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POINTING TO SAFER AVIATION

Get-there-itis

Alpha Tango Charlie – Say Again

Trust Your Instincts

Crosswind

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

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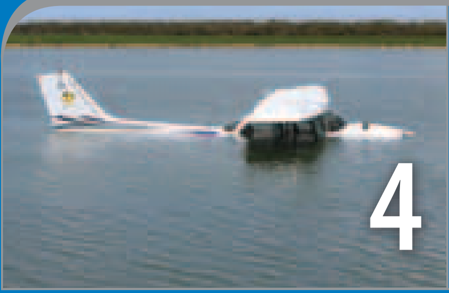
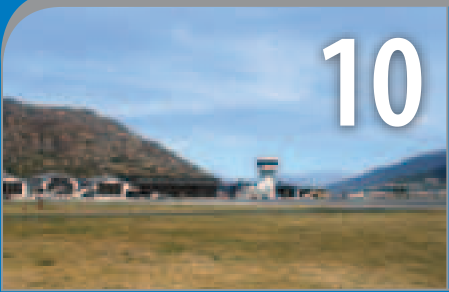


Get-there-itis

A determined desire to get to a destination is often called "get-there-itis". It can cause a pilot to ignore clues that a change of plan is needed to ensure a safe flight. We explain some of the human factors present so you can watch out for them.

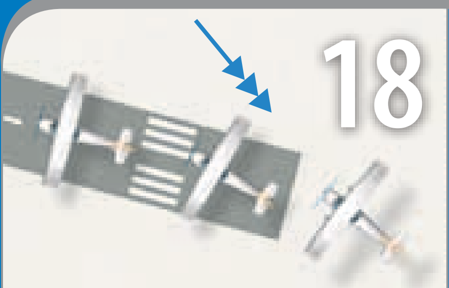


Alpha Tango Charlie – Say Again

Pilots and controllers are two sides of the same coin, but they don't always understand each other well. Pilots' first contact with Air Traffic Control at controlled aerodromes is often calling the ground frequency – what happens, and why?

Trust Your Instincts

You can think something is not quite right, but hesitate to get it sorted, because you might be wrong, or it might be inconvenient. This example shows you should trust your instincts and follow through until the problem is sorted.



Crosswind

It is rare for wind to blow straight down a runway with absolute consistency, so almost every takeoff and landing you carry out will involve an element of crosswind. Here is a refresher on the basics.

In this issue...

Cover photo: Get-there-itis contributed towards this C172 overrun accident at Thames Aerodrome. Photo courtesy of Graeme Giffney.

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Circuit Direction

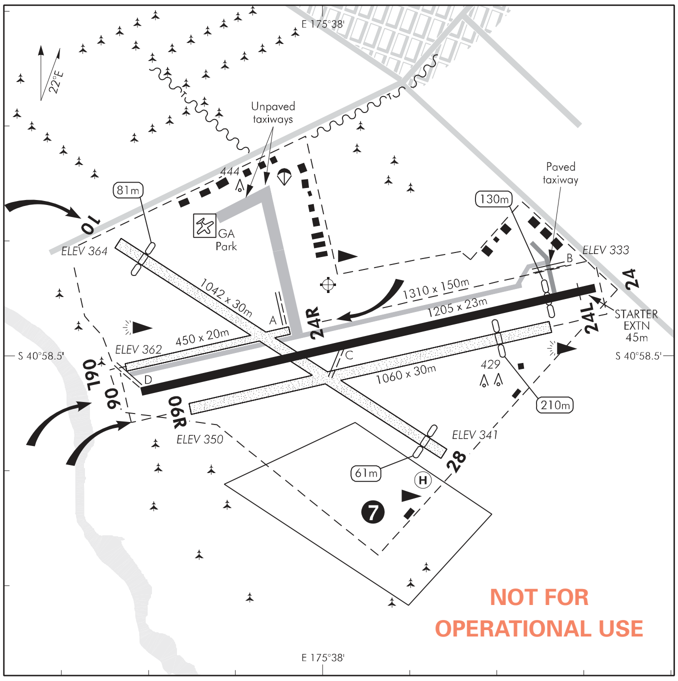
Pilots should be familiar with the traffic circuit direction, especially at uncontrolled aerodromes. It is a legal requirement for pilots to follow the aerodrome traffic circuit that is published in *AIP New Zealand*, Vols 2 to 4, when approaching for a landing, after takeoff, and when performing procedures such as the standard overhead join.

Recently, there have been a few instances of pilots joining the circuit at uncontrolled aerodromes from the non-published side. While this may seem quicker or more fuel-efficient, it is a risky option.

Aircraft are also not allowed to vacate the aerodrome circuit from the non-published side after takeoff. The circuit direction must be followed unless you continue on the runway heading until clear of the circuit, before turning opposite to the circuit direction.

Making a radio call to say that you are joining-in from the non-published traffic side, or that you are making a non-standard right (or left) turn after takeoff does not make it safe, or legal. There may be some NORDO aircraft or pilots who may have missed your radio call.

Following rule 91.223 *Operating on and in the vicinity of an aerodrome* is required to create an orderly traffic flow and reduce the risk of collision. Keeping a good lookout at all times is also essential. ■



1. Circuit:
Sealed RWY06 — Right hand
24 — Left hand
Grass RWY 10 and Southern grass RWY 06R — Right hand
Grass RWY 28 and Southern grass RWY 24L — Left hand
Northern grass vector 06L — Left hand
24R — Right hand

An example from *AIP New Zealand* showing circuit directions.

Photo courtesy of Graeme Giffney.

Get-there-itis

A determination to reach your destination despite changing circumstances is commonly referred to as 'get-there-itis'. The technical term for this is plan continuation bias – continuing with a failing plan despite evidence that it's not working.

This phenomenon continues to catch pilots out with serious or fatal consequences. Here are some recent accidents which illustrate the different ways in which it can manifest.

Cresco

In 2008, a fatal accident involving a Cresco showed many hallmarks of get-there-itis. The pilot was in the final stages of completing a topdressing job when the accident occurred, just after takeoff from a farm airstrip.

Self-imposed time pressure may have been a factor, as there were two strong incentives to get the job done that day. The weather forecast for the following day was poor, a low pressure system was approaching, bringing wind and rain, and the pilot was to begin an extended period of leave the following day.

The pilot departed for the farm strip at 6:30 am, but didn't arrive there to begin the job until 9:40 am, due to an engineering issue that required a diversion to the company maintenance base. Part 137, Appendix B, allows agricultural aircraft to be operated up to 28 percent over the maximum certificated takeoff weight (depending on certain conditions set out in the Aircraft Flight Manual). Running behind schedule may have influenced the pilot's decision to use these provisions in order to complete the job faster.

At the time of the accident the aircraft was 145 kg below the Part 137 maximum allowable weight. However, it was probably overloaded for the prevailing environmental conditions. Tyre tracks on the airstrip surface showed that the aircraft had been using the entire airstrip length to become airborne. The pilot needed to jettison some or all of his load on three occasions to achieve the required aircraft performance, and Satloc data showed that on some flights the aircraft had descended by 26 feet after takeoff before commencing a climb.

The pilot continued with this plan despite experiencing poor aircraft performance, lime that wasn't flowing from the hopper evenly, and changing meteorological conditions, as late morning the wind backed, introducing a tail-wind component and turbulence during takeoff and climb out.

As with most accidents, there was no one cause. In this case, get-there-itis (or get-the-job-done-itis) may have been a contributing factor that influenced the pilot's decision-making.

Thames Cess-pit

Plan continuation bias is most often reported in the approach-to-landing phase of flight, when a pilot's goal is to land the aircraft, and their focus is on progress toward that goal. It is a powerful but unconscious cognitive bias to continue the

original plan, and it can prevent pilots from noticing subtle clues that the original conditions have changed.

The Thames cess-pit is a good example of this. In the last six years, three Cessna aircraft have ended up in the sewage oxidation ponds at the end of Runway 14 at Thames Aerodrome, a C150, and two C172s. Two of these encounters show elements of get-there-itis.

The pilot of the first C172 was intending to carry out a touch-and-go at Thames, before continuing to Tauranga. A standard overhead join was made, and the pilot observed a light direct crosswind on Runway 14/32 from the south west, which was fluctuating between a head and tailwind for either runway choice. Since the pilot was heading to Tauranga next, he chose Runway 14 to expedite his departure on track.

On finals, the pilot decided he was too high to make his aiming point, so he went around. On his second attempt to land, the same thing happened – he was too high, and went around. At this point, instead of considering why he might be having trouble landing, checking the wind direction and reassessing his choice of runway, the pilot continued with his failing plan – determined to make a landing work on Runway 14.

The pilot extended downwind on the third circuit, and on realising he was high on finals once again, the pilot closed the throttle in an attempt to descend back onto profile. The pilot initiated a go-around when he saw that he couldn't achieve his aiming point, moving the throttle from fully closed to fully open. When no change in acceleration, attitude, or engine revolutions occurred, the pilot closed the throttle again and landed, but was unable to stop on the runway remaining. The aircraft ended up floating in the oxidation pond and the pilot swam to shore. It is likely that plan continuation bias led this pilot to either miss or dismiss clues that he was experiencing a tailwind and needed to reassess his plan for landing. This, combined with many other contributing factors identified during the investigation, all added up to produce an unfortunate outcome.

The pilot of the second C172 was also on a cross-country, and attempting a touch-and-go landing on Runway 14, before departing for Tauranga. The pilot experienced a tailwind on finals but did not recognise this, or the need to go-around. He continued, and landed deep into the runway. The pilot applied power to commence a takeoff, but then realised he did not have enough runway left to get airborne. He aborted the takeoff by applying the brakes, but inadvertently left power on. The aircraft failed to stop before the end of Runway 14.

Continued over ❯❯

Photo courtesy of Michael Craig.

» Continued from previous page

Cognitive Bias

Cognitive bias is a general term used to describe many distortions in the human mind that are difficult to eliminate, and that lead to perceptual distortion, inaccurate judgment, or illogical interpretation. Research has shown that plan continuation bias (or get-there-itis) can combine with other cognitive biases. Here are two examples.

