November/December 2013

POINTING TO SAFER AVIATION

vector

Taking Off in a Microlight

Adventure Flights are not Trial Flights

Summer Flying

VFR Transit Lanes – Avoid the Traps

CAA
CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

vector

In this issue...

Adventure Flights are not Trial Flights

Some operators are conducting adventure aviation operations without a Part 115 certificate. We explain why calling them a 'trial flight' is not an option and encourage certification.

Taking Off in a Microlight

Flying microlight aircraft has become a popular form of recreational flying in New Zealand. We explain the requirements to fly, own, and maintain these aircraft.

Summer Flying

Summer is back with us after a particularly vigorous winter, and brings its own set of challenges. For pilots and aircraft that have hibernated through the winter, we offer some considerations, as well as repeating some summer reminders for all aviators.

VFR Transit Lanes – Avoid the Traps

VFR transit lanes make your job as a pilot easier, but don't let that make you complacent. We identify some transit lane related incidents and provide advice from CAA and industry experts.

Cover: This type of microlight aircraft is based on developments of the hang glider wing. As a group these are referred to as 'trikes' (this is an overseas photo so registration letters are not visible). See "Taking Off in a Microlight", page 4.

Cover photo: ©istock.com/sierrarat

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Adventure Flights are not **Trial Flights**

A so-called trial flight, or flight instruction, should not be used as a backdoor method for conducting commercial activities such as adventure or scenic flights without certification.

In fact, there is no provision in the Civil Aviation Rules for "trial flights" in the adventure aviation context. However, the CAA is receiving reports of operators charging for adventure aviation style activities under the guise of trial flights.

An adventure aviation operation involves carrying passengers for hire or reward, where the purpose of the operation is for the "passenger's recreational experience of participating in the flight, or engaging in the aerial operation".

This is defined in Part 1:

> **Adventure aviation operation** means the following operations for the carriage of passengers by air for hire or reward where the object of the operation is for the passenger's recreational experience of participating in the flight, or engaging in the aerial operation—
>
> (1) an A to A flight in an aeroplane or helicopter issued with a *standard category* airworthiness certificate conducting formation flight, aerobatic manoeuvres, and similar non-standard flight manoeuvres such as steep climbs, steep descents, and steep turns:
>
> (2) an A to A flight (including an interim water landing for amphibious aircraft) in an aircraft issued with an appropriate *special category - primary, special category - LSA, or special category - limited* airworthiness certificate including formation flight, aerobatic manoeuvres, and similar non-standard flight manoeuvres such as steep climbs, steep descents, and steep turns:
>
> (3) an A to A flight in a Class 2 microlight aircraft:
>
> (4) a flight in a hot air balloon:
>
> (5) a flight in a glider:
>
> (6) a parachute-drop aircraft operation that is not conducted under the authority of an air operator certificate issued by the Director under the Act and Part 119:
>
> (7) a tandem parachute descent operation:
>
> (8) a tandem hang glider or paraglider flight.

To carry out these activities for hire or reward requires certification under Part 115.

Certification requires a number of measures to ensure the standard of safety that the paying public demands.

Some operators have argued that the person being carried on such flights is a "crew member" as defined in Part 1. For this to apply, the **sole** purpose of the flight must be for instruction, and not for "recreational experience".

It isn't too difficult to become certificated, and there are many benefits for a business through developing their exposition and putting quality control procedures in place.

There is information on the CAA web site to help you, www.caa.govt.nz, "Adventure Aviation". This includes the forms and an Advisory Circular (AC115-01). ■

Photos: ©istock.com/Elemental Imaging, Peter Masson, Scotto72

Taking Off in a **Microlight**

Flying a microlight can be great fun, and for many it's an affordable means of getting into flying. There are some rule requirements covering pilot certification and airworthiness, so here's an introduction to taking off in a microlight.

There has been rapid growth in the number of microlight registrations over the last 10 years as the graph on the next page shows.

The range of aircraft covered by the microlight category includes aeroplanes, powered parachutes, autogyros, and small helicopters.

There is a great variety within the aeroplane category alone, from the early wire-braced types costing a few thousand dollars, to modern composite types costing well over $100,000.

The factor that makes it affordable, regardless of which aircraft you fly, is that the administration is carried out by organisations of enthusiasts.

Microlight Organisations

Microlight organisations are able to issue pilot certificates and carry out certain airworthiness functions under delegations from the Director of Civil Aviation.

This is enabled by certificating them under Part 149 of the Civil Aviation Rules.

Once certificated, they are audited regularly to make sure safety standards are maintained.

To become certificated, they must submit an Exposition or Operations Manual. This gives details of pilot certificate classes and requirements, and microlight airworthiness requirements.

The main source of detailed information is the manual of the organisation you decide to join.

Photo courtesy of Gavin Conroy

Sportcruiser

This Sportcruiser is an example of the top end of the range of microlight aircraft. It can cruise at 115 knots and has a range of 1000 km.

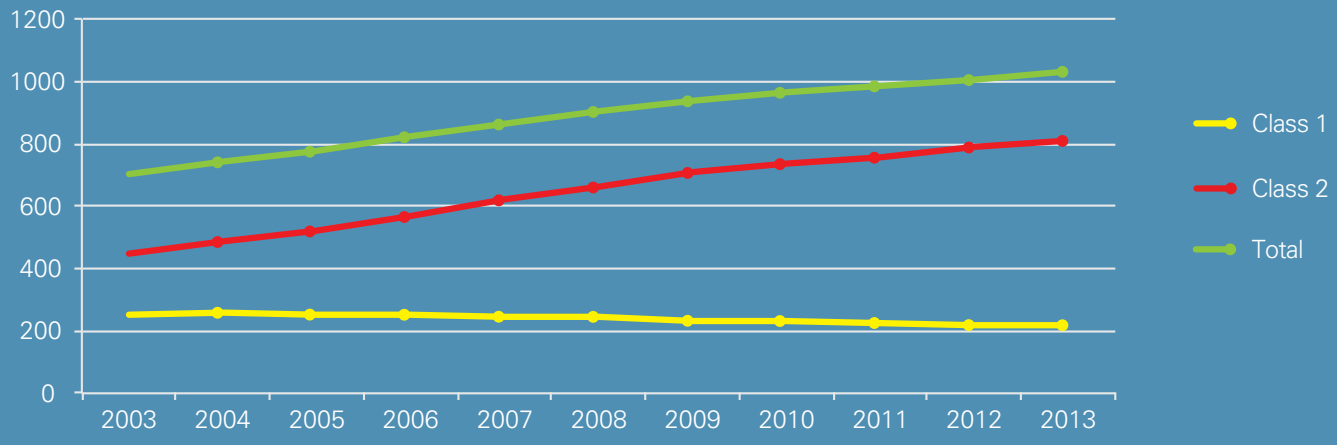
Powered parachutes

(see next page)

Powered parachutes come under the microlight category. This is an overseas photo so the registration is not visible. There are also powered paragliders but they do not come into the microlight category – they are administered by the New Zealand Hang Gliding and Paragliding Association.

Microlight numbers from 2003 to 2013

(on 1st January each year)



There are currently three microlight organisations:

» Recreational Aircraft Association of New Zealand Inc, www.raanz.org.nz,

» Sport Aviation Corp. Ltd, www.sportflying.co.nz, and

» Royal New Zealand Aero Club Inc. (also known as Flying NZ), www.flyingnz.co.nz.

It is important to remember that the Civil Aviation Rules apply, as for any aircraft. Of particular importance is Part 91 *General Operating and Flight Rules*.

Part 103 *Microlight Aircraft – Operating Rules* has some exemptions from the other rules.

Gaining Your Pilot Certificate

You don't need to own a microlight to fly one, as many organisations have their own aircraft for members to fly.

Contact one of the organisations above to start your flight training. They have branches around the country.

At the outset, you need to be considered fit and proper to hold an aviation document. This is a requirement of the Civil Aviation Act 1990. The organisation will assess this under their delegation from the Director.

There are exams to take in:

» Aviation Law and Publications,

» Air Navigation and Flight Planning,

» Aviation Meteorology,

» Aeroplane Technical Knowledge, and

» Flight Radio Telephone Operator Certificate.

You will also require a medical certificate issued by your organisation. Your GP can carry out the examination using a form issued by the organisation.

Microlight certificates are issued as your training progresses. You will start with a Novice certificate, then Intermediate, and Advanced. There is a separate Instructor Certificate.

If you currently hold a Part 61 licence, you can also fly a microlight providing some conditions are met. Consult a microlight organisation about this as you may need a check flight with a microlight instructor.

There are type ratings for various aircraft, and a requirement for a Biennial Flight Review (BFR), just as for 'conventional' aircraft.

Operations and Limitations

As mentioned before, Part 91 is critical to flight operations.

Microlight flying has many freedoms in New Zealand, but with these privileges there are also some limitations in the interest of safety.

You can fly microlights only under Visual Flight Rules (VFR) and during daytime.

You cannot fly microlights over a congested area.

You also cannot fly them in controlled airspace, or within 5.5 km of a certificated aerodrome, unless you have passed the air law examination, or are under the direct supervision of the holder of a microlight instructor certificate.

The air law exam refers to the Part 61 exam, or your organisation may have an air law exam approved by the Director.

Continued over ❯❯

Photo ©istock.com/ jkbowers

You can do Flight Training

You can use a Class 2 microlight for flight training if you have the relevant type rating for the aircraft and hold a microlight instructor certificate.

If you hold a Part 61 Instructor Rating and wish to do flight training using a microlight, you should have a type rating and demonstrate your competence to a microlight instructor.

Adventure Aviation Operations

You can use Class 2 microlights in adventure aviation operations for hire or reward, only if your operation has been certificated under Part 115 *Adventure Aviation – Certification and Operation.*

Aircraft Requirements

The definition of a microlight is in Part 1 and is "a basic low performance aircraft designed to carry not more than two persons which meets low momentum parameters that are acceptable to the Director".

