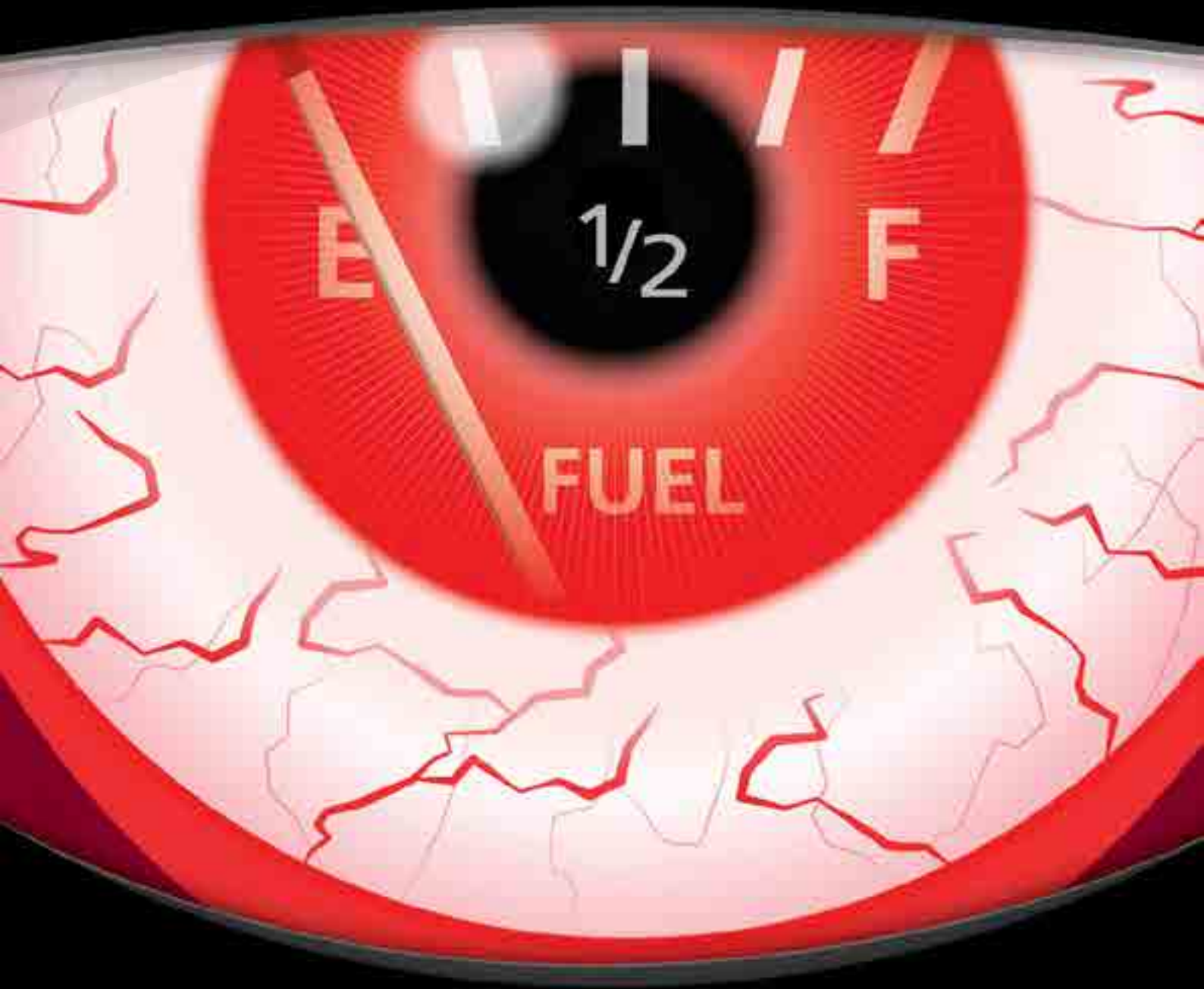


# vector

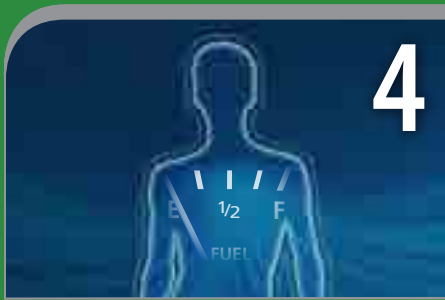


## **Fatigue Management**

**Lost**

**Radio Reminders**

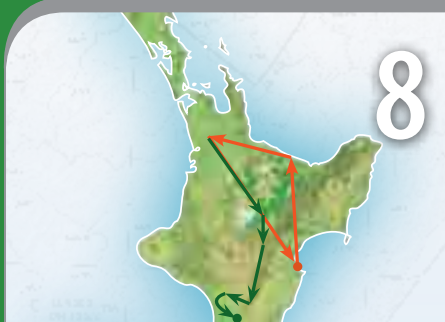
**Using the CAA Logo**



4

### Fatigue Management

Fatigue is now widely accepted as a causal factor in aircraft accidents. We look at some of these factors and how you can manage them to stay safe.



8

### Lost

A pilot loses situational awareness on a cross-country flight with serious consequences. We take a look at how this happened, and what you can do to prevent it happening to you.



10

### Radio Reminders

Good communication helps you, and others, maintain situational awareness. The calls we make must be clear, concise, consistent, and correct. This refresher for all pilots covers some of the more common radiotelephony issues.



22

### Using the CAA Logo

Certificated organisations can use the CAA logo on their company signs, brochures, and web sites to show that they're certificated for the flying activities they offer. Here's how to use the logo appropriately.

Part 115 Certificated

Adventure Aviation Two Years On	3
Fatigue Management	4
Lost	8
Radio Reminders	10
Plane Talking Online	10
Get the Mental Picture Online	12
Radio Frequency Consultation	12
You Are Your Own Safety Investigator	13
"Matamata traffic, be aware... ...a winch-launch is now in progress"	14
Use of Aircraft Lights	16
Aviation Safety Coordinator Course	17
Form 337 Changes	17
IFR Flight Planning Pilot Responsibilities	18
Simulators for Aircrew Training	19
Pregnancy Risks in Aviation	20
Fuel Policy	20
Instrument Flight Procedures Review	21
Using the CAA Logo	22
Exposition Amendments	23
Medical Matters	23
Consultation Reminder	23
Aviation Safety Advisers	23
How to Get Aviation Publications	23
Planning an Aviation Event?	23
Accident Briefs	24
GA Defects	26
Personal Preflight - AvKiwi Safety Seminar	28

Cover: Running on empty? Fatigue can make you feel tired and affect your performance. See "Fatigue Management" on page 4 for advice on managing your fatigue levels.

#### Published by

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

Tel: +64 4 560 9400,  
Fax: +64 4 569 2024,  
Email: info@caa.govt.nz.

Published six times a year, in the last week of every odd month.

**Manager Safety Promotion** Bill Sommer.

**Editor** Peter Singleton.

#### The Vector Team

Charlie Brimmicombe, Alistair Buckingham, Lakshmi Guda, Mark Houston, Rose Wood.

**Design** Gusto.

#### Publication Content

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

Reader comments and contributions are welcome and may be published, but the Editor reserves the right to edit or abridge them, and not to publish those that are judged not to contribute constructively towards safer aviation. Reader contributions and correspondence regarding the content of *Vector* should be addressed to: *Vector* Editor, PO Box 3555, Wellington 6140, or email: info@caa.govt.nz.

#### Free Distribution

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

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

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

#### Change of Address

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

#### Paid Subscriptions

*Vector* is available on subscription only from Vertia, www.vertia.co.nz, email: info@vertia.co.nz, or freephone 0800 GET RULES (0800 438 785).

#### Copyright

Reproduction in whole or in part of any item in *Vector*, other than material shown to be from other sources or named authors, is freely permitted, providing that it is intended solely for the purpose of promoting safer aviation, and providing that acknowledgment is given to *Vector*.

# Adventure Aviation Two Years On

Holders of an Adventure Aviation Air Operator Certificate (AOC) issued under Part 115 in November 2011 will be now looking at their first certificate reissue. Here are some tips to help you get through the process.

Initially, AOCs were issued for two years, during which time the operators and the CAA have worked to make sure there has been full compliance with Part 115 and the expositions. Current certificates will now expire, and the reissue of the AOC must be completed before you can continue operating.

You need to apply for certificate reissue at least 60 days in advance of the expiry date. Because the reissue of the AOC is treated like the initial certification, it will take some time for the CAA team to complete the application review and plan for your audit.

Make an early start on this reissue process. To make the application, you will need to have your documents, exposition, and the application form completed.

First thing is to check the expiry date on your certificate and plan ahead of the 60-day period.

Then review and, where necessary, amend your exposition. Check the current compliance matrix. You'll find this on the CAA web site.

Jeanette Lusty, Team Leader, Flight Operations Adventure Aviation, advises on issues that you might need to consider.

"This is a good opportunity for senior persons attached to your operation to 'connect' with the exposition and company operating requirements. We have seen, from reissue work already completed, just how a review of the exposition can

refresh your thoughts and ideas on better operating practices. Is there anything that could be done safer, better, or more effectively? The process helps everyone drive their operation safely and efficiently," says Jeanette.

Your nominated senior persons will need to supply current Fit and Proper Person validity to support your application. See the 24FPP or 24FPPDEC forms as appropriate.

Getting your application sorted well before the expiry date, and being ready for the audit team, will make sure that you do not have any delays in the certification process. This will also save you time and money.

Jeanette says that there is extended certificate validity available to successful applicants.

"Following our assessment of the operation, we are then able to issue an Adventure Aviation Operator Certificate for up to five years. This extended time frame has obvious benefits for the operator."

Some certificate holders have already completed the process, but the majority will get a visit from the audit teams from January 2014 onwards.

See the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Adventure Aviation" for all the forms and compliance matrixes you will need.

Remember to send in fresh Fit and Proper Person forms for all your senior persons, and your exposition, with your completed application form.

Contact Jeanette Lusty for any questions on AOC reissue, email: [Jeanette.Lusty@caa.govt.nz](mailto:Jeanette.Lusty@caa.govt.nz). ■



This BAC Strikemaster, is operated by Strikemaster Limited, a Part 115 certificated organisation.

