

VECTOR

POINTING TO SAFER AVIATION

Warbirds Over Wanaka 2008



Aerodrome Signs

Tips for Aircraft Buyers

Design Change Approvals



CIVIL AVIATION AUTHORITY
OF NEW ZEALAND



Warbirds Over Wanaka 2008

A flying trip to Warbirds Over Wanaka can be the highlight of your year's flying, but it is a huge responsibility to ensure that you and your passengers get there and back safely. This article covers important things to consider before flying to Wanaka.

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Aerodrome Signs

Signs are provided at aerodromes to help users navigate what can be a maze of asphalt, concrete, or grass. It is essential that all aerodrome users understand the colour coding and meaning of the different types of signs when taxiing on an aerodrome.

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Tips for Aircraft Buyers

The Internet has made it easier than ever to buy and sell just about anything. We give some tips for newcomers to aviation on what is involved in aircraft purchase, operation, and ownership. The emphasis is on seeking advice from clubs and organisations in order to make an informed decision.

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Design Change Approvals

Design change is a generic term covering any change to the aircraft approved type design as built by the factory, and includes modifications, repairs and STCs. When does maintenance or repair work become a design change requiring approval? This article outlines proposed changes to the design change approval process.

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Cover: An L-39 Albatros over Wanaka in 2007. Photo courtesy of Ian Brodie.

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Warbirds Over Wanaka 2008



Around 85,000 people will make the pilgrimage to Wanaka for this year's spectacular Warbirds Over Wanaka Airshow, 21 to 23 March 2008. Many of those attending will fly in. For pilots, a trip to Warbirds can be the highlight of your year's flying, but it is also a huge responsibility to ensure you and your passengers get there and back safely. The likelihood of a successful and enjoyable trip for all greatly increases if you put work into planning your trip before you set off, and make sound decisions while en route.

Royal Australian Air Force F-111 at Warbirds Over Wanaka 2006. Photo courtesy of Ian Brodie.

Bring It On

If you are considering flying into Wanaka, first think carefully about whether this trip is within your capabilities as a pilot. Be honest with yourself, and don't let others talk you into a trip that you don't feel comfortable with. The terrain surrounding Wanaka makes it a challenging destination in some wind conditions. You can't get there, or to any of the other local airfields (Queenstown, Cromwell, Alexandra, and Omarama) without flying over, or through, the mountains. If you have limited mountain flying experience, or it has just been a while, do some dual refresher training to build up your skills before setting off.

Aside from the technical aspects of mountain flying, also consider the challenges that changeable alpine weather may throw at you: low cloud, poor visibility, rain, updraughts, downdraughts, and turbulence, and the fact that this may be the busiest traffic environment you have ever flown in – so are you up for it?

If you are – great, but sit down and set yourself some personal minimums that you will stick to. Be mindful of your personal abilities and don't push it.

Hit the Release Valve

Take some pressure off yourself by explaining to your passengers the limitations of travelling in a light aircraft, and set a realistic time frame for the trip. Suggest they arrange a couple of extra days off work, and arrange a couple of extra nights' accommodation, in case the weather is not suitable on the day you are planning to leave.

It is also a good idea to have a plan B for getting to Wanaka if the weather does not cooperate, such as taking the car. Don't be tempted to launch off into marginal weather conditions.

Crossing Cook Strait

During the Easter period each year, Airways receive a significant number of requests from VFR aircraft wanting to operate in the Wellington Control Area (CTA) over Cook Strait. In response to this, a temporary Restricted Area NZR690 will be in place for VFR transit of Cook Strait. NZR690 will include the airspace

2 NM either side of a line joining the south tip of Kapiti Island, the Brothers Lighthouse, Perano Head, and Cape Campbell. The upper limit will be 4500 ft AMSL, and the lower limit will be coincident with the lower limit of controlled airspace (2500 ft and 3500 ft AMSL).

Aircraft in NZR690 will not be required to use VFR cruising levels. While you will be able to fly at a higher altitude if you use NZR690 (up to 4500 ft AMSL) be aware that you will not be crossing Cook Strait at the shortest point (which is between Ohau Point and Perano Head). You will be over water for a considerably longer time. With this in mind you may prefer to cross at the shortest point, below the CTA, and then use NZR690 to track from Perano Head to Cape Campbell.



Continued over...

In order to use NZR690 aircraft must have a VHF radio. Prior to entry you must request a clearance to operate within it from Wellington Control (126.5 MHz or 121.1 MHz), maintain a listening watch on Wellington Control while inside NZR690, and report when clear. An operative transponder is not required to use NZR690, but if one is carried it should be used with mode C selected. VFR met minima applicable to class G airspace apply.

Traffic in NZR690 will be one-way only. On Wednesday 19 and Thursday 20 March it will be available for southbound traffic. Between Friday 21 and Sunday 23 March, the direction will be southbound in the morning, northbound in the afternoon. On Monday 24 and Tuesday 25 March, the direction will be northbound. See the direction timetable in *AIP Supplement 45/08* for exact times.

For further information refer to "Crossing Cook Strait" in the January/February 2004 issue of *Vector* available on the CAA web site.

This Way or That? – Selecting a Route

Once you reach the South Island, there are essentially three routes to choose from to get to Wanaka. These are: down the centre of the island via Burkes Pass and Lindis Pass; down the west coast and over the Haast Pass; and down the east coast to just south of Oamaru, inland to Alexandra, and up the Clutha River to Wanaka. Choosing which route to take will depend on the weather.

In prevailing westerly conditions, Wanaka is most accessible via eastern routes. Be cautious of mechanical turbulence in strong westerly conditions. In easterly conditions low-lying stratus can make easterly routes more difficult, but generally western routes are clear and Wanaka is accessible from Haast Pass.

The basin that Wanaka is within protects it from most wind directions. This means that the weather in Wanaka itself can look okay for VFR operations, even when conditions en route to Wanaka are not suitable for VFR. Don't get caught out by this – study the area forecasts carefully, as the weather varies considerably throughout the South Island.

The prevailing wind at Wanaka is a westerly or south westerly, making runway 29 the most common runway in use. Be aware that wind shear can occur on short finals (below 500 ft AGL) for runway 29 in south westerly winds.

It is a very good idea to prepare a full flight plan (including drawing the routes on your charts) for at least one alternate route, if not both, in addition to your primary route. This avoids having to plan an alternative route quickly if the weather on the day is not suitable for flying your preferred route. Take the time to study all three routes thoroughly on the charts. Think about forced landing options, refuelling stops, and airspace structure for each route. Poring over the charts noting key valley and mountain range systems, spot heights, place names, and generally taking in the lie of the land is always going to be time well spent. Remember to use VFR cruising levels.

If conditions start to become marginal en route, or you become concerned about any other factor, for example, fuel, aircraft

performance, or navigation, do not press on in the hope that things will improve. Decisive action is required. Seek assistance from an ATS unit or another aircraft, stating your position and the nature of the problem. The decision to divert or turn back should be made as early as possible. Keep an eye on what the weather is doing behind you and if it does start to close in around you, slow the aircraft, enter bad weather configuration, and think seriously about making a precautionary landing.

Remember there is limited radar coverage in the lower South Island, so depending on your location, ATS units will probably not be able to locate you on their screens if you squawk "ident" or code 7700. Also be aware that you may have trouble contacting ATS units at low altitudes. Areas of unreliable VHF coverage are marked on the South Island FIS COM chart.

Tanking Up

The importance of meticulous fuel management on long cross country flights cannot be stressed enough – please don't cut it fine. When deciding on where to stop for fuel, make sure you check that the aerodrome you choose has the correct brand of fuel available for the fuel cards in your aircraft.

All aircraft must carry 30 minutes extra holding fuel in addition to normal reserves to enable diversions or holding, for traffic or bad weather.

A fuel stop is a good way to give you and your passengers a much-needed break on a long flight. It is important that your concentration levels are at a peak towards the end of your flight for dealing with heavy traffic density in the Wanaka area, and for following the arrival procedures at Wanaka.



North American P-51D Mustang. Photo courtesy of Ian Brodie.

If the aerodrome you choose to refuel at has an aero club, this can be an excellent source of enroute information, what conditions to expect given the current weather system, and alternative routes if needed.

Homework

It is important to study *AIP Supplement 44/08* before you go, and take it with you to refer to in flight.

A temporary restricted area (NZR993) and a coincident temporary control zone (Wanaka CTR/D) have been created, covering all airspace within a 5 NM radius of Wanaka Aerodrome, from the surface to 7500 ft AMSL.

Airways will provide an aerodrome control service within the Wanaka CTR/D and on the manoeuvring area at Wanaka Aerodrome. Wanaka Tower's primary frequency is 118.9 MHz, and the secondary frequency is 120.1 MHz. Check the *AIP Supplement* for exact hours of service. An off-watch message will be broadcast on the ATIS frequency (127.6 MHz) outside the Tower's hours of service. An aerodrome control service will not be provided during approved practice times and when the airshow is in progress. During those times operations in NZR993 will be restricted to display aircraft and emergency aircraft only.

Practice and airshow times can be found in the *AIP Supplement*. Designated arrival times for those not involved in the airshow are the periods outside or between the practice or airshow periods. Make sure you time your arrival to be within the designated arrival time slots. Entry into the Wanaka CTR/D via the Tarras and Dunstan arrival procedures (detailed in the *AIP Supplement*) is approved during designated arrival times – no further authorisation is required. If you are wishing to join at Wanaka using a different procedure you must obtain a specific clearance to enter Wanaka CTR/D. This will be available only if traffic and safety permit, and delays should be expected. When operating within the Wanaka CTR/D, aircraft landing and/or anti-collision lights should be on.

Before reaching the Wanaka area, all pilots should determine the runway in use and the arrival procedure they will be required to fly. This information will be available on the ATIS (127.6 MHz), from Christchurch Information, and from adjacent ATS units. Be aware that all frequencies in the surrounding area, including Wanaka Tower and the ATIS, have coverage limitations due to terrain.

If you are planning to travel to Wanaka IFR, arriving aircraft are required to cancel IFR and proceed VFR. If the conditions on the day mean this is not possible Non-RNAV aircraft must flight plan to Alexandra or Queenstown for an instrument approach and then proceed VFR to Wanaka from there. For more information on flying IFR in uncontrolled airspace see the March/April 2006 issue of *Vector*.

NOTAMs and Flight Planning

Don't forget to obtain the latest enroute and destination NOTAMs and read them carefully. It is essential to file a flight plan if you want to maximise your chances of being found should something go wrong.



Two L-39 Albatros. Photo courtesy of Ian Brodie.

There will be heavy demand placed on Airways' briefing and flight planning services over the Easter period. For this reason it is recommended that pilots file flight plans as early on the day of the flight as possible.

No flight planning or briefing facilities will be available from Wanaka Tower. Instead use the National Briefing Office, IFIS, or Fax-on-demand for VFR plans and information. Pilots filing I, Y, or Z flight plans to or from Wanaka must telephone the National Briefing Office (0800 626 756) as IFIS will not accept I, Y, or Z flight plans.