The parameters that are acceptable to the Director are in Advisory Circular AC103-1 *Microlight Aircraft – Operating Rules*.

A single-place microlight is called a Class 1 and a two-place, Class 2.

In brief, an aircraft defined as a microlight by some other States qualifies as a microlight in New Zealand.

Or some weight and stall speed specifications need to be met. For a two-place land aeroplane, for example, it must not exceed 600 kg and must have a stall speed no greater than 45 knots.

Typical Microlight

This Quicksilver is typical of the early decades of the hobby in New Zealand. It is open-air, wire-braced, and cruises at around 50 knots. This is an overseas photo so the registration is not visible.

Photo ©iStock\Dr-Strangelove

Buyer Beware

These days, many microlight aircraft are advertised for sale on web sites. If you are new to flying and microlights, it would be best to seek advice before making a purchase.

There are a number of requirements to be met before you take to the skies in your dream machine. If these are not in place, you will incur extra expense and delay.

There is also a process to follow when buying and selling an aircraft. There is guidance for this on the CAA web site, www.caa.govt.nz, "Aircraft – Change of Possession".

You could also import a new aircraft. For Class 2 microlights, you will need to know if the type is accepted in New Zealand. If it is a first of type, you will need to provide evidence that it is acceptable as a microlight here.

If you plan to import, it is best to contact the CAA for advice early in the process, email info@caa.govt.nz.

Another option is to build your own microlight. In this case, you should follow the advice above. It would also be beneficial to contact the Sport Aircraft Association of New Zealand. This organisation is based around people who build their own aircraft. They will be able to provide advice and may offer mentoring from experienced builders.

All microlight aircraft must be registered with the CAA and display the registration letters. If you are buying a new aircraft, allow for the cost of initial registration in your budget.

If you are buying an existing aircraft in New Zealand, make sure the registration fee is paid up to date, otherwise the aircraft could be de-registered.

Continuing Airworthiness

The aircraft owner or operator is responsible for airworthiness.

Part 103 requires you to maintain your aircraft in an airworthy condition (this is defined in Part 1).

The aircraft should have logbooks for the: aircraft, engine, propeller, and Airworthiness Directives.

Airworthiness Directives (ADs) are mandatory requirements issued by the Director. A basic microlight will not have many to check, but if you own one of the more sophisticated aircraft, you may need to check several AD Schedules.

There is a specific schedule called "Microlight". A large percentage of microlights use Rotax engines, and they have their own Schedule. Others to consider are Components (this may cover electronic equipment, etc), Engines, and Propellers.

You can seek advice from an aircraft maintenance engineer or a Part 149 Inspection Authority (IA). The Part 149 IA is authorized by the Director through your microlight organisation.

All Class 2 microlights and all microlight helicopters require a Flight Permit. This is originally issued after an inspection by a CAA surveyor, and is non-terminating.

The Flight Permit must be re-validated every year. The inspection for this can be carried out by a microlight inspector approved by one of the Part 149 organisations.

More Information

All Rules, Advisory Circulars, and Forms are available on the CAA web site, www.caa.govt.nz. Also see the "Sport and Recreation" section.

The Aircraft Operator Requirements poster gives information on the pilot, operations, and maintenance requirements for different types of aircraft. For a free copy, email: info@caa.govt.nz. ■

Autogyro

Autogyro aircraft (also known as gyroplanes or gyrocopters) have been around since the 1920s, but the development of powerful and lightweight engines has led to growth in numbers of this type.

Photo courtesy of John Milburn

Summer Flying

After a winter that was particularly vigorous in many parts of the country, summer has returned, bringing a different set of challenges and considerations for aviators.

Seasonal Pilots

Seasonal pilots, or fair-weather flyers, whatever you like to call them. These are the pilots who have given flying away for the winter, and are now ready to get back into it again. After a long break, a certain degree of skill and knowledge 'rustiness' is very likely.

Some things for these pilots to consider are:

» The currency of your pilot medical, pilot licence or certificate, and flight publications (including charts, and in some cases, the GPS database).

» When you last flew, and how you plan to get current again. A dual check is always a good idea if you haven't flown for a while.

» The due date of your next biennial flight review.

» The I'M SAFE checklist (available on the CAA web site or on request from info@caa.govt.nz).

And Aircraft

If your aircraft has been in hibernation for the winter, think about:

» Accumulated dust, dirt and guano.

» Tyres losing pressure and the battery losing its charge over time. Also, the tyres may have developed flat spots. These will 'iron out' with use, even though the initial bump-bump-bump might be a little disconcerting if you don't know what's causing it.

» The aircraft may have been home to a family of birds, particularly starlings. These skilful nest-builders can fill any open orifice on the aircraft with their nesting materials in very short order. Even though the young may have flown the nest, the nests themselves will need removing.

» Other wildlife may have decided on a new home as well. Rats and mice are also occasional tenants in idle aircraft, and may do considerable damage to wiring, hoses, and upholstery, in addition to building nests in hard-to-reach places.

» Possums also can adopt aircraft, and one helicopter pilot recalls being startled on startup when a possum appeared from the engine compartment and scrambled over the top of the canopy.

All of these considerations point up the need for a diligent preflight inspection before the first flight of the season. That minor oil leak may have added up to a substantial loss, and the fuel will need a thorough check for water and other contaminants. Top it up with fresh fuel in case it has gone 'stale'. Not a bad idea too, to check the maintenance status of the aircraft (and any emergency equipment), as some components may be due for calendar-time inspections, rather than in-service time. Better to think about these aspects while the aircraft is idle, rather than having to make short-notice arrangements.

Planning for Flight

Still a trap for even experienced pilots is the conversion from NZDT to UTC. Double-check your flight planning to make sure you haven't converted the time wrongly; a simple error could have your day VFR flight arriving at your destination after dark.

Refer to the "Summer Traffic Busy Spots" reminder on the back cover of this issue, as well as NOTAMs and AIP Supplements, for information on events with likely high concentrations of aircraft activity.

Remember though, that the summer weather will draw out many other aviators, in all conceivable contraptions. Take particular note of chart symbols for hang gliders, gliders, and model aircraft, although these can all be encountered in unmarked locations as well.

Be alert for traffic at all times, particularly in the vicinity of parachute landing areas (PLAs). Not only will there be more intense activity, it may go on for longer with the extended daylight hours.

If flying during the evening hours, do be aware of the cumulative effects of fatigue if you have been working at your regular job during the day.

Warm Temperature

Warm temperature is one of the reasons we like summer, but if not properly managed, heat can be very debilitating. Some cockpits are notorious hothouses, so adequate ventilation and hydration are important.

A useful article on hydration, "Need a Drink?", can be found in the November/December 2005 issue of *Vector,* available on the CAA web site under "Publications".

Warmth helps the grass grow, and what was short grass at a strip last week may well be a hazard this week. Braking action and takeoff roll can be adversely affected by long grass, and if the grass has gone to seed, be aware that grass seeds can find their way just about anywhere, even into carburettors.

Extended hot weather may turn grass brown, and at some affected aerodromes, the boundaries of the usable runways or vectors may be hard to distinguish at first glance.

Photo ©iStock/cdwheatley

A quick refresher on aircraft performance may be in order – refer to the GAP booklets *Takeoff and Landing Performance* and *Helicopter Performance* for more detail, but just a couple of tips:

» Every 1° C increase in temperature will increase density altitude (DA) by 120 feet, and every 1 hPa decrease in atmospheric pressure will raise DA by 30 feet.

» For example, for a sea-level aerodrome at 25° C and 1003 hPa, the density altitude works out to 1500 feet. It's worth checking those performance charts again if you have any doubts about the takeoff distance.

Aerodromes near the coast are often affected by sea breezes on warm days, which can result in crosswinds in many cases. This is another item to consider on your currency plan.

The warmer temperatures don't mean that carburettor ice will take a holiday. It can still catch pilots unawares, particularly on a fine day with developing cumulus clouds. Flying close under one of these clouds puts you into air very close to its dew point, ideal conditions for carb ice. See the carb ice chart in the GAP booklet *Winter Flying*.

You may encounter carb icing beneath fair-weather cumulus, and the ride can get a little rough. For your own and your passengers' comfort, flying above the cloud level may be an option depending on the height of the tops, controlled airspace considerations, and the amount of cloud cover. What might look like a solid layer ahead might turn out to be only two or three oktas' cover when you look at the cloud shadows on the ground.

This Summer's Mission

Get out there and enjoy it while it lasts – but enjoy it safely! ■

SIGMET Changes

From 14 November 2013, the positional information contained in SIGMET messages will be given in latitude and longitude coordinates only. For pilots on domestic operations, however, SIGMETs including geographic references can still be obtained.

The change is due to Amendment 76 to ICAO Annex 3 *Meteorological Service for International Air Navigation*, and applies to all States and all flight information regions (FIRs). Previously, Annex 3 provided for the issue of SIGMET applicable to domestic FIRs to relate the positional information to known geographical points, using plain language.

"The CAA recognises that the change is necessary for operator and airline machine readability for direct use within flight planning and operations," says CAA's Chief Meteorological Officer, Peter Lechner.

"We also recognise that this would impose some interpretive difficulties for domestic general aviation and some third-level airline operations."

Peter advises that the CAA has worked with Airways and MetService to establish a system to dynamically translate the coordinates into place names for domestic use.

In practice, this means that any NZ FIR SIGMET messages transmitted to pilots on domestic operations by air traffic services will have the coordinates translated back to place names for transmission. A similarly translated SIGMET may be available through the MetFlight GA site.

Note that SIGMET applicable to the NZ FIR and transmitted to aircraft on international operations will have all positional information expressed in latitude and longitude.