Photo: Gavin Conroy  
Courtesy of Jetfighter Ltd.

# Fatigue Management

Fatigue is now widely accepted as a causal factor in aircraft accidents. There are many factors that can create fatigue, but for now we'll look at ways you can manage your fatigue with sleep and rest, eating properly, and drinking plenty of water.

**L**earn more about other fatigue factors at this year's AvKiwi Safety Seminars – see the back page for details.

Fatigue is that feeling you get of tiredness, exhaustion, and a lack of energy. It usually comes from a combination of mental, physical, and emotional influences, including:

- » Inadequate rest and recovery through disrupted sleep;
- » Disturbed biorhythms – working outside the 24-hour clock cycle;
- » Excessive muscular or physical activity – short sector flights, eg, agricultural operations;
- » Excessive mental work – paperwork, decision making, and personal issues.

## Symptoms

Fatigue recognition is a personal assessment of how you are feeling at the time.

Lack of sleep or disrupted sleep patterns lead to a loss of physical and mental performance.

Recent research indicates that the effect of 17 to 24 hours awake is the equivalent of a blood alcohol concentration of 0.05 per cent to 0.10 per cent. The current vehicle driving limit is 0.08 per cent and is soon to reduce to 0.05 per cent.

Further symptoms include poor decision making, short-term memory loss, poor communications, and slow reaction times.

You may not notice the effects of fatigue, but early starts and long hours, or trying to complete complex tasks like flying or engineering, will become difficult and your performance will be affected. Family and workmates will soon notice a change in your behaviour.

## Losing Track of Time

An experienced agricultural pilot completed a long day of topdressing. In the 14-hour duty period, he flew 10 hours of productive work, including 130 takeoffs and landings.

At the end of the day, on the ferry flight back to his base, he told his loader driver that he could not remember completing the last hour of productive flying including 12 takeoffs and landings.

The shocked pilot had realised that the physical activity during the day and a lack of adequate sleep, food, and water in the preceding days had led to fatigue.

This led to short-term memory loss, a loss of situational awareness, and poor decision making about his fatigue levels and the effects.

This combination of fatigue factors created a potentially deadly situation.

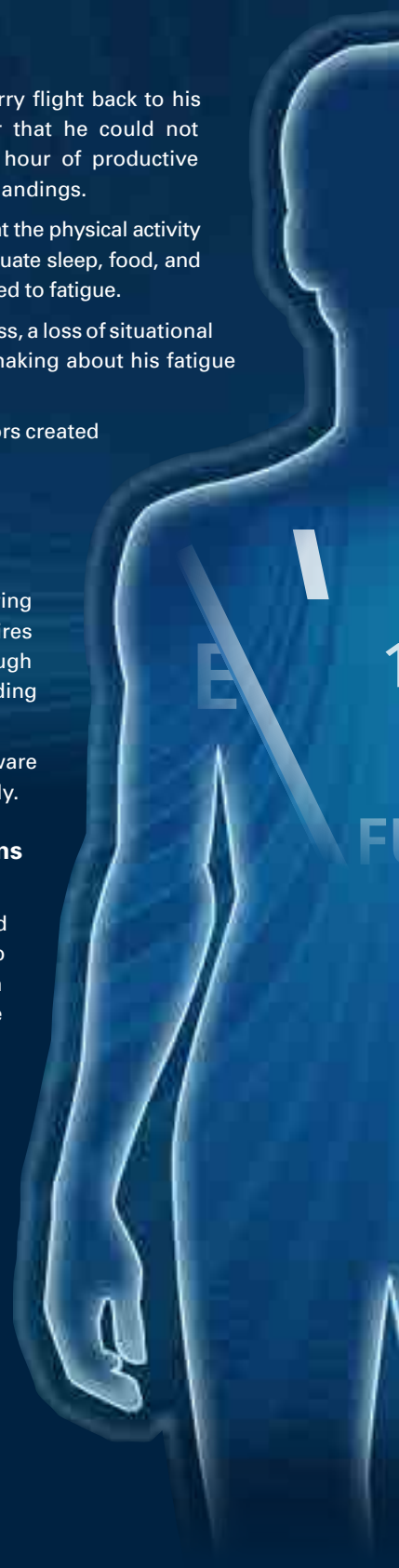
## How to Manage Your Fatigue

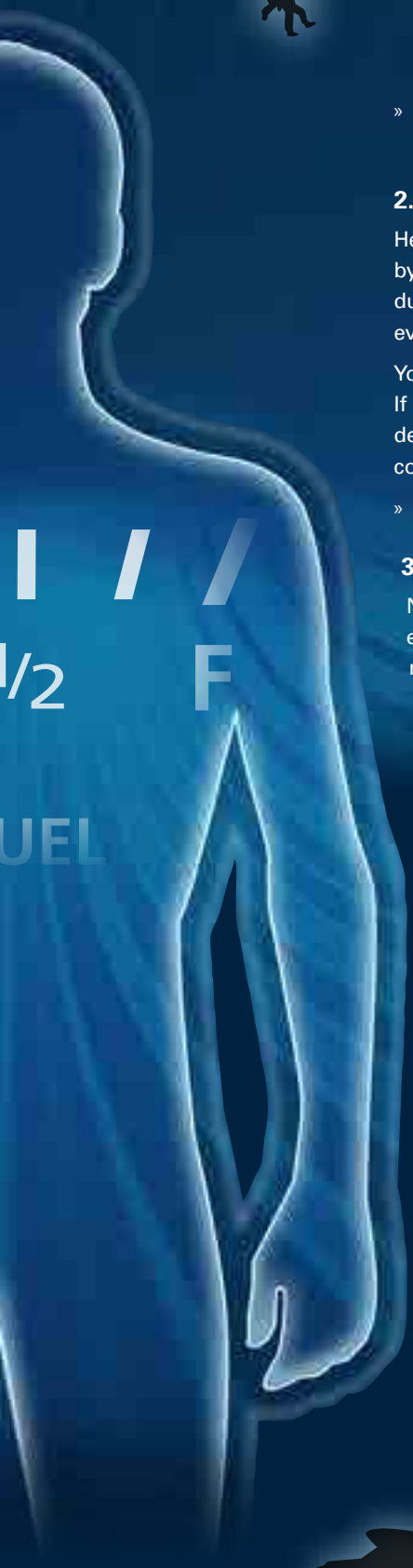
Fatigue is a naturally occurring event. Managing fatigue requires an integrated approach through education and training, and building operational solutions.

For you, it is about keeping aware and doing a few things differently.

### 1. Recognise the Symptoms – Act Quickly

Our pilot should have understood that he was not immune to fatigue, and should have been aware of the symptoms. He would have been feeling tired and lacking energy, and there would have been a little voice inside his head calling out, "I'm tired, I've had enough, why are my landings getting so rough?"





» Make the call for action, in this case to stop flying.

## 2. Know Your Sleep Patterns

He knew that his sleep pattern had been disrupted by the previous days with early starts and long duty hours. And then there were the long evenings organising work for the next day.

You need seven to nine hours sleep every day. If you don't get it, you accumulate debt – sleep debt. The hours you miss out on will quickly compound to produce fatigue.

» Get rid of the debt by sleeping it off.

## 3. Right Food, Right Time

Not only was his sleep disrupted, but his eating habits had changed to fit the work requirements. He had a light breakfast at 0430 hours, including toast and coffee. At 1130 hours, an aircraft refuel break was the

opportunity to have a sandwich and coffee. That was it for the day.

Food is essential to provide the energy and nutrients for your health. Digestion of food breaks down the components for absorption into your bloodstream. Not eating, or eating at the wrong time, will contribute to unstable blood sugar levels. They, in turn, cause changes in energy available to you, and this can lead to tiredness and loss of personal performance – in other words, fatigue.

- » Eat breakfast. Your body needs to start work as soon as you are awake.
- » A steady supply of nutrients is needed, so don't skip meals.
- » Healthy food options will not only give you the necessary energy for the day, but will also help reduce the onset of fatigue.

## Healthy Eating Food Pie

An example of recommended proportions of various food groups for a healthy diet.

Photo: ©istockphoto.com/egal



## Glycaemic Index of Food

It is important that you maintain a balanced diet. How blood sugar levels react to different foods is known as the glycaemic index (GI) of foods.

High GI foods, like cakes and French fries make your blood sugar levels rise and fall quickly. These are ideal foods for physical work, but after the high levels comes a rapid drop and you need to manage this closely.

Intermediate GI foods including bananas, ice-cream, and soft drinks will have a moderate effect on blood sugar levels.

For steady and consistent performance, low GI foods, such as baked beans, porridge, chocolate and some fruits, are recommended. They will slowly raise blood sugar levels, and can be ideal snack foods during the day.

- » Don't overeat. Large meals at irregular times will drain your energy as the body tries to digest the food. Regular, small meals are a better option.
- » The right food, in the right quantity, at the right time will stabilise your blood sugar levels, and help keep you awake and alert.

## 4. Keep Your Fluid Levels Up

Water is an absolute requirement for our existence. We cannot live without it for more than about 100 hours, even though we can do without food for many weeks.

It is generally agreed that in temperate climates (that are not too hot or too cold) your body loses 2500 ml of water per day.

Our pilot had a 750 ml bottle of water in the cockpit. During the day, he drank about 200 ml. In the previous days, he had averaged about 100 ml per day. Combined with other fluid intake through coffee (two coffees = approximately 600 ml), and a beer at night (330 ml), this means an average fluid uptake of 1030 ml per day.

This is about half of the required fluid uptake of 2500 ml, or eight glasses, and would have caused serious dehydration. When this happens, your body tries to conserve water by slowing its activities down to reduce loss of water. This creates fatigue.

In the agricultural role, our pilot may have, through physical actions, experienced a 10-fold increase in water loss and perspiration. Without replacement water, and inadequate fluid uptake in the preceding days, he will have been suffering severe dehydration.

A sure sign of dehydration is a headache and dizziness when standing up. This usually occurs after a loss of only 800 ml of fluid. This is just two per cent of your body's normal water volume of 40 litres. Other symptoms are tiredness, irritability, a dry mouth, and decreased urine production.