Confirmation Bias

Confirmation bias is a tendency for people to favour information that confirms their preconceptions, regardless of whether the information is true. As a result, people gather evidence and recall information from memory selectively, and interpret it in a biased way. Essentially, you see what you want to see. Confirmation biases can therefore maintain or strengthen beliefs in the face of contrary evidence, leading to potentially disastrous decisions.

In 2010, the pilot of a Cessna 172 was on a cross-country flight to Ohakune. The pilot had not landed there before, so prior to the flight he called the operator of the strip to ask a few questions about the area and advise his ETA. The pilot also obtained the GPS coordinates of the strip to load into his GPS unit, and used Google Earth to familiarise himself with the airstrip location and approaches. Overhead Ohakune, the pilot called the operator again to check the status of the runway, because the operator had mentioned he would be clearing stock off the strip before the pilot arrived.

The operator told the pilot that he could see him overhead and to join for Runway 04. The pilot looked down at what he thought was the runway and commented that it looked very brown. The operator said that was from the harrowing he had been doing. The operator then said that he was moving off the runway so the pilot could land. As he said that, the pilot watched a tractor move off the end of the field he was looking at. The pilot stated that glare from the sun prevented him from seeing the condition of the surface of the field and it was not until he was crossing the fence and flaring that he noticed the brown field was in fact ploughed dirt. As the nose wheel touched the ground it dug in and aircraft flipped onto its roof.

Confirmation bias meant this pilot's mind distorted what his eyes could see to fit the information he had been given on the phone. It also meant he dismissed evidence to the contrary,

the lack of a windsock, the short length of what he thought was the strip (the paddock was only 300 m compared to the strip which is 950 m), and the fact that he did not cross State Highway 49 on short finals, or identify a prominent go-karting track abeam the Runway 04 threshold.

Frequency Bias

This is the tendency to revert to high-frequency actions, beliefs, and interpretations. Frequency bias can lead you to see a routinely observed object as it normally appears, even when this differs from its actual current appearance. Similarly, when making decisions, frequency bias manifests as a tendency to do what you most frequently do in that situation, even when you have previously decided to do otherwise. In simple terms, it is your brain thinking, "it's always worked before".

In 2010, an overrun accident by a Glastar showed elements of frequency bias. The pilot had taken off from the strip successfully on previous occasions and assumed this day would be no different. When the pilot could not get the tail raised he aborted the takeoff and braked, but could not stop before the aircraft ended up in a river at the end of the strip.

The pilot did not recognise that the conditions that day were different, and that he needed to change his usual actions and plan. He just assumed the outcome would be successful based on previous experience, without analysing the situation closely. In doing so, he attempted to takeoff with a tail wind, during the hottest part of the day, and without using a short-field takeoff technique.

Summary

While the examples given here are from General Aviation, cognitive biases are experienced by all pilots. Airline pilots who fly the same sectors day in and day out need to be particularly aware of the dangers of frequency bias.

As human beings we like a successful result, and to achieve our goals. This desire can be increased by outside influences such as time, money, and not letting people down. Be aware that this tendency can lead you to make assumptions, see what you want to see, or disregard clues that would require a change of plan. In order to combat cognitive biases, be aware of their potential existence, and try to analyse everything objectively. ■

Satellite Navigation Gets a Boost

Satellite navigation technology is evolving rapidly – so much so that the Civil Aviation Rules haven't kept up. In order to facilitate operators using efficient Global Navigation Satellite Systems (GNSS), the Director of Civil Aviation has put in place an Exemption while the full Rule Development process takes place.

Twenty years ago, IFR navigation in New Zealand was conducted by aircraft flying along tracks between ground based navigation aids, and approaches were conducted by a series of manoeuvres around aids on or near an aerodrome.

In twenty years time, navigation will be by satellite systems. Arrival and departure procedures will be more efficient, fuel burns and the carbon footprint will be improved, and there will be a more efficient flow of traffic.

Exemption

The exemption (11/EXE/7) permits the use of GNSS on any route, provided the flight is planned, conducted, and fuelled in such a way that should the satellite system fail at any point, a diversion can be made to another route and destination that is supported by an alternative navigation system. The exemption can be found on the CAA web site, www.caa.govt.nz, see "Rules – Exemptions".

The Exemption applies only to GPS receivers fitted to aircraft operating to the operational approvals on CAA Form 2129 for en route, terminal, and non-precision approach operations. It does not differentiate between receivers certificated under TSO-C129 and those under TSO-C145/146.

The Exemption allows IFR operations to aerodromes with published GNSS procedures when there are limited ground-based navigation aids available, such as when the VORs at Auckland, Wellington, and Christchurch, are temporarily out of service for replacement in early 2011.

Safety Assessment

The safety assessment supporting the use of GNSS, as provided for in the exemption, was based on a statistical analysis of the comparative failure rates of satellite systems with VORs and NDBs / ADFs in New Zealand to show that regulatory requirements were met.

The safety assessment showed that:

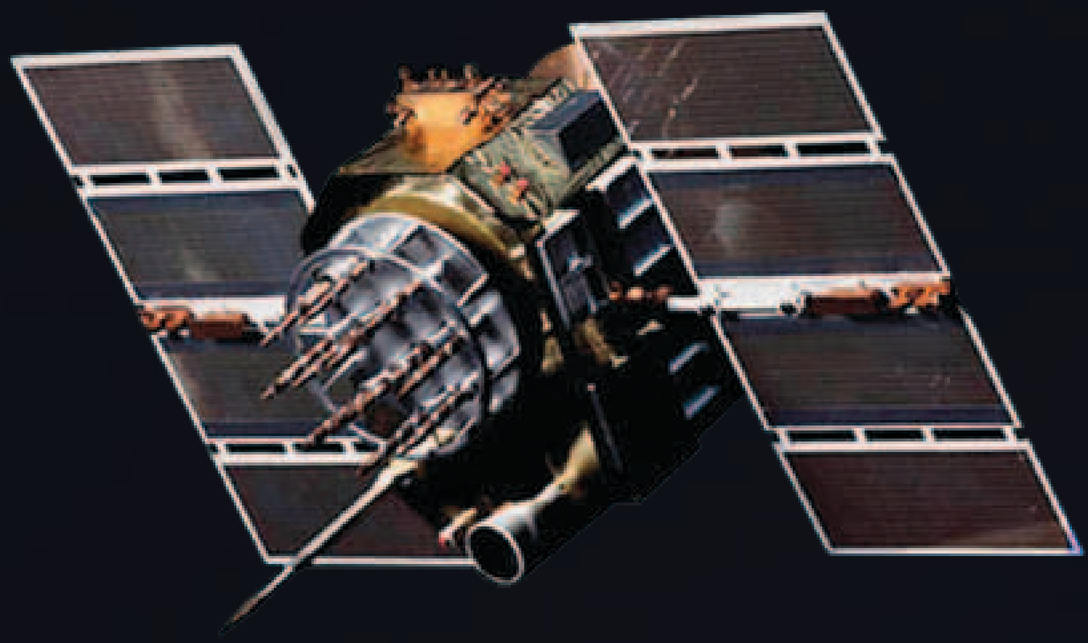
1. GPS receivers certificated under TSO-C129 use Receiver Autonomous Integrity Monitoring (RAIM) to provide satellite Fault Detection (FD). When a fault is detected in a satellite, or when there are insufficient satellites in view to confirm the integrity of the system, the receiver provides a RAIM alert, in which case the navigation information cannot be relied on. A second receiver does not provide redundancy for satellite failures, but does provide aircraft equipment redundancy.

The use of a TSO-C129 GPS receiver is dependent on an alternate means of navigation being installed in the aircraft.

2. Later GPS receivers certificated under TSO-C145/146 with Fault Detection and Exclusion (FDE) provide a navigation system that requires at least two satellite failures before the equipment becomes invalid for navigation. Current satellite reliability is better than the design specification, so the probability of the loss of valid navigation is very small.

The Australian Civil Aviation Safety Authority already approves these receivers on any route without the need for back-up navigation equipment, provided the satellite prediction indicates that there will be satellite coverage with FDE over the whole route. The CAA is working to achieve this same capability, but more work is needed.

Photo: ©istock.com/larslentz



GPS satellite photo courtesy of www.gps.gov

Navigating the Future

Emerging Air Traffic Enabling systems are improving airspace efficiency globally. These systems are relying on satellite technology for communications, navigation, and surveillance. Performance Based Navigation (PBN) will be a key enabler for more efficient airspace and operations, and will rely on satellite based systems. The greater the navigation performance of the equipment, aircraft, and crew, the lower will be the minima to which they may operate.

The CAA strongly recommends that operators thinking of purchasing GNSS receivers, or aircraft equipped with GNSS receivers, move towards the TSO-C145/146 or TSO C196 receivers. Eventually, these systems will not require an alternate means of navigation, and they will also be compatible with future ADS-B Surveillance system equipment requirements.

A number of factors will affect the full implementation of satellite navigation:

» GPS and GLONASS systems are already operational – both are undergoing improvement programmes. The European Galileo system, and the Chinese Compass system, will both be online in the next 5 to 10 years.

» Receiver and display technology is advancing rapidly.

» Airways' VORs and NDBs have a finite life, and decisions need to be made on whether or not they are to be replaced.

» Aircraft operators need to note the time scale of the transition to enhanced air traffic management systems globally so they can plan for the replacement of their navigation and surveillance equipment (see the CAA web site, "Performance Based Navigation").

» The Civil Aviation Rules and the Advisory Circulars need to be amended in the areas of flight operations, aircraft certification, aircraft maintenance, flight crew, and ATCO training, and airspace and airways design.

» Multilateration and ADS-B will be increasingly used for surveillance.

Human Factors

GNSS is comparatively easy to use, and provides very accurate navigation information. The danger in this is that it lulls pilots into a false sense of security and a failure to continually monitor the GNSS information by other means.

For multi-crew aircraft, pilots should be cross-checking all inputs to the navigation system.

