May / June 2009

POINTING TO SAFER AVIATION

vector

Balloons Get a Lift

Icing

Part 21 Changes

Pilot Maintenance

CAA
CIVIL AVIATION AUTHORITY
OF NEW ZEALAND

vector

Balloons Get a Lift

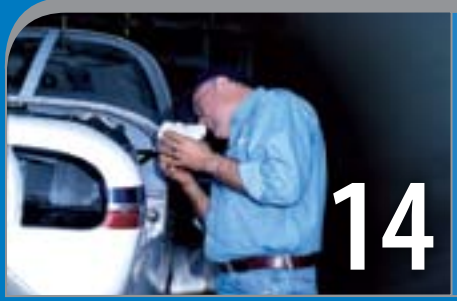
Modern day hot air balloons have been flown in New Zealand for more than 30 years, and there are currently 72 registered. We bring you up to date on moves that will see hot air balloons fully entering the aviation system through the joint efforts of the ballooning community and the CAA.

Icing

It's that time of year again, time for a reminder about the dangers of ice. While airframe icing is primarily a problem for IFR pilots, pilots of VFR aircraft need to remember that they are not immune.

Part 21 Changes

Changes to Part 21 *Certification of Products and Parts* are expected to come into force later this year. The new amendments will affect 320 currently registered aircraft as well as other new aircraft that will come into the system, and expand the existing special category into six subcategories.



Pilot Maintenance

Pilots are able to remove or fit role equipment, dual controls, and carry out other maintenance functions on an aircraft. But this privilege is subject to certain preconditions listed in rule 43.51(c). This article includes an easy-to-read list of the maintenance that pilots can do.

In this issue...

Cover: A competition over Henley Lake during Balloons Over Wairarapa in March this year. See page 4.

Published by
The Communications and Safety Education Unit of the Civil Aviation Authority of New Zealand, P O Box 31–441, Lower Hutt 5040, New Zealand.

Tel: +64–4–560 9400,
Fax: +64–4–569 2024,
Email: info@caa.govt.nz.
Published six times a year, in the last week of every odd month.

Manager Communications Bill Sommer.

Editor Peter Singleton.

Safety Education Publishing Team
Lakshmi Guda, Cliff Jenks, Anna McClay, Clare Ferguson, Rose Wood.

Design
Gusto Design & Print Ltd.

Publication Content
Unless expressly stated as CAA policy, the views expressed in *Vector* do not necessarily reflect the policy of the Civil Aviation Authority. Articles are intended to stimulate discussion, and nothing in *Vector* is to be taken as overriding any New Zealand civil aviation legislation, or any statements issued by the Director of Civil Aviation or the Civil Aviation Authority of New Zealand.

Reader comments and contributions are welcome and may be published, but the Editor reserves the right to edit or abridge them, and not to publish those that are judged not to contribute constructively towards safer aviation. Reader contributions and correspondence regarding the content of *Vector* should be addressed to: *Vector* Editor, P O Box 31–441, Lower Hutt 5040, or email: info@caa.govt.nz.

Free Distribution
Vector is distributed automatically to all New Zealand flight crew, air traffic controllers, aircraft maintenance engineer licence holders, aircraft owners, most organisations holding an aviation document, and to certain other persons and organisations interested in promoting safer aviation.

In the case of flight crew and air traffic controllers, a current aviation medical certificate must be held, and a current New Zealand address given, to ensure magazine entitlement.

Holders of Pilot Certificates issued by Part 149 certificated organisations can also apply to receive a free *Vector* (see the CAA web site for details). *Vector* also appears on the CAA's web site: www.caa.govt.nz.

Change of Address
Readers receiving *Vector* free of charge should notify info@caa.govt.nz of any change of address, quoting your CAA Client Number. Paying subscribers should notify The Colour Guy.

Paid Subscriptions
Vector is available on subscription only from The Colour Guy, P O Box 30–464, Lower Hutt 5040, Freephone 0800–438 785.

IFR Charts De-cluttered

The IFR charts have been de-cluttered to improve their readability. The re-developed charts will be effective 4 June 2009.

North and South Enroute Charts

All airspace below 9500 feet has been removed. Enroute descent distance steps have also been removed for routes covered by the larger scale Area Charts. Distance steps for routes not covered by the Area Charts (for example Kerikeri, Kaitaia, Whakatane, Gisborne, Wairoa in the North Island, and south of Ashburton and Hokitika in the South Island), remain on the Enroute Charts.

Upper North Island Area Chart

This was formerly the Auckland–Hamilton–Bay of Plenty Area Chart. Coverage has been extended to include New Plymouth and Taupo, and all airspace above 9500 feet has been removed.

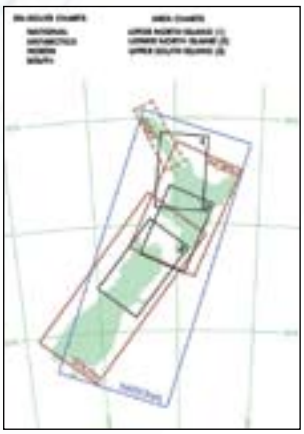
Lower North Island Area Chart

This was formerly the Ohakea–Wellington–Nelson Area Chart. Coverage has been extended to include New Plymouth, Taupo, and Napier. All airspace above 9500 feet has been removed.

Upper South Island Area Chart

This was formerly the Christchurch Area Chart. Coverage has been extended significantly to the north and west. The new chart covers from Paraparaumu in the north, to Ashburton in the south, and west to Hokitika and Wesport. All airspace above 9500 feet has been removed.

There are no changes to the National Enroute Chart. ■



New chart coverage areas

Balloons Get a Lift

Hot air balloons are poised to fully enter the aviation system. Modern day hot air balloons have been flown in New Zealand for more than 30 years and there are currently 72 registered. Until now though, they have not been managed in the same way as other aircraft.

This year for the first time, balloon event organisers have successfully applied to have their three annual Balloon Fiestas in the Wairarapa, Hamilton, and Levin approved as aviation events under Part 91 *General Operating and Flight Rules*. The move signals a joint intention from both the CAA and the ballooning community to bring the sport fully into the aviation safety system.

CAA Manager Sport and Recreation, Rex Kenny, says growing interest in ballooning and its popularity with the viewing public meant the CAA needed to increase its safety oversight of the sport.

"These aircraft often need to compete and operate at heights below those approved in Part 91 (500 feet over a non-populated area or 1000 feet over populated areas). For example, when they're doing their splash and dash runs, pilots fly across a lake and try to grab a target from the water before flying away again," Rex says.

"The sport is very attractive to spectators, so as it grows in popularity, we are seeing ever bigger crowds that are often very close to these aircraft."

In the past, a Commercial Pilot Licence (Balloon) has been required to carry passengers for hire or reward, but there has been no Private Pilot Licence (Balloon) available through the rules, or balloon pilot certificate through any other organisation. Rex Kenny says this has meant that anyone who wanted to buy and fly a balloon could legally do so, without formal training or airspace knowledge.

"Neither the CAA nor the ballooning community wanted to see that continue, and a PPL (B), as well as an instructor rating (F-category), has been included in the current rewrite of Part 61 *Pilots Licences and Ratings*. This is due to be published as a Notice of Proposed Rule Making toward the end of this year. Under the proposal, balloon pilots will sit similar examinations to fixed-wing pilots, although the navigation element will be tailored to ballooning," Rex says.

Balloon Association of New Zealand (BANZ) president, Martyn Stacey, says the organisation welcomes the new licences, and also plans to apply for certification under Part 149 *Aviation Recreation Organisations – Certification*.

He says there are about 54 balloonists in New Zealand, including several members of the same families, and they are all members of BANZ. Once certificated under Part 149, the organisation would be able to assess and approve aviation events under delegation from the Director.

President of the Balloon Association of New Zealand, Martyn Stacey (photo, right), was Balloon Meister for Balloons Over Wairarapa in March this year. Photos show a splash and dash competition at Henley Lake, Masterton.

Like all aircraft, balloons are entered on the New Zealand Register of Aircraft, and must undergo Annual Reviews of Airworthiness and be maintained in accordance with the manufacturer's maintenance programme, or a maintenance programme approved by the CAA.

Martyn Stacey says BANZ is also looking forward to the arrival of Part 115 *Adventure Aviation*, which will allow the certification of commercial ballooning operations. A Notice of Proposed Rule Making for Part 115 is scheduled for October 2009, with the completed rule expected toward the end of 2010.

"Commercial operators are seriously looking forward to Part 115 coming in," Martyn says.

"It will be a huge plus for the ballooning industry."

He says ballooning has changed dramatically since it was first introduced to New Zealand. Balloon

envelopes can now have factory guarantees of 600 hours, materials are better, inflation methods are improving, and manoeuvrability may come as a surprise. At this year's competitions, Martyn flew his balloon 17.5 km and landed within 30 cm of his mark.

"It took a long time to do it, but we got there. The thing about ballooning is that it's a team sport. It takes a pilot and a ground crew. Ballooning events allow us to get together, compete, and learn what works best from each other."

The CAA's Rex Kenny says the ballooning community is well prepared to take the next steps into the aviation safety system.

"Over the last few years we've seen a lot more awareness of the rules and the need to fly neighbourly and avoid being low level over livestock and other sensitive areas. There are also now some highly skilled and safety conscious people taking the role of Balloon Meister (airshow coordinator) at ballooning events. Five years ago, New Zealand would have had to bring that expertise in from overseas."