- » To prevent dehydration, simply drink sufficient water to replace that lost during the day. The greater the activity, the greater the water loss. If you feel thirsty, take a drink.
- » To help avoid dehydration, monitor the frequency of your urine output. A full bladder every three to five hours and light coloured urine, suggests dehydration is *not* occurring. If the urine is dark coloured and the bladder takes many hours to fill, or not at all, your water intake is insufficient and you are dehydrated.
- » If you need to take a lot of water, you will need to consider that the electrolyte levels in your blood may also be disturbed. Fruit juice and water combined is a good source of balanced fluid.

Caffeine is a drug, and when consumed in tea, coffee, cola, and energy drinks, it acts as a diuretic. It helps the body lose water. It is also a stimulant.

Any more than moderate use – 2 to 3 cups of instant coffee – can have the opposite effect. It can affect your ability to sleep and will lead to fatigue. It will also disrupt your sleep due to the diuretic properties.

- » Moderate use of caffeine can boost your energy and alertness for a limited period of time, but monitor consumption.

## Flight Planning Includes Fatigue Management

The best option for you to stay fed and watered is to be prepared. Plan your food and water needs based on the day ahead. If you are going flying, take all the food and water you will need. This includes the time spent planning, the duration of the flight, and the post-flight duties. Don't forget to stay hydrated and use snacks appropriately.

Use caffeine with caution, keeping in mind its effects.

Also include bladder stops along the way, and don't forget to look for colour and quantity as a check for dehydration.



## Symptoms of Dehydration

Amount of Water Lost (litres)



### Physical and Mental

Long duty days and long productive flight times can mean physical and mental fatigue. Our pilot had completed 130 takeoffs and landings, and over 200 spreading runs in 10 hours flying.

He was also using GPS for spreading guidance, made a number of calls on the aircraft radio, and was in contact with the operations base on many occasions. All this contributes to a very high mental workload.

How much is enough? When good flying conditions are available, it is easy to make the decision to keep going. This decision can also be based on getting paid only for completed productive flight time.

- » "It's always another day tomorrow". An 'oldie but a goodie' to suggest that you can do tomorrow what you didn't get done today. This applies to all parts of our flying activity, especially when you are under commercial pressure to complete a task. It is the same when you are trying to make a decision on enroute weather conditions, or the need for an alternate landing place.
- » In our example, the pilot and the loader driver are the only participants. There should have been an agreement between the pilot and driver to look out for each other. They should recognise changes in each other's behaviour or performance that could be fatigue related. This gives both parties the confidence to say, "I think I've/you've/we've had enough for today".

Early starts and late to finish disrupt our body's natural rhythm. We run on a 24-hour clock and like to sleep our seven to nine hours during the night with a slow digestion rate, and be awake during the day when we are active, feeding, and taking on fluid.

### Lucky Pilot, Or...

Our pilot was fortunate not to have had an accident. His flying performance was impaired by his inability to recognise the symptoms of fatigue, and to act on this serious situation.

Fatigue is a natural event and can be managed. We also know that dehydration and poor food choices will lead to fatigue and a loss of personal performance.

Look for the symptoms in yourself, your family, and workmates. Be confident with your decision making for your own level of fatigue, and for your workmates too.

We've looked at our body's food and water requirements and can now plan for our activities. We need 2500 ml of water for an average day, and regular meals of good quality food, including snacks. A coffee might help at some point too.

With good management we can keep fatigue under control, and enjoy safe and active flying while staying fit and healthy.

Our pilot will remember this day forever, even if he couldn't remember the last hour. ■



# Lost

A combination of fatigue and other human factors caused a pilot to lose situational awareness on a cross-country flight.

The night before, our pilot had completed a dual night-flying lesson at his Hamilton base. He then found he had been rostered to fly a solo cross-country early the next day. After a short rest period, he was back at the airfield for an early start. He was feeling tired, so invited a pilot friend to come along for the ride. An instructor authorised the flight, and he was soon airborne on the first leg to Taupo. This was completed without any problems.

During the climb after a touch-and-go landing, the pilot's friend noticed that the flaps were still extended. The pilot then realised he had forgotten to note the departure and set heading times for the next leg to Napier.

Map reading and ground features had him convinced he was on track and on time at this stage.

He established contact with Napier ATS and made a position report, but by then he was unsure of where he really was.

His navigation was starting to fall apart, and he began to experience a feeling of panic. Ignoring all the information that could help him find his position, he carried on tracking in the direction he thought would lead him to Napier.

At this point, his instructor contacted him by cellphone and advised him to contact Ohakea Control for help, now that he was well off track.

Blundering on into controlled airspace, he didn't see an Air Force training aircraft carrying out an instrument approach. The Air Force instructor saw the Cessna pass on the same level at 1 NM separation – a near miss.

Eventually, after contact with Ohakea Control, the aircraft was identified on radar and the pilot guided to a local airfield. He was very happy to land there, 2 hours 20 minutes after departing Hamilton.

The local airfield turned out to be Palmerston North.

## What Went Wrong?

The trouble started the night before. A late finish after night operations, combined with a planning session for the next day, interrupted the pilot's normal day/night and work/rest cycle. He finished the flight plan around midnight and, after a five-hour rest period, was back at the airfield. He had already started to accumulate sleep debt and was feeling tired.

Marc Brogan, an experienced A-category flight instructor and CAA Aviation Examiner discusses fatigue and pilot responsibility for managing it.

"This is a graphic reminder of just how quickly a situation can get out of control, luckily this time without any injuries. Fatigue was a major factor.

"A complex training programme, like the one the student was completing, places a number of influences on the pilot. He knows that he will be required to maintain steady progress through many different phases of the commercial pilot training and beyond.

"He will be put under some pressure at times, but will have the authority to manage his own fatigue levels and to let his instructor know if he is not able to fly. Use of the 'I'M SAFE' checklist would have helped his decision making before the flight.

"This is especially important when there are students and instructors from a number of different nationalities and cultures. In this example, the pilot clearly recognized he was fatigued, yet elected to conduct the flight," says Marc.

Once airborne, the pilot needed to establish and maintain his situational awareness – his mental model of the flight. A good way to do this is to use the activity cycle of Aviate – Navigate – Communicate. This establishes a pattern and a work rate required to maintain situational awareness and keep you focused on the task.

Errors will creep in when this starts to break down, in this case when leaving Taupo for Napier. Because he had not flown this track before, he became anxious about the map reading, and what he was seeing outside the cockpit was not what he was expecting.

"This can then make you feel anxious and will lead to distraction; you stop the Aviate – Navigate – Communicate cycle. You are now effectively a passenger, battling a number of factors that lead to mental overload. Factors such as not using standard procedures or training can lead to poor decision making.

"Considering the geographical features on the track from Taupo to Palmerston North, our pilot had the ideal opportunity to firmly establish where he was. Time keeping and review would have also alerted him to a growing problem. But the loss of situational awareness was clearly showing and he



abandoned good, safe aviation practice,” Marc says.

The pilot did not react to the ambiguity between the map and the ground. Distraction and confusion affected his priorities to Aviate – Navigate – Communicate. He did not question himself over the navigation errors and elected to continue on.

Another factor was the carriage of a passenger. This can be helpful at times for company and support, but could have worked against him due to peer pressure and cultural differences. In this situation, it is possible to use the passenger to reinforce the bad decision to deviate from the flight plan.

The danger of continuing on into unknown territory resulted in a near miss.

Our pilot did not have suitable charts for the Manawatu area and, still confused, flew into the busy controlled airspace around Palmerston North, Feilding, and Ohakea.

He was so preoccupied with his situation that he failed to maintain an adequate lookout.

## What Lessons Can We Learn?

Your flight training will have covered preparation for a cross-country flight, and procedures to use during the flight. That's too much to repeat here, but let's look at some of the lessons from this episode of *Lost*.

- » The conduct of the flight is the pilot's responsibility.
- » Use the "I'M SAFE" checklist to check if you're fit for flight, including fatigue levels.
- » Your flight planning should include potential diversions and enough fuel for them.
- » Carry adequate charts for any potential diversions.
- » Maintain situational awareness – read from the chart to the ground to confirm position.
- » When it doesn't match up – do something about it. Don't hesitate to call for help.
- » Use any available electronic aids to confirm position, eg, ADF, DME, GPS.
- » If you think you are lost – follow the lost procedure covered in your training.

- » Have an agreement with any passengers to speak up if they see another aircraft, or any concerns about the flight. For example, "Are they wind turbines over there?"
- » On a cross country, land to a full stop at the end of each leg. This allows you to get mentally prepared for the next leg.
- » On each leg, do an early track check, confirm heading and cross-check the chart with terrain or features.

## More Information

See the article on page 4, "Fatigue Management".

Attend one of the 2014 AvKiwi Safety Seminars, "Personal Preflight". See back page for details. ■



# Radio Reminders

This article is a refresher for all pilots, covering some of the more common radiotelephony issues.

The radio helps us maintain a high level of situational awareness. But in order to do this, the radio calls we make must be of a high quality.

## Say it Right

There are four elements of an effective radio call: clear, concise, consistent, and correct.

- » **Clear.** Speak clearly and slowly so others can understand your transmissions.
- » **Concise.** Always plan what you are going to say next to eliminate the ums and errs, and don't give a full itinerary of your flight. Keep the calls brief so they enhance the situational awareness of others. Too many calls can have the opposite effect.
- » **Consistent.** When you transmit information, get it in the right order to help match the listener's expectations.

Also use the standard phraseology. This will help everyone understand, and it cuts down on the length of your calls. If there isn't a standard phrase for a particular situation, use plain English.

- » **Correct.** Be accurate. The expressions 'abeam' or 'approaching' somewhere are of no help, and must be avoided.

## Keep it Standard

It's important to keep your radio calls standard and in the right order. There are a couple of aids you can use when making a call. The first is the **four Ws**:

- » **Who** you are calling
- » **Who** you are
- » **Where** you are
- » **What** you want.

The second mnemonic is useful for your position reports, **PTA-ETA**. That is, Position – Time (when relevant) – Altitude – ETA, and intentions if applicable.

## IFR Take Note

Aircraft doing instrument approaches at uncontrolled aerodromes can be a particular hazard to VFR traffic. Their radio calls may relate only to the procedure they are flying, and not to anything a VFR pilot might recognise.