VFR aircraft arriving at Wanaka should consider amending their SARTIME before descending as Christchurch Information (122.2 MHz) can be very difficult to contact at low levels. Terminate your flight plan by telephoning the National Briefing Office after landing, as Christchurch Information cannot be contacted on the ground at Wanaka. The SARTIME you nominate must take into account the possibility of a delay on arrival at Wanaka. Wanaka Tower will not accept SARTIME changes or VFR flight plan terminations.

When operating in mountainous terrain consider carrying a survival kit, cellphone, extra food and water, warm clothing, and sturdy footwear on board. If you will be crossing Cook Strait to reach Wanaka, make sure you have enough life jackets for everyone and that they are worn during the crossing. It can take a long time to put them on in an emergency.

Summary

The key to a fun and successful trip is careful planning. Study all possible routes and read *AIP Supplement 44/08* thoroughly. Brush up your mountain flying skills and make contingency plans so that you don't succumb to 'get-there-itis'. On the day, make sure you are fully briefed on weather and NOTAMs, file a plan and remember to terminate it. Take decisive action en route, and enjoy flying in this spectacular environment. The *Vector* team will see you there. ■

Aerodrome Signs



Pilots need a working knowledge of all aeronautical signs found at aerodromes.

When used together with your aerodrome charts, they help you taxi to the right place on the aerodrome.

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

Not all of these signs are currently in use in New Zealand, but they are being introduced at all the international aerodromes.

Signs are divided into two categories, mandatory and information.

Mandatory Signs

These include Runway Holding Position signs and No Entry signs. They have white characters on a red background. Pilots must not proceed beyond a mandatory sign without obtaining an ATC clearance and visually confirming that it is safe to proceed.

Runway Holding Position Sign

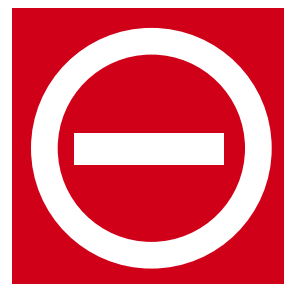


Runway Holding Position signs are located alongside the appropriate ground marking. These signs identify the holding position as well as indicate the direction in which the holding instruction applies. This example shows the holding position on taxiway Bravo for runway 23R.

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

No Entry Signs

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



Information Signs

Information signs are provided at an aerodrome where there is an operational need. They help pilots maintain situational awareness. Information signs consist of Location and Direction signs and are often located at intersections.

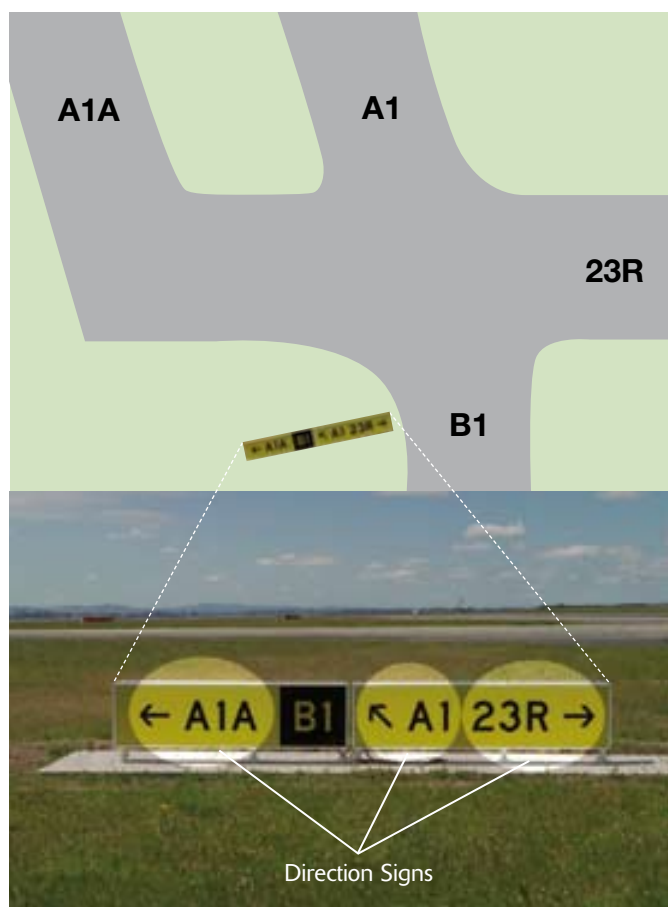
Location Signs



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

Direction Signs

Direction signs consist of a route or destination label accompanied by an arrow pointing in the appropriate direction. They have black characters on a yellow background and are normally accompanied by a Location sign.



Directions signs are also used to inform pilots of an exit from a runway after landing. In this situation they are called a Runway Exit sign and will not be accompanied by a location sign. Remember: *Yellow array points the way.*



Pilots must not proceed beyond a mandatory sign without obtaining an ATC clearance and visually confirming that it is safe to proceed.

Intersection Takeoff Sign



An Intersection Takeoff (more commonly known as Inset Takeoff Position) sign indicates the remaining takeoff run available from that point. They have black characters on a yellow background and are located opposite an intermediate taxiway.

While Taxiing

Signage used in conjunction with an aerodrome marking will help pilots improve their situational awareness. If you are in any doubt as to a taxi clearance that you have received from ATC, then ask for clarification.



See the November / December 2007 issue of Vector for the article "Aerodrome Markings".

For further information on aerodrome signs see the CAA web site, "Aerodromes – Aerodrome Signage".



Tips for Aircraft Buyers

Hang Gliders and Paragliders

Hang gliders and paragliders need to have an annual Warrant of Fitness check to confirm that they are airworthy before they are used or sold. This check also needs to be completed if the hang glider or paraglider suffers substantial damage, is stripped down, or substantially modified. An authorised hang gliding or paragliding inspector conducts annual Warrant of Fitness checks. Once the annual check has been completed, a sticker will be issued, and this must be placed on the glider in a visible spot. Hang gliders and paragliders do not need to be registered with the CAA.

For further information contact your local hang gliding or paragliding club, or see the New Zealand Hang Gliding and Paragliding Association web site, www.nzhgpa.org.nz.



Paraglider

Most people know that a car needs a Warrant of Fitness to be driven legally on public roads. Many would also consider getting a mechanic to check a car before purchasing it.

But the Internet has made the buying and selling process very easy. So easy in fact, that when it comes to aircraft, people are overlooking some checks and paperwork that may be required. And a surprising number of aircraft are advertised on the most popular Internet trading sites.

All aircraft, from a Boeing to a hang glider, will require some form of documentation to fly legally. This will range from a permit, to an Annual Review of Airworthiness (ARA), depending on the aircraft.

Obviously, you can buy an aircraft in any condition, but it is probably a good idea to know your legal obligations before committing to the purchase. For example, a *Change of Possession of Aircraft* form must be sent to the CAA when a registered aircraft changes hands.

Going back to our car example, most people realise that the Warrant of Fitness relates to the condition at the time of inspection, and it is up to the vehicle operator to make sure it is fit to be used on the public roads at any time. It is similar with regard to aircraft – there are many checks pilots carry out before every flight. So even when buying an aircraft with up-to-date paperwork, it would be advisable to have it checked by a suitably qualified person to ensure it is airworthy.

Here is a brief guide to the requirements for some aircraft – it is not complete, and it is always the responsibility of the participant to make sure they are operating an aircraft safely and legally. Remember that a bargain that is too good to be true, most likely is.

Microlight Aircraft

There are two types of microlight aircraft. A Class 1 microlight has one seat, and a Class 2 has two seats. Gyrocopters are classed as microlight aircraft. Microlight aircraft can be factory-built, amateur-built, or assembled from kitsets.

All microlight aircraft must be registered with the CAA. All Class 2 microlight aircraft require a flight permit. They have logbooks for the aircraft, engine, propeller, and Airworthiness Directives.

Microlights cannot be operated without an annual condition inspection that can be conducted by an authorised microlight inspector, or an appropriately qualified licensed engineer. They will issue a sticker that must be placed in a visible position on the aircraft.

For further information about Class 1 and 2 microlight aircraft, see Part 103, and contact one of the organisations certificated for microlight operations and training under Part 149.

Special Category Experimental Aircraft

Many amateur-built aircraft are operated under a Special Category Experimental airworthiness certificate. That doesn't mean they are experiments – it is just the name given to this category (although it is also used for aircraft that are truly experimental). There are different airworthiness and licensing requirements for aircraft in this category.

All Special Category Experimental aircraft must be issued with a certificate of registration by the Director. They have aircraft, engine, propeller, and Airworthiness Directive logbooks. Purchasers should have these checked by a Licensed Aircraft Maintenance Engineer (LAME). A LAME could also conduct a condition inspection prior



A Class 2 microlight (Bantam)

to purchase. The aircraft is required to undergo a 100-hour inspection at least annually, and in addition to that, an ARA. The ARA is similar to the Warrant of Fitness for your car.

Type Certificated Aircraft

If you are buying or selling a certificated aircraft you should confirm that the aircraft has a current airworthiness certificate, as some aircraft could have terminating certificates. Type certificated aircraft have aircraft, engine, propeller, and Airworthiness Directive logbooks. As above, purchasers may choose to have the logbooks, and the aircraft, inspected by a LAME. The aircraft is required to undergo a 100-hour inspection at least annually, and in addition to that, an ARA.



A type certificated aircraft (Piper Warrior II)



An amateur-built aircraft in the Special Experimental Category (Jodel D11)

Conclusion

If you are buying an aircraft with the intention of flying it, then make sure the decision to purchase is an informed one. This is just a 'heads-up' on some of the airworthiness aspects of operating an aircraft. You will also need to consider the requirements for an appropriate pilot certificate or licence to fly the aircraft.

There are clubs to promote recreational flying for most aircraft types. These clubs usually belong to national organisations. Their web sites will help you with information and contact details. These organisations and clubs can help you with aircraft inspections, and flight training and certification. ■

Seeing in the Dark



Photos courtesy of the Nelson Mail

Most of the country's rescue helicopter services are now operating with the latest generation of Night Vision Goggles (NVGs).

The technology is having a big impact on search and rescue operations at night.

Southern Lakes Helicopters, which operates throughout Fiordland, was one of the first operators to use Generation III NVGs. Its Director, Richard Hayes says NVGs have significantly increased the safety of flights at night, and made search and rescue much more successful.

"We saw one person from 4000 feet when he opened up his cellphone, and someone else was spotted from 8 km away, when he lit a tea-light candle. Any kind of light source, whether cellphone, a lighter, torch, candle, or even a match is going to make it much easier to find people," Richard says.

"If we can't find someone during the day, we'll often do better searching for them at night."

The third Generation NVGs owned by most operators in New Zealand are worth about \$20,000 per set and utilise state of the art technology. Only two companies in the Western world produce their critical parts, and their export outside the US military is strictly controlled by the US State Department. New Zealand operators must ensure restricted access to the goggles to comply with the US requirements.

Manager Rotary Wing / Agricultural Operations, John Fogden, says the CAA started considering whether NVGs should be allowed in New Zealand in 2002 after four fatal rescue helicopter crashes in Australia.

"We thought, 'there but for the grace of God go us'," John says.

Night Flying was already legal in New Zealand under Visual Flight Rules. NVGs had the potential to make that flying even safer.