More information can be found in the document *SIGMET Reference Material* on the CAA web site, under "Meteorology". The document includes useful tables for conversion of coordinates to geographical place names. The web page *Changes to New Zealand Meteorological Services – 14 November 2013* in the same location gives details of additional but minor changes resulting from the Annex 3 amendment. ■

Photo ©istock.com/ olada

Help Shape New Zealand's Airspace and Air Navigation System

Your feedback is invited on the draft National Airspace and Air Navigation Plan, now available on the CAA web site.

You now have the chance to help develop a plan to modernise our use of airspace and the air navigation system.

The Plan outlines the practical steps we all need to take to transition to next generation technologies. The benefits will be enhanced safety, improved efficiency, and orderly management of increasing demand.

The proposed changes could affect you, for example:

» The current radar network will reach the end of its life by 2021. ADS-B (Automatic Dependent Surveillance – Broadcast) is intended to become New Zealand's main surveillance system. Aircraft will need to be equipped appropriately to use airspace covered by ADS-B.

» Pilots wishing to take advantage of performance-based navigation (PBN) procedures will need to have approved equipment, operating procedures, and training.

» Radio will remain the primary communication medium but data-link (messaging) and satellite phone technology may be expanded.

» Aeronautical and weather information will be integrated, digitised, and ultimately provided direct to the cockpit.

» There will be ongoing efficiency improvements in air traffic management.

» Airspace will be redesigned to reflect the new PBN routes and surveillance systems. Controlled airspace is likely to be simplified and reduced.

» Aerodrome planning will be integrated with the rest of the transport system (including land-use management) through greater collaboration.

See the draft National Airspace and Air Navigation Plan on the CAA web site, www.caa.govt.nz, "National Airspace and Air Navigation Plan". Consultation closes 3 February 2014, email: consultation@caa.govt.nz ■

SIDs for 'Re-start' Cessnas

The Supplementary Inspection Documents (SIDs) programme is applicable to all 'Re-start' (from 1996 onwards) Cessna aircraft. Owners need to be aware that once the aircraft reach certain hours or calendar periods, these inspections need to be carried out for the aircraft to remain airworthy.

John Bushell, Team Leader Airworthiness, says, "Maintenance programmes for 'Re-starts' were initially amended to include ageing aircraft inspection (SIDs) in July 2012, and are now an integral part of the maintenance programme.

"However, anecdotal evidence from the aviation community suggests that some 'Re-start' owners are still under the impression that these ageing aircraft inspections are not applicable to their aircraft.

"The individual SID inspection items applicable to each model need to be listed in the Out of Phase section of the Airworthiness Directives (AD) logbook. Depending on calendar time and hours' time in service, the transition period for the inspections to be carried out is 31 August 2014," says John.

The difference between the 'Legacy' (pre-1986) and the 'Re-start' series is that the one-off baseline SIDs inspection is not required for the 'Re-starts'. When the 'Re-starts' come up to their hours or calendar periods (whichever is sooner), the inspection of the specific part or component is done on a when-required basis, not as an overall aircraft inspection.

Here are two examples to illustrate the 'Re-start' SIDs requirements:

For a 2004 Cessna 172S

A Cessna 172S manufactured in January 2004 has 21 SIDs applicable to it. If the aircraft has accumulated a total time of, say, 4000 hours, it would need the following SID inspections to be carried out by 31 August 2014:

» 27-30-01 Elevator trim pulley bracket and actuator inspection.

» 32-13-02 Main landing gear fittings inspection.

» 32-13-03 Main landing gear axle inspection.

» 32-20-01 Nose landing gear and torque link inspection.

» 53-12-02 Firewall inspection.

» 53-47-01 Seat rails and seat rails structure corrosion inspection.

» 57-12-01 Wing root rib corrosion inspection.

» 57-51-01 Aileron support structure inspection.

» 57-53-01 Flap tracks corrosion inspection.

"Some of these inspections would not be any more detailed than those required for the regular scheduled inspection for the particular area. But some will require additional work to gain access," says John.

For a 2013 Cessna 172S

On the other hand, a 2013 Cessna 172S with nil hours on issue of a New Zealand Airworthiness Certificate, will have the individual SID inspections identified and listed in the Out of Phase section of the AD logbook. These inspections are then required to be carried out at the periods listed in the individual SID document.

More Information

Contact John Bushell, Team Leader Airworthiness, John.Bushell@caa.govt.nz.

Rule 91.603 *General maintenance requirements*, on the CAA web site, www.caa.govt.nz, "Rules". Cessna web site, www.cessna.com. ■

Airspace Review Plan

The 2014 to 2016 Airspace Review Plan is now under way. The review looks at New Zealand domestic airspace. As an airspace user, it is your chance to have your say.

The Review Aims To Simplify Airspace

The CAA objectives for the review are to:

- De-clutter, simplify and clarify airspace;
- Take a regional approach to airspace review and change;
- Reduce confusion in some airspace areas to improve safety;
- Address identified 'hotspots' of airspace incidents or occurrences;
- Involve stakeholders to ensure all issues are assessed;
- Take a long term strategic approach to airspace so changes are less frequent.

New Zealand has a diverse aviation system that requires many different airspace considerations. When paragliders and jumbo jets operate in the same areas, the competition for limited domestic airspace increases. Changes need to be made.

These changes could affect your operation. We need to hear from all operators, including sport aviation groups, air transport operators, flight training organisations, and aerodrome operators.

This is your chance to have a say about changing airspace.

We're Taking a Regional View

This is the first time we have reviewed airspace region by region.

Paula Moore, CAA Aeronautical Services Officer, is the contact for the review, and explains some of the issues involved.

"In the past, airspace reviews concentrated on particular types of airspace across New Zealand, for example low flying zones and danger areas. Special use airspace requests also led to a 'bolt-on' solution that has, over time, resulted in complex and cluttered airspace. This means continuous change and can get confusing for ATC and pilots.

"For the 2014 to 2016 airspace review period, it is intended to take a good look at the country divided up into regions. This will allow for all local participants to be a part of the consultation process. We look forward to getting a valuable overview of all airspace in each particular region," says Paula.

The review coincides with performance based navigation (PBN) procedures being progressively introduced at controlled aerodromes over the next few years. Control zones and control areas may need to be re-designed to protect the new IFR flight paths.

The PBN system in the southern region, south of Christchurch, was completed in 2012. Controlled airspace was re-designed to protect new instrument flight paths. (Read more about PBN procedures in *Vector*, November/December 2012).

The review will look closely at any changes to make sure they work now and in the future. This will reduce the need for continuous change of charts and publications during the period.

How We Assess Airspace

The CAA identify areas of concern to help set up the priority list for the review plan. This process looks at airspace based on:

- Airspace related incidents;
- Volume of aircraft;
- Complexity of airspace;
- Type of air traffic mix.

From this it was seen that:

- Control Areas (CTA) would need minimal review, mainly to do with PBN.
- Control Zones (CTR) are mostly dated and need amending. A full review is required especially VFR transit lanes and General Aviation Areas (GAA).
- Uncontrolled and special use airspace (SUA) was found to be complex and cluttered and will require a full review.
- CTR and SUA airspace reviews and consultation will involve CAA, Airways, aerodrome operators, user groups, military users, and all airspace users.

Based on the assessment, geographical areas of priority and focus are made. The visual navigation charts (VNC), 1:250 000 series, have been used to set the boundaries.

Setting the Priority and Focus

Auckland

The Auckland region was given the highest priority for review due to the pressures on the airspace, especially the control zone.

The Auckland airspace is that shown on VNC C3, excluding the Bay of Plenty. Also excluding aerodromes at Tauranga, Matamata, and Hamilton.

This region's review is well under way. The CAA produced a consultation paper in September 2013. The closing date for all submissions was 29 November 2013.

Consultation will be completed by April 2014.

Hamilton

Hamilton Control Zone is the second region to undergo review. The focus is on intensive flight training operations issues in the CTR. Consultation started in October 2013. The closing date for submissions is Friday 20 December 2013.

Other areas begin their review process in May 2015 and completion is scheduled for April 2016.

Consultation and Review

When each region is reviewed, all identified stakeholder organisations including aerodrome operators and aerodrome/airspace user groups, will receive a review document.

The review document will be published on the CAA web site and will be sent to CAA email notification subscribers to Parts 61, 71 and 91.

This is your time to make comment and suggestions for airspace use and to request any airspace changes.

When the consultation is completed, and all proposals and requests have been received, the CAA will conduct a meeting in each region.