Generally, this is an issue when the weather is fine and the IFR pilot is training, or when the cloud base is approximately 2000 feet above the aerodrome.

If you are one of those IFR pilots, then you should be giving additional radio calls that will allow a VFR pilot to be able to locate you.

When making any position report, give your position relative to published reporting points, prominent geographical features, or by distance and direction relative to the field. Avoid using local terms which could be meaningless to a transient pilot.

## Controlled Aerodromes

### Readbacks

Know what clearances and instructions must be read back. Reading back unnecessary items wastes everyone's time, as



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



## Plane Talking Online

The 2012 AvKiwi Safety Seminar was all about radio communication in aviation. Those who attended received a Plane Talking course on a CD-ROM. The course can now be accessed on the CAA web site, "Seminars and Courses – AvKiwi Safety Seminars". To run it, you must have Adobe Flash Player installed. Throughout the interactive course you will find video and audio examples of spoken aviation English, which may help you improve your own radio skills. Here are some course features.



The course includes safety messages from New Zealand industry experts, CAA specialists, and Civil Aviation Safety Authority (Australia) officials.

does failing to read back essential items.

Clearance shorthand will help you to record and read back instructions and clearances.

### Before Departure

Make sure you are familiar with the aerodrome chart and any departure charts. They will include standard instructions on how to taxi and depart the aerodrome.

VFR flights do not usually need a clearance to start, but will need a taxi clearance to get onto the manoeuvring area.

### Departure

There are likely to be published departure procedures, with their own identifiers. Become familiar with these departures and make sure the departure charts are readily available.

Don't make the mistake of confusing your departure clearance with a clearance to take off. Air Traffic Control (ATC) will only ever use the word "takeoff" as part of a clearance for takeoff. If ATC refers to an aircraft takeoff in another context, they will use the word "departure" or similar.

If you get your departure instructions and can't comply with them, for example, if you can't maintain the rate of climb, inform the tower and request an alternative.

### Arrival

Copy down the Automatic Terminal Information Service (ATIS) in advance, and confirm receipt with ATC on first contact. You need to give the identifier and the QNH, eg, "Received Alfa, 1015".

Before you enter a control zone, make sure you are familiar with any published arrival procedures, then request joining instructions.

Your arrival generally won't be via a standard overhead join, although you may be cleared overhead the field to join downwind. The standard procedure is to join the circuit via either downwind or base leg.

When you are given joining instructions, clearly identify the aircraft ahead of you then report, "traffic in sight". Subsequently, if you lose sight of traffic, advise ATC immediately.

## When it Goes Wrong

### Distress Calls

If you need to declare an emergency, don't be afraid to speak up. It is better to tell someone that you may have a problem, than to struggle on and find yourself in a situation that could have been avoided.

Use the expression PAN PAN (spoken three times), followed by the urgency message, or a MAYDAY (three times) for a distress situation. If you can't decide whether it's a PAN PAN or a MAYDAY call, err on the side of caution and use MAYDAY. You can always downgrade it at a later time.

### Which Frequency

Initially you should transmit the MAYDAY call on the frequency you are on. If this is unattended, try giving the call again to an attended frequency, such as "Christchurch Information", or a local control tower.

You can also try the frequency used in the higher-level airspace above you.

If you can't find anyone to respond to your MAYDAY call, try 121.5 MHz – most airliners listen out on this frequency.

For a comprehensive guide, refer to the Advisory Circular AC91-9 *Radiotelephony Manual*, available on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Advisory Circulars".

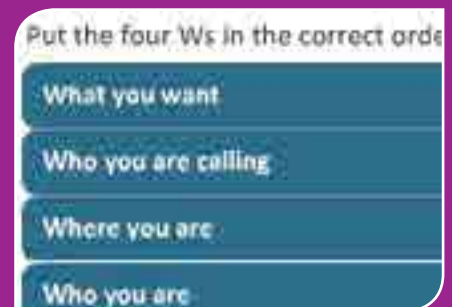
Also read the GAP booklet *Plane Talking*. For a free copy, email: [info@caa.govt.nz](mailto:info@caa.govt.nz). ■



It is important to be familiar with the equipment fitted in the aircraft you fly. Plane Talking online features interactive displays, such as this glass cockpit.



Animations are used to illustrate selected course content.



A quiz in each section highlights the key points.

# Get the Mental Picture Online

Get the Mental Picture is the online course from the 2013 AvKiwi Safety Seminar. It's now available for free on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Seminars and Courses – AvKiwi Safety Seminars".

- » Have you ever come way too close for comfort to another aircraft?
- » Have you ever landed after a flight and wondered, "How on earth did I get myself into that?"
- » Have you ever lost track of what's going on around you, especially in busy airspace?
- » Have you ever relied on luck to keep you safe?

Get some **GUTs**.

- G**ather your information – use as many sources as you can.
- U**nderstand that information – you need to make sense of what you are seeing, hearing, and how it affects you.
- T**hink Ahead – what's your world going to look like in 10 minutes? Get prepared for it.

## Feeling tired yet?

It's hard work keeping up with everything you need to think about and do. Getting prepared is the key to good situational awareness. And ultimately, having situational awareness will help prevent you from becoming one of the statistics.

So how can you improve your situational awareness? Hone your skills by using our online course.

It contains tools for decision making, getting and maintaining a high level of situational awareness, and self-evaluation. There are also games and activities to increase your skills. ■



## Radio Frequency Consultation

The ongoing issue of pilots using different frequencies when operating in uncontrolled airspace may be addressed by new broadcast zones. Following industry response to a discussion document issued in early 2013, the CAA met with a representative industry group in October 2013 and hammered out a workable plan.

The Massey University School of Aviation had previously advocated a national network of common frequency zones. This idea gained traction, leading to the issue of the CAA discussion document in April 2013.

Of the 97 responses received by the CAA, 65 favoured the Massey proposal, with 18 in favour of the CAA's FISCOM option.

The next step was the October meeting of CAA and industry, which agreed on the common frequency zone plan as the way ahead.

### The Essentials

Uncontrolled airspace will be divided into zones, each with a discrete frequency.

The frequencies will be separate from the existing FISCOM frequencies, but should be within one or two 'clicks' on the frequency selector.

The frequencies will be the 'unattended' frequency for all unattended aerodromes within the zone, and common to any other special use airspace within that zone.

The zones will be named for their geographical region, rather than for a particular aerodrome.

Vertical extent will be from the surface to the lower limit of controlled airspace.

The planning of the zones will be done in conjunction with the Airspace Review, currently under way.

Target date for completion is November 2016.

Background information and a summary of the October meeting are published on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), under "Airspace – Airspace Review". Queries can be directed to Mike Haines, Manager Aeronautical Services, tel: +64 4 560 9429, email: [Mike.Haines@caa.govt.nz](mailto:Mike.Haines@caa.govt.nz). ■

# You Are Your Own Safety Investigator

If you're involved in a serious incident – that is, one that was nearly an accident – you need to notify it to the CAA. That's just the first step in the process, as most cases will require an investigation report to the CAA within 90 days.

## When and How to Notify

For a serious incident, notify the CAA 'as soon as practicable', following the same procedure as for an accident notification. The contact details are on page 23 of this issue, and the requirements for notification are detailed in rule 12.55.

Once you've done the initial notification and have had time to collect your thoughts, you then have 14 days to follow up with the details. The easiest way is to use the "Report Occurrences Online" link on the CAA web site, under "Quick Links".

## Internal Investigation

Next comes the investigation, with a requirement (rule 12.59) to report the results to the CAA within 90 days of the occurrence. But who does it?

A certificated organisation will normally have at least one designated person, as well as documented processes, for incident investigation.

Some smaller organisations contract

an external investigator to perform this function, and this person may serve several other organisations in the same capacity.

If you're not part of a certificated organisation, you don't have to do an investigation after notifying your occurrence to the CAA.

## External Investigations

Some serious incidents will be investigated by the CAA or the Transport Accident Investigation Commission (TAIC). You will be contacted by one or the other if this is happening.

Even so, a certificated organisation still has to carry out its own internal investigation (rule 12.59). Where there is an external investigation, you will be able to work in conjunction with the investigator(s).

If TAIC is investigating, Section 14 of the TAIC Act applies, and in broad terms, this requires you to leave things 'as is', in the absence of their

specific permission.

## Completed Reports

We are happy to say that we receive some very competently written and timely investigation reports, from both large and small organisations.

Often, though, the initial notification is not followed through with an investigation report, possibly due to resource constraints or a lack of knowledge of how to go about it.

## Seeking Help

In this situation, you can find some useful guidance in Advisory Circular AC12-2 *Incident investigation*, and also in section 2.6 of AC00-4 *Safety Management Systems*. These are both available on the CAA web site.

Or you can email [info@caa.govt.nz](mailto:info@caa.govt.nz), and your request will be forwarded to the Safety Investigation Unit or the Intelligence, Risk and Safety Analysis Unit as appropriate. ■

The CAA gets over 5000 accident and incident reports per year, and the reporting rate is trending upwards. This is not necessarily a bad indication – more a reflection of an improving reporting culture.

Michael Campbell, Team Leader Safety Data Management, says that although this has not been researched in detail, the increase is probably due to a more widespread appreciation of safety management system principles.

"As a result some organisations may be reporting more events than before," says Mike. "Newly certificated Part 115 organisations have also started reporting, but their numbers are still quite small."



# “Matamata traffic, ...a winch-launch is

Winch-launched gliding operations at Matamata have increased significantly. Here we discuss the nature of winch-launching operations, radio procedures, and safety precautions so you don't get caught unawares.

**P**iako Gliding Club at Matamata has completed over 250 launches since the upgrade of their winching equipment in September 2013.

Winch-launches take place on either end of runway 10/28. During operations, cones are placed along the centreline of the runway – winching operations are restricted to the northern side. The southern side is still available for powered aircraft to use.

## Altitude with Attitude

Winch-launched gliding isn't for the faint-hearted. It can be likened to a reverse bungee jump where the glider climbs at a 45-degree angle, restricting the pilot's forward vision.

“Typical launch heights are between 1600 feet and 2200 feet,” says Piako Gliding's chief flying instructor, Julian Mason.

“If there is a strong wind, the upgraded winch can launch a glider to 2500 feet or higher.