Outside of organised events, balloons operate to the same VFR flight rules as other aircraft. For the most part, they are radio-equipped, and some are also fitted with transponders.

Learn more about BANZ, www.balloonz.org.nz. ■

Icing

It's that time of year again, time for a reminder about the dangers of ice. While airframe icing is primarily a problem for IFR pilots, pilots of VFR aircraft need to remember that they are not immune.

This article provides only a light dusting over the issue of ice. For detailed information refer to the *Aircraft Icing Handbook*, available on the CAA web site, www.caa.govt.nz, see "Publications", or go to the NASA web site where they have two online courses, one on ground icing, the other on in-flight icing, http://aircrafticing.grc.nasa.gov/courses.html.

Where to Find Ice

Accurate prediction of where icing is found, and how much icing you will encounter, is difficult. It is, however, possible to identify the general conditions that make icing more probable.

New Zealand's alpine chain lifts and cools the warm maritime air coming off the Tasman Sea – this high moisture-content air is perfect for producing ice.

Knowing the Outside Air Temperature (OAT) and having a detailed knowledge of the weather are the best cues for predicting icing conditions. However, sometimes the only way of knowing where the icing is, is to encounter it – or to hear from someone else who has.

Induction System Icing

Induction icing is a comprehensive term that includes all types of fuel metering and all parts of the induction system where ice can accumulate. This includes the air filter, bends in the system, and critical areas of the fuel metering device, like the throttle plate in a float-type carburettor.

Induction system icing forms insidiously, and some aircraft/engine combinations are more susceptible than others.

Impact Icing

Impact ice forms on the surface of the air intakes, air filter, and possibly in the bends in the system, creating disturbances in the airflow and gradually closing off the air intake.

Visible airframe ice should immediately alert you to the danger of a similar build-up in the induction system. In aircraft that have fuel-injection systems, this may be the only indication of induction system icing.

NASA GRC Icing Branch

Refrigeration Icing

Refrigeration icing forms in a float-type carburettor as a result of fuel vaporisation and low pressure, when the relative humidity is more than 50 percent, and in air temperatures anywhere up to 35°C.

The rapid cooling in the carburettor is caused by two factors: the absorption of heat from the air during vaporisation of the fuel, and the high air velocity, which causes a low-pressure area – accompanied by a drop in temperature – through the venturi. If the air contains a large amount of moisture, the cooling process from these two factors can cause ice on the inlet manifold walls and the throttle 'butterfly'. This can seriously restrict the airflow, reducing the power output of the engine, possibly even stopping it.

Symptoms

The best cure for carburettor icing is prevention, and this requires a sound knowledge of the symptoms.

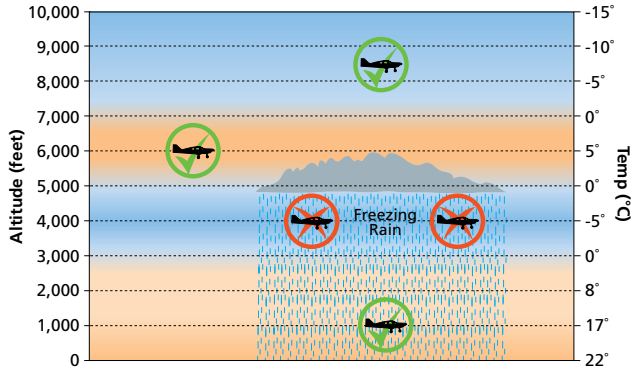
Fixed-Pitch Propellers

For aircraft with fixed-pitch propellers, a gradual loss of rpm and airspeed are early warning signs – exactly as if the throttle was being closed very slowly. If left unheeded, the next warning will be a rough-running engine combined with severe power loss, and finally a complete power loss.

Constant-Speed Propellers

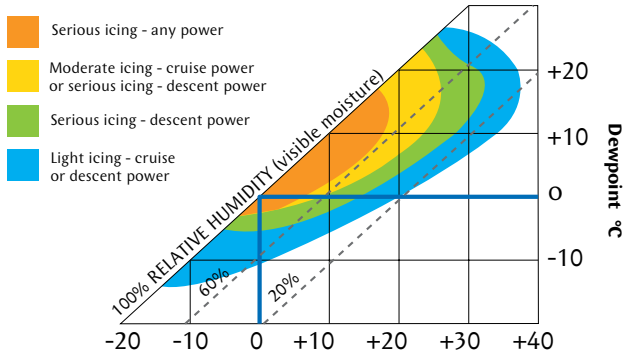
In the early stages, the propeller governor will maintain a constant engine rpm despite the loss of power. The first positive signs will be decreasing airspeed coupled with falling manifold pressure, but these symptoms come on gradually and insidiously, and may go unnoticed. Eventually, other symptoms will be experienced, such as rough running and rpm loss.

Freezing rain associated with a frontal system inversion layer



A temperature inversion at altitude can produce freezing rain conditions. See next page.

Carburettor Icing Chart



Continued over ❯❯

» Continued from previous page

Cures

At the first indication of a reduction in rpm/manifold pressure/airspeed or height, full carburettor heat should be applied for at least 30 seconds and the mixture leaned slightly to correct the over-rich situation. A gradual return of airspeed (and engine rpm with fixed-pitch propellers) will indicate that ice had been present.

The application of alternate air may produce similar effects, therefore the mixture may need to be leaned to restore smooth engine operation and to reduce power loss from an over-rich mixture.

Where considerable ice has accumulated, be prepared for some engine roughness when you apply carburettor heat. The mixture changes, caused by the heated air and pieces of partly melted ice passing into the engine, cause this roughness. If the use of carburettor heat is left until engine roughness has already occurred, the resultant rough running can seem quite severe, but wait until the engine returns to smooth running before reselecting COLD.

Airframe Icing

Although ice can build up on all aeroplane surfaces, of significant concern is aerofoil icing – on the mainplane and on the tailplane. Ice destroys the smooth flow of air over the aerofoil, diminishing its ability to generate lift. It increases drag, increases the aircraft weight, and degrades the control authority of the pilot. As power is added to compensate for the additional drag, and the aircraft nose is raised to maintain altitude (increasing the angle of attack), additional ice will accumulate on the underside of the aerofoils and fuselage.

Ice accumulation (on the leading edges or upper aerofoil surfaces) no thicker than a piece of coarse sandpaper can reduce lift by as much as 30 percent and increase drag by as much as 40 percent.

One particular hazard of severe icing is the tailplane, or empennage, stall. Sharp-edged surfaces are more susceptible to collecting ice than large blunt ones. For this reason, the tailplane will begin accumulating ice before the wings, and at a faster rate. Because you cannot see the tailplane, you may be unaware of the situation until a stall occurs when the critical angle of attack is exceeded (this can occur at a relatively high airspeed). Since the tailplane provides a balancing nose-down force, when it stalls, the aeroplane will pitch nose down, sometimes uncontrollably. Application of flaps can initiate or aggravate this process. Caution should be used when applying flaps during an approach if there is the possibility of tailplane icing. More information on the symptoms of this phenomenon is available in the *Aircraft Icing Handbook*.

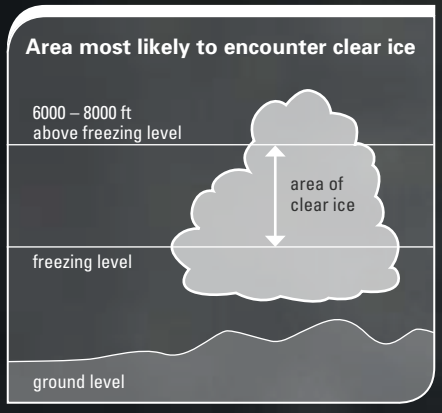
Loss of thrust or lift due to ice build-ups on the propellers, rotor blades, or around engine intakes is also a serious consideration. Not only will ice accretion significantly reduce the amount of thrust or lift produced, it is also likely to cause the propeller or rotor to become unbalanced.

The blockage of pitot intakes and static vents by ice will produce pressure instrument errors. The best defence against pitot icing is to ensure that the heating elements are working during the pre-flight, and are switched on well in advance of any anticipated icing conditions.

It is now recommended that as soon as you enter icing conditions, turn the boots on, and leave them on.

Clear Ice

Clear ice occurs when large supercooled water droplets freeze (relatively) slowly on contact with a cold surface. It normally occurs when the outside air temperature is between 0° and –15°C. It is most commonly encountered in cumulus cloud within the first 6000 to 8000 feet above the freezing level, but occasionally can be found in stratiform clouds.

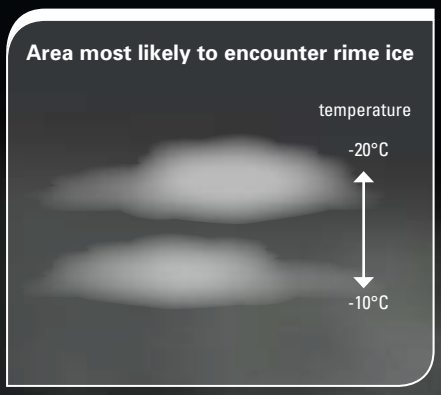


Clear ice is dangerous for many reasons. It can quickly build up – dramatically increasing the aircraft weight and stall speed. It can spread back over a large area and can be difficult to detect, particularly at night. Initially, it may not affect aerodynamic performance, but if allowed to flow back to the hinge line of a control surface, it may render the control unusable. When the aircraft encounters warmer air, it can break off in large chunks, possibly causing airframe damage.