The electronic databases sometimes contain erroneous data. Some GNSS receivers amend their data ahead of the amendment dates on the charts. It is essential that all information provided by the GNSS is verified by other means:

» When planning a Standard Instrument Departure (SID), and on every subsequent flight plan leg, check that the track and distance to the next waypoint provided by the GNSS agrees with that shown on the chart.

» When amending a flight plan in the air by changing waypoints, check that the track and distance to it make sense. You may have selected the wrong waypoint. ■

Alpha Tango Charlie – **Say Again**

"Think of it like this. A controller has a playground, and a pilot wants to come in and play. That's cool, but just say where you want to play."

Queenstown Air Traffic Controller, Jess Wilkinson, is speaking as a controller, who's also a pilot. Pilots and controllers are two sides of the same coin, but they don't always understand each other well. In the coming issues of *Vector*, we aim to take the foggles off and clear up some misconceptions.

Pilots' first contact with Air Traffic Control at controlled aerodromes is often calling the ground frequency. Pilots give their aircraft type and call sign, intentions, number of people on board, and the current ATIS (which includes the QNH).

"We need that information so the aircraft can be part of the scene in front of us and for our planning," Jess says.

"The aircraft type identifies the speed and characteristics of the aircraft, which helps with timings and planning. The intentions allow us to plan how the pilot wishes to vacate the zone, or enter it, or where they want to operate when remaining within the control zone. The POB is essential information in the event of an accident or incident, and the ATIS ensures the pilot is using the most up-to-date weather information and QNH."

Most pilots know why they give this information to ground. But what the controller does with it might be a mystery.

"At Queenstown, the ground person will be sitting there with a pen and a strip of white paper held in a plastic strip holder, about 20cm long. The details are written as received from the pilot, then it is sent to the Air Traffic Controller.

"The controller takes out the strip, reads and analyses the information, and the pilot's intentions are integrated into the exisiting plan. The controller thinks about where all the other aircraft operating in the zone will be when that particular aircraft is ready to depart. The pilot is then issued with taxi and departure instructions."

This means there can often be a short delay between calling ground and receiving your taxi instructions. While this procedure is not followed at every controlled aerodrome, some version of it will happen at each one.

"Some towers use an electronic system, and at others pilots just contact

the tower direct, but there's always some kind of processing to be done," Jess says.

Pilots can help this part of the process by speaking clearly, giving all of the required information on first contact, and using correct phraseology.

"The standard phraseology is our common language. It's helpful if pilots use it, but if you don't know the right thing to say, or it's hard to explain what you what, then plain language is absolutely fine. We'd rather get it correct, because looking after the safety of comings and goings is our main responsibility as controllers."

Accuracy is important, especially when giving position reports.

"In some airspace, we need to pass traffic information between aircraft in accordance with the airspace classification, so if you're giving me your position and altitude, be as accurate and concise as possible, so I can relay that information correctly to another aircraft."

In addition, Jess says controllers appreciate knowing other significant details, such as if a flight is a first solo cross country, the first time in the zone for an itinerant pilot, or if a student has an instructor on board.

"It's nice to know whether an aircraft has someone on board who is familiar with local procedures, in case we need to ask the aircraft to do something unusual. On the other hand, if we know someone is new, we do understand that it can be daunting and overwhelming and we will try and accommodate that by issuing non-complex instructions and 'chunking' information, if possible."

Jess says controllers can tell which pilots have studied their AIP, and are trying to correctly follow local procedures.

"Don't be afraid to come into a place like Queenstown for the first time, but you do need to do your homework and study the *AIP*. The controller is there to help. It is part of the service we provide."

A particular frustration controllers face is when pilots do not study aerodrome plates (*AIP New Zealand, Vol 4*), and are not clear on the location of taxi-way holding points, reporting points, or are unfamiliar with circuit directions. Controllers are planning a few minutes ahead when they send aircraft to holding points, and that plan unravels when an aircraft heads off the wrong way, or is unable to read back the clearance correctly.

"As controllers, we have a high vantage point with a good view, so it's obvious to us where the holding points are. It's a completely different perspective from the cockpit, but study the plates to familiarise yourself with the aerodrome layout."

Jess says controllers also need to understand things from the pilot's point of view.

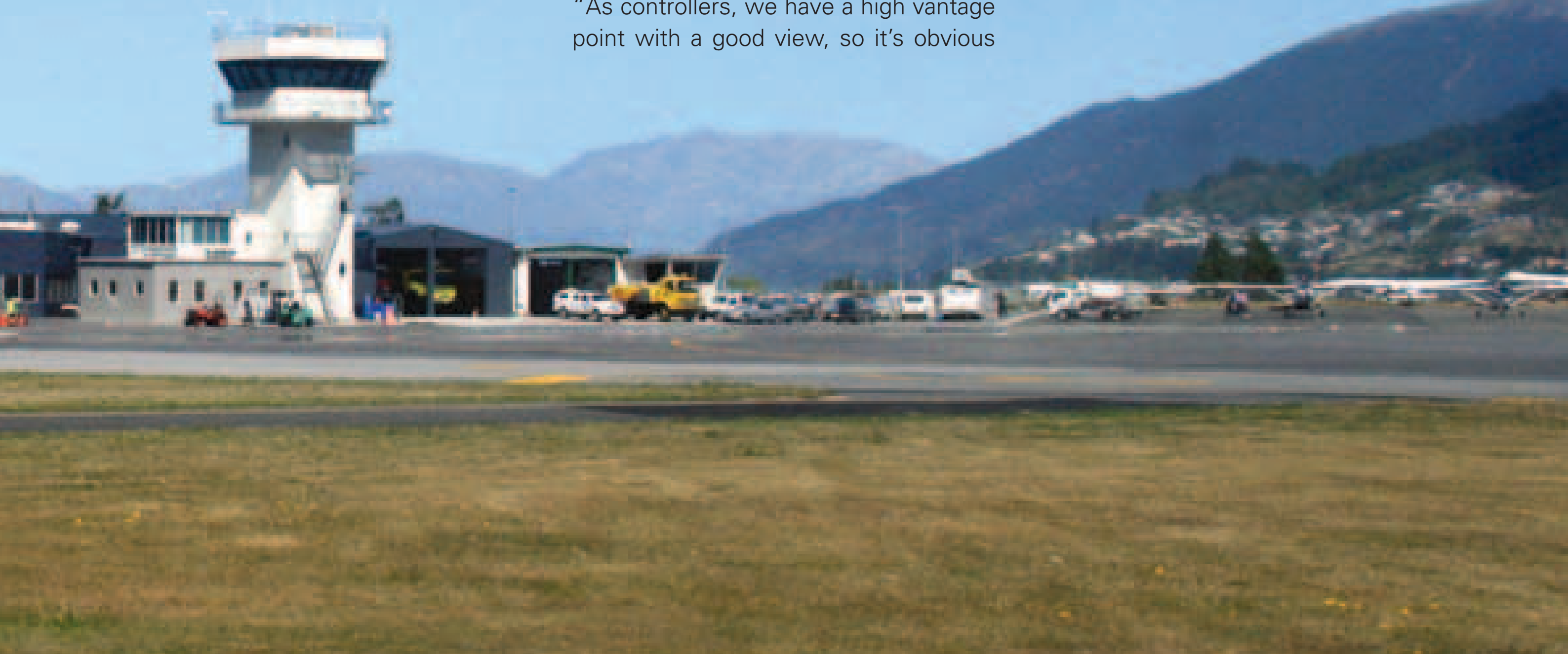
"Pilots are taught to aviate, navigate and then communicate. So we need to understand that the pilot's priorities are to fly the aircraft, head in the right direction, and then to talk to us. If we don't get an immediate response, we have to remember that there's a lot going on in the cockpit."

Talking to controllers can be daunting for pilots.

"That's understandable because other people can hear it, including when you make a mistake, but the more you do it, the easier it becomes. Just remember, when you're changing frequencies, listen first and ensure the new frequency is not in use before you speak.

"You might muck it up, but don't be afraid to ask for help – that's what we're there for."

For a refresher on radio calls, see Advisory Circular AC91-9 *Radiotelephony Manual*. ■



Call the **Professionals**

Don't be tempted to mount your own Search and Rescue (SAR) operation, even if you have GPS tracking technology – leave it to the professionals.

Many companies monitor the position of their aircraft using satellite tracking devices. When an aircraft equipped with this technology makes a forced, precautionary, or out landing, you may know exactly where they are, but this does not mean you have the knowledge, skills, experience, and equipment necessary to safely rescue them from a remote location.

Attempting your own SAR operation puts more lives at risk unnecessarily. The colleagues, friends, or family you are searching for may be uninjured, but if you take too long to reach them, or if you get lost yourself while searching, the consequences could be fatal.

The Rescue Coordination Centre New Zealand (RCCNZ) is New Zealand's national search and rescue organisation. They cover one of the largest search and rescue areas in the world, and typically respond to 700 search and rescue incidents annually.

The SAR officers working for RCCNZ are trained to international aviation and maritime SAR standards and have a wide range of experience in aviation, marine, and land, search and rescue. RCCNZ also have access to over 100 rescue services and related agencies nationwide, plus 10,000 SAR personnel and volunteers.

The logistics of planning and executing a search are not simple. SAR officers determine the area to be searched, plan the search strategy and, if necessary, consult with specialist aviation, defence force, marine, Police and land SAR advisers. They will then task aircraft, helicopters, ships, Coastguard, or other groups and agencies to carry out the plan.

Once the search and rescue is under way, SAR Officers then monitor progress, update the plans as new information comes to hand, and manage all the activities to get the best possible result.

A SAR incident only ends when all the people in distress have been accounted for, and all the searchers have returned safely home. ■

Tips to Help Yourself Be Found

Activate your 406 beacon any time there is imminent danger to your aircraft, as there is more chance the signal will be received while the aircraft is in the air. Next, squawk 7700, and make a Mayday call on a frequency that is likely to be heard by Air Traffic Services (ATS) or other aircraft.

Once you are on the ground, leave your ELT on until help arrives.

If RCCNZ receive an ELT activation and then lose the signal, they will assume the aircraft has had an accident, and start search and rescue procedures. For this reason, if the threat to your aircraft has gone, and you do not require assistance, you should establish communications with ATC to advise them of your situation before turning the beacon off. If your ELT has been activated inadvertently, advise ATC or call RCCNZ (0508 472 269) immediately.