“The winch is powered by a Ford V8 and has two winching drums. Each drum contains about 1200 metres of Dyneema® synthetic rope, covered with a bright orange protective sheath.

“A launch takes about two minutes to complete and the glider can climb at over 2000 feet per minute,” says Julian.

After the pilot releases the rope, the winch driver will continue to reel the rope in while it is still in the air.

The northern side of the runway will still be in use after the launch is complete. A tractor is used to pull the ropes back to the launch point. This takes about 11 minutes.

3000



This symbol and the accompanying “W” indicate a glider winch-launching area and the maximum launch height.

## Joining to Land

It is essential to refer to *AIP New Zealand*, Vol 4 aerodrome chart for Matamata if planning a flight there.

Winch-launch operations can be active at any time during the day.

Enroute traffic should avoid flying through the Matamata MBZ due to the presence of parachute and gliding operations.

If you intend to join, establish communications on the unattended frequency, 120.0 MHz, well in advance of your arrival. Avoid making an overhead join and remember that gliders have the right of way over powered aircraft.

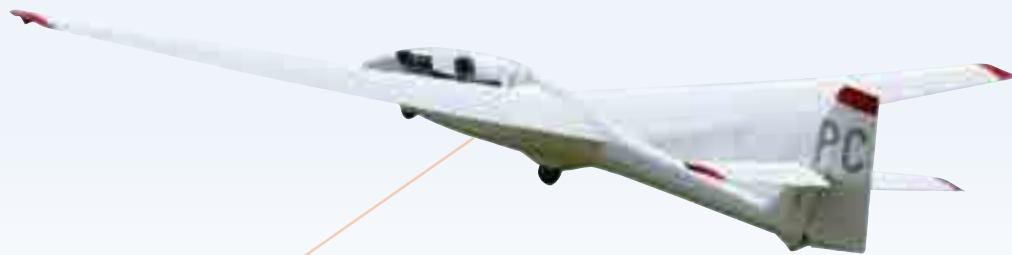
Given their narrow profile, gliders can be difficult to spot at the best of times, especially if they are at a similar altitude to you. When joining, maintain a constant visual scan.

To help you identify the winching area, Piako Gliding Club has employed new safety measures:

A representation of a winch-launch at Matamata.



# be aware... now in progress."



- » There is now a white "W" displayed on the threshold of the active vector when the winch is in use.
- » 3 white markers are placed at 20-metre intervals from the threshold of the runway in use.

*AIP New Zealand* will be revised in April 2014 to reflect these safety initiatives.

If you see a glider lined up for takeoff, treat it as a potential hazard and give it a wide berth. Winch-launched gliders can accelerate and climb quickly, so take precautionary action.

A useful article with additional safety tips, "Winch-Launched Gliders", can be found in the September/October 2012 issue of *Vector*, available on the CAA web site under "Publications".

## Radio Calls

The glider pilot will broadcast the launch instructions on Matamata's unattended frequency 120.0 MHz.

Before the glider is launched, the winch driver will transmit, "Matamata traffic, be aware a winch-launch is now in progress".

The following will be exchanged between the glider pilot and winch driver:

- » "Take up slack" – when the glider pilot instructs the winch driver to pull in the cable slowly to increase its tension.
- » "All out, all out, all out" – the pilot instructs the winch driver to apply power and start the launch sequence.

During the critical stages of the launch, if something goes wrong, the launch may need to be terminated quickly. The

driver must be able to hear the "STOP, STOP, STOP" call from the pilot. To assist the winch driver and pilot, don't make any radio transmissions between the "take up slack" and the "all out..." calls, or in the first 20 seconds after the "all out..." call.

While Piako Gliding Club is getting accustomed to their upgraded winching equipment, the pilot will call speeds in knots during the launch. This is to check that the maximum speed requirements are being met.

"Matamata Traffic, winch launch complete," will be broadcast on launch completion.

## Rope Breaks

If a rope break occurs, the pilot's response will depend on the remaining runway available.

Matamata's runway 10/28 is 1089 metres long, which gives pilots flexibility in the way they react to a rope break. Typically, if the rope breaks in the first half of the runway, the PIC will release the rope, pitch the glider's nose down and land straight ahead.

If a break occurs and there is not enough runway remaining to land ahead, the pilot will announce his intentions and make an abbreviated circuit.

The Dyneema® rope is expected to last for 10,000 launches before breaking.

## More Information

For more information, refer to the Piako Gliding Club web site, [www.glidingmatamata.co.nz](http://www.glidingmatamata.co.nz). ■

# Use of Aircraft Lights

In a 'see and be seen' environment, many pilots have a very effective aid that they may not have considered using – the aircraft landing lights. Most of us will have seen that they are used to good effect by airline aircraft – and there's nothing to stop us following suit.



**A**lthough practices may vary between operators, airline aircraft will typically show landing lights when below 10,000 feet. Approach and departure are normally the only reasons for flying below this altitude.

Conversely, it is unusual for a light aircraft to be above 10,000 feet, but for the light aircraft pilot, the landing light (and taxi light where fitted) can be a huge help to others (including aerodrome controllers) at lower levels. Being visible to other traffic is extremely important in the vicinity of an aerodrome, along a narrow corridor such as the Desert Road, and in busy training areas. The landing light is generally visible well beyond the range at which an aircraft can be perceived, and gives pilots plenty of time to plan avoiding action.

Using the landing lights when joining at a controlled aerodrome will greatly assist controllers in sighting you and helping them sequence you into the traffic pattern.

## Not Just For Other Pilots

Landing lights may also help birds to see your aircraft earlier and get out of your

way. You may have seen Air Nelson's Q300 fleet, where landing light use goes one step further – the landing lights (in each wing leading edge) pulse alternately, attracting attention more readily than a steady light.

The pulsing lights convey movement more effectively than a head-on view of an approaching aircraft with steady lights. This gives birds more time to decide where to go – infinitely preferable to a last-minute panic dive, which may even be into the path of the aircraft.

## Other Lights

Anti-collision beacons and position lights are fitted to aircraft intended to be operated at night, and the rules require these to be activated during the hours of darkness.

The (red) anti-collision beacons are commonly mounted on the top of the tail fin, or in some cases to the upper and lower fuselage. Older types were normally mechanical rotating beacons, but flashing strobes are now more commonplace, having weight, cost, and reliability advantages.

White wingtip strobes have been standard on many light aircraft for

several decades now, and during the day are most effective against a dull background.

## Common Practice

- » Anti-collision beacon: ON before start; leave on until shutdown. This is not in the rules, but is international practice, warning other pilots and ground crew that the engines/rotors are running or about to start.
- » Position lights: as desired, but must be ON before the aircraft moves at night.
- » Taxi light: as required during taxi, generally only at night. Use in conjunction with landing lights on takeoff and on approach, day or night.
- » White strobes: normally ON at line-up; OFF vacating the runway.
- » Landing lights: ON at line-up, along with taxi light if it's not already in use.

During night flight in cloud, anti-collision beacons and strobes can be switched off if they cause distracting reflections. On the ground, white strobes should be switched off if they are likely to dazzle other pilots. ■



# Aviation Safety Coordinator Course

## Auckland

13 to 14 February 2014

Sudima Hotel Auckland Airport  
18 Airpark Drive  
Auckland Airport

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

If your organisation operates commuter services, general aviation scenic operations, flight training, sport aviation, or engineering, you need an Aviation Safety Coordinator.

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

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



## Form 337 Changes

Improvements have been made to the Form 337 following consultation. It's now more user-friendly, formatted more logically, and available in fillable MS Word and PDF formats. If you don't have this software, free versions of MS Word and PDF readers are available on the Internet.

The Form 337 is used for two purposes: the approval of technical data, and/or to certify that a major modification or repair conforms to the technical data detailed.

### Key Changes to the Form

#### Rearrangement

The form has been rearranged to group those areas applicable to data approval, or conformity certification, more logically together.

#### Design Change Title

There's now a space on the front page to detail the nature of the design change.

#### The Applicant

The Form 337 now refers to the applicant instead of the originator. The applicant is the person who is applying for approval of the data (when the form is being used for the approval of data).

#### Multiple Uses of a Modification

Multiple use of minor modifications is no longer restricted to the original modifier, but is able to be used by anybody who has the written permission of the applicant.

#### Key Changes to AC43-9

Advisory Circular (AC)43-9 *Modifications, Repairs, and the Form CAA337* has been completely rewritten to remove

information that is no longer relevant.

It also gives specific guidance on how to fill out the Form 337. For example, when listing the acceptable technical data in Section 8, you need to make specific reference to the data used, including the revision number or date. Using a simple reference, such as FAA AC43.13-1B, is insufficient. You should reference the specific section and paragraph, or figure number, so any work completed can be clearly identified.

The Form 337 and AC43-9 are both available on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), under the respective pages "Forms" and "Advisory Circulars". ■

# IFR Flight Planning Pilot Responsibilities

As part of your IFR flight planning, you need to make sure your aircraft and navigation equipment is approved and certificated for the intended operation.

**Y**ou're about to fly IFR and you've got, or hired, an aircraft with all the bells and whistles. It's got glass this and multi that and GPS to go. But that doesn't mean it is good to go, and it's your responsibility to make sure it is – even if you've hired the aircraft.

GPS equipment must be approved as a primary means navigation system before it can be used for IFR enroute, terminal, and non-precision approach operations.

## Garmin G1000

The Garmin G1000 system, for example, as installed in the Cessna 172S, is a modern, capable, glass cockpit instrumentation suite for flight and navigation.

However, there are conditions attached to the operation of G1000-equipped aircraft on IFR operations in New Zealand.

For the Cessna 172S, the approval as a primary means navigation system for IFR is subject to an EASA requirement. The details are on the completed form, CAA2129 *Aircraft Radio Station Equipment Approval Levels*.

The EASA condition is for a pre-flight

check of the 24-volt standby battery and standby ammeter before operating VFR at night and IFR day and night. This is specifically for European GPS navigation, but has been adopted by the CAA for New Zealand IFR-GPS operations.

The CAA2129 form is part of the aircraft Flight Manual. It lists the radio equipment, including components of the G1000 and their approval levels. In this example, the approval level is 1, which is the minimum level for IFR operations, as detailed in Section 4 of the form. Any changes to the CAA2129 will require a reissue, and a note in the conditions that any previous approval for GPS-IFR is described. This previous form must be carried in the Flight Manual.