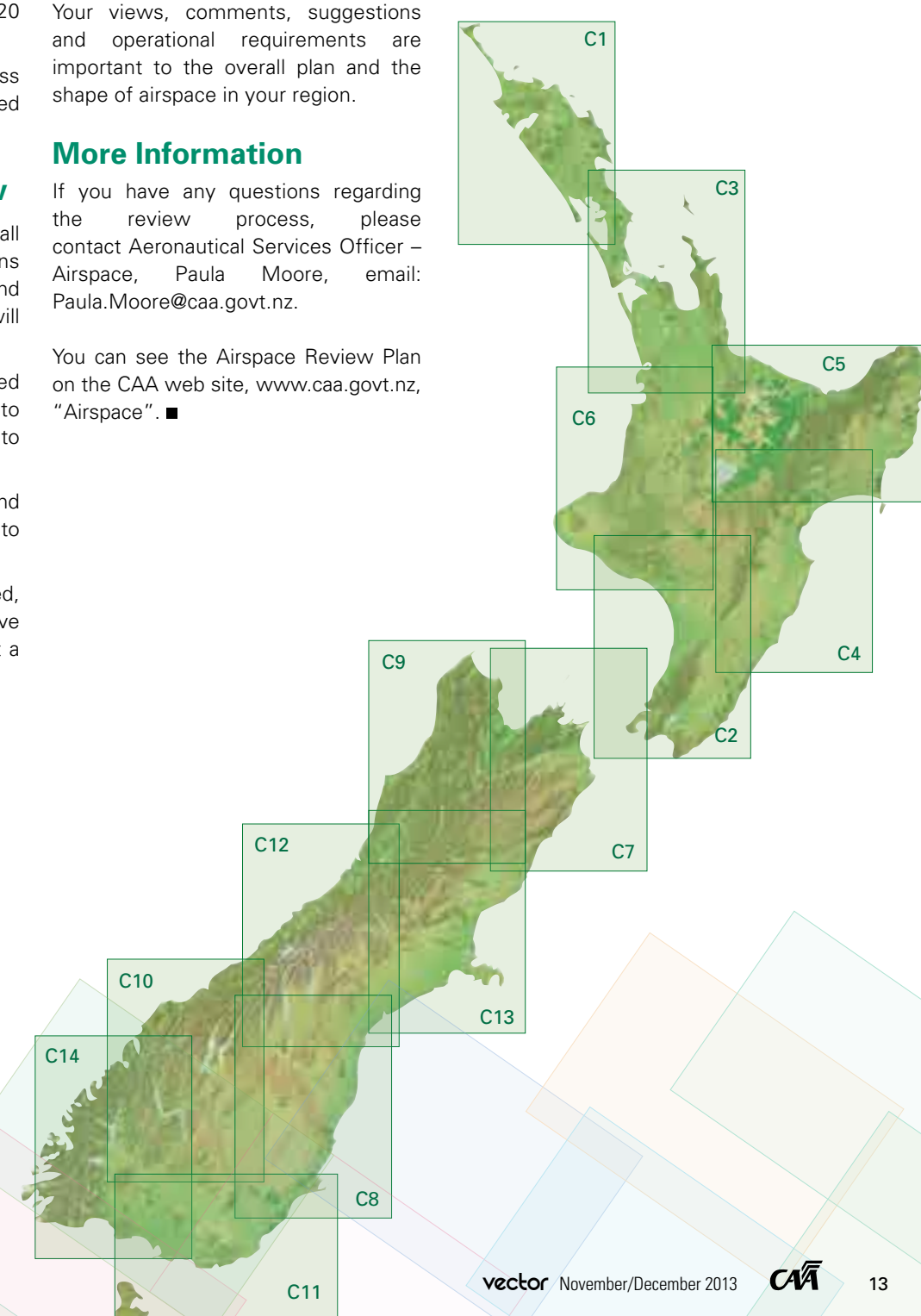
Meetings to discuss the Auckland region submissions will be held at 1800 hours on Monday 9 December 2013 at the Auckland Aero Club, and 1800 hours on Tuesday 10 December 2013 at the North Shore Aero Club.

Your views, comments, suggestions and operational requirements are important to the overall plan and the shape of airspace in your region.

More Information

If you have any questions regarding the review process, please contact Aeronautical Services Officer – Airspace, Paula Moore, email: Paula.Moore@caa.govt.nz.

You can see the Airspace Review Plan on the CAA web site, www.caa.govt.nz, "Airspace". ■



VFR Transit Lanes – **Avoid the Traps**

We investigate some VFR transit lane incidents.

VFR transit lanes are created for your benefit – they help you fly through controlled airspace without a clearance.

They make your job as a pilot easier, but don't let that make you complacent.

VFR transit lanes change portions of controlled airspace during daylight hours to Class G. This allows transiting VFR aircraft to operate in airspace not normally used by IFR aircraft without obtaining a clearance first.

We identified some incidents and talked to a few of the pilots involved, but first, here's some general advice.

Pay Attention and Plan

At the start of any flight, always plan using the Visual Navigation Charts (VNCs). Make a note of the transit lane altitude, frequency, (if applicable), and any landmarks you can use to help you determine where the airspace boundaries lie.

Where there is a recommended transit lane frequency, this will be shown on the VNCs (see example below).

When planning, make sure you identify the hazards associated with entering and leaving a transit lane (see the West Melton example).

VFR transit lanes create a natural choke point for aircraft. When using one, focus on aviating – keep your eyes out the window and look out for aircraft leaving and entering controlled airspace, particularly near visual reporting points.

When flying over any congested area (city, town, or settlement), you must remain at least 1000 feet above the surface (rule 91.311). The CAA receives complaints about low flying aircraft that exit transit lanes, and then fly over residential areas at less than 1000 feet.

VFR transit lanes can be used only in daylight hours. For Daylight Tables, see *AIP New Zealand*, GEN 2.7, available on the AIP web site, www.aip.net.nz.

Planning with the Right Chart

Plan your flight using the orange (1:125 000) or green (1:250 000) VNCs, says Carlton Campbell, CAA Standards Development and Training Officer.

"The navigation charts have different colour titling to help indicate their mapping scale. The larger scale blue (1:500 000) and yellow (1:1 000 000) charts omit some airspace details relating to VFR transit lanes, in order to reduce clutter. Some pilots use only the larger scale planning charts when flying, then get themselves into trouble," says Carlton.

The following three locations deserve further attention.

This example from VNC C2 shows the recommended T354 frequency 124.1 MHz (this is the Feilding aerodrome and CFZ frequency). Note the change to 122.6 MHz in the Manawatu CFZ to the south of T354.

Near Misses at West Melton

Airspace Occurrence – Near Miss

An unknown aircraft transited West Melton airspace at circuit height and without radio calls. Another aircraft operating in the circuit needed to take avoiding action.

West Melton airfield is bordered by two VFR transit lanes: T856 and T858. These transit lanes extend from the surface to 1000 feet.

We've reported a few near misses in recent times," said Jay Peters, Chief Flying Instructor at Canterbury Aero Club.

"Pilots transiting the area need to be better prepared, because unless attitudes change, accidents will happen.

"West Melton has a 1100-foot circuit altitude (795 feet above ground level). The transit lanes and danger areas that surround it tend to funnel traffic right through the circuit. Pilots come charging through the downwind and base leg," says Jay.

This section of VNC C13 shows the West Melton MBZ and the two transit lanes either side. There is a tendency for pilots to fly through the circuit at West Melton - see the article for advice.

Transmit when Transiting

"It's basic stuff – pilots should not enter West Melton MBZ unless intending to join overhead. Joining traffic should make a standard overhead join and must communicate on 119.2 MHz.

"Many pilots are either unprepared, or on the wrong frequency. They tend to be listening out on the Christchurch tower frequency, or ATIS, to determine the Christchurch runway in use and the corresponding VFR arrival and departure procedures. Pre-flight preparation can save a lot of paperwork.

"West Melton operations have intensified recently so I suggest that pilots transiting the area give the airfield a wide berth where possible. The easiest way to transit Christchurch airspace from the north or south is to track east or west of the CTR. Caution the high volumes of training traffic in the adjoining common frequency zone," says Jay.

Busting Airspace at Wellington

Controlled Airspace Infringement – January 2013

An aircraft entered controlled airspace without a clearance, tracking above transit lane T656 at 2500 feet.

Continued over ❯❯

This section of VNC C2 shows the transit lane in the Wellington CTR. T656 is surface to 1500 feet and pilots often fly above that without clearance.

The pilot said:

"I did all my preflight planning on the green VNC. I knew the transit lane altitude restriction was there.

"However, when I was flying, I used the blue chart that has a larger scale. These don't depict the Wellington transit lane altitude, so I just assumed that the transit lane upper altitude limit was the same as the control zone – 2500 feet."

Controlled Airspace Infringement – March 2013

Aircraft entered controlled airspace without a clearance, tracking above the upper limit of transit lane T656 at 2100 feet.

The pilot said:

"I forgot about the transit lane altitude requirement.

"During the previous Cook Strait crossing, I'd transited at 1000 feet due to cloud and this left me apprehensive when crossing for a second time. This was also unfamiliar airspace. I had a lot on my mind.

"My advice to other pilots: use a sticky note on the chart, or make a special reminder. This will keep you from forgetting the transit lane altitude when you get busy."

Transit Lane Dimensions

The Wellington VFR transit lane T656 wraps around the top of the control zone and extends from the surface to 1500 feet.

Before reaching T656, you must either descend, or receive a clearance from Wellington tower to enter controlled airspace. This will keep you clear of any IFR traffic on approach for runway 16 (Inbound aircraft on a visual approach are cleared as low as 2000 feet).

Use the Right Frequency

When using T656, you should be on the FISCOM frequency 121.3 MHz, with your secondary frequency tuned to Wellington Tower – 118.8 MHz.