"NVGs greatly improve situational awareness. They allow pilots to complete flights that they may otherwise have had to come back from. But pilots must still operate within the night Visual Flight Rules. If the goggles fail, there must be no increased risk to the flight because they were using them," John says.

"The US experience has shown that since NVGs were allowed in the civilian fleet, there have been only two accidents involving NVG-equipped rescue helicopters, and neither of those was attributable to the goggles.



“Training and currency, and the correct cockpit modifications are essential though. It’s like looking through two empty toilet rolls. There’s very little peripheral vision, so you have to get used to turning your whole head to look around.

“NVGs are an add-on safety factor. They are not a licence to fly in conditions that do not meet current night VFR minima.”

Richard Hayes says NVGs must be treated with respect.

“They’ve got to be used in the right way, by people with the right training and the right cockpit. You can’t just clip a pair onto your helmet and charge off into the night,” Richard says.

Helicopters Otago started using NVGs three and a half years ago. Chief Executive Officer, Graeme Gale, says the amount of flying the company does at night has increased from about 18 percent to about 50 percent since the introduction of NVGs.

“Our guys know they don’t do any emergency service work at night unless they’ve got goggles on. It’s that black and white. They just make the work so much safer.

“We would hardly ever even try to search at night. But now, if we’re in the right area and someone has a torch or a cigarette lighter, we will just go straight to them,” Graeme says.

But they are not a cure-all.

“It is obvious what they will let you see, but it’s what you can’t see that you need the training for.

“I can’t stress enough – training, currency and a modified cockpit are every bit as important as the goggles.

“There are a lot of little visual cues to things like the weather deteriorating around you. You see the light differently and it takes time and training to get used to that. But if you are current and confident on them, you will see lights and stars that you’ve never seen before.”

Nelson’s Summit Rescue helicopter is now using NVGs. Pilot Tim Douglas-Clifford says they have completely changed his work.

“One major thing is that you don’t have to night-adapt your sight before you go flying. There is no need to maintain a sterile light environment. You can go straight from a bright room into the helicopter,” Tim says.

“The NVG compatible cockpit lighting means the paramedic can have good lighting for working on a patient, without interfering with the pilot’s vision.”

Garden City Helicopters Operations Manager Grant Withers says the company’s night flights have increased by about 30 percent since the introduction of the goggles.

“That’s not because we are going out in worse weather. We can more easily go into some mountainous terrain at night. If we were going to fly into the mountains without goggles to do a rescue, we would need a cloud base of 2000 ft above the minimum safe altitude (which can be up to 12,000 ft), but with the NVGs, we can just fly up the valleys, like we would during the day.

“They don’t turn night into day. But if you’re out tramping and you’ve got some kind of light source and a 406 MHz beacon, you stand a pretty good chance of being found,” Grant says.

The CAA has published Advisory Circular 91.13 *Night Vision Imaging*, detailing how and when NVGs can be used. View it on the CAA web site. ■

Jerrycans

Plastic 20-litre chemical containers may seem, at first appearance, to make good fuel jerrycans when emptied of their original contents, and their use in the helicopter industry has been commonplace over the years. But don’t be fooled by appearances – they can constitute a significant hazard when used for fuel.

These containers do not necessarily comply with the requirements for portable fuel containers as specified in Australian/New Zealand Standard 2906:2001 *Fuel containers – Portable – Plastics and metal*.

Some areas in which they may be deficient are:

- Tendency to accumulate static charge.
- Fuel could degrade the container material.
- Inadequate structural strength and impact resistance.
- Lack of proper warning label and other required markings.
- Cap gaskets inadequately retained.
- Insufficient resistance to ultraviolet radiation and heat.

In particular, the cap gaskets have been identified as an actual hazard.

The Standard requires that these be physically restrained in the cap by a retaining ring, or other means of preventing accidental loss. Obviously, the gasket should also be fuel resistant.

Apart from simply falling out of the cap and preventing proper sealing, two ways in which the gasket can be hazardous are:

- Embrittlement and subsequent disintegration. The fragments can then be tipped into the aircraft fuel tank (no, not everybody uses filters, despite what we would like to think) along with the fuel, and, over time, can either clog the tank outlet or the fuel system filter(s).
- Turning to ‘mush’ (possibly more likely in jet fuel), also resulting in filter clogging.

The use of unapproved fuel containers can damage your aviation business or hobby. Not only are the risks of fire, fuel spillage and contamination increased, but also your possible liabilities after an accident.



A plastic jerrycan that meets AS/NZS 2906. Various labels and warnings are moulded into the container during manufacture, and the white label details safety precautions and first aid procedures.



Look for evidence that the item was manufactured to a recognised standard.

Design Change Approvals

The CAA is proposing to make significant changes to the way modifications ('mods') and Supplemental Type Certificates (STCs) are approved. A 'design change' is a generic term covering any change to the aircraft approved type design as built by the factory, and includes modifications, repairs, and STCs.

Why is Approval Required?

If licensed aircraft maintenance engineers (LAME) can maintain an aircraft, why can't they modify it?

The basic answer is that an aircraft is certificated against a detailed set of airworthiness design standards, so when an aircraft is modified, the modified configuration must be shown to meet those original design standards. Design standards are not something a maintenance engineer has at their fingertips, or refers to every day. That is why it requires a professional engineer trained in, and familiar with, the design standards to determine compliance and then issue an approval.

This requirement is legally embodied in rule 21.505 *Form CAA 337 – Approval of Technical Data*, which requires design changes to be approved by the Director (or the Director has delegated this power to individual design engineers).

When Is an Approval Required?

When does maintenance, or repair work, become a design change requiring a design change approval?

Any change to an aircraft's approved type design (as built by the factory) must be carried out in accordance with Acceptable Technical Data. 'Technical Data' is a generic term for all drawings, wiring diagrams, installation instructions, service bulletins or other documents that describe the design change.

Acceptable Technical Data is defined in Civil Aviation Rules, Part 21 *Certification of Products and Parts* Appendix D. It includes, among other things, Supplemental Type Certificates from the USA, Canada, or Australia; the aircraft's Type Design Data; and FAA Advisory Circular 43.13-1B.

Type Design Data is really just a fancy name for the aircraft's engineering drawings, but it also includes other associated publications that define the aircraft's approved configuration,

such as the manufacturer's Service Bulletins, and Standard Repairs as detailed in the applicable Maintenance Manual.

The specified Technical Data listed in Part 21 Appendix D is Acceptable Technical Data and does not require an approval. This is because it has already been approved by another national Airworthiness Authority. Technical Data covered by a New Zealand modification or STC approval is also Acceptable Technical Data.

Other data, such as overseas modification approvals that are not Supplemental Type Certificates, require approval in New Zealand before they can be embodied.

Clearly, for any new design change that you may wish to develop, there will not be any existing Technical Data, and it will have to be produced. It will then require approval as a mod by a Part 146 Aircraft Design Organisation, or the CAA. Note that the CAA can provide approval, but will not produce the Technical Data, whereas a Part 146 Aircraft Design Organisation can do both.

Changes to the Processing and Approval of Design Changes

To bring New Zealand into line with international standard practice, the CAA is proposing the following changes to its policies for the way design changes are processed and approved.

1. All major design changes will have to be approved as an STC. There will be some exceptions to this, such as some design changes produced by the aircraft manufacturer, repairs, and some one-off design changes such as a ferry fuel system.
2. STCs will have to be approved against the latest airworthiness design standards, unless this is impractical or the increase in safety does not justify the increased cost, and the CAA approves an alternative standard to be used.
3. All STC applications will have to be submitted to the CAA through a Part 146 Design Organisation, who will produce the required Statement of Compliance.

A detailed summary of these proposed changes and their effects will be available on the CAA web site when the changes are introduced. Advisory Circular 43-9 *Modifications, repairs, and the Form CAA 337* will also be revised.

Summary

Any change to an aircraft's approved type design, as built by the factory, is a design change which must be covered by Acceptable Technical Data.



Piston Engine TBO Escalations



Two 'STC' kits are shown on this BK117 helicopter.

Acceptable Technical Data is listed in Part 21 Appendix D, and includes data approved in New Zealand as a mod or STC. This approval involves an assessment against the applicable detailed airworthiness design standards to ensure that the modified aircraft is still safe.

Significant changes in policy are envisaged to the way the CAA processes and approves design changes, and these will require most major design changes to be approved as an STC. For further information on the proposed changes contact Peter Gill, in the Aircraft Certification Unit, Email: gillp@caa.govt.nz, or Tel: 0-4-560 9567.

General questions about modifying an aircraft or component, or the approval of a design change, can be directed to the Aircraft Certification Unit, Email: info@caa.govt.nz.

This article discusses mods, but the approval requirements are equally applicable to repairs. The main difference between a mod and a repair is the intent. A repair usually restores some aircraft capability that has been lost or damaged, while a mod adds some capability that the original design lacked.

Rule 21.433 *Approval of designs for repairs* states that repairs are design changes and must be approved in the same way as a mod. For a New Zealand approval, there is no distinction between a mod and a repair – they are both design changes that require one of the types of Acceptable Technical Data listed in Part 21 Appendix D.

Rule 91.603 *General maintenance requirements* section (d) permits the operation of products and components beyond the manufacturer's time between overhauls (TBO), if the operator complies with TBO escalation procedures that are detailed in a maintenance programme that is approved by the Director under Part 119 *Air Operator – Certification*, or rule 91.607 *Approval of maintenance programmes*.

A new Advisory Circular (AC91-16) will detail the approved means of compliance with rule 91.607 as applicable to piston engines, and will provide guidelines for drafting an escalation procedure. This AC is currently in the final stages of drafting, and will be available on the CAA web site in the near future.

It is important to note that engines on an extended TBO will need a more rigorous maintenance and reporting regime than is normally the case. There are specific prerequisites for an engine to be entered into an escalation programme, and these include:

- Identification by engine model, aircraft type and engine serial number.
- Review of the type of operation.
- Review of maintenance history.
- Establishment of baseline engine performance figures.

All engines should be trend monitored for at least 300 hours prior to reaching the manufacturer's recommended TBO, and the AC will provide detailed guidance for the required recording and analysis.

The escalation programme should specify the 'build standard' of the engine(s), ie, service bulletins to be incorporated, the use of PMA parts, and parts replacement policy. Modification standards of the accessories and components must be detailed, and acceptable repairs must be specified for all components.

A number, depending on the size of the fleet, of nominated 'exhibit engines' may be specified. These are the 'control' examples, and are subject to detailed strip reports, which include reasons for rejections, repair and rework of components, and comparison of limits and clearances to the acceptable limits specified by the manufacturer.

TBO extension approvals will be required for all components installed on the engine that are part of the engine certification document, and also items such as alternators, vacuum pumps, and propeller governors.

The operator, in conjunction with the maintenance provider, must closely monitor the continued airworthiness of the engines during the escalation programme. All significant events, including major defects and any other factors that may affect an engine's ability to meet the extended TBO, need to be reported to the CAA.