## Aircraft Flight Manual Notices

Notices in the Flight Manual alert pilots to differences between New Zealand rules and those detailed in the Flight Manual supplements. Specific Flight Manual procedures may be overridden by New Zealand Civil Aviation Rules which must be complied with.

## RNAV and RNP Operations

For information on requirements for approval to conduct IFR RNAV and RNP operations, see AC91-21 *RNAV 1, RNAV 2, RNP 1, RNP 2, RNP APCH, and BARO VNAV*.

It is also important to keep pace with ongoing changes to Airways routes as these may affect your equipment requirements and pilot qualifications to operate in this environment.

## Further Reading

Rule 91.603 *General maintenance requirements*

Part 19, Subpart D *IFR Operations: GNSS*

AC43-10 *Aircraft radio station – Form CAA 2129*

### Vector articles:

"RNAV and RNP Operational Approvals" – March/April 2013

"RNAV and RNP – Operational Approvals" – January/February 2013

"PBN Developments" – November/December 2012 ■



A Cessna 172S instrument panel including the Garmin G1000 system. Note the standby instruments above the throttle.



# Simulators for Aircrew Training

Following a review of the training and competency requirements contained in Part 125, proposed rule changes will include using simulators for many parts of the aircrew training process.

The rule changes propose that Part 125 flight crew training will include flight and ground instruction using simulators.

Pilots of single-engine reciprocating, single-engine turboprop, and multi-engine reciprocating powered aeroplanes, will then be using training devices and either the aeroplane, or a flight simulator of the same aeroplane type, for their training.

Turbojet, turbofan, and multi-engine turboprop aeroplane pilots will include the use of a flight simulator of the same aeroplane type for type training and recurrent training.

This is in line with International Civil Aviation Organization (ICAO) recommendations that are supported by CAA.

The simulator training provides a safer environment, allows adequate time to achieve suitable levels of skill, and overall, a higher level of pilot proficiency.

Although a number of airline operators conduct training in simulators, the majority of general aviation (GA) operators conduct all training in their aircraft. Suitable simulators for several of the aeroplanes operated by the GA sector are hard to find. Approved alternate flight simulators or training devices

identified as suitable for training will be able to be used.

## Pilot Line Training and Consolidation

Line training is now organised to match the required flight time and takeoff and landing experience, with aeroplane types operated by Part 125 operators.

For example, pilots conducting line training on single-engine aeroplanes require a minimum of five hours on type, including five takeoffs and landings. For multi-engine turboprop aeroplanes, the pilot requires 20 hours on type, including 10 takeoffs and landings.

Changes have also been proposed for the consolidation phase of flight experience after line training has been completed. For two-pilot operations there are changes where one of the pilots must meet certain experience levels to supervise a new pilot, or a pilot transitioning to type. The hours are based on aircraft type.

## Human Factors and Crew Resource Management

The review has also taken into account the advances made in the study of human factors and crew resource

management (CRM). A rule has now been included for all crew members involved in your operation to be trained on human factors and CRM, incorporating human performance and threat and error management.

## Other Changes to Part 125

A number of other rules have been introduced in the Part 125 review.

They include flight attendant, simulator instructor and examiner, and ground instructor experience requirements, as well as flight crew member pairing limitations.

The review has been developed through a Project Working Group made up of Part 121 and Part 125 operators and the CAA. Their focus has been on the alignment of the two Parts to promote aviation safety domestically, and for the international exposure likely through tourism.

It is expected that the Part 125 Amendment will be signed off in late February 2014, to be in force early April 2014. There is a two-year transition period from this date for operators to address the new rules and requirements.

To be informed when the Part 125 Amendment is signed, subscribe to our email notification service on the home page of the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz). ■

# Pregnancy Risks in Aviation

The CAA is examining current medical evidence on risks associated with pregnancy that may affect aviation safety.

Auckland University has been commissioned to do the research for this project, which began in December 2013.

Researchers will collect, analyse, and report on current medical evidence on issues such as:

- » Miscarriage
- » Fatigue
- » Abdominal girth and mobility
- » Pre-eclampsia/eclampsia (seizures during pregnancy), and
- » Premature labour.

John McKinlay, CAA Manager Personnel and Flight Training, says, "The CAA has a risk-based approach to the medical certification of pregnant pilots and air traffic controllers. Our job is to quantify the risks and see that they are being managed appropriately."

The results of the study are likely to be available by the end of March 2014. They will be presented to the newly-formed Aviation Community Medical Liaison Group (ACMLG) for further discussion. It is expected that ACMLG will make the results available to the wider aviation community.

Currently, there are 1148 female pilot and 86 female air traffic controller licence-holders in New Zealand.

## More Information

*Medical Information Sheet, "Pregnancy"*, on the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Medical – Medical Information Sheets".

*Vector* article, "Flying and Pregnancy", on the CAA web site under "Publications".

See page 23 for news about a new email notification service for "Medical Matters". ■

# Fuel Policy

Does your organisation have a refuelling policy to prevent overloading? Recent concerns have made this a hot issue in the flight training sector.

Following recent investigations, John McKinlay, CAA Manager Personnel and Flight Training, advises that audits or inspections may focus on operators' fuel policies.

Encouragingly, some training organisations have already notified the CAA that they have addressed the issue.

## An Often-Forgotten Problem

Some two-seat training aircraft can easily be loaded beyond their maximum all-up weight with two hefty individuals and full fuel tanks, baggage not included.

In some cases, the weight limitation was either ignored or forgotten about, resulting in the aircraft frequently operating over the limit.

Contributing factors have been the automatic topping up of fuel tanks after flight, with no consideration of the next flight, and pilots not doing a proper weight and balance calculation for each flight.

## Accuracy

Weight and balance calculations have some unseen variables:

- » Flight manual examples invariably use the standard occupant weight of 77 kg (170 lb). Better to use actual weights.
- » The aircraft empty weight may have 'drifted' since the last weighing (which may have been as long ago as the initial airworthiness certification).
- » Dipstick calibration may not be accurate. One organisation found that the marks on different dipsticks for the same aircraft type could vary by 10 to 15 mm.
- » The type of tank cap can give misleading "full" indications.

These factors introduce a possible margin of error, and may need further consideration when examining your fuel policy.

The GAP Booklets *Weight and Balance* and *Fuel Management* may be useful references – both are available on the CAA web site, or on request from: [info@caa.govt.nz](mailto:info@caa.govt.nz). ■





# Instrument Flight Procedures Review

Instrument flight procedures, like just about everything else in aviation, need periodic review and maintenance to ensure they remain safe for use.

These procedures (IFPs) are designed to exacting criteria by organisations certificated under Civil Aviation Rules, Part 173 *Instrument Flight Procedures Service Organisation – Certification and Operation*.

Part 173 came into effect in 2008, and currently there are three organisations certificated for procedure design. The main one is Airways, who assumed responsibility for most procedures existing at that time. Exceptions were those IFPs designed by other providers.

Before 2008, IFPs were designed by (mainly Airways) persons under specific delegations from the Director of Civil Aviation.

## Review Process

Many procedures date back well into the 1990s and beyond, and have not been reviewed since their inception. Advisory Circular AC173-1 (issued in 2012) recommends that the maximum period for a procedure review is five years.

When Part 173 came into effect, all existing procedures were deemed compliant with Part 173, giving a timeline of October 2013 for the completion of all reviews. Airways has found that most of the older procedures needed more resource than anticipated, some requiring a full redesign or major reassessment.

Review of a procedure may result in a change to the approach minima (minimum descent altitude and/or visibility); adjustment of the approach path; or displacement of the runway threshold.

The CAA has agreed to extend the review period until October 2015, in order to accommodate the remaining volume of work.

Straight-in approaches that still require assessment of the visual slope surface (VSS) are listed in Aeronautical Information Circular (AIC) 7/12, and this will be updated periodically. AICs are available on the AIP web site, [www.aip.net.nz](http://www.aip.net.nz).

## Aerodrome Operators

Rule 173.201(d) requires the operator's written agreement that the aerodrome or heliport may be used for IFR operations, before an IFP can be designed for that place.

Airways began getting retrospective operator agreements in 2010, but several operators have not yet responded. In these cases, a review cannot be carried out until agreement is obtained.

Survey data for some aerodromes is not up to date, and in some cases simply cannot be supplied. The data is critical to a procedure review, as since the original design date, new buildings and tree growth may have compromised obstacle clearance criteria.

## Cost Recovery

Airways recovers the costs of IFP design by commercial arrangement. The type of arrangement may be:

- » Included in standard landing charges at aerodromes where Airways provides air traffic services;
- » Included in landing charges at unattended aerodromes, where Airways assets (eg, nav aids) are located;
- » Recovered directly from the aerodrome operator by negotiated agreement.

The current review of IFPs has identified that procedures at some aerodromes may no longer be required, and could be withdrawn. It is up to the aerodrome operator, in consultation with users, to decide which procedures are retained and which are disestablished.

## Further Information

Any queries on the instrument flight procedure review can be directed to Peter White, Aeronautical Services Officer; tel: +64 4 560 9474; email: [Peter.White@caa.govt.nz](mailto:Peter.White@caa.govt.nz). ■

# Using the CAA Logo

Organisations certificated by the CAA may use the CAA logo on their letterheads, documents, brochures, web pages and signs to advertise that fact. Here are some conditions on its use.

## Placement

The logo should be placed at the bottom of the document, sign, or web page, and must be less prominent than the organisation's own logo or masthead.

## Style

Depending on where you want to use it, you can reproduce the logo in colour or black and white as appropriate. The colours and tints are shown in the diagram, so you can pass these instructions to your designer or printer.

The associated wording must include the words "Part XXX Certificated". If you are a Part 119 certificated organisation, you should also indicate which CAR Part the operation is conducted under, eg, "Part 119/135 Certificated".

Any additional wording must not include the word "approved", or otherwise imply any other endorsement by the CAA.

## Use to Your Benefit

Displaying the CAA logo can, particularly for small operators, show potential customers that the organisation meets the CAA standards for that operation.