Whether you should stay with the aircraft, or leave with the ELT, depends on the accident site. You will need to move if you are in imminent danger from the accident site, from fire for example. You may also want to move if you can get to help or a communications point easily, or if you suspect that the ELT signal is being blocked, such as in a tight gully, or heavily wooded area, and you have a removable ELT or a Personal Locator Beacon.

In all other situations, you should stay with the aircraft, as it is easier to see from the air.

If you are on the ground and accidentally activate an ELT, or you hear an ELT transmitting on 121.5 MHz, then call the RCCNZ on 0508 472 269.

Getting to Know **the Slopes**

From 1 July this year, every fixed-wing trainee pilot must learn basic mountain flying as part of gaining their private or commercial pilot licence. The mountain flying syllabus for helicopter pilots was revised in 2008.

The syllabus requirements for both helicopter and fixed-wing are set out in Advisory Circulars AC61-3 (PPL) and AC61-5 (CPL). PPLs will learn terrain and weather awareness, and CPLs will learn basic mountain flying skills. However, all pilots, including those who have held licences for many years, are encouraged to undergo mountain flying awareness training from a suitably qualified instructor.

One such instructor is Simon Spencer-Bower of Wanaka Helicopters. Simon plays a starring role in the CAA's 2010 *Mountain Flying* DVD, and assisted with the CAA's AvKiwi Safety Seminar on mountain flying last year. His organisation offers an Advanced Mountain Flying Course (helicopter), which is aimed at commercial pilots who will be working in mountainous areas.

Recent CPL, Steve Jennings-Steers, took part in a Wanaka Helicopters Advanced Mountain Flying Course in September 2010 and wrote to *Vector* of his experiences. Note: This course is much more in-depth than the new PPL and CPL Mountain Flying syllabuses require.

Photo courtesy of Simon Spencer-Bower

My intro to mountain training was to begin on the northern slopes of the Pisa Range just south of the airfield. Simon's instructions and explanations were concise and I was left in no doubt as to what was to be achieved with each exercise. Altitude, approach and landing spots steadily increased in difficulty. I was trained to have great accuracy with my landings.

"You can see the front right skid so pick a point on the ground and place the end of your skid on it," Simon would require. At one spot he pedalled the R22 on the ground to make definitive skid marks. He then had me fly away and try to return to the same spot. We touched down and opened both doors to inspect the result. Simon looked back at me with that characteristic toothy smile, "You missed by half an inch."

The challenges kept coming. At the top of a valley on the east side of Lake Hawea, an ascending airstrip was to be a good lesson in terrain awareness and illusions. My task was to land on the level ground at end of the airstrip. On approach I couldn't work out whether I was too high or too low. I kept progressing with Simon telling me to hold altitude. We seemed to touch down on target, but I had to confess I was aiming for the other end.

I enjoyed trying to assess approaches and small landing sites. We played "land me there" with Simon or B-Category instructor and Operations Manager, Andy Clayton, pointing to a cellphone tower that required inspecting, a farmer's gate on a saddle that had to be closed, or a herd of animals that had to be checked out, which meant a landing on seemingly inaccessible mountain sides.

I got better at defining wind direction by the feel of the R22, cloud shadow direction, and early loss of translation. The snow cover and short tussocks at altitude gave little away, even in a reasonable breeze. The conditions would often be dead calm at Wanaka airport, but we'd find ourselves hovering at the summit of the Pisa Range in 45 knots watching snow being whipped up from the surface.

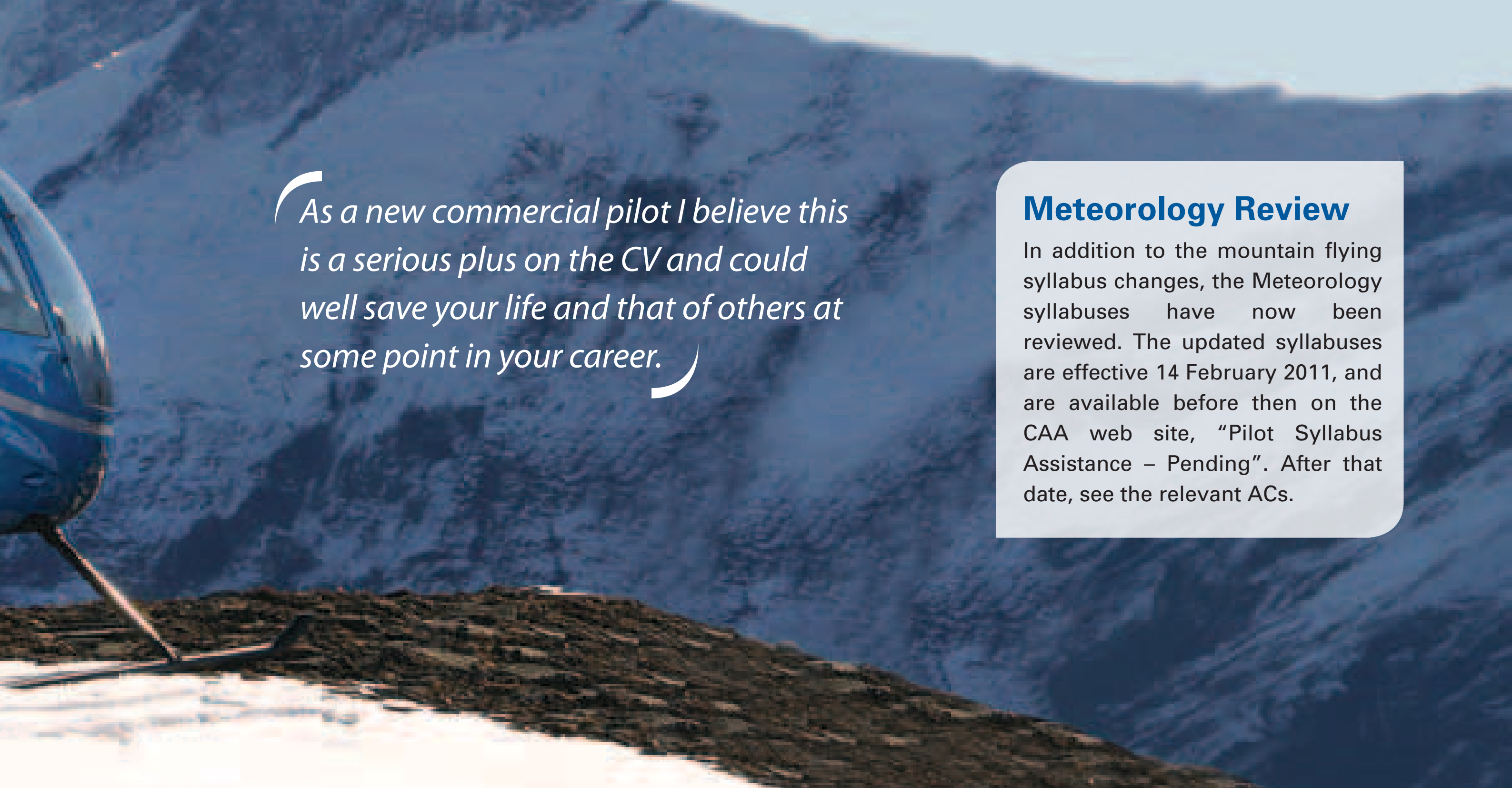
On my last day, we flew west up the Matukituki River towards Mount Aspiring. I was surprised to learn how important aircraft positioning was, even in such a large valley. A little too close to one side or another and any theoretical passengers would have been getting a solid buffeting.

The terrain produced enormous wind shifts. You think you're flying fine with heaps of distance between you and rugged turbulence-producing terrain and then you'd get hit by a violent gust out of nowhere. It was really easy to see why so many pilots have come to grief in the past.

So is the course worth doing? As a new commercial pilot I believe this is a serious plus on the CV and could well save your life and that of others at some point in your career.

Learn More

- Ask for Mountain Flying training at your next BFR.
- Order a copy of the CAA's new *Mountain Flying* DVD (details on the CAA web site, www.caa.govt.nz, under Safety Info), or borrow it free from the CAA library, email: info@caa.govt.nz.
- See *Vector* July / August 2010 for a taste of the 2010 AvKiwi Mountain Flying Safety Seminar.
- Read Advisory Circulars AC61-3 for the terrain and weather awareness syllabuses (A and H), and AC61-5 for the basic mountain flying syllabuses (A and H).
- See the *Mountain Flying Training Standards Guide* for guidance. It is on the CAA web site under "Pilots". ■



"As a new commercial pilot I believe this is a serious plus on the CV and could well save your life and that of others at some point in your career."

Meteorology Review

In addition to the mountain flying syllabus changes, the Meteorology syllabuses have now been reviewed. The updated syllabuses are effective 14 February 2011, and are available before then on the CAA web site, "Pilot Syllabus Assistance – Pending". After that date, see the relevant ACs.

Trust Your **Instincts**

A 28,500-hour pilot flew his Fletcher for 1800 hours after having routine maintenance done, becoming increasingly concerned that something was not quite right.

After an in-depth investigation, it was found that the all-moving tailplane's counterweight tube was not bolted on correctly. The aircraft's control cables attached directly to the tube. Had it failed in flight, the accident would have been unsurvivable.

The aircraft had been scheduled for regular maintenance, and the pilot had noted a defect of mild stick shake due to worn elevator bushes. The tailplane and the counter balance assembly were removed, and new bearing bushes and bolts were fitted to the counter balance attachments and tailplane hinges. The bolts were tightened to the required torque, and aircraft was released to service. The pilot ferried it back to home base.

On that flight, the pilot noticed the stick shake was no better. In fact, it was marginally worse.

The pilot contacted the engineers, but was assured that the whole tailplane had been removed, checked and reattached, and the other possible causes of stick shake had also been checked. There was nothing more the engineers need do.

Accepting that advice, the pilot resumed flying, and continued working in the aircraft.

"The mild stick shake didn't go away, but when you're flying it everyday, small changes in vibration tend to go unnoticed as you get used to it.