Rime Ice

Rime ice is rough and uneven in appearance and fairly brittle in comparison to clear ice. The rapid freezing of small, super-cooled water droplets traps pockets of air, giving it a rough and crystalline look.

Rime ice is usually associated with stratiform cloud, with an outside air temperature between 0° and –40°C, but is most common within the range –10° to –20°C.



It dramatically affects the aerodynamic qualities of leading edges, but unlike clear ice, it does not usually cause a significant increase in aircraft weight. It can be easily cleared using de-ice equipment.

Freezing Rain

Freezing rain occurs when rain from a warm layer of cloud falls into an air mass that has a temperature below 0°C. Freezing rain is normally associated with the cold sector directly under the slope of a warm front, or in the cold sector just behind a cold front. It can cover the entire aircraft with clear ice in a matter of minutes – to the point where de-icing equipment is unable to cope. If these conditions are encountered, it is essential to vacate them as soon as possible.

Frost

Frost forms on aircraft when the OAT falls below 0°C and there is visible moisture in the air – usually while on the ground overnight.

Frost does not have the same weight penalties as other icing, but it does roughen the smooth surface and disrupt the airflow over the wing. This can lead to flow separation and significantly reduced takeoff performance. It is essential to ensure that the wings, tail-plane, and windscreens are cleared of ice before flight. Frost can be carefully brushed or washed off the aircraft, but be careful not to scratch surfaces or provide more water that can refreeze later!

Frost can also form in flight. It usually occurs when the aircraft has spent long enough in temperatures below 0°C to have 'cold soaked' to that temperature and then encounters moist air. This can occur after takeoff on a winter's morning, or when an aircraft descends into warm moist air. Remember this can also happen to VFR aircraft in clear air.

Cures

Remove all ice or frost on any lifting surface before flight. Your Aircraft Flight Manual or company Standard Operating Procedures will have guidance on how best to achieve this.

Avoid icing conditions if you can. The freezing level in ARFORs and SIGMET warnings will alert you to the areas you are most likely to find ice, and if you can't avoid them, then limit your exposure and don't rely on the de-icing capability of your aircraft to cover all situations. No aircraft are certificated for flight into severe icing conditions, and if you encounter them, you must get out as soon as you can.

Know how your particular de-icing or anti-icing system works. There are a number of different methods used, so know when and how to use yours. If you fly a variety of types, make sure you know the differences.

Recent research has indicated that if you have pneumatic boots, the conventional wisdom of waiting until there was a build-up of ice before you cycled them, is flawed. This advice was based on the original pneumatic boots design and materials, and newer versions have a lot higher pressure and better materials.

It is now recommended that as soon as you enter icing conditions, turn the boots on, and leave them on.

Finally, for those of you flying IFR, we would like to draw your attention to rule 91.421:

"...a pilot-in-command operating an aircraft under IFR shall not—

(1) perform a take-off in an aircraft that has—

(i) snow, ice, or frost adhering to any propeller, windscreen, or powerplant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system; or

(ii) snow, ice, or frost adhering to the wings, stabilisers, or control surfaces; and

(2) fly an aircraft into known or forecast icing conditions unless the aircraft is certificated with ice protection equipment for flight in the type of known icing conditions." ■

Ice accumulation (on the leading edges or upper aerofoil surfaces) no thicker than a piece of coarse sandpaper can reduce lift by as much as 30 percent and increase drag by as much as 40 percent.

Part 21 Changes

Changes to Civil Aviation Rule, Part 21 *Certification of Products and Parts* are expected to come into force later this year.

The new amendments to the rule will affect 320 currently registered aircraft (including helicopters) with special category airworthiness certificates and also aircraft (meeting the criteria outlined below) that will enter the system after the amendments come into force. These include aircraft from amateur-built aircraft with two to four seats which will not be eligible for hire or reward operations, to those which may be eligible for hire or reward, such as Light Sport Aircraft (2 seats), ex-military and vintage aircraft with 2 to 10 seats (5-seat maximum for helicopters).

Since the mid 1990s, the international and national situation has changed with the growth in numbers of ex-military and vintage aircraft for private and display use, and increasing demand for the use of sport and recreational aircraft for hire or reward adventure aviation. The majority of aircraft involved in these activities in New Zealand are currently certificated under Part 21 Subpart H *Special Category – Experimental*. However, only a small number of aircraft certificated as Experimental are actually involved in experimental operations.

The current amendments to Part 21 have been made taking into account industry petitions for the creation of a new rule providing for the unique certification and operating requirements of ex-military and vintage aircraft. It also follows developments in the United States, where a Light Sport Aircraft certification category has been created.

What are the Changes?

The existing special category will be expanded into six subcategories – Experimental (revised), Exhibition, Amateur-built, Primary, Light Sport Aircraft, and Limited – enabling an aircraft to be placed in the most suitable subcategory.

1. A revised **Experimental** subcategory which limits aircraft to true experimental activities such as research and development, showing compliance with rules, or flight evaluation, will be introduced.
2. An **Exhibition** subcategory which will accommodate aircraft that will be primarily operated for exhibition at aviation events, aerobatic competitions, film industry, or private use.
3. An **Amateur-built** subcategory which will accommodate aircraft built by their owners for sport and recreation purposes. The aircraft will migrate to this category once it has completed flight evaluation under the Experimental subcategory.
4. A **Primary** subcategory. This certification standard originates in the United States – the category allows for future imports. An aircraft certificated as Special Category – Primary may be operated for hire or reward or for flight training.

Experimental

Under the proposed changes to Part 21, aircraft in the Experimental category will be carrying out flight evaluation or being used for research and development. The Falcomposite Furio is pictured.

Exhibition

This rotary engine Sopwith Camel replica could be registered under the new Exhibition category.

5. The **Light Sport Aircraft (LSA)**, when constructed under factory conditions, may be operated for hire or reward or for flight training.
6. A **Limited** subcategory which accommodates ex-military and vintage aircraft (including helicopters) that have been constructed in series, under factory conditions, in a controlled design environment. Aircraft in this subcategory may be operated for hire or reward.
7. Introduction of a new **Subpart I for Flight Permits**. All special flight permit rules have been withdrawn from the existing Subpart H and consolidated under this new Subpart for ease of reference. Other than consolidation, there has been no change to rule content.

This rotary engine Nieuport 11 'Bebe' replica biplane (left), and Fokker Dr1 replica triplane could be registered in the Exhibition category.

Continued over ❯❯

Amateur-built

The Piel Emeraude could be registered in the Amateur-built category as will many aircraft currently registered as Experimental.

Light Sport Aircraft

The TL-2000 Sting could be registered as an LSA under the proposed changes to Part 21.

Limited

This North American AT-6 Harvard could apply for the new Limited category.

The Exhibition category will suit some specialised aerobatic aircraft.

» *Continued from previous page*

The amendments to Part 21 also impact on Parts 1, 43, 47, 66 and 91.

CAA Manager Sport and Recreation, Rex Kenny, says, "The significant amendments to Part 91 that are consequential to the Part 21 rule change will allow the commercial operation of some special category aircraft such as factory-built Light Sport Aircraft in the flight training sector and, once the proposed Part 115 *Adventure Aviation* is in place, Limited category aircraft conducting adventure aviation."

This will provide a number of opportunities for organisations in the General Aviation sector.

Advantages

Rex says that there will be many benefits to industry from the amendment, such as:

- The ability to use special category aircraft in proposed adventure aviation activities under Part 115
- Availability of LSAs for flight training of Part 61 pilots
- Giving pilots an opportunity to maintain some aircraft to higher standards that comply with the aircraft manufacturers' requirements in return for flight over congested areas
- Enabling aero clubs to consider the use of LSAs. Many of these have modern designs, are available at generally reduced cost, provide greater operational efficiency, and lower maintenance costs.

Transitional Arrangements

Proposed transitional arrangements include a provision giving owners 12 months to transition to the respective subcategories developed in this rule amendment.

CAA General Manager General Aviation, John Lanham, says, "The rewrite of Part 21 goes hand-in-hand with the development of Part 115 *Adventure Aviation* and, combined, will move New Zealand sport and recreation aviation a significant step forward. The Part 21 rewrite gives CAA the ability for the first time to recognise and classify certain sub-types and technology in sport and recreation aircraft. Part 115 will provide a robust means of regulating the commercial use of those aircraft for the carriage of passengers for hire and reward. Much of this work has been ground-breaking and will, I believe, come to be seen as world leading."

For more information contact Manager Sport and Recreation, Rex Kenny, email: kennyr@caa.govt.nz, or see the CAA web site, www.caa.govt.nz, "Rules Development – Pending and Draft Rules". ■

Young Eagles News

young eagles RNZAC

The Ross Macpherson Memorial Flying Scholarships were presented to the winners at Flying New Zealand's (Royal New Zealand Aero Club) national championships in Taumarunui on 7 March 2009.

The scholarship winners for 2009 were:

Chris Van Rossum (North Shore)
Ryan Daum (Auckland)
Daniel Firth (Tauranga)
Monique Garrett (New Plymouth)
Kerry Walton (Wellington)
Matthew Johnson (Marlborough)

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

In all, 16 applications were received this year for the scholarships. Young Eagles National Co-ordinator, Kevin Lloyd, says, "I was extremely impressed with the high calibre of the applications received this year."

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

Pickard Memorial Trophy

This year, the Pickard Memorial Trophy went to Wellington's Kerry Walton.