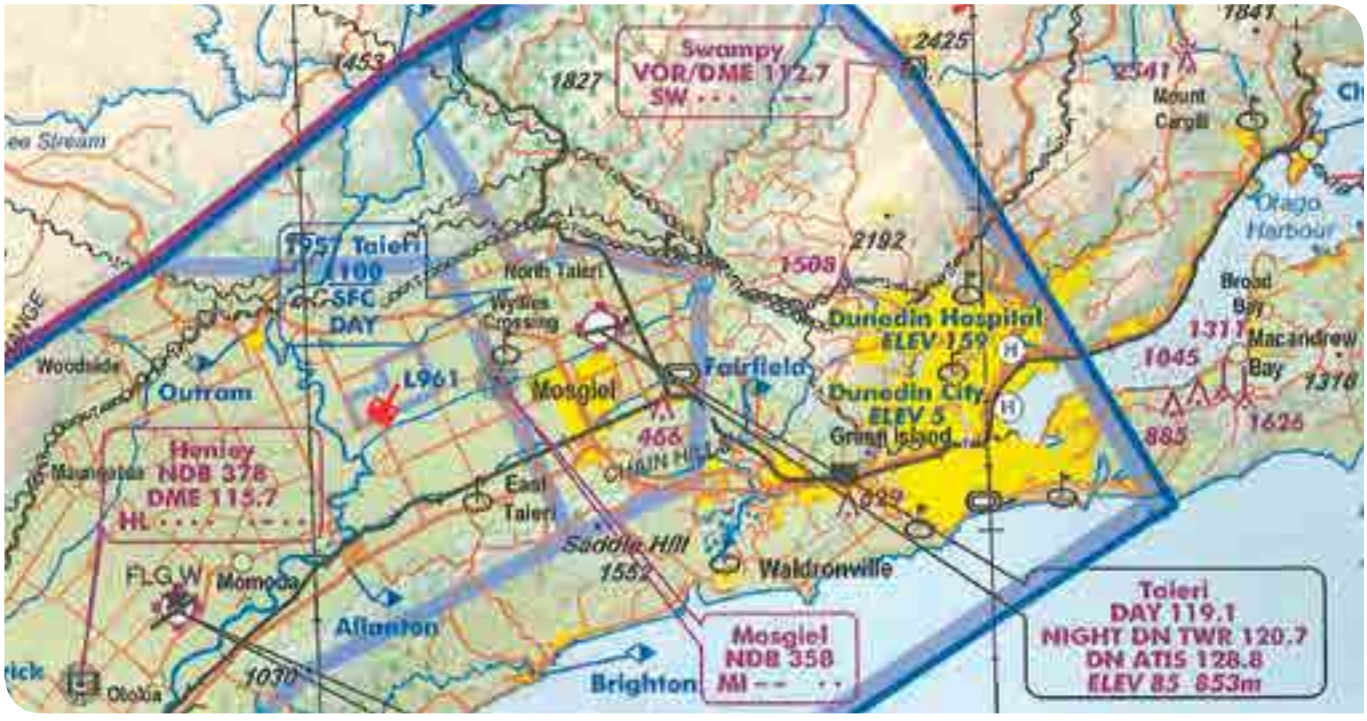
Airspace Changes at Dunedin

Heads up – Dunedin's Taieri VFR Transit Lane T957 has been extended. These changes are reflected in the latest VNCs, effective 14 November 2013.

Paula Moore, CAA Aeronautical Services Officer, says the changes to T957 were made as the result of a request submitted by the Taieri airspace user group. These changes will reduce congestion in the area.

"This extension widens the corridor around Mount Hyde. It also gives Taieri circuit traffic more space," says Paula. ■

VFR transit lanes are depicted like this on the VNCs (also used for General Aviation Areas).



This section of VNC C8 shows the new boundaries for the T957 transit lane. The new charts were effective 14 November 2013.

Keep Out of **Restricted Areas**

Restricted areas of airspace mean just that. Unless you are authorised to enter these areas, stay out.

Controlled airspace and special use airspace are designated by the Director of Civil Aviation under Part 71 for safety reasons. Special use airspace includes permanent or temporary Restricted Areas (RAs).

Most permanent Restricted Areas are conservation sites of importance to New Zealand's wildlife, such as the Royal Albatross colony at Taiaroa on the Otago Peninsula.

Temporary RAs are put in place in the interests of aviation safety or security, or in the public interest.

For example, the airshow season is about to start. Temporary RAs will be established for a number of events to separate display aircraft from other aircraft at certain times.

Recent Restricted Area Bust

Recently, a temporary restricted area was approved for the demonstration, in a working environment, of a sophisticated RPAS (Remotely Piloted Aerial System). The event was held over a five-day period in busy and complex airspace.

As well as applying for special use airspace, the operator made sure that local operators and the nearby UNICOM staff were briefed on the Temporary RA.

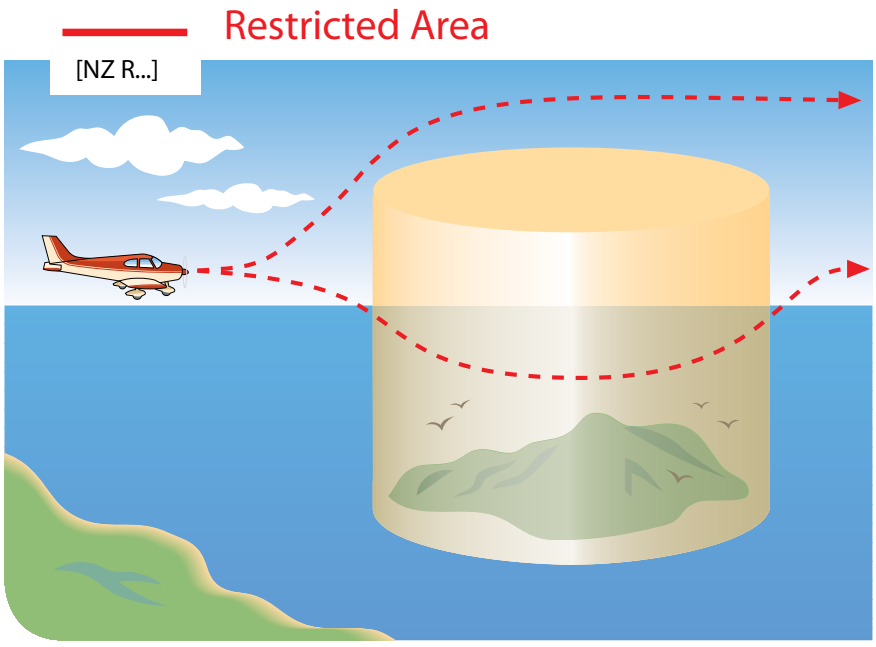
During that time, at least one aircraft entered the Restricted Area without authorisation. Observers thought that several of these busts occurred during the five-day period.

Airspace Information and Flight Preparation

Before any flight, a pilot should check the AIP Supplements and NOTAMs. Of course, this will be combined with weather and route information as part of planning for a safe flight.

Apart from alerting you to Restricted Areas, the AIP Supplements and NOTAMs will alert you to other Special Use Airspace, such as Danger Areas and Military Operating Areas.

Although aircraft are not prohibited from operating within a Restricted Area, the pilot must have prior approval of the designated 'administering authority' – in our example, this was the operator of the RPAS.



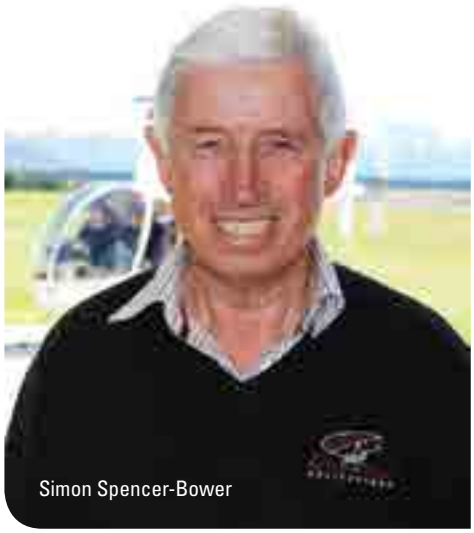
Enter only after authorisation from the administering authority.

Finding Airspace Information

- You can download the AIP Supplements for free from the AIP web site, www.aip.net.nz.
- For NOTAMs, log onto Airways' IFIS web site, www.ifis.airways.co.nz.
- See *AIP New Zealand*, Vol. 1, ENR 5.1 for details of permanent Special Use Airspace, including Restricted Areas.
- You can get a free New Zealand Airspace poster and booklet of the same title by emailing: info@caa.govt.nz. ■

Low-g Effects – A New Perspective

By Simon Spencer-Bower, QSM


Simon Spencer-Bower

Low-g mast bumping is a subject that tends to send shivers up the spine of many a helicopter pilot, probably because it is not fully understood. The Robinson Helicopter Company's (RHC) very robust low-g education programme, run through their Safety Courses over many years, has gone a long way to eliminating low-g accidents. From time to time, however, the odd low-g accident still seems to occur.

The intention of this article is to assist pilots to understand the low-g phenomenon and to make them realize that the subject is not as complicated as they probably first thought.

Importantly, it also informs pilots about a new recovery technique variation that is probably more instinctive than the current 'standard' recovery method, and targets the causes of the problem rather than dealing with the symptoms.

History and Research

Very little was known about the low-g phenomenon in the early days of helicopter operations, and no information was available in any of the helicopter theory books available at the time. It appears that the US Armed Forces were among the first to identify it after they began experiencing low-g mast bumping during some helicopter operations.

After 268 mast-bumping accidents, the US Army went on a massive pilot information programme for their pilots and largely eliminated it from their operations. They also made a training film on the subject, which has been seen by many of today's pilots during their Robinson Safety Awareness training. Due to the lack of any technical material involving low-g conditions and mast bumping, RHC also set about investigating the phenomenon. They instrumented an R22 with a recording oscillograph with control position indicators to record torque on the main rotor, the flapping angles of the retreating blade, the movement of all controls, the times of control movement in hundredths of a second, and a number of other parameters. They then attempted to measure the effects of various control inputs during entry to less than 1-g situations, the effect of different control inputs in the low-g environment, and the effect of all control movements on the right roll, all at varying power settings and airspeeds up to V_{ne} (never-exceed speed) at maximum power.

Using the information gathered, the RHC engineers were able to calculate potential roll rates of up to 100 degrees per second in the worst of conditions; a very quick roll rate!

The first Robinson R22 mast-bumping accident happened in 1983. It was a 'classic', in that the mast was completely severed, with the intact rotor system flying off in one direction while the fuselage just fell to the ground. Other, less than 'classic' accidents also occurred where the mast was bumped but not completely severed.

However, with the passage of time, more and more has been learnt about the subject and some of the information in the US Army film is now considered incorrect. Nevertheless, there still appears to be a lot of unhealthy attitudes and fears associated with low g, probably perpetuated by misinterpretation, hearsay, and 'Chinese whispers'. There is even some completely false information published in a well-known helicopter textbook, which says something along the lines of, "on entering autorotation, do not lower the

A Robinson R22 helicopter in normal flight.

collective too quickly, as this will cause a catastrophic low-g rollover situation".