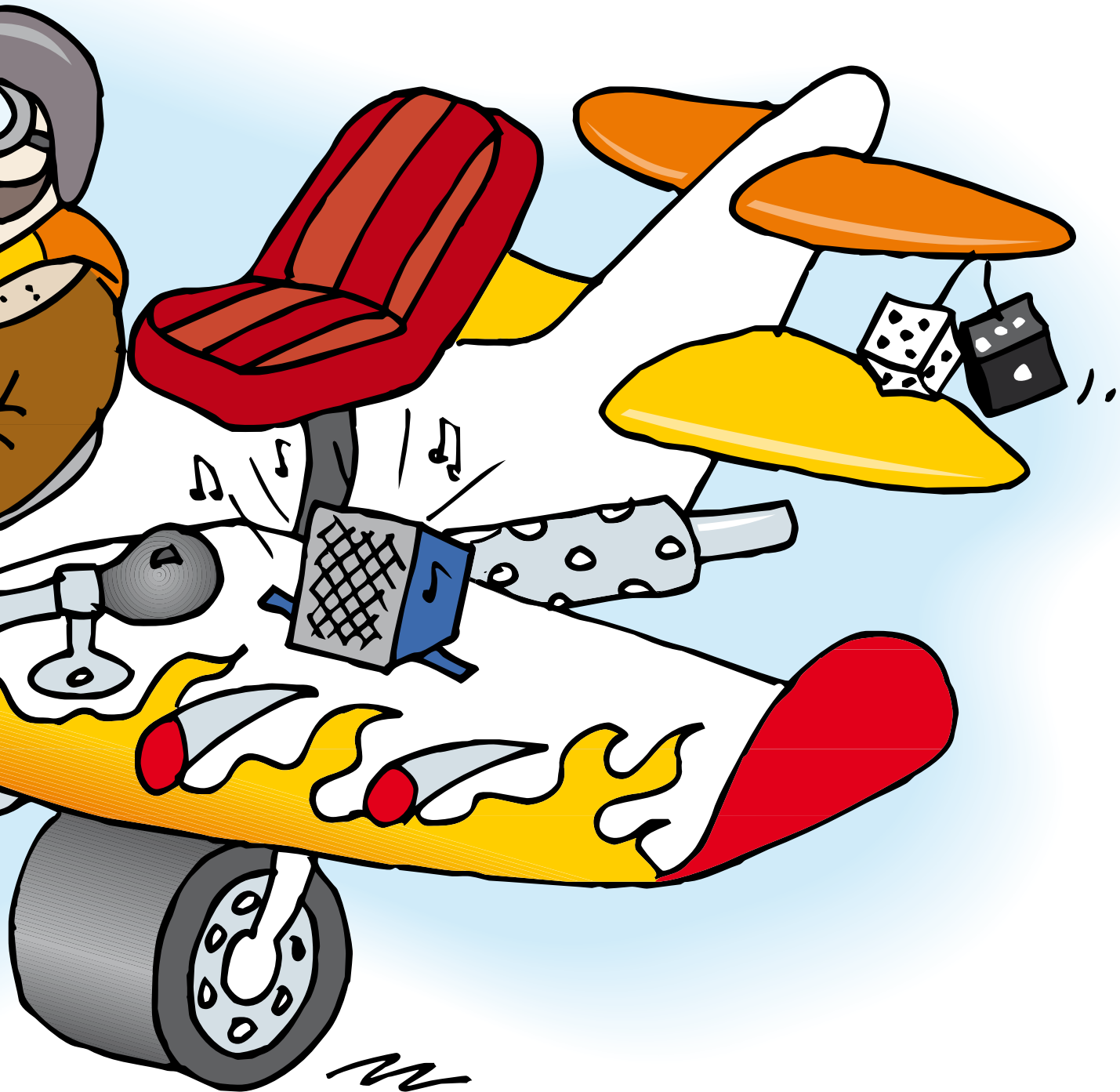
For a TBO escalation programme to work, an operator will need to have the appropriate infrastructure and a commitment to a high level of operational safety.

Is that Mod



- ✓ Covered by acceptable technical data (Part 21 App D)
- ✓ Logbook entry with certificate of release to service (Part 43)
- ✓ Conformity certificate (CAA 337) for major design change (Part 43)

Approved?



See Advisory Circular 43-9 *Modification, repairs, and the Form CAA 337* for details on how to identify approved data, and how to have data approved.

App E

Rules Development for ICAO Compliance

The International Civil Aviation Organisation (ICAO) audited New Zealand's civil aviation system in March 2006, as part of its Universal Safety Oversight Audit Programme (USOAP). The objective of USOAP is to promote global aviation safety, through auditing contracting states on a regular basis, to determine those states' capability for safety oversight.

The audit resulted in 61 findings. Many were procedural, but 18 required rule amendments to bring New Zealand into compliance with ICAO Standards and Recommended Practices (SARPs). The final audit report, complete with findings and the CAA's proposed corrective actions, is available on the CAA web site, see "A to Z Topics – I – ICAO".

As New Zealand is an ICAO member state, the CAA is obliged to action the findings, so rules issues have been raised to initiate possible rule-making action. This process requires the CAA and the Aviation Community Advisory Group (ACAG) to invite representatives from relevant industry sectors to form an Issue Assessment Group (IAG). The IAG's job is to consider the issues, look at the risks, and identify possible solutions. This will enable the rule writers to scope the project and begin in earnest.

The CAA is now at the point where it needs to take the issues to IAGs. There are the 18 issues which were raised directly from the ICAO audit, and another 25 closely-related issues that can be dealt with at the same time. All of these have been grouped into modules according to the type of operation, or the rule affected, and the time that might be expected to draft the final rules.

Module 1 – Inconsistencies between Parts 121 and 125

Although these had been already raised by ALPA to address differences in standards between Part 121 and Part 125, and have been to an IAG, a further issue has been included for consideration.

Module 2 – Operational deficiencies

This contains ICAO non-compliances that are mainly administrative and mostly aimed at international operations.

Module 3 – Required equipment

This group of issues addresses a single finding where the Civil Aviation Rules do not comply with respect to equipment standards.

Module 4 – Flight safety and accident prevention programme

This issue may require legislation to provide for the protection of safety data.

Module 5 – Review of Part 172

Although this is a single issue, substantial work is required.

Module 6 – Review of Part 139

This module has three related issues that will be included for assessment.

Module 7 – Provision for Article 83 bis agreements

This concept deals with the transfer of regulatory oversight from one state to another. While the Civil Aviation Act enables the use of Article 83 bis of the Convention on International Civil Aviation, this needs to be reflected in the Civil Aviation Rules. This will require policy consideration and so will not be included in this round of IAG meetings.

Module 8 – Operation of non-commercial large aircraft

This is a relatively new development from ICAO. It results from the pending modernisation of Annex 6 Part II, which deals with General Aviation (the ICAO definition). Affected aircraft will be those in non-commercial/non-certificated operations, and greater than 5700 kg MCTOW, or have more than nine passenger seats, or are turbo-jet powered. This has been previously identified in two other similar rules issues that have been added to this module. Because this issue awaits amendment of Annex 6 Part II by ICAO, it will not be included in this round of IAG meetings.

How will we address the issues?

Because of the number of issues and the geographical spread of affected organisations, there will need to be several meetings. To keep travel costs down, meetings will be structured to address issues that have audience commonality, rather than strictly by module. Proposed IAG sessions are:

- Session 1 – This will address all but four of the Module 2 and 3 issues, and will relate mainly to certificated air operators. One issue is human factors in maintenance, and will be of interest to maintenance providers.
- Session 2 – This has the remaining issues that will be of interest to many industry sectors: certificated air operators; aerodrome operators; all aircraft operators; Airways; parachuting operators; and security and meteorological service providers.

The sessions will be run consecutively over two days.

For more information

The Civil Aviation Rules Register Information Leaflet (CARRIL) due for publication 7 February 2008 will have the details of session dates and times. In the meantime, the agenda and issues are listed on the CAA web site, "Rules Development – Issue Assessment Group – ICAO Findings IAG".

To register your interest in attending an IAG session, please contact either Paul Elton, Rules Project Specialist, eltonp@caa.govt.nz; or the Rules Docket Clerk, docket@caa.govt.nz.

Further information about the rule development process, and how you can participate, is in the booklet, *The Rule Development Process*. Copies can be obtained from your CAA Field Safety Adviser, or email: info@caa.govt.nz.

New Field Safety Adviser

Highly experienced helicopter engineer John Keyzer has joined the CAA as Field Safety Adviser Maintenance, covering the North Island.

John was Chief Engineer at Ardmore's Wing and Rotor Aviation for 12 years, and more recently held the position of Chief Engineer at nearby Eurocopter.

Before that, John worked as an engineer in the Australian outback maintaining Bell 206Bs for West Coast Helicopters. He has also worked in Taiwan supporting BK117s, and assisting Dailyair in their acquisition of a regional airline operating 4 Dornier 228 aircraft.

His career began over 30 years ago with a five-year apprenticeship with Pacific Aerospace Corporation.

"They gave me the option toward the end of my apprenticeship to go into piston engine overhaul or have a go at helicopters. I thought the helicopters

would be more interesting," John says.

He started out being involved in the major maintenance of the Bell UH-1H and the Bell 47 with Alexander Pacific, a subsidiary of PAC, and then later he worked on Hughes 269, 369, Bell 206, and AS350 for Wishart Helicopters, which later became part of The Helicopter Line.

"My whole career has been in helicopter maintenance, and I've always liked fixing things."

John and his family are based in Auckland and John will tour the North Island on behalf of the CAA, visiting operators and aircraft owners to provide education, advice and support.

"I won't know all the answers, but the industry should be able to depend on me to know where to go and how to find out," John says.



"I have loved my career. It has given me great opportunities and I'd do it all over again. Now I hope I can put something back into the industry."

To contact John:

Maintenance, North Island
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Email: keyzerj@caa.govt.nz

Big Birds Fly Further

Jet aircraft with two engines or more may soon be allowed to fly further offshore than ever before.

In January 2008, the CAA will publish a Notice of Proposed Rule Making (NPRM), relating to Part 121 operations, that proposes new options for Extended-Range Twin-Engine Operations (ETOPS).

Currently, if an airline operator wants to conduct twin-engine aeroplane operations further than one hour's flight time from an aerodrome, they must gain special authorisation. Authorisation is issued for flights of up to 180 minutes from a suitable aerodrome.

The new provisions are called Extended Diversion Time Operations (EDTO). Under the proposed new rules, EDTO aircraft would be able to fly oceanic routes that they may not have been able to fly before. Given New Zealand's remote location, the rules facilitating extended-range operations are needed to achieve certain routes.

"Advances in aircraft technology and reliability, coupled with the wide acceptance of Safety Management

Systems, will make EDTO flights viable," says Chris Lamain, CAA Manager Rules Development.

This is the first change to the ETOPS provisions in many years. They are currently outlined in Advisory Circular 121-1 *Extended-range twin-engine operations*. The EDTO NPRM formalises the requirements and brings them up-to-date. These provisions are not just about flights over water – they are about flying to a suitable alternate aerodrome with an in-flight engine shutdown. They also apply to all multi-engine aeroplanes.

The new rules will affect five current New Zealand operators: Air New Zealand, Airwork, JetConnect, Pacific Blue, and Zeal 320.

Air New Zealand is positive about the proposed changes.