"The scholarship winners went through a day of learning with me," says Kevin. "They then answered test questions on aviation and general knowledge and the winner was based on the test results. The high standard of applicants was also evident in the final results for the Pickard Memorial Trophy award, as the placements were very close indeed."

Kevin also announced a special prize this year, "Chris Van Rossum was awarded a week's work experience with a multi-engine air transport operation in recognition of the high standard of his application."

The purpose of the Young Eagles programme is to foster and promote aviation among youth. Many aero clubs have an active Young Eagles programme with regular coordinated activities, like monthly Young Eagles get togethers where they study and discuss aviation-related topics. They also assist at club competition days and go away on club fly-ins.

This year, six young people were chosen for the scholarship, instead of the normal five, thanks to a donation from the former Pine Park Flying Club.

The CAA is a major sponsor of the Young Eagles Programme. The other scholarship sponsors are Aviation Services Ltd, and Aviation Co-operating Underwriters Pacific. ■

From left: Young Eagles National Coordinator, Kevin Lloyd, Monique Garrett, Chris Van Rossum, Kerry Walton, Ryan Daum, and Daniel Firth. Absent: Matthew Johnson.

Pilot Maintenance

Changing role equipment, dual controls, and the performance of minor maintenance on aircraft, plays an important part in many operations. Pilots are able to remove or fit role equipment, dual controls, and carry out other maintenance functions on an aircraft within the limitations of Part 43, Appendix A.1 and A.2.

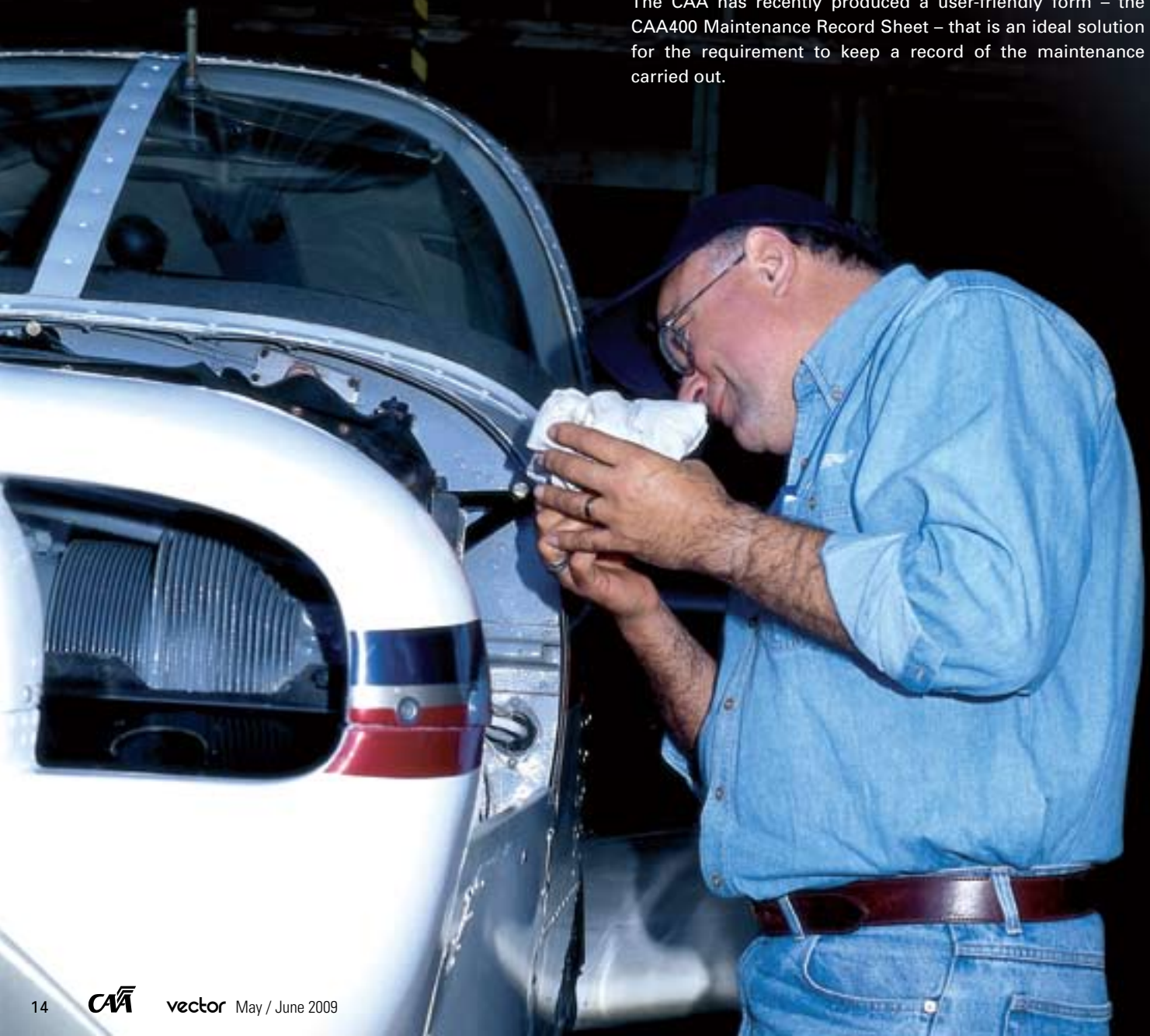
But this privilege is subject to certain preconditions listed in rule 43.51(c): namely, that the pilot must be trained by an appropriately rated licensed aircraft maintenance engineer and hold a written record of that training; and the pilot must have written authorisation from the operator/owner allowing them to perform the maintenance.

"Surprisingly, this is not common knowledge in the pilot community," says Flight Operations Inspector, Shaun Burton. "A large percentage of fixed-wing and helicopter pilots are not aware of the need to hold operator/owner written authorisation, and a record of the appropriate training from a licensed aircraft engineer."

For the holder of an air operator certificate who is required to have maintenance done by a Part 145 maintenance organisation – either because of the size of the aircraft, or because of the operator's choice to do maintenance reviews instead of annual reviews of airworthiness – the pilots will need to be trained and have authorisations issued by the Part 145 maintenance organisation.

All of the functions listed in Part 43 Appendix A.1 and A.2 are maintenance, and a record of this maintenance must be kept. On completion of the maintenance, the pilot must certify a Release to Service for the maintenance carried out.

The CAA has recently produced a user-friendly form – the CAA400 Maintenance Record Sheet – that is an ideal solution for the requirement to keep a record of the maintenance carried out.



These sheets are used in conjunction with the CA006 Technical Log, and the tear-off sections become loose leaf entries in the aircraft maintenance records. The CAA400 sheets and the associated instructions for use (on the Separator Card) can be obtained free of charge from your maintenance provider, Aviation Safety Advisers, or email: info@caa.govt.nz.

Implications

It is important to be aware of the risks that arise from not receiving training from an appropriate person, or not releasing the aircraft to service. Some of the risks possible in such a scenario are:

- Incorrect installation or use of wrong hardware to fit heavy role equipment underneath aircraft. This can result in damage to the aircraft, or danger to persons or property on the ground, and is a big safety issue for obvious reasons.
- Role equipment maintenance done by pilots who are not competent can pose a risk to airworthiness and serviceability of the aircraft.
- Duplicate Safety Inspections might not be carried out when required after the removal and fitting of dual controls. The incorrect installation of dual controls can lead to the pilot not being able to control the aircraft, and in some FADEC engine systems, an uncontrolled start cycle could occur and result in serious engine damage.
- Owners of the aircraft could face insurance risks.
- If damage should occur to an aircraft as a result of pilot maintenance, a pilot who is not trained or authorised may be personally liable for the damage.

If you're unsure of what maintenance you can and cannot be authorised to do as a pilot, here is an easy to read list.

A.1 Aircraft used to perform air operations

The following maintenance may be performed by a person under rule 43.51(b) on an aircraft that is used to perform air operations under the authority of an air operator certificate issued in accordance with Part 119:

1	Greasing, lubrication that does not require disassembly other than removal of access panels, fairings, or cowls
2	Replacing the aircraft battery
3	Replacing fuses and lights
4	GPS equipment maintenance including – installation and removal of GPS receivers and the routine updating of GPS receiver database information
5	Compressor washing
6	Installation and removal of seats, doors, and role equipment
7	The completion of repetitive airworthiness directive inspections between scheduled maintenance inspections
8	Replenishment of engine oil
9	Deferral of defects relating to inoperative instruments and equipment if the aircraft can be operated with inoperative instruments and equipment in accordance with rule 91.537
10	Performing routine maintenance that is intended by the aircraft manufacturer to be performed by a pilot provided no special tooling or equipment is required
11	Operating the self-test function on a 406 MHz ELT