"Then when I was doing a pilot currency check, the E-cat asked if the stick shake was normal, as his aircraft didn't do that. I replied that it had been doing it for a while and the cause was a bit elusive."

After a further 50 hours, the shake was even more noticeable, so the pilot took it to another maintenance facility and that engineer started solving the problem by inspecting the counter balance tube attachments.

"One of the four bolts holding the counter balance tube to the tail plane had broken, and catastrophic in-flight failure of the tail plane was not far away. It is highly unlikely any ensuing accident would have been survivable," the pilot says.

The engineer found the two forward counter balance attachment bolts were too long. When tightened, the end of the bolts were pressing into the nut recess of the bracket, giving the illusion they were tight, but they were not properly clamping together the two halves of the bracket assembly. The counter balance tube was able to vibrate within the bracket.

"Hindsight is a great thing. Once I knew the cause and the possible consequences of the problem, I realised I should have been more forceful and insisted the original engineers recheck the aircraft after the first ferry flight. The red flag should also have gone up for them when a pilot says they are not happy.

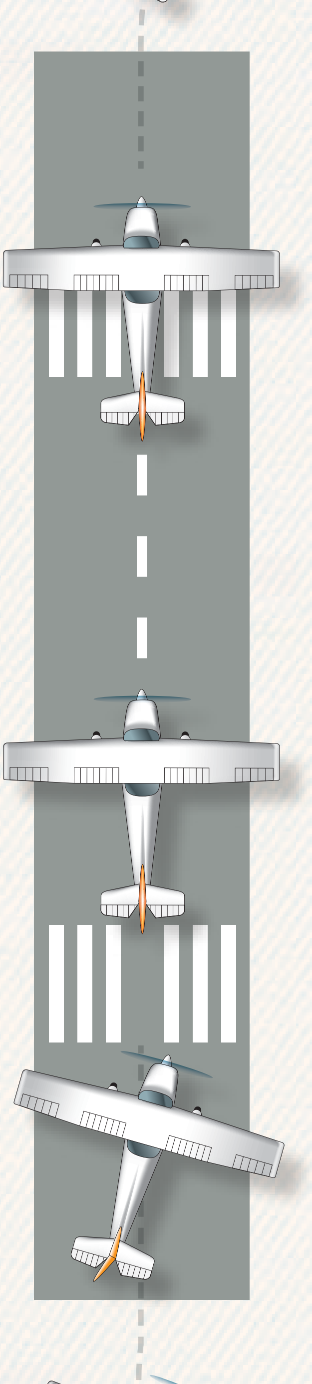
"I didn't want to be questioning their ability. I can't fly without engineers.

"The message I would like to get across to other pilots is that if you think there is a problem, it doesn't matter who picks it up. Get it sorted. There is a joint responsibility between pilots and engineers to reduce risks as far as we can by communicating our issues and concerns in a constructive manner." ■

Fletcher illustration courtesy of Deane Baunton, landscape photo: ©istock.com/Popkov

Crosswind

It is rare for wind to blow straight down a runway with absolute consistency, so almost every takeoff and landing you carry out will involve an element of crosswind.



It is important to know the crosswind limitations of the aircraft you fly, but more importantly, your own personal limitation, as well as any club or organisation limit. The maximum demonstrated crosswind component can be found in the Aircraft Flight Manual. This is the figure at which factory testing has shown that directional control can still be maintained. It is affected by the size of the rudder, its distance from the C of G, and the availability of asymmetric braking. It is not a legal limitation, but a guide to what limit should be applied to crosswind landings.

Be aware that the figure in the Flight Manual may be for a dry runway – it is advisable to reduce this for a wet or contaminated runway. The appropriateness of the Flight Manual figure will also depend on the experience, training, currency, and competence of the pilot, as well as the approach speed and the amount of flap used.

Calculating Crosswind Component

Here are a couple of quick ways to calculate the crosswind component you will experience on landing. First, you need to know the wind speed and direction from an ATIS, METAR, or by estimating it from the windsock. If you are using a METAR or TAF, the wind is given in degrees true so you need to convert it to degrees magnetic. Now calculate the angular difference between runway heading and the wind direction.

Method 1

Add 20 to the angular difference. This tells you what percentage of the wind speed is crosswind. For example, if the wind speed is 20 knots and the angular difference 40 degrees, 40 plus 20 is 60 percent. 60 percent of 20 knots is a crosswind of 12 knots.

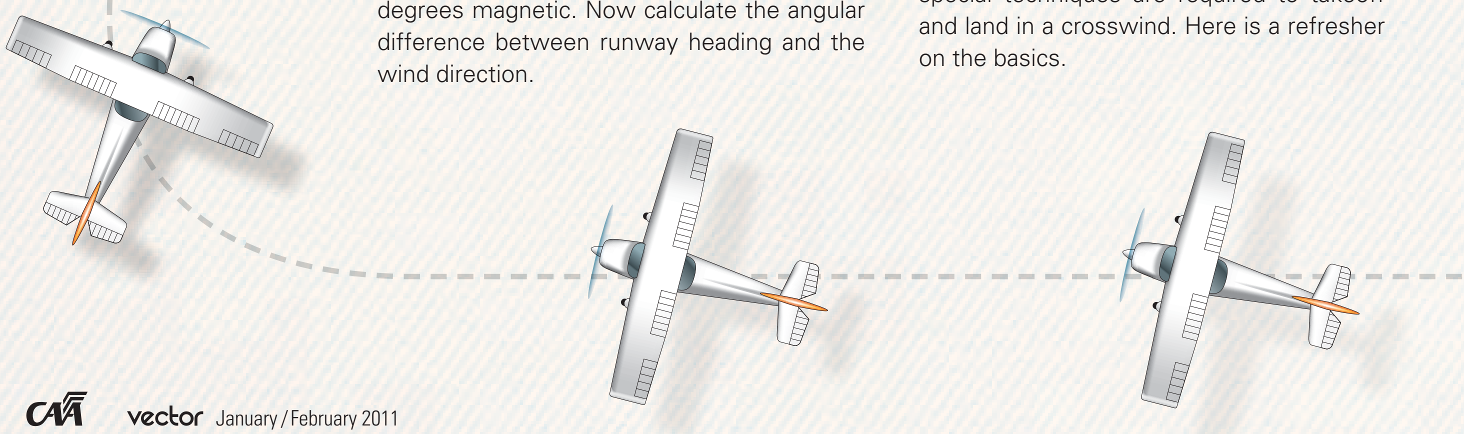
Method 2

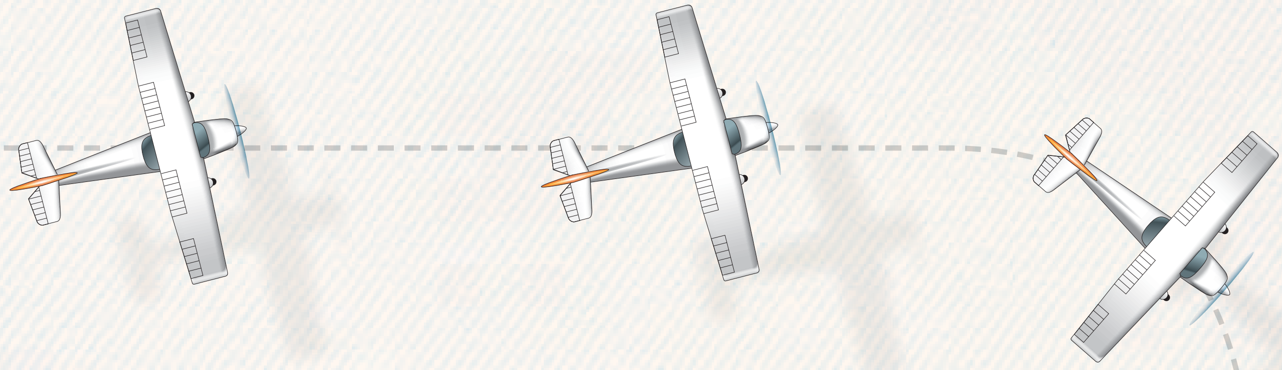
Imagine that the minutes on the face of your watch are equivalent to the angular difference between the runway and the wind direction. If the difference is 30 degrees, then thirty minutes is half way around your watch face, therefore the crosswind is half the wind speed. If the angular difference is 45 degrees, then that is three quarters the way round your watch face, so the crosswind is three quarters of the wind speed.

If the angular difference is 60 degrees or more, then consider the crosswind component to be the full strength of the wind.

Crosswind Techniques

When the wind is at an angle to the runway, aircraft have a tendency to weathercock, or swing nose into wind. For this reason, special techniques are required to takeoff and land in a crosswind. Here is a refresher on the basics.





Takeoff

Adjust your normal reference point for drift, and begin the takeoff roll with ailerons fully deflected into wind, and neutral elevator. As your speed increases, the ailerons become more effective, so you can progressively reduce the amount of aileron into wind. As you roll, keep straight with rudder and keep some weight on the nosewheel to improve your directional control.

At a safe flying speed, cleanly rotate the aircraft, and using your nominated reference point as a guide, make a gentle balanced turn into wind in order to track along the extended centreline.

In the Circuit

Maintain your circuit positioning relative to the runway by allowing for drift. Anticipate the head or tailwind component you will experience on base, and adjust your turn onto final accordingly. Continue the turn onto a suitable 'into wind' reference point in order to track along the extended centreline.

Landing

The limiting factor for crosswind landings is your ability to maintain directional control. Although it may be easy enough to keep the aeroplane aligned with the runway during the round-out and landing; as airspeed decreases, rudder and aileron effectiveness will reduce, and it may be difficult to prevent weathercocking and drifting sideways. Therefore, as the crosswind component increases, the amount of flap used for the landing may be reduced. This reduces the surface area on which the crosswind can act after landing, and may provide for a higher approach speed improving your directional control.

Any landing with reduced flap will increase your landing roll, and if the crosswind is not steady, you may need to increase your approach speed to compensate for windshear and gusts. So before committing to a landing, it is important to consider the runway's overall suitability in relation to crosswind component, approach/threshold speed, and available length.