Manager Operations Support at Air New Zealand, Bob Fletcher, says that the new rules will provide the platform for reliable safe operation of twin-engine aircraft such as the B777 on the most fuel-efficient and flexible routing.



"Although the current 180 minutes are adequate for most of our operations, the new EDTO will incorporate changes in fuel provisions that will improve operational economics without compromising safety.

"For Air New Zealand, the ability to operate beyond 180 minutes will allow the use of more easterly flexible routing between New Zealand and North America. Ultimately, the new rules will also permit aircraft such as the B777 and B787 to potentially operate services to South America without the need to be reliant upon nomination of Easter Island," says Bob.

The NPRM is due to be signed as we go to print, so it should be on the CAA web site by the time you receive *Vector*. ■

Laser Pointers

During 2007, the CAA received 20 reports of aircraft being targeted by laser beams. One of these occurrences was in Sydney, 15 in the Wellington area, one near Auckland, and three in the vicinity of provincial airports. All were green beams and were probably from hand-held laser pointers of the type used for outdoor astronomy classes.

Harmless Devices?

The red laser pointers commonly seen in classrooms and conference venues are low-powered devices of less than one milliwatt (mW), emitting light in the wavelength range of 630 to 670 nanometres (nm, or 10^{-9} m). These are normally 'Class 2' laser devices (the higher the class number, the greater the hazard), with insufficient power to cause actual physical harm, although they still require care in operation.

Green pointers are readily available with a maximum power rating of 5 mW, and these are classified '3R' (more hazardous than Class 2). They emit light at a wavelength of 532 nm, perceived by the human eye as green. The eye's maximum sensitivity to visible light is around this wavelength, and the eye will interpret a green laser light of a given power as being up to 30 times brighter than a red laser of the same power.

Direct eye exposure to one of these laser beams can result in momentary 'flash blindness' with possible after-images, the duration of which will vary with the relative brightness. As all of the incidents occurred at night, the pilots' eyes would have been at least partially dark-adapted and thus more susceptible to dazzling. The human eye has a natural blinking reflex that activates after about 0.25 seconds' exposure, limiting the amount of light reaching the retina.

Nonetheless, the dazzling effect on the eye can be a major distraction, particularly in situations of high workload. Some of the reported incidents took place immediately after takeoff, and probably before the crew had fully transitioned onto instruments.

To inflict actual eye damage with a 5 mW green laser pointer would require some effort, as both the low power and the eye's natural defence would combine to limit potential damage. So, one would think, these devices can be written off as little more than a nuisance.

Not so. Some vendors advertise higher-powered (from 10 to 400 mW) green laser pointers – these are definitely harmful, and can cause permanent eye damage. Price may put these out of the reach of normal users, but not necessarily for someone with malicious intentions.

Criminal Acts

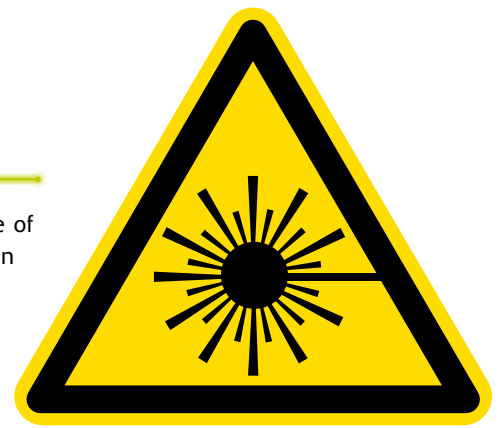
In the USA, the targeting of aircraft by lasers is taken very seriously, as some offenders have discovered. Cases can be taken under anti-terrorist legislation with its inherent severe penalties. Australia has introduced legislation under which laser misuse can be prosecuted, and some Australian states and the UK restrict the public sale of laser pointers to Class 2 or lower. In Victoria, pointers more powerful than 1 mW are classified as 'prohibited weapons'.

New Zealand has no specific legislation addressing laser misuse at present, but legal opinion is that charges could be brought under the Civil Aviation Act 1990, Section 44 *Dangerous activity involving aircraft ... if necessary*. The main difficulty would be in locating the culprit, as a pilot's natural reaction is to look away from the light source, making it difficult to pinpoint its actual origin.

A characteristic of the green laser beam, however, is its visibility even on a clear night. It shows up clearly as a shaft of green light, and this can make it easy for a ground-based observer to track it down without being exposed to its direct glare. Prompt reporting of any instances of aircraft being targeted by a laser beam will assist police in locating the source.

In the Event of Exposure

- Do not stare directly into the beam – avert or shield the eyes if possible.



- If your vision is affected, hand over control (assuming a two-pilot crew, and that the other pilot has not been affected).
- Turning up cockpit lighting may assist in overcoming the 'flash' after-effects (peripheral vision may still be effective).
- Do not rub your eyes after exposure.
- If any lingering effect is experienced, seek medical attention after landing.
- Report the occurrence (immediately to ATC, and as soon as possible through your normal reporting channel).

Laser Pointer Precautions

- Never aim a laser pointer at persons, vehicles or aircraft, no matter how far away they are.
- Keep these devices out of the reach of children.
- Never look directly into a laser beam, especially not through an optical instrument such as binoculars.
- Do not aim a laser beam at a mirror or similar surface.
- Do not use a pointer that lacks warning and/or explanatory labels.
- If you know somebody with a green 'astronomy' type pointer, caution them specifically against targeting aircraft. ■

New Airport Laws May Affect You

From 31 March 2008 airport workers at international airports will be randomly screened for prohibited items or substances that may be a threat to aviation security. This security measure is known as non-passenger screening.

Any airport worker who has a valid reason to go airside into restricted areas at a security designated airport during international flights may be affected.

The new laws, passed in September 2007, bring New Zealand into line with standards set by the International Civil Aviation Organisation (ICAO).

They mean that every person, and their personal belongings or vehicles, that enter designated areas may face some of the same security restrictions as passengers travelling on international aircraft.

The security screening will be random and unpredictable, and will be done by Aviation Security Service (AvSec) Officers. The new measures will be permanent and consistently applied nationally, although the extent of screening (and where it is to be done), will be tailored to each international airport.

Initially, parts of existing airside security areas will be designated by the Director of Civil Aviation as Security Enhanced Areas (SEAs) for the new measures. These SEAs will include baggage make-up areas and ramp areas at security designated airports. Floor plans of the SEAs will be defined on aerodrome security plans. The SEAs will also be signposted. People, vehicles and any other item or substance may be screened before going into, or while within, an SEA.

Any potential weapon, or dangerous substance, will be prohibited, and must usually be left outside. If you need that spanner or pair of scissors to do your job, AvSec officers will use discretion in deciding whether or not to allow them to be taken into the SEA. If the item is necessary for you to do your job, you will be responsible for ensuring it is used only for that purpose and you must remove it when you have finished.

AvSec officers will have the power to search any person, their baggage and vehicles before going into, and while within an SEA, with consent. If a vehicle is left unattended within an SEA, AvSec officers may screen it without consent. Searching may include electronic screening, and an AvSec officer may also request that a pat-down search of you and your outer garments be undertaken. They will carefully explain to you what they are doing, and why, before commencing any search.

The new non-passenger screening measures will allow New Zealand to maintain its international reputation for thorough aviation security, while minimising the impact on busy airport operations.

Workshop for Senior Persons, Air Operations

The CAA will be holding further training workshops for Senior Persons responsible for Air Operations in organisations with Part 119/135 certification. The workshops will also be of interest to Part 137 Chief Pilots, and Chief Flying Instructors in organisations that hold, or will hold, Part 141 Certificates.

The aim of the workshop is to equip Senior Persons, Chief Pilots, Flight Operations Managers, and Chief Flying Instructors with an awareness of the responsibilities of their positions, and to cover the knowledge and tools needed to be an effective Senior Person.

The two-day course will cover the Civil Aviation Act, Civil Aviation Rules, and how operator expositions apply to the Senior Person/Chief Pilot role. The following practical day-to-day aspects of the job will also be covered: Standard Operating Procedures, records and rosters, crew and staff management, training and checking responsibilities, safety culture, and professionalism in the aviation environment.

Senior Persons Workshop

North Shore,
Auckland

18 & 19 February 2008

North Shore Aero Club
North Shore Aerodrome
Postman Road, Albany

Registrations close 11 February 2008

A registration fee of \$100 will be charged to help cover costs. Lunch and morning and afternoon teas will be provided on both days. Travel and accommodation is the responsibility of those attending.

If you would like to attend the Auckland workshop, please register by 11 February 2008. The registration form is on the CAA web site under, "Safety information – Seminars and Courses". Send by email, fax, or post, to:

Sue Holliday or Elizabeth Parlakchief
GA Group – CAA
P O Box 31-441
Lower Hutt 5040

Email: hollidays@caa.govt.nz or
parlakchiefe@caa.govt.nz
Fax: 0-4-560 9611

CAA Appoints General Manager Government Relations, Planning and Strategy



Simon Clegg has been appointed to head the CAA's Government Relations, Planning and Strategy Group.

Simon has been based in Montreal for the past four years as the Australian representative on the 36-member council that effectively governs the International Civil Aviation Organisation (ICAO).

Simon also has a legal background and qualifications in economics and commerce. He has extensive experience in aviation policy and rules development and was instrumental in getting ICAO to adopt a strategic plan for the first time.

Simon fills the position left by Director of Civil Aviation, Steve Douglas.

"I am pleased to announce Simon's appointment. He was the main driver in the team that developed the Australia / New Zealand mutual recognition arrangement during 2001 to 2003, and has retained an understanding and respect for the New Zealand civil aviation system based on that experience," Steve says.

Simon takes up his new role on February 7. ■

Authority Members Reappointed

Minister of Transport Annette King has reappointed two members of the Civil Aviation Authority for further three-year terms.

Susan Hughes QC and Darryll Park were reappointed to their roles on the board in November 2007. Ms Hughes is a criminal and civil legal specialist. Mr Park is the Chief Executive Officer of travel management company HRG New Zealand, and has a background in airline management.

Authority Chairman Rick Bettle said both members had worked hard for the Authority.

"I'm pleased to welcome them both back on board. They have provided good direction for the CAA," Rick said.

The five-member Authority provides oversight and direction to the CAA. Recently retired Air New Zealand captain Ross Crawford and past chairman of Airways Corporation Errol Millar complete the team.

Maintenance Controller Course

Each year the CAA runs courses for Maintenance Controllers in Part 119/135 organisations, and for those with an interest in the planning and direction of maintenance. The course is in two parts.

Part One is a self-paced learning module. The aim is to introduce you to the Rules that provide the foundation for aviation safety in New Zealand. You will require access to the CAA web site for the pre-workshop module. Part Two is a two-day workshop. This is designed to be hands-on and practical.

Courses in 2008

Auckland – 21 to 22 May

Palmerston North – 11 to 12 June

Nelson – 26 to 27 March

Christchurch – 25 to 26 June

Queenstown – 9 to 10 July

Each course will be limited to 12 people and a registration fee of \$100 is charged. To register, please complete the form on the CAA web site. For further information, contact John Bushell, GA Airworthiness Coordinator, Tel: 0-4-560 9427, email: bushellj@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.