Improving on the 'Standard Method'

During the course of many years of instructing I have come to the opinion that the 'standard' published low-g recovery method of gently applying aft cyclic to load the disc before applying lateral cyclic is counter-instinctive, and could be improved on and explained a lot better. Let's look at the reasons why developing this new, more intuitive, technique is beneficial.

When a helicopter is sitting on the ground at full operating RPM with collective completely down, ie, no pitch, and the cyclic is moved, the disc moves in the direction of the cyclic input but the helicopter will not respond. This is because the disc is not 'loaded'. In other words, the disc doesn't have any weight hanging from it. To achieve this same unloaded disc condition in flight, the helicopter would have to be bunted forward hard enough to the point that the helicopter became weightless. This situation is known as zero g. If this were done, movement of the cyclic would have no effect on the helicopter at all, just as in the case when it was sitting on the ground as described above.

Going back to the ground situation, as the pilot begins to raise the collective, the cyclic begins to become effective as the disc becomes loaded. So, if the disc is 'half loaded', it will be half as effective as when fully loaded. Likewise, for a helicopter in flight, if the pilot were to bunt forward to the point of being partially loaded, (low g) the cyclic would be half as effective as at normal 1-g flight.

Anti-torque in a helicopter is provided by the tail rotor, and the more power in use, the more anti-torque required. The thrust of the tail rotor is the reason the helicopter drifts in the opposite direction to this thrust (tail rotor drift). This is most noticeable in the hover, but is also present in all flight situations when power is being produced. Helicopter manufacturers usually build in methods to compensate for this drift, and the pilot will also control it with the cyclic.

In flight, if a helicopter reaches a condition of zero g with power on, the horizontal thrust component of the tail rotor is still present. As we have already discussed, the cyclic is ineffective at zero g and so cannot counteract any roll resulting from that horizontal thrust. Therefore, the helicopter will continue to roll in the direction of the tail rotor thrust (to the right in a counter-clockwise rotating main rotor) regardless of what the pilot does with the cyclic.

However, in a low-g situation (as opposed to zero g), the horizontal tail rotor thrust component is still present, but the cyclic will now have a limited amount of control because the main rotor disc is partially loaded.

It is this knowledge that forms the basis of the current recovery technique, in which pilots are advised to apply aft cyclic to 'reload' the disc so that the cyclic becomes more effective, and they can then control the roll.

However, as we have explained, cyclic control is nil at zero g, it can be seen that the closer the helicopter gets to zero g, the less effective the cyclic becomes until, at zero g, attempting to 'reload' the disc, (the current method) will not work at all.

Controlling vs Eliminating Roll

Up to this point we have talked about **controlling** the roll. Now let's talk about reducing or eliminating the roll – by removing tail rotor thrust. If the tail rotor thrust is removed, then the helicopter will not roll because no horizontal thrust is being produced. Therefore, if the collective is lowered, power will be reduced, reducing tail rotor thrust – and the associated roll tendency. If you take this technique to its logical conclusion, lowering the

Continued over ❯❯

Photo: ©istockphoto.com/HeliRy

A typical two-bladed teetering rotor, as used on the Bell 206 series.

collective completely and entering autorotation will completely remove all tail rotor thrust.

A normal conservative cruise manifold pressure (MAP) setting in the R22 is the 20 to 23" range. This power setting should be considered 'high', with 20" considered a good demarcation between high and low power. The R22 flight manual advises pilots to slow down to an IAS between 60 knots and 0.7 Vne (about 70 knots) when encountering turbulence. The reason for this is that the power setting for this speed in the R22 is typically 17 to 18" MAP (and even lower in the R44). This power setting is 'low' (below 20" MAP) and therefore produces low tail rotor thrust, thereby reducing any roll tendency in the event of a low-g situation being encountered during turbulence. Robinson also states that there is no need to be concerned about low g when lowering the collective rapidly when entering autorotation. This is quite correct for the reasons explained above, because with no power, there will be no roll.

Reaction Time

In the R22, RHC states that in the event of a power loss at maximum continuous power, the rotor system will stall in 1.1 seconds if the collective is not lowered. A lot of pilots interpret this as meaning they have 1.1 seconds to lower the collective. This is not correct, because once the rotor has stalled on a helicopter, recovery is impossible. This means that in reality, the collective has to be lowered within about 0.5 seconds in order to be able to maintain rotor RPM within recoverable limits. Lowering the collective this fast will result in a low-g sensation, but it should now be understood that this is not a problem, as no tail rotor thrust is being produced. This makes a mockery of the statement in the well-known helicopter book mentioned earlier, that cautions pilots not to lower the collective too rapidly.

Making it Worse

If we are discussing low-g recovery, the phrase "the pilot must reload the disc" has been misinterpreted and misunderstood to the point that it could possibly have contributed to some low-g accidents. For example, some instructors and flight schools have actually taught students to raise the collective on encountering low g, in the mistaken belief that this will reload the main rotor disc and give them the cyclic control needed to counteract the roll. Raising the collective will in fact make the situation worse and cause even more rapid roll because more tail rotor thrust is being produced.

So this begs the question: why not use the technique of lowering collective and even entering autorotation as the recovery method for low-g and especially for zero-g situations, as the **only** technique that will work at zero g?

Some advocates of the current recovery technique of applying aft cyclic and then left cyclic argue that this current technique is more instinctive. I disagree. A good example of this was when RHC inserted the low-g recognition and recovery manoeuvre into their Safety Course, which at the time was conducted only for flight instructors. After providing two days of ground instruction which included a wealth of information on low-g mast bumping, showing the Army film, and demonstrating a number of various low-g recovery techniques in the flight portion of the course, the RHC instructors charted the first movement attendees made in response to the right roll. In 80 per cent of cases (and this was with instructors who knew what to expect, not low-time pilots) the first movement of the cyclic was to the left. When the

Photo courtesy of Simon Spencer-Bower

helicopter rolls, a pilot's instinctive reaction is to counter the roll.

No Pushover

RHC has also cautioned that if the cyclic is moved abruptly aft, the main rotor torque can cause what has been referred to as the 'killer right roll'. This is one of the reasons that since the late 1990s, low-g pushover demonstrations were prohibited in the R22 and R44.

I consider that low-g education is now sufficient worldwide that no-one would intentionally perform a low-g pushover for the hell of it, however, inadvertent low g may still be encountered through turbulence and inadvertent forward cyclic input, especially at high forward speeds. Even so, I believe low g is unlikely to be too much of a problem in turbulence, because the low-g condition produced by turbulence is not usually sustained long enough for a roll to develop. In any case, a pilot's instinctive first reaction on encountering turbulence is to lower the collective and slow down, which as already explained, will reduce tail rotor thrust and therefore remove most of the cause of the rolling tendency.

Testing during deliberate low-g pushover demonstrations has proved that if the collective is lowered **immediately** when a roll starts to occur, the roll will stop instantly, even though an even lighter feeling of low g (weightlessness) might be experienced momentarily. Lowering the collective will also require right pedal to maintain balance, further reducing the tail rotor thrust and exposure of the right side of the fuselage to the airflow. Because there is now no rolling tendency and the helicopter is basically in autorotation, the flight can be resumed normally.

While the current method is well ingrained in most training schools, any additional control inputs that might reduce or stop the roll can only be good. Pilots **are** going to move the cyclic – at least as an instinctive reaction to high roll rates – but lowering the collective and even combining it with aft cyclic (similar to a quick-stop manoeuvre), produces a compromise between the old and this new technique, that should appease any critics of changing the current procedure.

Prevention Rather Than Cure

As mentioned at the beginning of this article, the intention is to provide information about a recovery technique variation that is probably more instinctive than the current standard recovery method. It should be very apparent now that the lowering of the collective (new method) focuses on **preventing the cause of the problem** (the low-g condition), whereas applying aft cyclic (current 'standard' method) focuses more on managing the symptom (the roll). Perhaps the best analogy is that of shutting the gate before the horse bolts rather than trying to catch it after it has escaped!

Naturally, avoiding low-g situations altogether is the best approach but now it can be seen that at any sign of low g, the technique of lowering the collective, reducing the power – and therefore the tail rotor thrust – will reduce the problem of low-g rollover. ■

This article, contributed by Simon Spencer-Bower, was first published in *Pacific Wings* magazine.

Simon Spencer-Bower is the owner of Wanaka Helicopters Ltd, and has long been recognised as a quality aviator. He passed the 20,000-hour mark earlier this year, and is acknowledged as the world's highest R22-time pilot, with over 13,000 hours on type. In 2002, he received the Director's Individual Award for his commitment to safety, and was awarded the Queen's Service Medal in the 2010 New Year's Honours for services to aviation.

Although Simon's advice on recovery technique does not appear in any helicopter flight manual, it does not contradict any existing recommended practices, but in fact enhances what has already been published.

We invite your comments on this article, email: info@caa.govt.nz.

New General Managers

The CAA is proud to announce the appointment of two new General Managers, Steve Moore and Stephen Hunt.

Both bring a unique mixture of senior management experience and technical flying skills to their positions.

Steve Moore

Steve Moore started in October as the General Manager, General Aviation.

Steve's experience in the New Zealand Defence Force (NZDF) spans 38 years. He has held a number of challenging command and leadership positions. He is a qualified flight instructor, test pilot, and gliding enthusiast (albeit inactive at the moment).

As Air Component Commander for nearly four years, he was responsible for the planning and conduct of Air Force flight operations.

"That included everything; all Air Force flight training and anything from an Orion doing a fisheries patrol, to a Hercules on a combat mission in Afghanistan.

"As part of that role I was the NZDF's Operating Airworthiness Authority. The military breaks airworthiness into two parts: technical airworthiness, and operating airworthiness – which focuses on aircrew," says Steve.

Steve also commanded a rotation of the New Zealand Provincial Reconstruction Team in Bamyan province, Afghanistan.