The recommended crosswind landing technique is a combination of the kick-straight method and the wing-down method.

Throughout the approach, the aeroplane is crabbed into wind, in balanced flight, preventing drift.

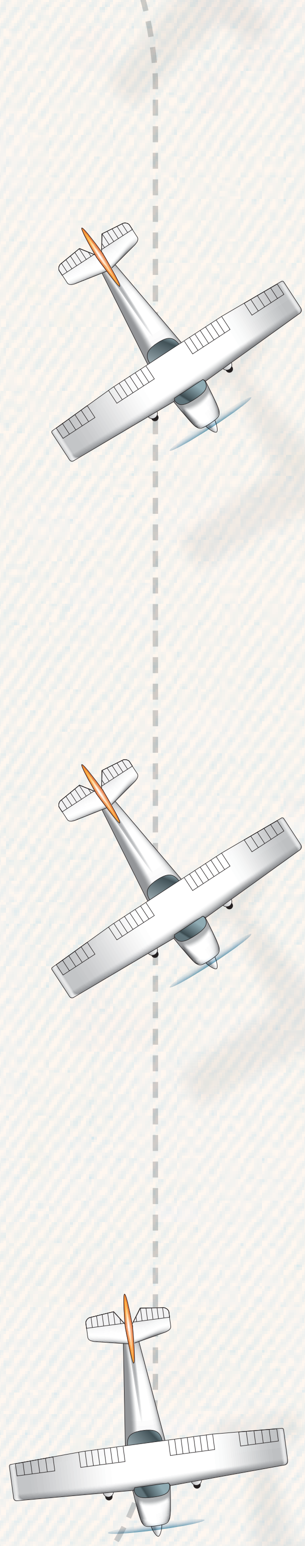
During the round-out, the wing-down method is applied. The aeroplane's nose is aligned with the runway through smooth rudder application, and sufficient into wind aileron is used to prevent drifting off the centreline.

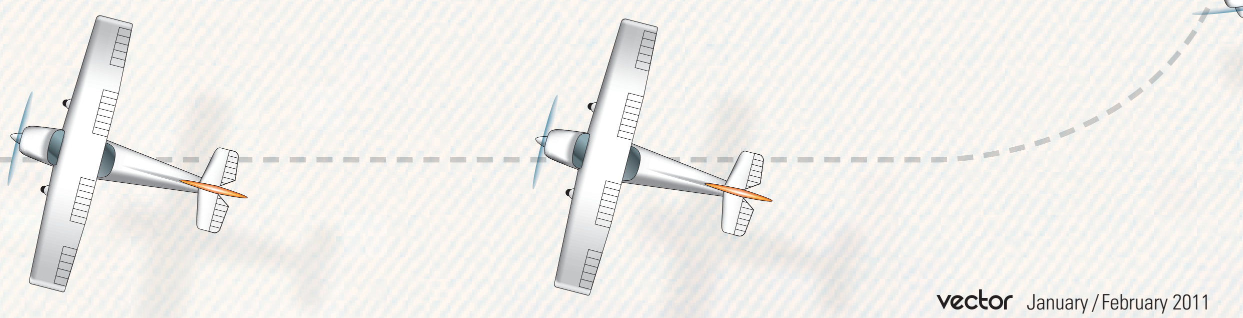
Use control inputs that are appropriate to the conditions. If large amounts of aileron or rudder are required to maintain the centreline on approach, then it is unlikely you will have enough control effectiveness to keep straight throughout the landing roll. Whether you run out of aileron or rudder first depends on your aircraft type, as some have a big rudder but comparatively small ailerons, or vice versa.

In this situation, unless rudder and aileron effectiveness can be improved with an increase in power and speed, a go-around should be carried out, and an approach with a different speed/flap configuration conducted. Alternatively, the runway's suitability may need to be reconsidered.

The landing is made directionally straight on the windward wheel, creating a 'couple' that lowers the other main wheel. The nosewheel should be lowered with some weight maintained on it to improve directional control. At the same time, increase aileron into wind as your speed reduces, in anticipation of rogue gusts which may lift the into-wind wing.

In strong crosswind conditions, a small amount of power can be used throughout the landing to improve the effectiveness of your rudder, but the throttle must be closed at touchdown. Keep straight on your reference point and apply differential brakes as required. ■





Possible Solution to **ELT G-switch Fault**

A solution to the Artex ELT G-switch problem may be close at hand.

G-switch faults have been reported in more than 90 Artex ELTs in New Zealand since aircraft operators were alerted by Airworthiness Directive (DCA/RAD/54) at the end of June 2010 (see *Vector* July / August and September / October for details).

Analysis of the aircraft types in which the G-switches are failing has since shone some light on the possible cause. Air New Zealand Link's 23 Dash-8 Q300 aircraft have had high failure rates. The Q300 ELTs are installed outside the pressure cabin, whereas ELTs in pressurised areas (including a number of different aircraft types and models from small bizjets to large air transport) have not exhibited problems globally.

CAA Airworthiness Engineer, Ron Doggett, says New Zealand's humid environment may be the cause of the problem.

"The switches are sealed, but they're not hermetically sealed. As an aircraft climbs and cools, any moisture that's got into the switch condenses and accelerates oxidation. As the aircraft descends, more moist air enters the switch, causing the oxidation process to continue," Ron says.

An accelerated life cycle test for a new switch gave inconclusive results – there was no real difference found between the old and new switches. In a new approach, Artex is now studying a change to the G-switch internal plating, which is currently a brass barrel with a thin gold coating.

"They're going to try a plating scheme that's more resistant to oxidation. A batch of replated G-switches will then be put through an accelerated life cycle test. If it's successful, that will be our fix."

Ron says installing replated G-switches would not be a significant change requiring a revalidation of the ELT Technical Standard Order.

"If it works, this will be a faster and less expensive solution."

Learn More

Progress on the G-switch solution will be advised in future issues of *Vector*, the CAA web site and by Airworthiness Directive. ■

Free Aviation Safety Coordinator Training Course

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

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

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

» you will get a comprehensive safety manual;

» access to all of the latest CAA safety resources and support; and

» lunch is provided (accommodation, transport and other meals are not provided).

Auckland
Thursday 24 and Friday 25 February 2011
Hotel Grand Chancellor
Auckland Airport
cnr Kirkbride & Ascot Roads, Mangere

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

Or contact Rose Wood,
Tel: +64 4 560 9487,
Fax: +64 4 569 2024,
Email: rose.wood@caa.govt.nz

Aviation **Event**

An aviation event is an event that is conducted below the minimum safe heights set out in rule 91.311 *Minimum heights for VFR flights*; and that is either an airshow, or practice for an airshow; or an air race or practice for an air race; or an aerobatic competition, or aerobatic training or practice, according to the definition in Advisory Circular AC91-1 *Aviation events*.

All aviation events should be held in accordance with Civil Aviation Rule 91.703 *Aviation events*, and should follow the standards, practices and procedures in the associated Advisory Circular AC91-1. See the rule and the Advisory Circular on the CAA web site, www.caa.govt.nz.

Director's Approval

Rule 91.703 also specifies that if there are more than 500 spectators, or more than three aircraft, participating in the event (unless the aircraft are in single formation), approval from the Director of Civil Aviation is required for the event. At least 90 days' notice is required for an approval from the Director.

If you are unsure if your event requires the Director's approval, check with the CAA by emailing info@caa.govt.nz.

You can make an application for an aviation event authorisation on Form 24091/03 (available on the CAA web site under "Forms"). Detailed information on the event, such as copies of the event plan, etc, is required to be submitted with the application, so it pays to check with the CAA well before you start to ensure that you get it right. Contact your local Aviation Safety Adviser (see page 23), or the CAA's General Aviation Group for more advice.

Airspace Considerations

It is recommended that you arrange for the publication of an *AIP Supplement,* as this alerts other airspace users of your activity and possible traffic increases in the area. It enables pictorial representation of the airspace and can include any procedures required. The *AIP Supplement* cut-off dates are provided in every issue of *Vector* (see page 23).

For large events, airspace restrictions may be needed to keep the airspace safe. Airspace restrictions can control who uses the airspace during the event, and allow for normal air traffic at an aerodrome. If you require airspace restrictions for your event, you should make an application at least 90 days in advance.

Submitting an airspace restriction application does not mean it will be automatically approved.

Note that separate applications need to be made for event authorisation and airspace restriction – making an application for an aviation event approval does not automatically lead to an airspace restriction promulgation, and vice-versa.

If approved, the restricted airspace will be promulgated in an *AIP Supplement*.

Email aero@caa.govt.nz to make an *AIP Supplement* request, or to get more information.

For more information on organising aviation events, see *Vector* November/December 2006, page 12. ■

Changes at **Paraparaumu Aerodrome**

Paraparaumu Airport Limited (PAL) has made changes to existing operations at the aerodrome, effective from 10 December 2010.

All the changes were publicised through NOTAMs, and will be published in the *AIP Supplement* effective 10 March 2011. The airport's operational manual has also been updated to reflect the changes, and can be viewed on PAL's web site, www.paraparaumuairport.co.nz, "Pilot Information – Airport operations manual".

Some of the changes are:

Change to aerodrome circuits

» The grass runway circuit 16/34 (to the East of the aerodrome) is limited to gliders and tugs only. All powered aircraft should use the sealed runway 16/34 circuit (to the West of the aerodrome) for both sealed runway and grass runway 16/34.

Updated AWIB software

» Aerodrome Weather Information Broadcasts (AWIB) indicate which runway the wind direction favours, based on wind data.

Grass runway 12 closed

» Only imperative landings and gliding operations permitted on grass runway 30. This essentially makes the crosswind runway a one-way strip.

Restrictions on grass runway usage

» Helicopter operations are limited to sealed runway 16/34 when gliders are actively using grass runway 16/34.

New helicopter training area

» The centre grass helicopter training area is closed.

» A new helicopter training area has been established to the north of the Helipro apron.

Circuit training limit

» Circuit training aircraft are limited to three.

PAL is likely to sign a Memorandum of Understanding with user groups based on these changes. ■

Photo courtesy of Paul Harrison

Flight Training **Accidents Prompt Studies**

Recent accidents in the flight training sector have prompted two separate studies, with different emphases.