Supplement Cycle	Effective Date	Cut-off Date With Graphic	Cut-off Date Without Graphic
08/4	10 Apr 08	31 Jan 08	7 Feb 08
08/5	8 May 08	28 Feb 08	6 Mar 08
08/6	5 Jun 08	27 Mar 08	3 Apr 08
08/7	3 Jul 08	24 Apr 08	1 May 08

TAWS Terrain Alerts

The CAA has received a number of reports that Terrain Awareness and Warning Systems (TAWS) (Class A and Class B) have been providing false terrain alerts when aircraft are on approach to minor aerodromes. Initially, it was thought that this was a terrain database issue, but this may not be the case. False alerts detract from the safety benefit of the TAWS equipment so the problems need to be resolved.

To allow further investigation of the problem, all operators are requested to advise the CAA of any terrain alerts from a TAWS system. The information needed for the investigation is:

- (a) Aircraft
- (b) Location details;
- (c) Phase of flight;
- (d) Altitude and QNH at the time of the alert;

- (e) Rad Alt height at the time of the alert (if available);
- (f) IAS and groundspeed;
- (g) TAWS system make and model;
- (h) TAWS system operating software version;
- (i) Terrain database version;
- (j) Any other relevant details;
- (k) Contact details of the submitter to enable follow-up.

Please forward all reports to Ron Doggett at the CAA, Email: doggettr@caa.govt.nz.

Note: Reports of alerts generated by the terrain awareness function present in some GNSS systems are not required.

Aviation Quiz Clarifications

Our Aviation Quiz in the November/December 2007 issue of *Vector* prompted some correspondence. Thanks for your enthusiasm – here are two resulting clarifications:

Question 8

Answers A and D are both correct (we only indicated “D” as correct).

Question 9

Answer “C” is correct (as stated).

Refer to AC91-9 *Radiotelephony Manual* and *AIP New Zealand* ENR 1.15.

Field Safety Advisers

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Fax: 0-3-322 6379
Mobile: 027-285 2022
Email: jelleyb@caa.govt.nz

How to Get Aviation Publications

Rules, Advisory Circulars (ACs), Airworthiness Directives

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

AIP New Zealand

AIP New Zealand Vols 1 to 4 are 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).

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”.

Safety Education Adviser

Your opportunity to make a difference

The Civil Aviation Authority of New Zealand produces world-class safety education material and this is your opportunity to join the team that creates these high quality aviation safety resources.

You will be part of the Communications and Safety Education Unit, based in Petone. The team produces the magazine *Vector*, a variety of safety booklets, posters, and videos, as well as conducting safety seminars, and maintaining the CAA web site.

We currently have a vacancy for a Safety Education Adviser. This full-time role involves:

- writing and editing articles for *Vector* magazine, including researching and interviewing
- project managing the development and production of aviation safety material
- safety promotional activities.

The successful applicant will have outstanding writing skills, with an ability to translate complex technical information into engaging and informative articles that are easy to read. Good oral communication skills are also essential.

A passion for aviation safety is vital, and experience in flying, or instructing, would be highly desirable for the position.

You will be confident in dealing with people at all levels, and enjoy contributing to a very active and dynamic team.

You will be competent with computer software in a PC and Microsoft environment, and proficient in Microsoft Word.

In return for your skills and experience, we offer you competitive remuneration and the opportunity to influence and promote a safety culture within the aviation community.

Applications close on 8 February 2008 and should quote vacancy number CAA 08/01.



See the CAA web site, www.caa.govt.nz, for further information and an application form. Otherwise, please send a covering letter and curriculum vitae, together with examples of your published writing, to Human Resources Unit, Recruitment 08/01, Civil Aviation Authority of New Zealand, P O Box 31-441, Lower Hutt. Alternatively telephone 0-4-560 9400 or email jobs@caa.govt.nz.

Aviation Safety Coordinator Training Course

SAFETY IS CRITICAL TO ALL ORGANISATIONS

The number one function of any company is 'Business Success'. Safety supports that idea – so safety is critical. If your organisation provides commuter services, general aviation scenic operations, flight training, or sport aviation, you need an Aviation Safety Coordinator.

The CAA is running a **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, and access to all of the latest CAA safety resources and support.

There is no course fee and lunch is provided (accommodation, transport, and other meals are not provided).

"I was fortunate to be accepted to participate in the CAA Aviation Safety Coordinator Training Course held in Auckland in 2007. I found the course invaluable and that the content could be adapted to fit any safety issue around the Airport. Credibility was given to the course by the wealth of experience provided by the main presenters.

In addition to the knowledge gained on the course, I picked up some valuable networking contacts.

I thoroughly recommend that if you get the opportunity, you try and attend one of the courses. Be quick as they fill up very fast. What makes attendance even more appealing is the fact that it is free! Well done CAA!"

Keith Butler
Airfield Operations Controller
Auckland Airport

Check the CAA web site under "Seminars and Courses" for an enrolment form and further information, or contact:

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

ASC Course

Wellington

Thursday 21 and Friday 22
February 2008

Brentwood Hotel, 16 Kemp
Street, Kilbirnie

OCCURRENCE BRIEFS

LESSONS FOR SAFER AVIATION

The content of *Occurrence Briefs* comprises notified aircraft accidents, GA defect incidents, and sometimes selected foreign occurrences, which we believe will most benefit operators and engineers. Individual accident briefs, and GA defect incidents are available on CAA's web site. Accident briefs on the web comprise those for accidents that have been investigated since 1 January 1996 and have been published in *Occurrence Briefs*, plus any that have been recently released on the web but not yet published. Defects on the web comprise most of those that have been investigated since 1 January 2002, including all that have been published in *Occurrence Briefs*.

ACCIDENTS

The pilot-in-command of an aircraft involved in an accident is required by the Civil Aviation Act to notify the Civil Aviation Authority "as soon as practicable", unless prevented by injury, in which case responsibility falls on the aircraft operator. The CAA has a dedicated telephone number 0508 ACCIDENT (0508 222 433) for this purpose. Follow-up details of accidents should normally be submitted on Form CA005 to the CAA Safety Investigation Unit.

Some accidents are investigated by the Transport Accident Investigation Commission (TAIC), and it is the CAA's responsibility to notify TAIC of all accidents. The reports that follow are the results of either CAA or TAIC investigations. Full TAIC accident reports are available on the TAIC web site, www.taic.org.nz.

ZK-HDL, Hughes 269C, 16 May 04 at 6:20, Rangioru. 2 POB, injuries 1 fatal, 1 serious, aircraft destroyed. Nature of flight, private other. Pilot CAA licence PPL (Helicopter), age 35 yrs, flying hours 1302 total, 45 on type, 13 in last 90 days.

The helicopter was in cruise flight at 500 ft agl when an engine connecting rod failed. The subsequent autorotation and hard landing ruptured the fuel tank, resulting in a fire and destruction of the helicopter. The pilot survived with serious injuries and the passenger was killed. A full accident report is available on the CAA web site.

[CAA Occurrence Ref 04/1624](#)

ZK-JNX, NZ Aerospace FU24-954, 5 Jul 04 at 09:55, Hicks Bay. 2 POB, injuries nil, damage substantial. Nature of flight, other aerial work. Pilot CAA licence CPL (Aeroplane), age 53 yrs, flying hours 18,116 total, 2871 on type, 235 in last 90 days.

During takeoff from an agricultural airstrip the engine stopped producing power. The aircraft was force-landed onto a river bed, with no injuries to the two crew.

[CAA Occurrence Ref 04/2142](#)

ZK-FSB, Piper PA-38-112, 10 Jul 04 at 17:04, Te Aroha Ad. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 20 yrs, flying hours 71 total, 54 on type, 17 in last 90 days.

The aircraft landed at the Te Aroha airstrip and sank into the soft ground, causing extensive damage to the aircraft. The airstrip has three parallel vectors, and due to the wet conditions only one was open. The pilot had landed one of the closed vectors, despite its being marked by white crosses.

[CAA Occurrence Ref 04/2204](#)

ZK-DEF, Piper PA-32-260, 20 Aug 04 at 16:00, Te Aroha Ad. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 53 yrs, flying hours 1592 total, 1 on type, 23 in last 90 days.

The aircraft landed on a soft paddock instead of the runway, causing damage to the aircraft. Some confusion existed over which runway was in use, in spite of the white crosses designating a closed runway being in place.

[CAA Occurrence Ref 04/2689](#)

ZK-TPO, Piper PA-25-235, 23 Oct 04 at 14:45, Taupo. 1 POB, injuries nil, damage substantial. Nature of flight, training solo. Pilot CAA licence PPL (Aeroplane), age 58 yrs, flying hours 285 total, 0 on type, 15 in last 90 days.

The pilot, who was obtaining a type rating, rounded out too high, and did not apply recovery power. The aeroplane landed heavily. The aircraft is a single-seater, so by necessity the instructor was observing from the ground.

[CAA Occurrence Ref 04/3398](#)

ZK-CMW, Cessna 185, 11 Nov 04 at 16:45, Rotorua Ad. 2 POB, injuries 1 minor, damage substantial. Nature of flight, training dual. Pilot CAA licence PPL (Aeroplane), age 54 yrs, flying hours 440 total, 160 on type, 6 in last 90 days.

While making a wheel landing during circuit training, the owner/pilot applied heavy braking that the instructor was unable to counteract, and the aircraft nosed over onto its back.

[CAA Occurrence Ref 04/3545](#)

Continued over...

ZK-HRB, Hiller UH-12E, 22 Feb 05 at 08:00, Lower Waiaua. 1 POB, injuries nil, damage substantial. Nature of flight, aerial application/dropping. Pilot CAA licence CPL (Helicopter), age 62 yrs.

The helicopter was spraying gorse when the engine began to fail. An emergency landing was carried out, in which the helicopter sustained substantial damage.

[CAA Occurrence Ref 05/426](#)

ZK-HNV, Hughes 369HS, 25 Feb 05 at 08:30, Taihape. 1 POB, injuries 1 minor, damage substantial. Nature of flight, agricultural. Pilot CAA licence CPL (Helicopter), age 26 yrs, flying hours 800 total, 480 on type, 140 in last 90 days.

The pilot had just started a spray run into a small basin when a loud bang was heard, and the loader driver saw a flame coming from the exhaust. The helicopter lost power and hit the slope. A compressor failure was found to be the cause of the power loss.

[CAA Occurrence Ref 05/502](#)

ZK-JEB, David Boehm Locke Hi-Max Minitwin, 8 Dec 05 at 19:15, Rangiora Ad. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 207 total, 60 on type, 43 in last 90 days.

The pilot reported a lack of engine power during takeoff. The aircraft could only hold level at 300 feet while the pilot attempted to find a paddock for a precautionary landing. The engine then seized, forcing the aircraft to land in a small paddock.

[CAA Occurrence Ref 05/4055](#)

ZK-RUS, Aero Designs/Skystar Pulsar U/L, 7 Jan 06 at 11:00, Harihari. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 85 total, 46 on type, 19 in last 90 days.

The aircraft veered off the runway while landing during a rain squall. The left wheel ran off the side of the runway after touchdown, and the aircraft stopped on its nose. The propeller was broken, and the horizontal stabiliser and the landing gear were damaged.