This is especially relevant to Part 115 adventure aviation operators, where customers may be considering risk as well as cost. The assurance that they are dealing with a certificated organisation may well be the deciding factor when it comes to parting with their hard-earned cash.

## How to Obtain the Logo

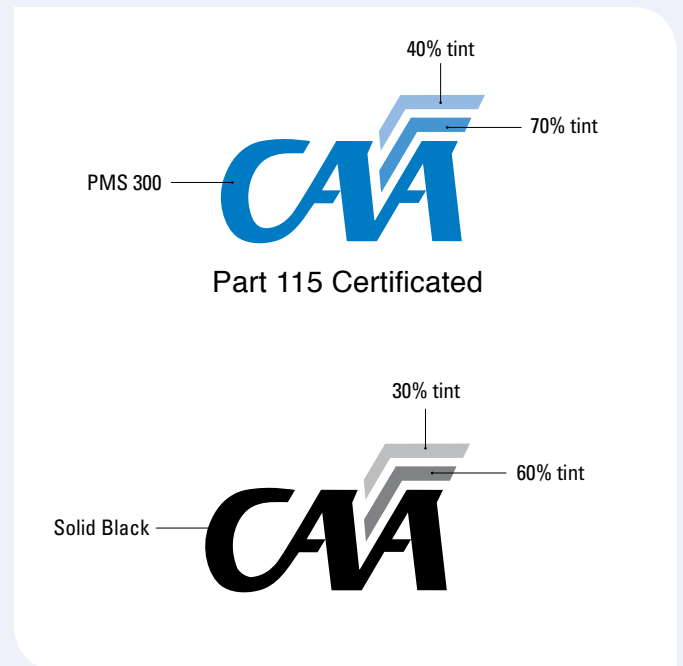
It may seem tempting to copy and paste the logo from a CAA letterhead or other document, but the result could be untidy, with pixellation and incorrect colour rendering.

Email us at [info@caa.govt.nz](mailto:info@caa.govt.nz), and we will send you the image file(s). There's no cost involved.

Before you go into production of the item on which you have placed the logo, we do ask that you send us proof copies, just to make sure it complies with these guidelines.

If you have any queries on the use of the logo, email us at [info@caa.govt.nz](mailto:info@caa.govt.nz). Also, recheck the logo information on the CAA web site in the event that the conditions of use have changed. Although unlikely, this may occur without prior notice. ■

CAA logo examples in colour and greyscale with tints as indicated



Example of the logo use on a helicopter operator's brochure  
Image courtesy of Over The Top Ltd

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

## Exposition Amendments

New Forms CAA 24115/08 and 24119/12, Exposition Amendment Summary Sheets for operators certificated under Parts 115 and 119 respectively, are now available under "Forms".

## Medical Matters

There's a new email notification service for all Medical Matters. This will automatically notify you when we add any new medical information (including consultation documents) to the web site.

See "Medical" on the home page; this will take you to the "Medical Certification" page. The top panel "Keep Up to Date on Medical Matters" has two links, one each for existing or new subscribers.

"New subscribers" links to the "Notification Service" page – tick the required boxes (eg, Medical Matters, and anything else you may like to receive notifications for), enter your details, and click the Subscribe button. Don't forget to "Confirm" when you receive the email.

Existing subscribers will receive an emailed update page, on which you tick the appropriate box.

## Consultation Reminder

Just a reminder that Monday 3 February 2014 is the closing date for submissions on the National Airspace and Air Navigation Plan. There's a link on the home page.

## Aviation Safety Advisers

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

### Don Waters (North Island)

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

### Murray Fowler (South Island)

Tel: +64 3 349 8687  
Fax: +64 3 349 5851  
Mobile: +64 27 485 2098  
Email: Murray.Fowler@caa.govt.nz

### John Keyzer (Maintenance, North Island)

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

### Bob Jelley (Maintenance, South Island)

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

## How to Get Aviation Publications

### AIP New Zealand

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

### Pilot and Aircraft Logbooks

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

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

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

## Planning an Aviation Event?

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

To allow for processing, the CAA needs to be notified **at least one week** before the Airways published cut-off date.

Applying to the CAA for an aviation event under Part 91 does not include applying for an AIP Supplement – the two applications must be made separately. For further information on aviation events, see AC91-1.

CAA Cut-off Date	Airways Cut-off Date	Effective Date
17 Feb 2014	24 Feb 2014	1 May 2014
17 Mar 2014	24 Mar 2014	29 May 2014
14 Apr 2014	21 Apr 2014	26 Jun 2014

See [www.caa.govt.nz/aip](http://www.caa.govt.nz/aip) to view the AIP cut-off dates for 2014.

## Report Safety and Security Concerns

Available office hours (voicemail after hours).

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

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

For all aviation-related safety and security concerns

## Accident Notification

24-hour 7-day toll-free telephone

**0508 ACCIDENT**  
(0508 222 433)

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

The Civil Aviation Act 1990 requires notification "as soon as practicable".

# Accident Briefs

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

## ZK-IMB Aerospatiale AS 350BA

Date and Time:	30-Nov-11 at 23:20
Location:	Karikari Peninsula
POB:	2
Injuries (Fatal):	2
Damage:	Destroyed
Nature of Flight:	Search and Rescue
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	68 yrs
Flying Hours (Total):	17,670
Flying Hours (on Type):	165
Last 90 Days:	60

The helicopter was engaged in a bushfire reconnaissance at night, with the pilot and a fire officer on board. The pilot was requested to divert to a nearby beach, where some people were trapped by the fire front.

During the diversion, the helicopter entered the bushfire smoke plume and collided with the sea surface about one kilometre offshore. Neither occupant survived.

A full report is available on the CAA web site.

[CAA Occurrence Ref 11/5349](#)

## ZK-ICM Helipod KC518

Date and Time:	07-May-13 at 11:19
Location:	Waitemata Harbour
POB:	2
Injuries:	0
Damage:	Destroyed
Nature of Flight:	Test
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	56 yrs

The prototype helicopter was on a photographic mission over Waitemata Harbour, when a drive train failure occurred, resulting in an engine overspeed. The pilot entered autorotation and carried out a safe ditching, rolling the helicopter deliberately to the left after touchdown in order to stop the main rotor. Both occupants escaped through the pilot's door, and were picked up within minutes by a naval vessel in the vicinity.

The failure was attributed to the deterioration of the main transmission rear mounts, which allowed excessive forward tilt of the transmission. This in turn placed excessive loading on the driveshaft coupling, causing the drive gear to fail.

[CAA Occurrence Ref 13/2219](#)

## ZK-HGJ Schweizer 269C

Date and Time:	24-Sep-11 at 9:26
Location:	Karamea
POB:	2
Injuries:	0
Damage:	Minor
Nature of Flight:	Hunting
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	56 yrs
Flying Hours (Total):	2903
Flying Hours (on Type):	2013

During a venison recovery operation in the Karamea River area, the pilot was flying along a river at about 300 feet agl when the helicopter engine started to 'miss'. The pilot turned back down the river to a safe landing area and made a precautionary landing with partial power. The helicopter sustained minor damage to the drive pulleys and cooling fan shroud. Subsequent engineering investigation found that the loss of power was due to a broken valve spring.

[CAA Occurrence Ref 11/4285](#)

## ZK-DOK Piper PA-30

Date and Time:	21-Mar-13 at 11:40
Location:	Taieri
POB:	3
Injuries:	0
Damage:	Substantial
Nature of Flight:	Private Other
Pilot Licence:	Airline Transport Pilot Licence (Aeroplane)
Age:	41 yrs
Flying Hours (Total):	8850
Flying Hours (on Type):	17
Last 90 Days:	250

The aircraft was one of many joining at Taieri at the end of one of the legs of the New Zealand Air Safari 2013. The pilot held off landing as long as possible, as the aircraft ahead was slow to vacate the runway. The landing on the wet grass was too late and too fast for the aircraft to stop in the space remaining, and it ran through the fence at the end of the runway. The aircraft fuselage and propellers were damaged in the collision with the fence.

The pilot had allowed himself to focus on landing to prevent further circuit congestion, after the twin aircraft that was previously number one did a go-around, leaving him number two to a Cessna 172. He was further distracted when a ground person asked over the radio if he needed fuel.

[CAA Occurrence Ref 13/1364](#)



### ZK-GSW Schempp-Hirth Ventus cT

Date and Time:	04-Jul-12 at 15:50
Location:	Taupo
POB:	1
Injuries:	0
Damage:	Substantial
Nature of Flight:	Private Other
Pilot Licence:	Airline Transport Pilot Licence (Aeroplane)
Age:	62 yrs
Flying Hours (Total):	21,000
Flying Hours (on Type):	11
Last 90 Days:	98

The pilot was towed to 3700 ft with the intention of finding lift in an area of promising cloud formation. The lift proved disappointing, so the pilot decided to return to the aerodrome. Passing through 3500 ft, the pilot started the sustainer motor, which did not run at normal revs or power. The motor required a higher airspeed than normal to keep it operating, which resulted in excessive drag. During this period the pilot became distracted with the motor, and lost too much height to return to his departure aerodrome. He headed towards a farm airstrip nearby but the excessive drag meant he did not have the height to reach it. The glider landed heavily in a paddock just short of the airstrip and the pilot ground-looped the aircraft to avoid running into a fence.

CAA Occurrence Ref 12/2905

### ZK-KTZ Cessna 152

Date and Time:	06-Feb-13 at 14:49
Location:	Kiwitea, Manawatu
POB:	2
Injuries:	0
Damage:	Destroyed
Nature of Flight:	Training Dual
Pilot Licence:	Commercial Pilot Licence (Aeroplane)
Age:	24 yrs
Flying Hours (Total):	1940
Flying Hours (on Type):	50
Last 90 Days:	80

The aeroplane stalled in a maximum-rate turn during a low flying lesson. The instructor recovered to a wings-level attitude but was unable to avoid a momentary ground impact, during which the nose wheel separated and the propeller blades were bent. The aircraft then snagged an electric fence wire, which became wrapped around the crankshaft behind the propeller flange, and dragged it a further 250 metres. The aircraft came to rest straddling a fence, with the tail on top of a pump shed and the nose in the adjacent maize paddock.

The instructor and student vacated the aircraft without injury, but shortly afterwards, a fire broke out, consuming the engine bay and cabin area before it was brought under control.