Part 141 Rewrite

As part of its ongoing review and rewrite of Part 141 *Aviation Training Organisation – certification*, the CAA is going to conduct a study into incidents and accidents in the flight training sector.

The review is in response to feedback from the Ministry of Transport on this project's Regulatory Impact Statement. The feedback suggested that there was a lack of information on the causal factors in accident reports that would help determine if non-part 141 organisations had an inferior safety record, and if the new rule would result in an improved safety outcome. This review will identify any primary common causes and actions necessary for improving the sector's safety record.

If the review shows that certification of flight training organisations would improve the sector's safety record, it will be a good foundation to convince the Government of this. On the other hand, if the study proves that the CAA's resources would be better used in another way, then those options will be considered by the CAA.

Meanwhile, rule writing has reached draft final rule stage – see the CAA web site, www.caa.govt.nz, "Rules Development – Pending and Draft Final Rules".

Flight Training Safety Inquiry

The Transport Accident Investigation Commission (TAIC) is currently investigating one mid-air collision and one near-miss involving flight training aircraft, and notes increasing rates of flight training related incidents and accidents over recent years.

The Commission is concerned that systemic or wide-spread factors may be affecting training safety. In December 2010, TAIC called for submissions from the public and industry participants on civil flight training safety in New Zealand.

See www.taic.org.nz for further information on the inquiry scope, and the procedure for making submissions, which close on Monday, 21 February 2011. ■

Digital Charts **Available**

Digital versions of the *AIP New Zealand Visual Navigation Charts*, and Visual Planning Charts are now available in three file formats for use with moving map software: ECW, Geo-TIFF, and Ozfx3 map file types. They are also available in PDF format.

Digital charts can be used as a supplement to the hard copy charts available from Airways – Part 91 requires the use of "appropriate aeronautical charts", and this currently applies to the hard copy versions.

The new Digital charts are available as part of a Chart Pack, or sold individually, and are produced by MapTrax under licence from Airways New Zealand, the certificated provider of Aeronautical Information Services in New Zealand.

» Hard copy VNCs effective 18 November 2010 are now available from Airways at www.aipshop.co.nz.

» Digital VNCs effective 18 November 2010 are available now, see www.maptrax.com.au for further information. ■

How to Get Aviation Publications

AIP New Zealand

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

Pilot and Aircraft Logbooks

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

Rules, Advisory Circulars (ACs), Airworthiness Directives

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

Additional NBO **Phone Number**

From 10 February 2011, Airways are introducing a new phone number to use when calling the National Briefing Office from a cellphone. The new number will be 0900 62 675, and it will cost $2.00 + GST per minute.

From this date, the National Briefing Office's existing 0800 626 756 phone number can only be used if you are calling from a landline.

There is no change to the NBO fax number.

Planning an Aviation Event?

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

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

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

CAA Cut-off Date	*Airways Cut-off Date*	*Effective Date*
21 Feb 2011	28 Feb 2011	05 May 2011
21 Mar 2011	28 Mar 2011	02 Jun 2011
18 Apr 2011	25 Apr 2011	30 Jun 2011

Aviation Safety Advisers

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

Don Waters (North Island)
Tel: +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

Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

0508 4 SAFETY
(0508 472 338)

isi@caa.govt.nz

For all aviation-related safety and security concerns

Accident Notification

24-hour 7-day toll-free telephone

0508 ACCIDENT
(0508 222 433)

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

Accident Briefs

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

ZK-NUN Bill Sharpe Special

Date and Time:	15-Jan-10 at 16:03
Location:	Greymouth
POB:	1
Injuries (Minor):	1
Damage:	Substantial
Nature of flight:	Private other
Age:	33 yrs
Flying Hours (Total):	53
Flying Hours (on Type):	36
Last 90 Days:	53

The gyrocopter had departed Greymouth for Hokitika, and turned right to vacate via Kumara, when it encountered a severe up-draught and loss of rotor speed near the hills east of the runway. The pilot lost control, and after many flat spins it collided with the ground just west of Greymouth CBD, about 2 km from where control was lost. Conditions on the ground were a 10 knot southerly but a very strong easterly was encountered just before the accident sequence started.

CAA Occurrence Ref 10/134

ZK-RVT Vans RV 10

Date and Time:	5-Mar-10 at 13:00
Location:	Bulls
POB:	2
Injuries:	0
Nature of flight:	Private other
Pilot Licence:	PPL (Aeroplane)
Age:	46 yrs
Flying Hours (Total):	500
Flying Hours (on Type):	260
Last 90 Days:	30

The aircraft taxied into a metal fence post while operating on a private strip.

CAA Occurrence Ref 10/782

ZK-YKZ Jurca MJ-8 (FW 190)

Date and Time:	31-Mar-10 at 19:40
Location:	Wanaka
Injuries:	0
Damage:	Minor
Nature of flight:	Private other
Pilot Licence:	PPL (Aeroplane)
Age:	39 yrs
Flying Hours (Total):	440
Flying Hours (on Type):	5
Last 90 Days:	4

After a normal approach and touch down with a 10 kt crosswind, the tailwheel firmly contacted the runway causing the tailwheel locking pin to disengage. This resulted in a loss of directional control and the aircraft ground looped to the left, causing the RH undercarriage leg to collapse and the RH wingtip, aileron, and propeller to contact the ground. To prevent a reoccurrence, the tailwheel locking pin diameter has been increased from 8 mm to 12 mm, and the pin retaining spring has been replaced with one of greater pressure, to prevent it disengaging due to shock loads on the tailwheel.

CAA Occurrence Ref 10/1475

ZK-ELH Cessna 172N

Date and Time:	2-Apr-10 at 10:40
Location:	New Plymouth
POB:	4
Injuries:	0
Damage:	Substantial
Nature of flight:	Private other
Age:	70 yrs
Flying Hours (Total):	216
Flying Hours (on Type):	16
Last 90 Days:	16

The aircraft was flared too early on landing so the pilot added power, but lowered the nose too much. The aircraft landed heavily on the nose wheel causing damage to the nose wheel, spat, nose gear fork, as well as damaging both propeller tips and buckling the lower fire wall and belly skin. The pilot has been counselled about the option of going around and also the correct technique to use to recover from an early flare situation.

CAA Occurrence Ref 10/1195

ZK-FYF Micro Aviation B22 Bantam

Date and Time:	10-Apr-10 at 14:30
Location:	North Shore
POB:	1
Injuries (Minor):	1
Nature of flight:	Private other
Age:	64 yrs
Flying Hours (Total):	165
Flying Hours (on Type):	165
Last 90 Days:	3

The pilot was completing his first landing on a friend's property. He had previously inspected the property, measuring the length of the strip, and choosing a decision point that accounted for trees on the overshoot.

However on the approach, and after the decision point had been passed, the pilot ended up too high and landed too far down the strip. The microlight's nose wheel dug into rising ground at the end of the strip and the microlight flipped upside down. The pilot suffered a cut finger and the microlight sustained damage to the undercarriage and tailplane.

CAA Occurrence Ref 10/1217

ZK-BZA Piper PA-25-235

Date and Time:	14-Apr-10 at 14:30
Location:	Matamata
POB:	1
Injuries:	0
Damage:	Substantial
Nature of flight:	Towing
Pilot Licence:	PPL (Aeroplane)
Age:	75 yrs
Flying Hours (Total):	3085
Flying Hours (on Type):	1460
Last 90 Days:	74

The left hand undercarriage leg collapsed during the landing roll. Maintenance investigation found that the hydrasorb shock strut lower end fitting had failed across the landing gear attachment bolt hole. The failure possibly initiated from a small machining mark at the edge of the bolt hole. The aircraft operator advises that restraining cables will be fitted to prevent the undercarriage legs collapsing should a similar failure occur in the future.

CAA Occurrence Ref 10/1364

ZK-OUR Rans S-6ES Coyote II

Date and Time:	20-Apr-10 at 11:45
Location:	Ahuriri
POB:	2
Injuries (Minor):	1
Damage:	Substantial
Nature of flight:	Private other
Age:	54 yrs
Flying Hours (Total):	200
Flying Hours (on Type):	15
Last 90 Days:	15

The aircraft failed to achieve the expected climb performance after takeoff and the pilot was forced to pass under some power lines and land in a rocky paddock beyond. The aircraft was substantially damaged and the pilot received minor injuries while the passenger was not hurt. The pilot reported that the wind appeared to have changed before liftoff, which resulted in poor performance. There were no available wind direction indicators that would have made that apparrent to the pilot.

CAA Occurrence Ref 10/1483

ZK-SON Cessna 152

Date and Time:	28-Apr-10 at 10:40
Location:	Tauranga
POB:	1
Injuries:	0
Nature of flight:	Training solo
Age:	32 yrs
Flying Hours (Total):	15
Flying Hours (on Type):	15
Last 90 Days:	15

The aircraft bounced several times during the landing which finally resulted in the nose gear collapsing and the propeller striking the ground. The pilot did not apply the correct bounce recovery technique to recover from the situation. The student has since had comprehensive retraining over several flights, particularly on correct bounce recovery actions. This was followed by check flights with a senior B-Cat Instructor, and additional dual and solo training.

CAA Occurrence Ref 10/1598

ZK-HDF Robinson R22 Beta

Date and Time:	8-May-10 at 10:00
Location:	Paraparaumu
POB:	2
Injuries:	0
Damage:	Substantial
Nature of flight:	Training dual
Pilot Licence:	CPL (Helicopter)
Age:	31 yrs
Flying Hours (Total):	1010
Flying Hours (on Type):	916
Last 90 Days:	130

During a simulated engine failure in the hover the student mistakenly lowered the collective, with the helicopter impacting the ground before the instructor could react. The left hand landing skid collapsed, and the tail rotor contacted the ground.