[CAA Occurrence Ref 06/1083](#)

D-KANZ, Schleicher ASW 28-185, 17 Feb 06 at 13:00, Lake Ohau. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil.

The glider lost height and, unable to gain any further lift, the pilot was forced to land in a paddock. The glider experienced a heavy landing, striking rocks and ground-looping during the landing roll. The pilot sustained no injuries.

[CAA Occurrence Ref 06/608](#)

ZK-FXU, Micro Aviation B22 Bantam, 19 Feb 06 at 13:22, Paeroa. 2 POB, injuries 2 minor, damage substantial. Nature of flight, private other. Pilot CAA licence CPL (Balloon), age 60 yrs, flying hours 137 total, 88 on type, 41 in last 90 days.

In cruise, the pilot noticed that the engine temperature was high. Reducing power and descending did not reduce the temperature indication, so the pilot shut the engine down. There was only one short rough paddock available, and the aircraft was damaged on landing.

[CAA Occurrence Ref 06/446](#)

ZK-JAW, Airborne Windsports Edge 582, 1 Apr 06 at 12:00, Hamilton. 1 POB, injuries 1 serious, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 715 total, 500 on type, 25 in last 90 days.

The pilot reported that during a landing on a home strip the aircraft drifted off the centreline and hit an adjacent fence post. The pilot had a broken hand/wrist/arm and fractured ribs.

[CAA Occurrence Ref 06/2083](#)

ZK-CPC, Taylor Monoplane U/L, 14 Apr 06 at 17:48, Wainui. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 59 yrs, flying hours 1043 total, 806 on type, 37 in last 90 days.

The aircraft experienced an engine failure during flight. A forced landing was made in a paddock, but the landing was heavy.

[CAA Occurrence Ref 06/1330](#)

ZK-ROY, Rans S-6ES Coyote II, 26 Aug 06 at 12:38, Nelson Ad. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 64 yrs.

On the fifth landing of a circuit practice exercise, the left main wheel failed. The aircraft tipped onto its nose, destroying the propeller and damaging one wingtip.

[CAA Occurrence Ref 06/3196](#)

ZK-GSH, Schempp-Hirth Janus, 11 Nov 06, Puhupuhi Strip. 2 POB, injuries nil, damage substantial. Nature of flight, training dual. Pilot CAA licence nil, flying hours 608 total, 1 on type, 15 in last 90 days.

During a winch launch, the winch motor 'hesitated' while the glider was still on the takeoff roll. The motor regained power, but one of the glider's wingtips touched the ground, starting a groundloop. The tow release was actuated, at which time the glider became airborne briefly and landed heavily. A cold winch motor was suspected; operators now warm it up thoroughly before flying commences.

[CAA Occurrence Ref 06/4166](#)

Unregistered gyrocopter, 21 Nov 06 at 13:28, Roxburgh. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Helicopter), age 60 yrs.

On climb after takeoff, the pilot detected a change in the engine note and decided to do a 180-degree turn back onto the runway. The resulting landing was heavy, and the gyrocopter tipped over. This was the aircraft's first flight; it had not yet been registered.

[CAA Occurrence Ref 06/4297](#)

ZK-HJU, Eagle R & D Helicycle, 9 Dec 06 at 14:30, Bombay. 1 POB, injuries 1 minor, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Helicopter), age 67 yrs, flying hours 4305 total, 66 on type, 3 in last 90 days.

While cruising at 1000 feet, severe vibration was felt. An autorotation was carried out towards a paddock; vibration increased. The rate of descent at touchdown was such that the rotorcraft was severely damaged. Engineering investigation revealed a displaced transmission drive belt, which may have initiated the vibration and caused subsequent damage to the

engine mount structure. Similar problems regarding the drive belts have been recorded by the manufacturer, and frequent monitoring of drive belt tension is recommended.

[CAA Occurrence Ref 06/4597](#)

ZK-GDD, Schempp-Hirth Duo Discus, 6 Jan 07 at 15:00, Falls Dam. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil.

The pilot was making an out-landing in a clover field as the glider was beyond gliding range of the base aerodrome. Crosswind conditions prevailed, and the glider ground-looped during the landing roll.

[CAA Occurrence Ref 07/3](#)

ZK-CCK, Rand KR-2 UL, 6 Feb 07 at 11:45, Hokitika Ad. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 74 yrs, flying hours 1187 total, 14 on type, 14 in last 90 days.

On approach to Runway 31 at Hokitika, the pilot decided to land on the grass beside the runway. Although he had the aerodrome chart with him, he had not noticed the requirement to confine operations to the sealed runways and taxiways. On touchdown on the soft grass, the aircraft nosed over onto its back.

[CAA Occurrence Ref 07/263](#)

ZK-WNA, Piper PA-38-112, 9 Feb 07 at 19:59, North Shore. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 51 yrs.

Shortly after takeoff, at about 300 feet agl, the engine stopped suddenly. The pilot carried out a forced landing into a farm paddock to the left of the runway but was unable to avoid colliding with a water trough. A CAA field investigation found no defects relating to the engine and its associated systems, but noted that the selected fuel tank had insufficient fuel to sustain engine operation in the climb and subsequent left turn.

[CAA Occurrence Ref 07/337](#)

ZK-GPY, DG Flugzeugbau DG-800B, 10 Feb 07 at 15:30, Lake Station. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 63 yrs, flying hours 1810 total, 294 on type, 87 in last 90 days.

The pilot decided to land at the side of the strip to allow room for other aircraft. Just after touchdown, the right wing caught in long lucerne at the side of the strip, causing the aircraft to ground-loop violently.

[CAA Occurrence Ref 07/1128](#)

ZK-SND, Monnett Sonerai ILS, 11 Feb 07 at 15:30, Toko. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 41 yrs, flying hours 150 total, 29 on type, 29 in last 90 days.

At the end of the landing roll, the left brake line failed when the pilot applied the brakes. The aircraft veered sharply to the right, stopping in a shallow ditch. The nylon brake line had ruptured at a crease that had formed adjacent to the compression nut. The brake lines were replaced with steel braided lines.

[CAA Occurrence Ref 07/493](#)

ZK-FHK, Thruster Aircraft Thruster, 5 Apr 07 at 10:00, Woodbury. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 378 total, 225 on type, 5 in last 90 days.

The aircraft touched down too far along the strip to stop safely. The pilot elected to takeoff again, but the tailwheel clipped a fence, causing the aircraft to stall and land heavily.

[CAA Occurrence Ref 07/2996](#)

ZK-REJ, G H Clarke Rosco Bruty, 15 Apr 07 at 16:00, Onamalutu Valley. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 59 yrs.

After experiencing fuel exhaustion, the gyrocopter rolled over during the ensuing forced landing.

[CAA Occurrence Ref 07/1189](#)

ZK-REG, Neil Hintz Tandem Dominator, 16 Apr 07 at 11:00. 1 POB, injuries nil, damage substantial. Nature of flight, training solo. Pilot CAA licence nil, flying hours 10 total, 10 on type, 10 in last 90 days.

On takeoff, the aircraft yawed strongly to the left and did not respond to opposite rudder and stick. The pilot managed to land but the rotor blades flapped downwards and struck various parts of the aircraft.

[CAA Occurrence Ref 07/1566](#)

ZK-MDM, Solo Wings Windlass Aquilla, 27 Apr 07 at 11:22, Tauranga Ad. 2 POB, injuries 2 minor, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 43 yrs, flying hours 112 total, 63 on type, 7 in last 90 days.

A crosswind gust lifted one wing as the aircraft was touching down on grass Runway 25. The opposite wingtip struck the ground and the aircraft tipped over.

[CAA Occurrence Ref 07/1399](#)

ZK-RCE, Neil Hintz Tandem Dominator, 6 May 07 at 16:00, Lumsden. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil.

Coming in to land on a paddock, the pilot made an abnormal landing, causing substantial damage to the gyrocopter but nil injuries.

[CAA Occurrence Ref 07/1498](#)

ZK-PHW, TL TL-2000 Sting, 19 May 07 at 12:15, Silverdale. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 54 yrs, flying hours 952 total, 72 on type, 2 in last 90 days.

The aircraft was approaching the strip over trees with a light tailwind, and landed well into the field. The pilot decided there was sufficient room to stop, but braking was ineffective and the higher touchdown speed meant the aircraft ran further than expected. Towards the end of the strip, the pilot decided that aircraft would not stop before the electric fence at the end, and pulled to the left to attempt a ground-loop turn to the right. Estimated speed of aircraft was 15 to 20 kt. The aircraft suddenly veered left and the left wing struck a fence post. Longer grass to the left and strip camber had exacerbated the left turn.

[CAA Occurrence Ref 07/1746](#)

Continued over...

ZK-XAT, Cessna 172R, 30 May 07 at 15:30, Ardmore Ad. 1 POB, injuries nil, damage substantial. Nature of flight, training solo. Pilot CAA licence nil, age 27 yrs, flying hours 63 total, 63 on type, 36 in last 90 days.

The student pilot returned to Ardmore and joined the circuit for a touch-and-go on Runway 21 seal. After touchdown, the pilot applied power for takeoff but lost directional control of the aircraft. It veered left off the runway and across the grass to the sealed taxiway which runs parallel to Runway 21. Meanwhile, ZK-TAT (another Cessna 172) was taxiing from the flying school to the Runway 21 holding point via the sealed taxiway. The instructor and student on board saw ZK-XAT leave the runway at an angle; the instructor took avoiding action by turning the aircraft to the right, but this was unsuccessful, and ZK-XAT's left wing struck the left wing of ZK-TAT.

CAA Occurrence Ref 07/1937

ZK-WAV, Micro Aviation Bantam B22J, 30 May 07 at 16:30, Raglan. 1 POB, injuries 1 serious, damage substantial. Nature of flight, private other. Pilot CAA licence nil.

The aircraft reportedly crashed on hill country south of Raglan, causing serious injury to the pilot. No official report has been received by the CAA.

CAA Occurrence Ref 07/1936

ZK-KTO, Australian Av Works Karatoo J6 C, 21 Jun 07 at 13:30, Loburn Abbey. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 38 yrs, flying hours 159 total, 11 on type, 34 in last 90 days.

The pilot reported that as he approached the airfield he allowed the aircraft to get too low and slow. He applied some power, which allowed the aircraft to balloon over the boundary fence before it dropped its right wing and landed heavily. The right undercarriage collapsed and the front cowl and propeller were damaged.

CAA Occurrence Ref 07/2559

ZK-JRX, Vans RV-4, 26 Jun 07 at 16:26, Queenstown. Injuries nil, damage destroyed. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 37 yrs.

The aircraft experienced a total engine failure on a long final. It made a heavy landing on the beach.

CAA Occurrence Ref 07/2291

ZK-TII, TEAM 1300 Z Max, 28 Jun 07 at 11:00, Kaikoura. 1 POB, injuries nil, damage substantial. Nature of flight, ferry/positioning. Pilot CAA licence nil.

A forced landing without power resulted in the aircraft turning over after landing in a cropped paddock.

CAA Occurrence Ref 07/2365

ZK-RDW, Air Command Elite U/L Single Seat, 26 Jul 07 at 11:00, Omaha Flats. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age 76 yrs, flying hours 68 total, 39 on type, 1 in last 90 days.