A.2 Aircraft not used to perform air operations

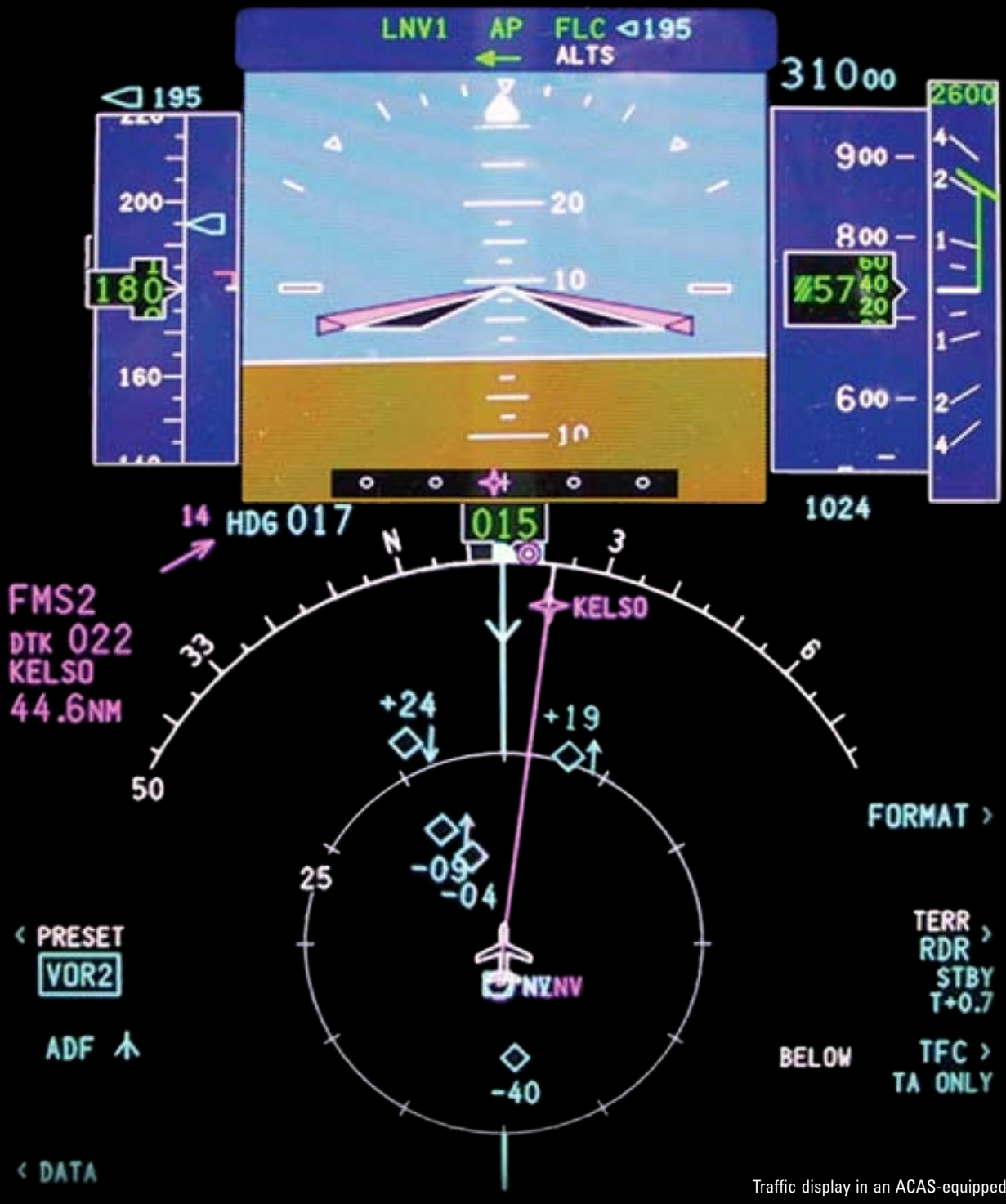
The following maintenance, in addition to the maintenance listed in Appendix A.1, may be performed by a person under rule 43.51(b) on an aircraft that is not used to perform air operations:

1	Replacement of landing gear tyres or tail skid shoes
2	Simple or temporary fabric patch repairs
3	Restoration of damaged or worn decorative coatings and application of preservative or protective material to components
4	Simple or temporary repairs to fairings or non-structural cover plates
5	Replenishment of hydraulic fluid in hydraulic reservoirs
6	Replacement of engine oil
7	Replacement of pressure oil filters
8	Removal and replacement of turbine engine igniters
9	Removal and replacement of piston engine spark plugs
10	Removal and replacement of brake pads

Please note that this is not a complete list and does not include all of the limitations – you should become familiar with Part 43, Appendix A, see the CAA web site, www.caa.govt.nz. ■

Turn It **On**

You like to know where other traffic is. So return the favour by letting other pilots know where you are. If you have a transponder, make sure it is switched on.



Traffic display in an ACAS-equipped aircraft.

The traffic labelled +24 with a down arrow is 2400 feet above the ACAS-equipped aircraft and descending. The traffic labelled -09 with an up arrow is 900 feet below and climbing.

Transponders produce a response when they receive a radio-frequency interrogation from secondary surveillance radar or ACAS-equipped aircraft. In Mode A, they transmit the four digit squawk code, and in Mode C, they transmit pressure altitude information in addition to the squawk code. Mode S capable transponders also transmit the aircraft call sign and a unique ICAO 24-bit address or 'hex code'.

All controlled airspace in New Zealand is transponder mandatory (as well as the upper portion of some Mandatory Broadcast Zones in Class G airspace). Some pilots, however, are not switching their transponders on while in Class D airspace. This is extremely important because IFR and VFR aircraft are not separated by ATC in Class D airspace (only runway and wake turbulence separation is provided). ATC will give traffic information, but it is up to individual pilots to see and avoid other aircraft.

In areas with secondary surveillance radar coverage, having your transponder on will allow ATC to see you on their radar screen, and give other aircraft accurate traffic information about your position. This does not mean that in areas outside radar coverage it is okay to switch your transponder off – it is not – keep it on at all times, even in uncontrolled airspace. Having your transponder on Mode C will give ACAS-equipped aircraft some idea of where to start looking, in order to find you visually. ACAS is a safety tool to help pilots out, but there is no substitute for actually sighting other aircraft, because ACAS displays can be misinterpreted. They only provide partial information, have limited accuracy, and are based on a moving reference (unlike a controller's radar display, which has a fixed reference). They cannot be relied on for self-separation or sequencing. That said, they do make it considerably easier to visually identify other aircraft. So help your fellow pilots out by keeping your transponder switched on.

Specific approval from ATC is required if you wish to enter TM airspace without a transponder.

Etiquette

Set your transponder to standby while taxiing, and only turn it to ALT as you line up. Remember to switch it off as soon as you exit the runway after landing (except at Auckland, where the signals are used by a new form of ground surveillance called multilateration). This avoids cluttering the controller's screen unnecessarily. To avoid unintentionally selecting the unlawful interference, communication failure, or emergency code, switch your transponder to standby when changing codes. Do not use the ident feature unless instructed to by ATC.

VFR Codes

Civil aeroplanes	1200
Gliders and balloons	1300
Aircraft in General Aviation Areas	1400
Civil helicopters	1500
Operating in controlled aerodrome circuit	2200
Defence aeroplanes	6000
Defence helicopters	6500

All aircraft on an IFR flight plan will receive a specific transponder code for that flight as part of their ATC clearance. A limited number of codes, however, are available for VFR aircraft on cross-country flights. If you file a VFR flight plan using IFIS, your assigned code will be shown in the message acknowledging acceptance of your plan.

Some VFR aircraft have a permanently assigned code. To apply for a permanent code, contact the National Briefing Office. The pilots of other VFR aircraft should set the code indicated in the table above.

Emergency Codes

Unlawful interference	7500
Loss of radio communication	7600
In-flight emergency	7700

Thinking about Buying a Transponder?

The cost of an entry level mode C transponder unit, including the encoder and antenna, starts at approximately $3800 plus GST and is subject to exchange rates. Installation costs will vary depending on the accessibility of the area the unit will be located, and the work required for installation of the unit, electrical loom, encoder, and antenna. This can take anywhere between 8 and 20 hours for a light GA aircraft, at a cost of approximately $800 to $1600 plus GST. Avionic maintenance providers will be able to provide an estimated cost for the unit, installation, and the necessary documentation.

While the cost of a transponder may seem prohibitive for recreational aircraft owners, consider the economic benefits of having access to controlled airspace, such as reduced fuel consumption at higher altitudes, and more direct routing by not diverting around airspace. These are in addition to the clear safety benefits.

Testing Transponders

If care is not taken, transponder testing on the ground can lead to controllers receiving false alerts, and ACAS-equipped aircraft receiving false Resolution Advisory (RA) alerts. Testing should ideally be carried out in shielded areas, but if this is not possible, the following steps should be taken:

» Notify the nearest ATC unit of your intentions and the time period for testing.

» Operate the transponder on codes 0050-0057 unless a specific code has been issued.

» When testing mode C, set to 40,000 feet or above.

» For more information see *AIP New Zealand* ENR 1.6. ■

Aviation Exams Going Electronic

Aviation exams for Commercial Pilot Licence (CPL), Air Transport Pilot Licence (ATPL), Instrument Rating (IR), and Aviation Maintenance Engineering (AME) subjects will go electronic from 29 June 2009.

Aviation Services Limited (ASL) General Manager, Graham Headey, says that with the electronic delivery, candidates can complete their exams and have their results back on the same day, in most cases.

ASL administer the aviation theory exams under delegation from the Director of Civil Aviation.

PPL exam subjects will continue in their paper form and be delivered at their current venues, but will have pre-determined session times until their transition to electronic exam delivery occurs. This is likely to happen by the end of December 2009.

There will be permanent exam centres in Auckland, Hamilton, Palmerston North, Lower Hutt, Motueka, and Christchurch, from which these exams will be delivered on ASL computers.

The number of sessions available will depend on the demand. For example, it is expected that the Auckland centre will be open 127 days without PPL sittings, while the Motueka centre will be open 40 days. This is based on the average of 15,000 exams that ASL conducts. All centres will have the ability to offer as many sessions as possible in a five-day working week.