Most of Steve's military flying career was spent piloting the A-4 Skyhawk and BAC-167 Strikemaster. His proudest achievement was being selected to attend the United Kingdom's Empire Test Pilot School, where he flew a large assortment of aircraft. These included classics like the Lightning and Hunter, more modern types like the Hawk and Tornado, through to smaller aircraft like the Beagle Basset and de Havilland Beaver.

In his new role, Steve will work closely with medium to small-sized organisations in the tourism, agriculture, and recreational aviation sectors. He will also oversee the growth of Remotely Piloted Aircraft.

Stephen Hunt

Stephen Hunt is the new General Manager, Air Transport and Airworthiness.

Stephen has recently been working on a strategic reform project for the NZDF and managing defence strategic commitments and relationships. Other NZDF positions have been Executive Officer at the Air Force flying headquarters in Whenuapai, and commander of the Air Force pilot training squadron.

"As the director of RNZAF flying standards, current capability, compliance and audit, I was fortunate to lead an excellent team of operations and engineering specialists. We worked on some challenging test and certification programmes, and special projects such as the certification of the Boeing 757 onto the Ross Sea Ice Shelf."

Stephen spent the majority of his flying career with the Royal Air Force where he trained on the Jet Provost Mk5 and the de Havilland Chipmunk. He was a BAE Hawk QFI before converting to the Harrier T4 and GR7.

"All my operational flying was with the world's oldest fighter squadron, Number 1(F) Squadron, a specialist night attack unit. I was lucky to become the squadron executive officer and to command the squadron on many operational deployments."

He later became the Director of Joint Force Harrier Operations where he was responsible for deployments in Iraq, Afghanistan, and Kosovo.

On a sabbatical between the RAF and the RNZAF he flew business jets in Australia.

"I'm proud of the opportunities I had to lead teams of great people in some very challenging operating circumstances. I would say that the times spent flying and managing diverse operations from foreign airfields and aircraft carriers were the most rewarding."

Stephen will now be responsible for overseeing the larger organisations operating within the New Zealand Airlines sector. ■

Steve Moore (left), General Manager General Aviation, and Stephen Hunt, General Manager Air Transport and Airworthiness.

Group Established to Discuss Medical Certification System

The Aviation Community Medical Liaison Group (ACMLG) met for the first time in September 2013 to give feedback on New Zealand's medical certification system.

Its membership draws widely from the aviation community. Representatives will give the CAA advice and input on medical issues relating to aviation.

The ACMLG will help to improve medical processes, said Chris Ford, CAA General Manager Aviation Infrastructure and Personnel.

"This is an opportunity for everyone to understand where the issues are, why they exist, and to give feedback."

Ben Johnston, President of the Aviation Medical Society of New Zealand, attended the first ACMLG meeting.

"The ACMLG provides a forum in which medical examiners can raise issues and concerns with the CAA.

"It also provides an opportunity for the Aviation Medical Society to receive feedback from other members in the aviation community about any issue they may have with the medical certification process," says Ben.

John McKinlay, Manager Personnel and Flight Training, will chair the ACMLG for its first year.

"The CAA will use this forum to identify industry priorities, for example; General Directions, Medical Information Sheets, and Medical Manual sections.

"It's an open forum where everyone can air their concerns and work together to improve the system efficiency," says John.

More information is on the CAA web site, www.caa.govt.nz, "Medical – Aviation Community Medical Liaison Group". ■

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).

Planning an Aviation Event?

If you are planning any aviation event, the details should be published in an AIP Supplement to warn pilots of the activity. For Supplement requests, email the CAA: aero@caa.govt.nz.

To allow for processing, the CAA needs to be notified **at least one week** before the 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*
23 Dec 2013	30 Dec 2013	6 Mar 2014
21 Jan 2014	27 Jan 2014	3 Apr 2014
17 Feb 2014	24 Feb 2014	1 May 2014

See **www.caa.govt.nz/aip** to view the AIP cut-off dates for 2014.

Aviation Safety Advisers

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

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

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Bob Jelley (Maintenance, South Island)
Tel: +64 3 322 6388
Fax: +64 3 322 6379
Mobile: +64 27 285 2022
Email: Bob.Jelley@caa.govt.nz

Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

0508 4 SAFETY
(0508 472 338)
isi@caa.govt.nz
For all aviation-related safety and security concerns

Accident Notification

24-hour 7-day toll-free telephone

0508 ACCIDENT
(0508 222 433)
www.caa.govt.nz/report
The Civil Aviation Act 1990 requires notification "as soon as practicable".

Accident Briefs

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

ZK-ISF Bell 206L-3

Date and Time:	20-Jan-11 at 12:17
Location:	Bream Bay
POB:	1
Injuries (Minor):	1
Damage:	Destroyed
Nature of Flight:	Private Other
Age:	43 yrs
Flying Hours (Total):	4435
Flying Hours (on Type):	445
Last 90 Days:	148

On 20 January 2011, the pilot of a Bell 206L-3 LongRanger helicopter, ZK-ISF, ditched the helicopter after experiencing a significant engine power reduction while in the cruise. The pilot did not have time to make an emergency radio call, but the accident was witnessed by people on shore. The pilot was not wearing a life jacket and spent more than two hours in the water before he was rescued. He suffered minor injuries only.

The cause of the reported engine power reduction was not determined. The pilot did not take appropriate survival precautions for a flight that was intended to be operated over water. His rescue was greatly assisted by the accident being witnessed and by a favourable onshore wind. The accident was investigated by the Transport Accident Investigation Commission. The Commission made no safety recommendations.

The full report is available on the TAIC web site, www.taic.org.nz (ref 11-001).

CAA Occurrence Ref 11/195

ZK-LTX Pacific Aerospace Cresco 08-600

Date and Time:	22-Apr-12 at 12:00
Location:	Tautane Station
POB:	1
Injuries:	0
Nature of Flight:	Agricultural
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	34 yrs
Flying Hours (Total):	7495
Flying Hours (on Type):	111
Last 90 Days:	201

Returning to the airstrip after dispersal of the fifth load, the aircraft landed slightly short of the strip threshold, and the right main undercarriage struck a small 'lip' at the end of the strip. The leg was torn from its attachments and folded back under the wing. The operator subsequently provided further theoretical and practical training for the pilot.

CAA Occurrence Ref 12/1786

ZK-EYD Piper PA-38-112

Date and Time:	06-Apr-13 at 14:22
Location:	Te Araroa
POB:	1
Injuries (Minor):	1
Damage:	Substantial
Nature of Flight:	Training Solo
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	22 yrs
Flying Hours (Total):	122
Flying Hours (on Type):	102
Last 90 Days:	62

On a solo cross-country exercise, the pilot decided to track via the coast due to weather conditions. More adverse weather was encountered on the coastal leg, with significant updraughts and downdraughts, reducing visibility, and a lowering cloudbase.

The pilot elected to carry out a precautionary landing on a beach. After touchdown, the aircraft ran into an area of soft sand and tipped over.

CAA Occurrence Ref 13/1684

ZK-LTT Pacific Aerospace Cresco 08-600

Date and Time:	02-Jun-11 at 12:30
Location:	Matawai Makers Airstrip
POB:	1
Injuries:	0
Damage:	Substantial
Nature of Flight:	Agricultural
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	61 yrs
Flying Hours (Total):	20102
Flying Hours (on Type):	11113

To avoid churning up the centreline of the airstrip, the pilot was using different routes for the takeoff and landing runs. On the accident flight, the aircraft was moved too far to the right side of the airstrip, and departed the strip approximately 60 metres before the actual threshold, striking a fence.

This impact damaged the rear elevator cable pulley, resulting in a loss of pitch control. The pilot commenced a load dump, but the aircraft struck a second fence before coming to rest in a brassica crop.

Weather at the time was light drizzle, which may have contributed to the accident.

CAA Occurrence Ref 11/2478

ZK-HTX Bell 206B

Date and Time:	15-Dec-11 at 10:00
Location:	Geraldine
POB:	1
Injuries:	0
Damage:	Substantial
Nature of Flight:	Agricultural
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	59 yrs
Flying Hours (Total):	13000
Flying Hours (on Type):	150

The helicopter was simultaneously refuelled and loaded with product. After refuelling was completed, a miscommunication between the pilot and the loader resulted in the pilot taking off before the product hose was recovered. The aircraft was restrained on one side by the hose, causing a dynamic rollover.

CAA Occurrence Ref 11/5586

ZK-MAD Pitts S-2B

Date and Time:	15-Nov-09 at 12:16
Location:	Stratford
POB:	1
Injuries (Fatal):	1
Damage:	Substantial
Nature of Flight:	Private Other
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	52 yrs
Flying Hours (Total):	843
Flying Hours (on Type):	187

The aircraft was in transit from Ohakea to Ardmore. The weather in the Stratford area was poor. Possibly while being manoeuvred for a precautionary landing, the aircraft stalled and struck the ground, fatally injuring the pilot. There was a delay in locating the wreckage due to the weather conditions at the time, and the disposition of the SAR satellites at the time affecting location of the ELT. A full report is available on the CAA web site.

CAA Occurrence Ref 09/4406

ZK-SET Grumman American AA-5A

Date and Time:	20-Dec-11 at 14:00
Location:	Motiti Island
POB:	2
Injuries:	0
Nature of Flight:	Commercial Pilot Licence (Aeroplane)
Age:	19 yrs
Flying Hours (Total):	230
Flying Hours (on Type):	16
Last 90 Days:	53

The aircraft had been engaged in fish-spotting activities and was returning to Ardmore. During the takeoff from Motiti Island airstrip, the aircraft drifted to the left of the centreline and the left wing starting brushing through long grass. The pilot tried to correct the situation but the drift worsened as the wing was dragged further into the grass, resulting in a groundloop.