The gyrocopter engine lost thrust, and the pilot made a precautionary landing. The aircraft landed heavily on a ridge and tipped over, suffering a blade strike.

CAA Occurrence Ref 07/2700

GA DEFECTS

The reports and recommendations that follow are based on details submitted mainly by Licensed Aircraft Maintenance Engineers on behalf of operators, in accordance with Civil Aviation Rules, Part 12 *Accidents, Incidents, and Statistics*. They relate only to aircraft of maximum certificated takeoff weight of 9000 lb (4082 kg) or less. These and more reports are available on the CAA web site. Details of defects should normally be submitted on Form CA005 or 005D to the CAA Safety Investigation Unit.

The CAA Occurrence Number at the end of each report should be quoted in any enquiries.

Key to abbreviations:

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

Aerospatiale AS 350BA Compressor #1 Bearing

The helicopter carried out a precautionary landing following compressor stalling. The compressor assembly was returned to the Overhaul Section for rectification. The number 1 bearing was found to have failed as a result of reduced lubrication, which was associated with a previous bearing housing repair procedure.

ATA 7230

CAA Occurrence Ref 05/2027

Bell 206B

Allison 250-C20 Turbine Module Casing
P/N 6898734

A crack about 25 mm long was discovered, during a scheduled inspection, in the 12 o'clock position of the engine's turbine module casing. The crack is believed to have been caused by stress concentrations in the casing material. TSO 1242.1 hours, TTIS 2350 cycles.

ATA 7250

CAA Occurrence Ref 05/4430

Cessna A185F

King KMA 24H P/N 066-1055-70

Smoke was seen entering the cockpit from the area of the radio audio panel. The avionics and battery master were turned off. The fault was isolated to the audio control console, and was attributed to internal electronic component failure.

ATA 2300

CAA Occurrence Ref 06/2740

Cessna U206C

Elevator Trim Jack Screw Rod P/N 0310362-5

The aircraft was climbing when vibration in the elevator was noticed. The climb was continued and the vibration reappeared. A precautionary landing was then made. Investigation revealed that the trim jack rod had broken. A passenger had pushed on the elevator trim tab when assisting the aircraft to leave the water's edge. The force on the tab bent the trim jack screw rod, which then fractured when the jack screw operated. The elevator trim tab was then free to oscillate when the aircraft was in flight. The operator has affixed "no push" signs to the trim tab.

ATA 2732

CAA Occurrence Ref 06/100

Cessna 402B

Oil Filter Housing P/N 641639

The aircraft experienced a loss of manifold pressure and smoke was observed in the cabin. Skydivers on board exited from the aircraft and a precautionary engine shutdown was carried out followed by a single-engine landing. The engineering investigation found the oil filter housing had cracked, allowing oil to escape onto the rear section of the engine and exhaust pipes. The cause was attributed to possible overtightening of the oil filters in the past, thereby setting up a stress crack. The oil filters were found to be tightened correctly. The housing was replaced and the aircraft returned to service. TSO 1170 hours.

ATA 7900

CAA Occurrence Ref 05/4216

Hughes 369E

Compressor Case Halves P/N 23057142

When the compressor case halves were removed for a six-monthly inspection, it was found that considerable separation and de-bonding had taken place with the liner. The compressor halves are supplied by Avidair. It is a known problem that the thermoplastic liner on the compressor halves debonds faster than other products on the market. There are no reports of the liner separation causing any safety issues with the performance of the engine. It is considered by the CAA that the current inspection schedule is adequate for detecting the failure of the lining. TTIS 171 cycles, TTIS 208 hours.

ATA 7200

CAA Occurrence Ref 05/4415

KHI Kawasaki-Hughes 369D

Main Rotor Pitch Link P/N 369D21338-3

The main rotor pitch link was found to be cracked along its length, and the spherical bearing was also found worn. It is suspected that the crack developed as a result of stresses induced by pitting corrosion. TSI 61 hours, TTIS 5586 hours.

ATA 6710

CAA Occurrence Ref 06/2988

NZ Aerospace FU24-954

Nose Wheel Steering P/N 245207

The pilot was unable to steer the aircraft during the landing sequence. It was later found that the tube assembly to the nosewheel steering was broken. The damage was attributed to operating off a rough airstrip. TSI 70 hours, TSO 70 hours.

ATA 3250

CAA Occurrence Ref 06/2937

Partenavia P 68C

Fuel Cap

During a pre-flight inspection, the fuel cap became jammed in the fuel tank filler hole. The Maintenance Provider disassembled the fuel cap to inspect it. It was subsequently re-assembled incorrectly, such that the locking mechanism was reversed. When the fuel cap was latched in the closed position, the fuel cap was actually unlocked, and vice versa. On the next flight the pilot did not detect that the fuel cap was insecure during the pre-flight inspection. The fuel cap came off in flight and remained attached by its safety chain. The unsecured fuel cap was reported by the control tower after the aircraft had landed and was taxiing to the apron.

ATA 2810

CAA Occurrence Ref 06/2486

Piper PA-34-200T

Landing Gear Actuator P/N 96860-00

During the approach, the gear selector lever was selected down, but there was no response from the landing gear. A go-around was executed and an emergency gear extension was then carried out. A normal landing was made. The engineering investigation determined that the nosewheel undercarriage actuator failed to operate because of excessive hydraulic leakage from the seals. The seals had been replaced previously, but the wear on the actuator shaft still caused a hydraulic leakage. A new actuator was installed, and the undercarriage functionally tested satisfactorily. TTIS 7354 hours.

ATA 3200

CAA Occurrence Ref 06/4009

Robin R2160

LH Ignition Harness

While at 1700 feet amsl, the aircraft's engine started to misfire. The initial actions were carried out and a shallow climb was begun. A magneto check was carried out, revealing that the rough running was associated with the left magneto/ignition system. ATC were advised and the aircraft was recovered to the airfield for a glide approach. The aircraft landed safely without further incident. The engine operated normally during ground runs, but it was suspected that the ignition harness was breaking down at altitude and therefore it was replaced as a precaution. The aircraft has had no recurrence of the problem.

ATA 7420

CAA Occurrence Ref 06/2648

Robinson R44 II

LH Collector and Muffler

The aircraft engine was running rough. The engine left collector was holed and distorted. The muffler was cracked and distorted at the pipe outlet as a result of normal operation. A new collector and muffler were fitted. TTIS 692.5 hours.

ATA 5750

CAA Occurrence Ref 06/4551

Robinson R44 II

Drive Belt

During a pre-flight, the pilot noticed that the backing on one drive belt had separated and come away. Engineering could not determine a cause. After consulting Robinson Helicopters, the belt was returned to them for investigation.

ATA 6300

CAA Occurrence Ref 07/1178



Fuel Management

Time in Your Tanks

SAFETY SEMINARS

You're almost home. Through your headset the engine beats louder as you wait for the sound of silence, and the knot in your stomach grows larger as time seems to slow down. Your last refuelling opportunity is well behind now. It will surely take longer to turn around than to press on, and you wonder if backing off on the power will make a difference. But the airplane's going so slowly already that you decide to leave the throttle alone. One good thing about this groundspeed: It gives you plenty of time to pick out suitable landing sites – at least in daylight. But night fell an hour ago, and intuition tells you that surviving a forced landing now will be more a matter of luck than skill...

Most pilots can recall a time when they dipped into their reserves, and most vow never to do it again. But somebody always does.

From *Fuel Awareness Safety Advisor*, courtesy of the AOPA Air Safety Foundation (www.asf.org).

There is a lot to know about fuel and fuel management, not just fuel starvation. Come along to one of our seminars to learn some of the common traps in fuel management, and some of the accidents that have happened as a result, as well as ways to avoid having that accident yourself.

The Civil Aviation Safety Authority (CASA) Australia has been presenting a Fuel Management safety seminar which we thought was pretty good. We have adapted their seminar and added some 'kiwi' flavour.

This year Andrew Warland-Browne, a Field Safety Adviser with CASA, will be presenting the South Island seminars. Jim Rankin, RNZAF Instructor, or Carlton Campbell, CAA Training Standards Development Officer, will be presenting the North Island seminars.

Seminar Schedule

(duration approximately 1 1/2 hours)

Auckland

Tuesday 26 February, 7:00 pm

Marine Rescue Centre,
3 Solent Street, Mechanics Bay

Christchurch International Airport

Friday 11 April, 7:00 pm

Canterbury Aero Club

Dunedin

Wednesday 16 April, 7:00 pm

Cargills Hotel, 678 George Street, Dunedin

Feilding Aerodrome

Friday 7 March, 6:30 pm

Flight Training Manawatu (*light meal provided*)

Gisborne

Monday 3 March, 7:00 pm

Captain Cook Motor Lodge, 31 Awapuni Road,
Gisborne

Greymouth Aerodrome

Thursday 10 April, 7:00 pm

Greymouth Aero Club Flight Centre

Hamilton Aerodrome

Monday 25 February, 7:00 pm

Waikato Aero Club

Invercargill

Tuesday 15 April, 7:00pm

Southland Aero Club

Kerikeri Aerodrome

Friday 29 February, 7:00 pm

Bay of Islands Aero Club

Lake Tekapo

Friday 19 April, 7:00 pm

Air Safaris, Tekapo Aerodrome

Masterton (Hood) Aerodrome

Friday 4 April, 7:00 pm

ATC Building

Motueka Aerodrome

Wednesday 9 April, 12:45 pm

Nelson Aviation College

Napier Aerodrome

Tuesday 4 March, 7:00 pm

Napier Aero Club

Nelson Aerodrome

Tuesday 8 April, 7:00pm

Nelson Aero Club

New Plymouth Aerodrome

Thursday 6 March, 7:00 pm

New Plymouth Aero Club

North Shore Aerodrome

Wednesday 27 February, 7:00 pm

North Shore Aero Club

Omaka Aerodrome (Blenheim)

Monday 7 April, 7:00 pm

Marlborough Aero Club

Palmerston North

Tuesday 1 April, 1:30 pm

Massey University Campus, Japanese Lecture
Theatre (opposite commercial complex)

Paraparaumu Aerodrome

Wednesday 2 April, 7:00 pm

Associated Aviation

Queenstown Aerodrome

Monday 14 April, 7:00 pm

Wakatipu Aero Club

Taupo

Wednesday 5 March, 7:00 pm

Helistar Helicopters Ltd, Huka Falls Road, Taupo
(near the Russian Mi-8 Helicopter)

Tauranga Aerodrome

SportAvex Fly-in

Saturday 16 February, 11:00 am

The AvKiwi Seminar will be held in one of the
hangars on the airfield. (There will be signs on
the day indicating which hangar.)

Friday 15 February, 4:00 pm

Rex Kenny, CAA Manager Sport and Recreation,
will be giving an update on Sport Aviation
regulation, with time for questions and answers.

Timaru Aerodrome

Thursday 17 April, 7:00 pm

South Canterbury Aero Club

Wellington Aerodrome

Thursday 3 April, 7:00 pm

Wellington Aero Club

Whangarei Aerodrome

Thursday 28 February, 7:00 pm

Northland Districts Aero Club