The rest of the country will be covered by mobile centres, which will be set up at venues hired for the occasion. There will be mobile centres at Whangarei, North Shore, Tauranga, Dunedin, Invercargill, Queenstown, Napier/Hastings, and New Plymouth.

For further information on Computer Exam Delivery, see the ASL web site: https://www.asltasman.com/TOL/General/Main.aspx?sponsorid=8709

Advantages

By delivering the exams electronically, ASL is meeting a long-felt need of the aviation community. Graham points out that trial exam runs have received very positive feedback.

"Getting rid of the paperwork, and human error, are the biggest advantages," says Graham.

Obviously, faster delivery of results for candidates or training organisations is another big advantage. CPL, ATPL, IR, and AME candidates won't have to wait for the time that it takes a result to reach them by post, as they did with the paper-based system.

Level Playing Field

The new exam delivery system also has another advantage, in that it is expected to reduce exam cheating, thanks to the following initiatives:

- The layout of the new computer centres will be different.
- The question papers that each candidate has will be different, as they are generated randomly by the computer.
- There will be constant candidate surveillance both by the exam supervisor and video.

"All this will ensure a fairer playing field for all candidates," says Graham.

Fee Structure

ASL hasn't increased exam fees in four years. With this new exam system coming into place, the fee structure will be revised.

Revised Syllabuses

Meanwhile, the CAA Training Standards Development Officer, Carlton Campbell, says that the implementation date for some of the revised syllabuses for aviation subjects will be 29 June 2009 to accommodate the changes required for ASL's electronic exam delivery.

The subjects for which the revised syllabus becomes effective from 29 June 2009 are:

AC 61-3 (PPL)

Subject 6 Air navigation and flight planning

AC 61-5 (CPL)

Subject 18 Flight navigation general

AC 61-7 (ATPL)

Subject 37 Air Law (H)

Subject 38 Flight navigation general (A & H)

Subject 44 Instruments and navigation aids (A)

Subject 48 Advanced aerodynamics, performance, and systems knowledge (A)

Subject 50 Aerodynamics and aircraft systems (H)

Subject 41 Flight planning (H)

Subject 51 Performance and loading (H)

AC 61-17 (IR)

Subject 54 Flight navigation IFR

Subject 56 Instruments and navigation aids

Revised syllabuses for PPL Aircraft Technical Knowledge, Basic Turbine Knowledge, and CPL General Aircraft Technical Knowledge, were implemented earlier this year.

Further information on the new syllabuses is available from the CAA web site, www.caa.govt.nz, see "Pilots – Licences – Pilot Syllabus Assistance". ■

Nominations called for **Director's Awards and Flight Instructor Award**

Awards are presented each year to an individual, an aviation organisation, and a flight instructor with an overwhelming safety ethos.

These annual awards acknowledge those in the industry who have made outstanding contributions to promoting safety in aviation. Nominees, by their conspicuous actions, will have demonstrated a positive attitude to safety.

Two Director of Civil Aviation Awards are presented – one for an individual, and one for an organisation. A Flight Instructor Award is also presented.

These awards will be presented at the annual Aviation Industry Association conference at Blenheim in July.

The Director's Awards were first presented in 1995, and they represent a record of achievement in New Zealand aviation in recent years. Details of past award winners are available on the CAA web site, www.caa.govt.nz, under "Safety Information".

Nominations close on 22 June 2009 and, should be sent to Manager Communications, Bill Sommer (see below), with a few paragraphs on why your nominee(s) should receive the Award.

Bill Sommer
Email: sommerb@caa.govt.nz
Fax: 0–4–569 2024
Post: P O Box 31–441,
Lower Hutt 5040

Aviation Safety Advisers

Don Waters
North Island, north of a line, and including, New Plymouth-Taupo-East Cape
Tel: 0–7–376 9342 Fax: 0–7–376 9350
Mobile: 027–485 2096
Email: watersd@caa.govt.nz

Ross St George
North Island, south of a line
New Plymouth–Taupo–East Cape
Tel: 0–6–353 7443 Fax: 0–6–353 3374
Mobile: 027–485 2097
Email: stgeorger@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

John Keyzer
Maintenance, North Island
Tel: 0–9–267 8063 Fax: 0–9–267 8063
Mobile: 027–213 0507
Email: keyzerj@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

Weather to Fly

SAFETY SEMINARS

Attendance at this year's AvKiwi Safety Seminars has been outstanding. Last year we saw 1000 pilots – this year we have seen around 2000. A fantastic response.

Now that the AvKiwi Safety Seminars are all finished, here is a summary of the seminar, and a look at the new products we introduced:

» A brand new *VFR Met* GAP booklet
» A revised *Weather Card*
» A *VFR Met Minima* card
» A new *Met Info* poster
» A new Met section on the CAA web site.

Jim Rankin, one of this year's presenters, said, "Overwhelmingly, the feedback we received was that it is easy enough to decode the weather (with the right tools), but not to interpret it – and that takes practice." So help yourself out by brushing up on your Met knowledge – at minimum you will need it at your next BFR, but potentially it could save your life.

VFR into IMC is Fatal

Research by the Australian Transport Safety Bureau (ATSB) studied all weather-related incidents and accidents to identify trends. They found that 76% of inadvertent VFR into IMC accidents ended fatally.

Those flights that did not push on into deteriorating weather – by carrying out a precautionary landing – tended to damage the aircraft, but all the occupants walked away.

A Weather-Related Accident

In August 2005, a Cessna 182 crashed into the sea north of Christchurch, killing the pilot and his wife, while seemingly trying to make a low level turn in bad weather. The aircraft has not been found, but the GPS unit washed up shortly after the accident.

The flight departed Nelson bound for Aylesbury (North Canterbury) at approximately 13:45 local, this is the weather they received.

```
TAF NZNS 062110Z 062112 VRB02KT 30KM
SCT030 BKN050 2000FT WIND 09010KT =

TAF NZWB 062110Z 062112 27005KT 30KM
SCT020 BKN040 BECMG 2301 08010KT TEMPO
0612 6000 DZ BKN011 2000FT WIND 07015KT =

TAF AMD NZCH 062228Z 062212 VRB02KT 20KM
-SHRA SCT015 BKN025 BECMG 2224 06015KT
TEMPO 2208 BKN012 TEMPO 0812 2500 DZ
BKN007 2000FT WIND 04020KT =

SPAR NZCH 062100Z VIS 20KM RED 5000M BR
CLD BKN012=

SPECI NZCH 062200Z 32002KT 5000 PRFG BKN012
07/07 Q1014 BECMG 20KM HZ SCT008 BKN018=
```

All of the information the pilot obtained was over three hours old – the pilot did not get any Area Forecasts (ARFORs), the updated TAFs, or the current METARs for Christchurch or Woodbourne.

From a quick study of the weather information above, it seems that the weather is forecast to deteriorate after dark, and the cloud base in Christchurch will be low in places – but the 22:00 (10:00 local) SPECI for Christchurch indicates visibility is improving.

Southerly storm front.

These are excerpts from some of the weather the pilot didn't get.

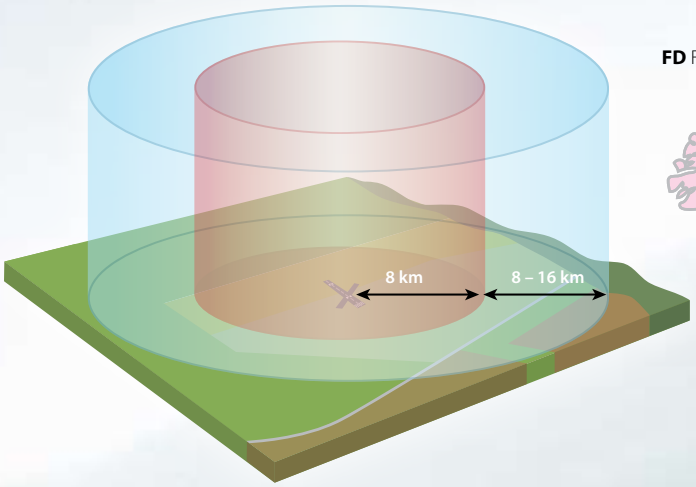
```
KA ARFOR (in part)
Visibility reducing to 3000 m in rain,
Cloud broken at 1000 ft

PL ARFOR (in part)
Visibility reducing to 2500 m in rain and
drizzle, visibility reducing to 400 m in
fog, cloud broken stratus 300 ft in rain and
drizzle, otherwise BKN CUSC 1200-8000

TAF AMD NZCH 070029Z 070012 06012KT 20KM -DZ
SCT012 BKN025 TEMPO 0008 4000 DZ BKN007 TEMPO
0812 2500 DZ BKN003 2000FT WIND 04020KT
```

This weather paints a very different picture of the weather en route.

Planning a flight with only the TAFs for your departure, enroute, and destination aerodromes is not enough – you also need the ARFORs, charts, and radar and satellite pictures.



A TAF is only valid for the 8 km area around the aerodrome (16 km when the term vicinity is used). It cannot be used to infer the conditions between two distant aerodromes like Woodbourne and Christchurch.

The 17 **ARFOR Areas**

Continued over ❯❯

» *Continued from previous page*

How to Avoid Becoming a Statistic

So what are you going to do to make sure you don't get caught out? You are going to do four things: get as much up-to-date weather information as you can, keep up to date with any changes, make early decisions, and use our seven planning steps.