The operator has now introduced a 45-degree maximum angle of bank limit during low flying exercises.

CAA Occurrence Ref 13/479

### ZK-HKU Aerospatiale AS 350BA

Date and Time:	09-Aug-12 at 13:00
Location:	Minaret Peak
POB:	0
Injuries:	0
Damage:	Substantial
Nature of Flight:	Transport Passenger A to B
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	39 yrs

The pilot had vacated the idling helicopter, and had spent five minutes unloading and setting up the pick-up point. The rotor blades were seen to begin oscillating, striking the tail boom and the ground beside the helicopter.

CAA Occurrence Ref 12/3419

### ZK-HLY Robinson R44

Date and Time:	10-Apr-13 at 08:03
Location:	Christchurch
POB:	1
Injuries:	0
Damage:	Substantial
Nature of Flight:	Private Other
Pilot Licence:	Private Pilot Licence (Helicopter)
Age:	42 yrs
Flying Hours (Total):	969
Flying Hours (on Type):	929
Last 90 Days:	48

During his after-start checks, the pilot raised the collective to test the low-rpm warning. The helicopter 'leapt' off the ground unexpectedly and yawed rapidly, the tail rotor and fin striking and penetrating a nearby avgas tanker trailer. No fire ensued.

CAA Occurrence Ref 13/1774

### ZK-HIY Robinson R22 Beta

Date and Time:	22-Jan-13 at 10:00
Location:	Karamea
POB:	2
Injuries:	0
Damage:	Destroyed
Nature of Flight:	Private Other
Pilot Licence:	Commercial Pilot Licence (Helicopter)
Age:	62 yrs
Flying Hours (Total):	7316
Flying Hours (on Type):	2500
Last 90 Days:	58

During cruise flight the helicopter experienced unusual main rotor vibrations, and the pilot decided to make a precautionary landing. During the final landing stage the tail rotor struck rising ground and the helicopter rolled over. The pilot suspected that the vibration was caused by FOD (vegetation) picked up by the main rotor during a previous landing.

CAA Occurrence Ref 13/376

# GA Defects

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

## 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 350B2

### Hydraulic hose

Part Model:	Hydraulic hose
Part Manufacturer:	Eurocopter
ATA Chapter:	2910

After a maintenance flight, it was noticed that there was a large leak from a mast hydraulic hose. The hose was checked for tightness, the area cleaned and a further flight was made.

The leak was still evident and on examination, the hose was found to be of a 'generic' type. Further investigation with the latest revision of the IPC (illustrated parts catalogue) found that this hose was a new part number hose that had been introduced.

Correspondence with Eurocopter established that they have introduced a new product manufactured from different materials, Teflon and stainless steel braid. The leaking hose was of this new generation type. Eurocopter investigations concluded that the main cause of the leaking was that the hoses can charge with static electricity through a triboelectrical phenomenon, and discharge in the stainless steel braid when its potential has reached the Teflon tube's insulating limit. This discharge can create a micro-perforation, leading to the hydraulic fluid leak. Eurocopter has therefore commissioned manufacture of new pressure hoses within a short time frame. These will be completely interchangeable with all previous versions.

[CAA Occurrence Ref 13/1502](#)

## Bell 206B

### Servo pilot input pivot

Part Manufacturer:	Hydraulic Research
Part Number:	206-076-031-023
ATA Chapter:	6710
TSI hours:	25
TSO hours:	152
TTIS hours:	17,145

The pilot reported to engineering that the helicopter had become progressively more difficult to fly smoothly.

An overhauled cyclic servo had been installed 152 flight hours previously, with the servo pilot input trunnion pivot becoming stiff during subsequent flights. The servo pilot input trunnion pivot was removed, cleaned, lubricated, and reinstalled.

[CAA Occurrence Ref 13/2520](#)

## Air Tractor AT-402B

### Wing attachment tube

Part Model:	402B
Part Manufacturer:	Air Tractor
ATA Chapter:	5310
TTIS hours:	3715

Routine maintenance inspection found a crack in the fuselage main vertical wing attachment tube. The crack had propagated approximately 180 degrees around the tube.

The manufacturer was advised, and a repair was carried out in accordance with the manufacturer's repair scheme.

[CAA Occurrence Ref 13/2590](#)

## Cessna 207

### NLG drag link bolt

Part Number:	NAS464P5A42
ATA Chapter:	3220
TSI hours:	50

During scheduled inspection, the head of the bolt that attaches the nose landing gear drag strut to the fuselage was found shorn off. Maintenance investigation identified the possible cause of the failure to be a slight radius under the bolt head and the hole in the drag strut not having a chamfer to accommodate the bolt radius. The Cessna 200 series SIDs inspection Supplemental Inspection Number 32-20-01, Nose Landing Gear inspection, requires removal and inspection of the nose landing gear drag link bolts at 3000 hours or 5 years, and repeated at the same interval. Serviceable replacement bolts are to be installed following inspection. SIDs inspection should now prevent further failure in service.

[CAA Occurrence Ref 13/1225](#)

## Piper PA-31-325

### Hydraulic filter seal

ATA Chapter:	3220
--------------	------

The main gear failed to retract after takeoff, and subsequently, the nose gear would not extend. The pilot was able to lower the nose gear using the hand pump.

After landing, investigation found that the hydraulic fluid reservoir level was low. A leak was eventually found at the right engine hydraulic filter bowl seal (the leak was difficult to find as it was a slow misting leak). The filter bowl O-ring seal was partially extruded between the filter bowl and its case. On removal of the bowl, the seal was found to be misshapen and irregularly seated.

The engineers suggested that the operator include a more accurate check of the hydraulic reservoir levels as a pre-flight inspection item.

[CAA Occurrence Ref 13/532](#)

## NZ Aerospace FU24-950

### Main gear attachment bolts

Part Number:	6606-18
ATA Chapter:	3210
TSI hours:	13

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

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

[CAA Occurrence Ref 13/900](#)

## ZSLS SZD-9bis Bocian 1D

### Top rudder hinge

Part Manufacturer:	SZD
ATA Chapter:	2720
TSO hours:	642
TTIS cycles:	7525
TTIS hours:	2949

After landing, it was found that the top rudder hinge had completely separated at the right-angle bend and the rudder was held only by the main bottom hinge. The top rudder hinge is subject to AD DCA/SZD/101, requiring daily inspection before flight.

This inspection was carried out with no problems or cracking identified before the day's flying. It is believed that the cause was either extremely rough ground conditions at the airfield and/or severe turbulence and negative 'G' in flight.

The part was also original, installed at manufacture, and the alloy appeared to be severely crystallised. The manufacturer has been contacted and a new part has been ordered for replacement.

[CAA Occurrence Ref 13/1503](#)

## Robinson R44 II

### Pilot door hinge

Part Manufacturer:	Robinson
Part Number:	C228-1
ATA Chapter:	5210
TSI hours:	91.1
TTIS hours:	1773

The pilot's door lower inboard hinge failed during flight, and the aircraft was landed without further incident.

The failure of the hinge was believed to be due to fatigue cracking, possibly initiated from a stress raiser in the interface between the bush and hole. The cracked part has been sent to the manufacturer.

Inspection criteria covering the hinges are contained in the manufacturer's maintenance manual, but it was considered that the cracks would be hard to see and so the maintenance organisation introduced supplementary inspection to the schedule.

[CAA Occurrence Ref 13/880](#)

## Robin R2120 U

### Exhaust heat exchanger shroud

Part Manufacturer:	Avions Robin
Part Number:	56.40.68.000
ATA Chapter:	7810

During a scheduled inspection, a piece of the exhaust heat exchanger shroud internal rib was found detached and loose in the air box.

Maintenance investigation found that the internal rib had probably failed due to fatigue because of the length of time in service. The exhaust heat exchanger on the French-built Robin 2120 aircraft using the four-into-one exhaust system utilised ribs made from 0.025" material. The replacement item now supplied by the New Zealand manufacturer uses a thicker 0.032" material for the ribs and should therefore be more durable.

The exhaust system is subject to a detailed visual inspection every 50 hours, and removal of the heat exchanger shroud for muffler inspection every 100 hours. Defects such as this should be able to be detected during scheduled inspections before component failure. This is the first occurrence of this nature that the New Zealand manufacturer is aware of.

[CAA Occurrence Ref 13/3530](#)

## Aerospatiale AS 355 F1

### Battery relay

ATA Chapter:	2430
--------------	------

After No 2 engine was started, the BATT TEMP warning light illuminated. The helicopter was shut down and the battery removed to a secure area. The battery was replaced and the aircraft returned to service.

The helicopter operated normally for a further 53 hours, but then the same thing happened after No 2 engine was started.

The fault was traced to Relay 32P, which connects the second battery to the helicopter electrical system. This was operating intermittently, meaning that the helicopter had been effectively operating on one battery instead of two.

[CAA Occurrence Ref 13/1717](#)

## Pacific Aerospace 750XL

### Elevator cable

Part Manufacturer:	PAL
Part Number:	CAB-P-14-83-2960 & 3
ATA Chapter:	2730
TTIS cycles:	59626

During scheduled inspection the elevator cables were found frayed and worn. The cables were sent for metallurgical testing, which confirmed that the failure mechanism was fatigue.

The cable batch was traced and no link could be found between batch numbers of other reported cable defects. There was no evidence of over-tensioning of the cables and no abnormal wear on the pulleys. The cause could not be determined. The worn cable was replaced.

[CAA Occurrence Ref 13/679](#)

# Personal Preflight

## Are you ready to fly?



You've completed your planning, the aircraft is ready, but have you completed your *Personal Preflight*?

You would never fly an unsafe aircraft, but are **you** in top condition?

The safety of every flight hinges on the competency of the pilot. If you're off your game, whether it be a cold, new medication, you're tired, got a hangover or worse, then your ability to make important decisions is compromised.

Come along and get the truth about what you are putting into your body, and how you can get yourself as sharp as possible before flight.

At the seminar, you will have access to supporting material such as online tools to check your readiness for flight.

Here are the first venues for the 2014 AvKiwi Safety Seminars. We'll be adding more in the next issue of *Vector*, and you can also check the CAA web site, [www.caa.govt.nz](http://www.caa.govt.nz), "Seminars and Courses".