CAA Occurrence Ref 11/5623

ZK-BEZ Cessna 180

Date and Time:	25-Feb-13 at 15:45
Location:	Piopio
POB:	3
Injuries:	0
Damage:	Substantial
Nature of Flight:	Private Other
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	68 yrs
Flying Hours (Total):	3202
Flying Hours (on Type):	2825
Last 90 Days:	26

When the pilot lowered the nose at top of descent, the engine lost power due to fuel exhaustion. The pilot attempted a forced landing on a farm airstrip, but the approach was high and fast, and after touchdown, the pilot deliberately ground-looped the aircraft in an attempt to stop. The left undercarriage leg failed with resulting damage to the left wing and tailplane.

Before departure, the pilot had measured the total fuel quantity as 104 litres, and subtracted what he thought was the unusable fuel of 8 litres, leaving 96 litres usable. His calculated flight time was 1 hour and 35 minutes, on a planned fuel consumption of 55 l/h.

The pilot had miscalculated the total fuel required for the flight. For 1 hour 35 minutes flight time, he required 88 litres plus a further 28 litres to cover the 30-minute VFR reserve requirement, giving a total minimum usable fuel quantity of 116 litres. The Owner's Manual for this aircraft states that as well as the 8 litres unusable fuel, there is another 11.5 litres usable only in level flight. This means that 19 litres must be considered unusable and subtracted from the total fuel dipstick reading to allow for flight in non-level attitudes. The legal minimum fuel requirement for this flight was 135 litres.

CAA Occurrence Ref 13/935

ZK-GVM Schempp-Hirth Discus-2cT

Date and Time:	20-Dec-11 at 12:15
Location:	Drury
POB:	1
Injuries (Minor):	1
Damage:	Minor
Nature of Flight:	Private Other
Age:	60 yrs
Flying Hours (Total):	800
Flying Hours (on Type):	5
Last 90 Days:	20

During a winch launch, the pilot did not detect that the airbrakes were unlocked before takeoff. The glider launched to 1100 feet and with the extra drag from the now-deployed airbrakes, the glider descended faster than expected.

An attempt to deploy the sustainer motor was made but abandoned, and the pilot elected to land in a paddock near to the airfield northern boundary. The glider overshot, clipped a fence, and then landed heavily on rising ground.

The pilot sustained a back injury that required medical attention.

CAA Occurrence Ref 11/5636

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, "Accidents and Incidents".

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

Aerospatiale AS 350B2

Fuel filler sleeve

ATA Chapter:	2810

After a full-fuel indication check as part of a scheduled maintenance inspection, the fuel filler tube cover in the side locker was removed for access. Fuel was noticed seeping around the clamps securing the rubber sleeve between the fuel tank and the airframe.

Further investigation found that the rubber sleeve was perished and leaking. There was a split about 35 mm long in the rubber hose, but it was in a position such that it would have needed a mirror to see.

The rubber sleeve was sent to the manufacturer for further investigation.

CAA Occurrence Ref 13/289

Robinson R22 Beta

Main rotor drive belt

Part Manufacturer:	Robinson Helicopters
Part Number:	A190-2 Rev Z
ATA Chapter:	6300

The forward drive belt disintegrated in flight, but the pilot was able to make a safe landing. A new belt set had been fitted during a 2200-hour overhaul, and at approximately 2.9 hours' time in service the forward belt disintegrated.

The sheave alignment was checked and found satisfactory, a new belt set was fitted, and minor repairs carried out to the cowling and baffles. The Robinson Helicopter Company was advised by the maintenance provider.

The maintenance provider noted that a failure of the Z-revision drive belts is a rare occurrence as they have proven to be very reliable since introduction.

(See the article "Two Belts, No Braces" in the May/June 2011 issue of *Vector* for a description of the R22 drive train.)

CAA Occurrence Ref 13/2966

Diamond DA 40

Airframe/engine interface unit

Part Model:	GEA 71
Part Maufacturer:	Garmin
ATA Chapter:	7930

The operator reported a series of low oil pressure indication defect occurrences for the aircraft over a three-day period, followed by an engine overhaul and another low oil pressure occurrence.

Maintenance investigation found that the Garmin GEA 71 was faulty. The GEA unit measures a large variety of engine and airframe parameters, including engine RPM, manifold pressure, oil temperature, cylinder head temperature, exhaust gas temperature, and fuel level in each tank. This data is then provided to the integrated avionics units.

The GEA 71 unit was replaced, and an engine ground run and check flight were carried out.

The oil pressure remained steady and within limits. The faulty GEA 71 unit was returned to Garmin.

CAA Occurrence Ref 13/2873

Cessna 172S

Stabiliser inspection panel

ATA Chapter:	5510

While the aeroplane was being tied down, the inspection cover on the right side of the tailplane was found to be bent and had almost fallen off. The cover was missing three screws, which had not been noticed during preflight checks.

The aircraft had just come out of a 100-hour scheduled inspection. The engineer tasked with replacing the panel was a new apprentice, and had been distracted part-way through the job.

The screws were subsequently found on the engineer's toolbox. The omission had not been identified by the engineer's supervisor(s).

The maintenance organisation has made improvements to the training plan, and educated the apprentice engineer on human factor errors, including distractions.

The organisation is also to review the supervision and oversight of apprentice engineers; to ensure that supervisors have the skills required to assess competence levels; and to ensure that adequate support and guidance is given where appropriate.

The operator is to remind pilots of the importance of preflight checks and specific items to look out for.

CAA Occurrence Ref 12/5131

Aerospatiale AS 350B2

Vertical stabiliser rivets

ATA Chapter:	5530
TTIS Hours:	1000

During a routine airframe inspection, the vertical fins were removed and the mounting points inspected. The front of the upper fin is secured by two bolts through the top of the tail boom into anchor nuts riveted inside the boom. The front upper vertical fin attach point anchor nuts were found to be cracked. The manufacturer was notified.

The tail rotor gearbox was removed for access. The four rivets securing the subject anchor nuts were drilled out from the top of the boom using the pilot holes above the rivets. The top of the upper doubler plate was then countersunk and new anchor nuts secured in place using rivets down through the upper doubler, skin, frame, internal doubler and the anchor nuts themselves.

CAA Occurrence Ref 13/3020

Piper PA-46-310P

Fuel control unit lines

ATA Chapter:	7320

Smoke was seen trailing from the aircraft after takeoff. The pilot transmitted a MAYDAY message and was given immediate landing clearance. The aircraft landed safely, and the pilot advised that the engine was malfunctioning.

Engineering investigation found that the cause was the transposing of the fuel vapour return line and the ambient pressure reference line at the fuel control unit during the recent engine installation. Both lines use an identical '-4' union.

The transposition of the lines led to an over-rich fuel mixture, which resulted in rough running, power loss, and the observed smoke after takeoff.

The maintenance provider who refitted the engine has amended the company engine installation worksheet to include a check of all wiring and hoses for correct orientation before release to service.

CAA Occurrence Ref 13/568

NZ Aerospace FU24-950

Main gear attachment bolts

Part Number:	6606-18
ATA Chapter:	7700
TSI hours:	13

While walking around the aircraft organising the retrieval of his final load from the storage bin on the farm airstrip, the pilot noticed the left main undercarriage leg had twisted 90 degrees out of alignment and was leaning at an unusual angle.

Engineering inspection found the leg attachment bolts broken. An operational investigation identified that the undercarriage was being over-stressed when the aircraft was being turned using braking action under power on hard ground.

CAA Occurrence Ref 13/900

Piper PA-38-112

Blocked main jet air bleed

Part Model:	3A
Part Maufacturer:	Facet
Part Number:	10-5199
ATA Chapter:	7320

On climb through about 100 feet after takeoff, the engine power reduced to idle. The pilot was able to land the aircraft in the remaining runway distance ahead. When the aircraft stopped on the runway the engine cut out, and assistance was required to move the aircraft.

Maintenance investigation found that the carburettor main jet air bleed was blocked by an insect leg. The carburettor was repaired and refitted, and a ground run carried out. Although it was not possible to determine exactly how the insect entered, the carb heat air inlet gauze was found frayed around the edge where the gauze attaches to the air box scoop.

CAA Occurrence Ref 13/3238

Robinson R44 II

Sprag clutch

Part Maufacturer:	Robinson Helicopter Co
Part Number:	C188-3
ATA Chapter:	6300
TTIS Hours:	1086

The pilot experienced a sudden uncommanded yaw during a maximum weight takeoff. During a subsequent engineering inspection, the sprag clutch bearing was found to have failed. The inspection required in DCA/R44/23A had been carried out satisfactorily 114.2 hours previously. The clutch assembly was replaced with an upgraded unit and the original unit was sent to the overhaul facility for investigation.

CAA Occurrence Ref 13/2341

Cessna 172P

Accelerator pump nozzle

ATA Chapter:	7320

On initial climb through 600 feet, the engine began to run rough and the rpm reduced to 1200. Carburettor heat was applied immediately, but there was little or no response. The pilot made a reversal turn for the reciprocal vector, and as there were sporadic bursts of power, closed the throttle once landing was assured. During taxi to the apron, the engine continued to run rough.

During maintenance investigation, fuel samples were taken and checked and the fuel tank interiors were examined for possible contamination. None was found.

Several engine runs were carried out, and the rough running occurred once, when the throttle was advanced. On removal of the carburettor, the accelerator pump discharge nozzle was found to be missing from the venturi. The carburettor was sent for repair, and later refitted. Subsequent extensive engine runs were carried out and all were satisfactory. The aircraft was released for operational check flight, on which it performed normally, and was released to service.

CAA Occurrence Ref 12/5755

Summer Traffic Busy Spots

Don't inadvertently fly into an aviation event – check your AIP Supplements for planned events near you.
If you don't subscribe personally, you can download the AIP Supplements for free from www.aip.net.nz.

This map shows the known flying events between late November 2013 and mid-March 2014.

Keep these events on your calendar

CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND
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