Get As Much Weather Information As You Can

There is a wealth of weather information available on the MetFlight GA web site, http://metflight.metra.co.nz. There are surface charts, satellite pictures, rain radar images, and all the regular aviation weather products. And the best thing about MetFlight GA is that the Civil Aviation Authority pays MetService to provide this site for non-commercial flights below 10,000 feet – so use it.

Also try www.MetService.com and www.metVUW.com.

You can get a good appreciation of the general weather patterns from TV reports and The Weather Channel. If you don't have access to the internet, aviation specific weather is still available via fax-on-demand from Airways, but you need to register. Contact Airways on 0–3–358 1500 for an application form.

Keep Up To Date with the Recent Changes

There have been changes to TAFs and METARs recently, as detailed in recent *Vector* articles. In summary:

» The date time format in all TAFs has changed. 1921/2012 means from the 19th of the month at 2100 UTC until the 20th of the month at 1200 UTC.

» The terms CAVOK and 9999 have been introduced at international airports and MetService will be carrying out consultation on extending these terms to all New Zealand aerodromes in November.

Make Timely Decisions

The ATSB research also showed that two thirds of the VFR into IMC occurrences happened after the mid-point of the flight. In other words, by not making an early decision to either turn back or land, you increase your chance of inadvertently entering IMC.

Another presenter, CAA Training Standards Development Officer, Carlton Campbell, adds, "The most important lesson from these statistics is to be proactive – make an early decision. Don't let a gradual deterioration in the weather sucker you into continuing, hoping that conditions will improve. Make sure you keep assessing the weather conditions to keep within your minimums."

Use Our Suggested Planning Steps

1. Check the NOTAMs and *AIP Supplement* first, to make sure you are not wasting your time planning to an aerodrome that is closed, or flying through temporary restricted airspace or an airshow.
2. Look at the BIG picture. Check the surface charts. Look at the satellite images (visible and infrared) and check that the satellite confirms the surface charts. Then look at the rain radar – be aware of the trap we point out below. Next move on to SIGMETs, and finally don't forget to look out the window.
3. Check the ARFORs for the route.
4. Check the TAFs for the route.
5. Check METARs (as well as SPECIs and SPARs) and compare with the TAFs – look for a confirmation of what you have seen in the forecasts and any trends.
6. Build a picture of the weather situation. Take some time to understand the weather. Make it real by processing the information – just reading it probably won't be enough. Write down or draw a picture of what you expect to see on your flight, or try using the blank tables on the back page of the *VFR Met* GAP booklet. Take a look at the map in conjunction with the weather, so that even if you don't have local knowledge, you can make an educated guess.
7. Make some decisions. Is the flight feasible and/or sensible given the current weather? What is the best route to take today? What is the best time to fly – will it be better earlier, or later? Do you have diversion options or escape routes? How much fuel do you need – including carrying out those diversion options?

Rules of Thumb

Here are our top tips.

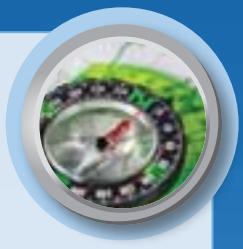
QNH Changes

Rapid decreases in QNH, either actual or forecast, normally mean strong winds and possibly bad weather on the way.

Similarly, a significant QNH difference between two near locations, normally means strong winds.

Pilot Reports

Pilot reports are a very useful but underutilised report. If you come across weather that is different from forecast (better or worse) give a report over the FISCOM frequency – you could benefit from another's report. Typically they include information on hazardous condition like windshear or turbulence.

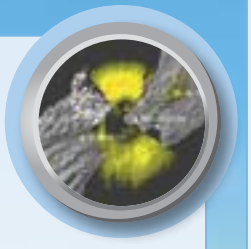


True or Magnetic

Make sure you know which reports use degrees true, and which use magnetic to report wind direction. Anything provided directly by an air traffic controller will be in magnetic (ATIS, SPAR, or landing report), everything else is in true.

2000 ft Wind

The 2000 foot wind is a good indicator of the gradient flow. A significant difference between the surface wind and the 2000 foot wind can indicate local wind effects, possible turbulence and/or windshear.



Rain Radar

This rain radar picture seems to show rain in Cook Strait, but no, this is sea spray being whipped up by the fresh northerly funnelling through the Strait. Some of the clues that identify this phenomenon are the straight edges and the shadow behind Kapiti Island.

Cruising Altitude

A general rule of thumb is that winds at higher altitudes (7000 feet or more) are from the westerly quarter.

In fine weather:

» Heading south – fly low (2500 feet and below). This keeps you out of any strong headwinds, and you may pick up a tailwind.

» Heading north – fly high (as high as airspace, aircraft, and cloud cover permit).

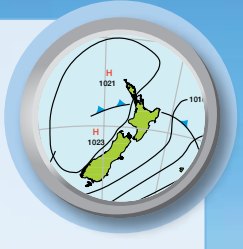
Local Winds

New Zealand meteorology is strongly dominated by local wind effects, for example anabatic winds (uphill), katabatic winds (downhill), sea and lake breezes, and venturi effects. Try and understand any effect that enhances a katabatic or anabatic wind, for example a sea or lake breeze.

Monitor the surface wind – you never know when you might need to land into it!

Temperature–Dew Point Split

The temperature–dew point difference (split) is an indication of the amount of water vapour in the air. When they are the same or close, it normally means either low cloud, fog, or precipitation. The smaller the split, the lower the cloud base. Pay particular attention late in the day when temperatures can drop rapidly, especially in winter.

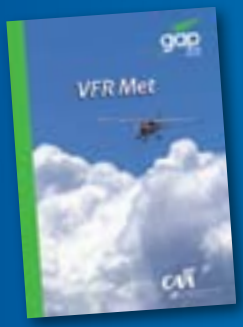


Forecast Accuracy

A forecast is just that – it is **not** a guarantee. Apply some common sense and a margin to the forecast. The conditions could be better or worse than forecast.

If the forecast indicates bad weather is on the way, the issue may be one of timing rather than severity. Don't plan on arriving ten minutes before a forecast change – you could easily get caught out because the change happened 30 minutes early.

New Products



VFR Met GAP

Developed in conjunction with the *Weather to Fly* AvKiwi Safety Seminars, this booklet covers why you should get Met, where you can get it, what you should get, and how to interpret it.

It encourages you to use a set of tables to help you compare and contrast the weather for your flight, as a means of improving your weather-related decision making.

Met Info Poster

A handy poster to put up near your flight planning desk, with the ARFOR areas and abbreviations right where you need them.

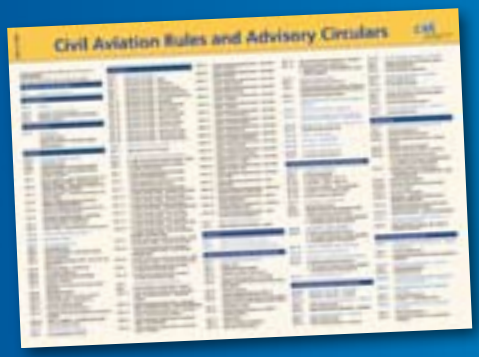
Weather Card

This is a total revamp of the Weather Information Interpretation Card. Now it's a fold-out card with a handy UTC time converter on the front, important information about each of the aviation weather products on the outside, and a full list of weather abbreviations on the inside.

It's handily hole-punched to fit into your *AIP Vol 4* – so you can take it everywhere you go.

CAA Web Site

Our web site, www.caa.govt.nz, has a new Meteorology section – a good guide to New Zealand aviation meteorology. Link is on the home page.



VFR Met Minima Card

In response to demand we have produced a simplified VFR met minima illustration, as a handy reminder of your visibility and distance from cloud requirements. On the back is a decision-making guide encouraging you to reassess your flight whenever any one of the indicators changes.

Civil Aviation Rules and Advisory Circulars Poster

An update of this poster as at March 2009 was included in the last *Vector* mailout. If you would like more copies, see the information below.

You can get any of these new products from your local Aviation Safety Adviser (see page 19), or email: info@caa.govt.nz.

Planning an Aviation Event?

If you are planning an event, large or small, such as an airshow, air race, rally, or major competition, the details should be published in an *AIP Supplement* to warn pilots of the activity.

The published cut-off dates for the AIP are listed below, but you must advise the CAA ***at least one week*** before those dates, to allow for inquiries and processing. Note that, even if you have applied to the CAA for an aviation event authorisation, this does not automatically generate an *AIP Supplement* or airspace request.

Email the CAA, aero@caa.govt.nz. Further information on aviation events is in AC91–1.

Effective Date	***Cut-off Date With Graphic***	***Cut-off Date Without Graphic***
27 Aug 09	15 Jun 09	22 Jun 09
24 Sep 09	13 Jul 09	20 Jul 09
22 Oct 09	10 Aug 09	17 Aug 09

Flight Instructor Seminar
August 2009

For all instructors in the aviation community

Masterton 4 and 5 August (Copthorne Solway)

Ashburton 11 and 12 August (Hotel Ashburton)

Hamilton 18 and 19 August (Kingsgate Hotel)

Closing date for registration is 27 July 2009

All current Part 149 Instructors, and Part 61 Instructors are invited to register. Places are limited, so please register early. The registration form is on the CAA web site, www.caa.govt.nz. All registrations must be accompanied by evidence of instructor rating currency (ie, copy of last renewal flight test report) and the $100 registration fee (this includes all meals over the two days and accommodation on the first day of the seminar. It is non-refundable but substitutions are possible).

Complete the form and send with the registration fee to:

Flight Instructor Seminar
Civil Aviation Authority
P O Box 31-441
Lower Hutt 5040

How to Get Aviation Publications

AIP New Zealand

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

Inspection Authorisation (IA) Initial Course 2009

A Part 66 IA Certificate is an additional qualification, over and above holding a Part 66 AME Licence, to perform and certify the following two maintenance functions:

1. An Annual Review of Airworthiness (ARA).
2. Conformity of Major Modifications and Repairs.

Courses are run when there are sufficient numbers. One course is planned for 2009, tentatively for October.

If you are interested in attending a course, please contact:

Mark Price
AME Examiner
Tel: 0-4-560 9619
Email: pricem@caa.govt.nz

Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

0508 4 SAFETY
(0508 472 338)
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".

ATS Breaks

The temporary closure of towers manned by sole Air Traffic Controllers (mentioned in a letter enclosed with the last issue of *Vector*) has been avoided. Airways have reached an interim agreement with Controllers, effective until 1 November 2009, to avoid tower closures while breaks are taken. Work is under way to define what will happen when the agreement ends.

Fax On Demand Service and National Briefing Office Phone Number

In March, Airways announced that the Fax On Demand Service would be withdrawn from 1 April 2009 and that from 20 April 2009 the National Briefing Office phone number would change from an 0800 number to an 0900 number charged at $2.50 per minute.

Both of these changes have been put on hold. These services will continue to operate as normal, pending discussions between Airways and the CAA.

Accident Briefs

More Accident Briefs can be seen on the CAA web site, www.caa.govt.nz.
Some accidents are investigated by the Transport Accident Investigation Commission, www.taic.org.nz.

D-2929 Alexander Schleicher Flugzeugbau

Date and Time:	21-Dec-07 at 15:41
Location:	Makarora
POB:	1
Injuries (Fatal):	1
Damage:	Destroyed
Nature of flight:	Private Other
Pilot Licence:	PPL (Aeroplane) (Germany)
Age:	59 yrs
Flying Hours (Total):	8706
Flying Hours (on Type):	38
Last 90 Days:	51

The glider was involved in a Grand Prix race when it went missing. It was found to have collided with terrain and the pilot killed. The CAA investigation concluded that the most likely cause for the accident was turbulence that caused a loss of height just prior to the glider crossing a small ridge. This resulted in the glider striking the ridge and the pilot being killed. A full accident report is available on the CAA web site.

CAA Occurrence Ref 07/4533

ZK-GOE Schempp-Hirth Discus-2T

Date and Time:	1-Jan-08 at 16:30
Location:	Omarama
POB:	1
Injuries:	0
Damage:	Substantial
Nature of flight:	Private Other

Glide Omarama reported that the glider had landed in a rough field amongst boulders. Both wing tips and the main wheel were damaged, and the main tyre blew out. The pilot was not injured.

CAA Occurrence Ref 08/575

ZK-SWP Piper PA-22-160

Date and Time:	25-Jan-08 at 10:00
Location:	Hope River Valley
POB:	1
Injuries:	0
Damage:	Substantial
Nature of flight:	Private Other
Pilot Licence:	CPL (Aeroplane)
Age:	39 yrs
Flying Hours (Total):	1604
Flying Hours (on Type):	750
Last 90 Days:	135

The aircraft hit a rock on takeoff, damaging the undercarriage. The aircraft was just at the point of getting airborne. The impact caused enough loss of speed for the wing to drop and the propeller to strike the ground. The power was cut, and the aircraft proceeded to slide to a stop, turning 180 degrees.

CAA Occurrence Ref 08/222

ZK-SYD Alpi Aviation Pioneer 200

Date and Time:	15-Feb-08 at 12:40
Location:	Great Mercury Island
POB:	2
Injuries:	0
Damage:	Substantial
Nature of flight:	Private

It was reported that aircraft made a mayday call that the engine had failed and reported pilot had made a successful landing on Little Barrier Island. Pilot activated beacon and rescue helicopter found occupants on Great Mercury Island.

CAA Occurrence Ref 08/569

ZK-VIH Zlin Z-137T

Date and Time:	10-Mar-08 at 13:52
Location:	Roxburgh
POB:	1
Injuries:	0
Damage:	Destroyed
Nature of flight:	Agricultural
Pilot Licence:	CPL (Aeroplane)
Age:	43 yrs
Flying Hours (Total):	3133
Flying Hours (on Type):	318
Last 90 Days:	49

A wind gust affected the aircraft on takeoff. The aircraft swerved to the left and following corrective action swung to the right colliding with a bank. The RH wing, RH undercarriage, wing centre section, engine and propeller all suffered severe damage. The aircraft is a write-off.

CAA Occurrence Ref 08/996

ZK-EMT NZ Aerospace FU24-954

Date and Time:	27-Mar-08 at 8:30
Location:	Dannevirke
POB:	1
Injuries:	0
Damage:	Minor
Nature of flight:	Agricultural
Pilot Licence:	CPL (Aeroplane)
Age:	57 yrs
Flying Hours (Total):	14000
Flying Hours (on Type):	13700
Last 90 Days:	75

As the aircraft rotated for takeoff while engaged in agricultural operations, the left main undercarriage leg failed and fell from the aircraft. The pilot diverted to Dannevirke and landed safely with minor damage to the wing flap horn and stabilator. The failure was of AN5-36A x3 bolts, which attach P/N 245106 LUG to P/N 245120 cylinder.

CAA Occurrence Ref 08/1234

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.

Key to abbreviations:

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

Bell 412EP

N2 Governor

Part Model:	412EP
Part Manufacturer:	Bell
ATA Chapter:	7320

On departure a torque split was noticed. It was up to 15% at times, with the engine hunting between being matched and a 15% split. The flight was aborted and returned to base for further investigation. The N2 governor on the #1 engine replaced with a new item. The ITT trim actuator on #2 engine was found to be working incorrectly. The actuator fault was rectified and the N2 settings retrimmed. Aircraft was flight tested satisfactorily.

CAA Occurrence Ref 08/4137

Britten-Norman BN2A-20

Governor

Part Manufacturer:	Woodward
Part Number:	210275
ATA Chapter:	6120
TSI hours:	5
TSO hours:	1965

The aircraft was in the climb during parachute operations, when the pilot found that he was unable to obtain the required power from the right engine. The aircraft returned to the airfield and landed safely. Maintenance investigation found that the propeller governor was unable to increase propeller rpm above 2500. This was found to be due to excessive gear wear within the governor. The Maintenance provider notes that these gears were on their 4th and final life. Governor replaced.

CAA Occurrence Ref 08/4664

Cessna 152

Starter

Part Manufacturer:	Skytec
Part Number:	122-NL
ATA Chapter:	8500

The pilot reported that the starter was unserviceable. Investigation revealed the starter commutator section completely disintegrated. It is suspected a faulty magneto/starter contactor caused the starter to continue to be engaged with the engine running. A replacement starter and a new contactor were fitted.

CAA Occurrence Ref 08/2282

Cessna 172N

Pitot Static

Part Model:	172
Part Manufacturer:	Cessna
ATA Chapter:	3400
TTIS hours	6950

En route, while returning from a CPL navigation flight, the crew identified an ASI indicating error. At cruise power and holding level at the straight-and-level attitude, the ASI read 65 to 70 knots with flap up. The crew did a groundspeed check using map and time plus the GPS, which confirmed the normal cruise speed of approx 110 kts. It was also discovered that the VSI and Alt were showing errors as well. ATC were contacted and advised of the problem. Weather conditions were good en route, so it was decided to continue to the destination aerodrome, where a safe landing was made. The maintenance provider carried out a Pitot-Static system check. A blockage was found within the static system inboard of Alt static source select. The blockage was removed and a Pitot-Static sense and leak check carried out. All instruments operated in the correct sense, and leak rate was within limits.

CAA Occurrence Ref 09/135

Diamond DA 42

Bulb

Part Model:	DA42
Part Manufacturer:	Diamond
ATA Chapter:	3260

The aircraft was in the circuit when the pilot reported a landing gear indication failure. The status of the landing gear was observed from the tower, who advised that the gear appeared to be down. The pilot circuited and landed safely. Maintenance investigation found the righthand main landing gear indicator light was u/s. A new bulb P/N 190100013 was fitted.

CAA Occurrence Ref 08/4157

Pacific Aerospace Cresco 08-600

Elevator Hinge Brackets

Part Model:	Cresco 08-600
Part Manufacturer:	PAC
ATA Chapter:	2731
TTIS hours:	200

During a routine 100-hour inspection, the elevator hinge bearings were found very loose in the elevator hinge brackets. This allowed the elevator assembly to have excessive end float. Investigation revealed the elevator bearings were tight when installed and resulted in the bearings turning in the elevator hinge brackets. This caused extensive wear in the brackets and allowed excessive end float. Serviceable hinge brackets were fitted.

CAA Occurrence Ref 08/2487

Aviation Safety Coordinator Training Course

CIVIL AVIATION AUTHORITY OF NEW ZEALAND

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

If your organisation carries out 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:

Thursday 11 and Friday 12 June 2009

Brentwood Hotel
16 Kemp Street, Kilbirnie
Wellington

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

Or contact Rose Wood,
Tel: 0–4–560 9487,
Fax: 0–4–569 2024,
Email: woodr@caa.govt.nz.