CAA Occurrence Ref 10/1783

ZK-YRA Yakovlev Yak-52

Date and Time:	12-May-10 at 9:40
Location:	Rangiora
POB:	1
Injuries:	0
Nature of flight:	Private other
Pilot Licence:	ATPL (Aeroplane)
Age:	50 yrs
Flying Hours (Total):	16512
Flying Hours (on Type):	186
Last 90 Days:	243

The aircraft landed with the wheels up because the pilot allowed himself to be distracted on final approach by radio traffic from a helicopter that was using the opposite circuit, but was in the process of repositioning into his circuit pattern.

CAA Occurrence Ref 10/1818

ZK-CSC Czech Aircraft Works Sportcruiser

Date and Time:	22-May-10 at 10:15
Location:	Waiuku
POB:	2
Injuries:	0
Nature of flight:	Private other
Flying Hours (Total):	370
Flying Hours (on Type):	270
Last 90 Days:	18

The aircraft flared too high and landed heavily, breaking the landing gear and sliding into a fence.

CAA Occurrence Ref 10/1957

GA Defects

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

Key to abbreviations:

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

Piper PA-31-350

Hydraulic fill valve

Part Manufacturer:	Piper
Part Number:	2C5836
ATA Chapter:	2900
TSI hours:	11.5

When the pilot selected the landing gear down, the gear remained retracted. The pilot successfully lowered the gear using the emergency extension procedure. Maintenance investigation found that the hydraulic system fluid was depleted due to a failure of the non return valve in the hydraulic system fill valve. The blanking cap was also not adequately tightened and allowed the hydraulic fluid to escape to a level sufficient to interrupt the undercarriage selection. The hydraulic fluid level was checked on the previous 100 hour inspection and found to be satisfactory with no oil replenishment being required. To prevent the blanking cap being left loose again, the maintenance provider will lockwire the fill cap together with the drain cap.

CAA Occurrence Ref 10/95

Aerospatiale AS 350BA

Compressor

Part Model:	Arriel 1B
Part Manufacturer:	Turbomeca
ATA Chapter:	7230
TSI hours:	1017.2
TSO hours:	2579.6
TTIS hours:	5123.7

During cruise, the engine started popping rapidly, accompanied by a twitching in the yaw axis. The pilot immediately lowered the collective which caused the popping and twitching to cease, however, on checking the engine parameters, the pilot noticed the T4 exceeding the limit. He immediately retarded the F.C.U lever and this brought the T4 under control. The pilot made a descent for a shallow approach, and as the collective increased to touchdown, the engine started popping rapidly again. A safe landing was made and all switches were turned off. The front housing air passage slots of the compressor were found to have failed, a fault which has ocurred with this engine type before. Turbomeca have not been able to determine what caused the failure to date.

CAA Occurrence Ref 10/141

Schweizer 269C-1

Belt drive stay

Part Model:	269C-1
Part Manufacturer:	Schweizer
Part Number:	269A5423-9
ATA Chapter:	6300
TTIS hours:	1431.2

During scheduled maintenance the engineers discovered that the drive belt stay was significantly cracked around most of its circumference, at the upper end where it attaches to the subframe. The scientific metallurgical inspection revealed that this was a fatigue crack initiating at an area of weld porosity. The weld was found to have numerous other deficiencies such as poor heat treatment, inclusions and poor weld penetration. The manufacturer was advised and a local AD is being considered.

CAA Occurrence Ref 10/1575

McDonnell Douglas 500N

Blade

Part Manufacturer:	MD Helicopters
Part Number:	369D21102-523
ATA Chapter:	6210
TSI hours:	77
TTIS hours:	3414

During a swash plate overhaul the main rotor blades were removed. During the inspection of the blades a crack was found. The cracked blade was taken out of service.

CAA Occurrence Ref 10/3013

Tecnam P92 Eaglet U/L

Battery contactor earth cable

Part Manufacturer:	Tecnam
ATA Chapter:	2400

The battery contactor randomly switched itself on and off without activation of the master switch. Maintenance investigation found that the main electrical loom earth wire, which grounds the battery contactor via the master switch, was chaffed where it was in contact with the stainless steel braided brake lines. The electrical loom runs from the instrument panel to the rear of aircraft under the seats and through a structural box section. The loom cuts across on a diagonal, and passes over the brake lines, before coming out of the box section. This area is very difficult to inspect and the loom and wiring is not protected with any type of sheathing. The section of chaffed wire was replaced, and a heavy duty spiral wrapping was wound around the loom for protection against future chaffing.

In response to this defect the CAA has issued Airworthiness Directive DCA/MICRO/8 Airframe Wiring Loom – Inspection and Rework effective 27 May 2010, applicable to any Tecnam aircraft fitted with steel braided brake lines.

CAA Occurrence Ref 10/1761

THE CAA HAS MOVED

LOCATION

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

AV KIWI SAFETY SEMINARS

Emergency Landings

Sometimes you need to put your aircraft down somewhere you just didn't plan for.

Most emergency landings turn out well, with no damage or injury, but too many end in preventable accidents.

Successful emergency landings all have one thing in common; aircraft control was maintained all the way to the ground.

Contrary to popular belief, it is not engine failure that causes most emergency landings, but non-mechanical factors, like running out of daylight, running into bad weather, and running out of ideas.

Regardless of the type of aircraft you fly, don't miss this opportunity to learn more about:

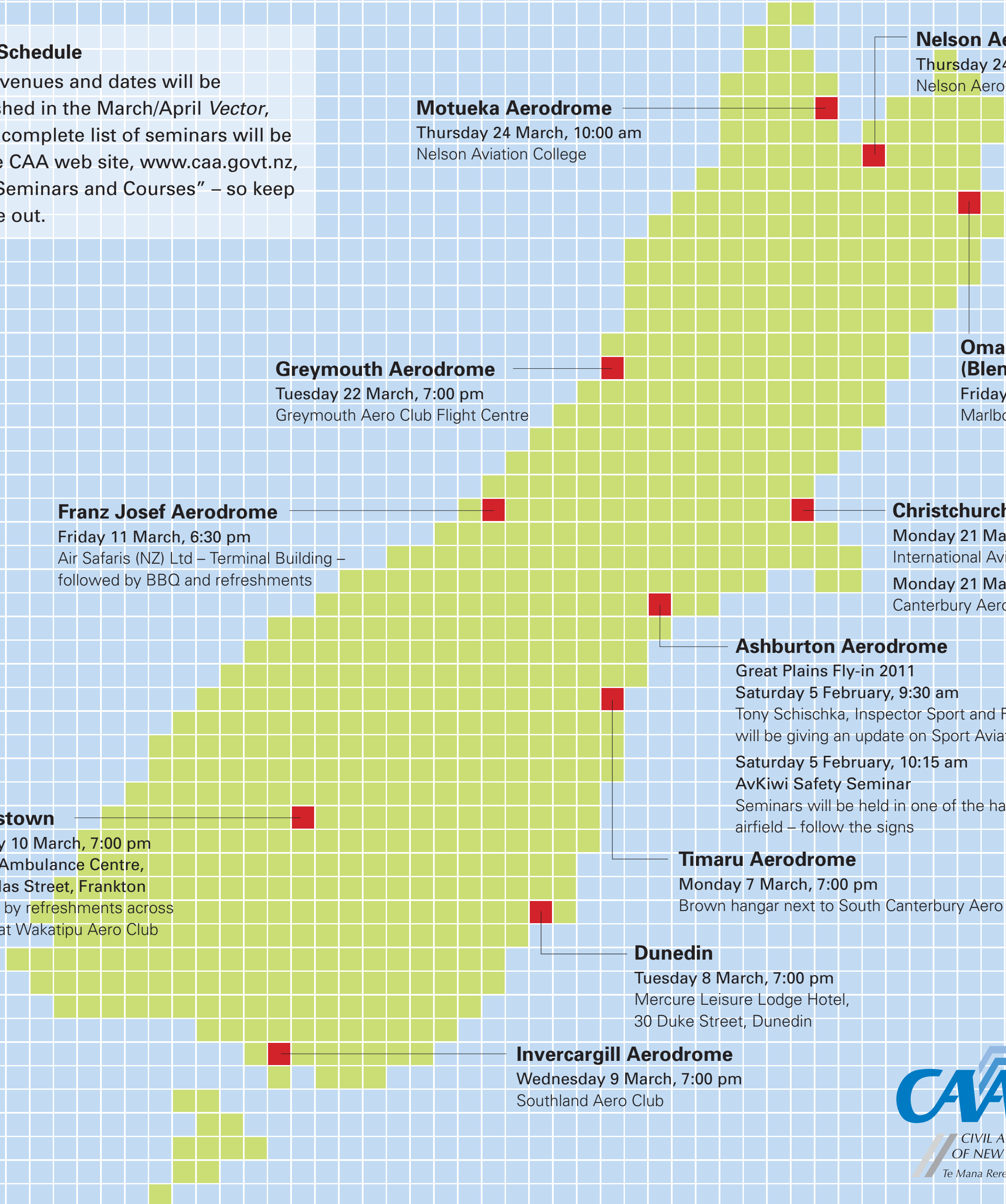
» the main reasons for emergency landings, and how to avoid them,

» practical tips on how to survive one.

Our presenters are Jim Rankin, RNZAF Instructor, and Carlton Campbell, CAA Training Standards Development Officer – both have lots of experience teaching pilots how to carry out successful emergency landings.

2011 Schedule

More venues and dates will be published in the March/April *Vector*, and a complete list of seminars will be on the CAA web site, www.caa.govt.nz, see "Seminars and Courses" – so keep an eye out.



Nelson Aerodrome
Thursday 24 March, 7:00 pm
Nelson Aero Club

Motueka Aerodrome
Thursday 24 March, 10:00 am
Nelson Aviation College

Omaka Aerodrome (Blenheim)
Friday 25 March, 7:00 pm
Marlborough Aero Club

Greymouth Aerodrome
Tuesday 22 March, 7:00 pm
Greymouth Aero Club Flight Centre

Franz Josef Aerodrome
Friday 11 March, 6:30 pm
Air Safaris (NZ) Ltd – Terminal Building – followed by BBQ and refreshments

Christchurch Aerodrome
Monday 21 March, 3:00 pm
International Aviation Academy
Monday 21 March, 7:00 pm
Canterbury Aero Club

Ashburton Aerodrome
Great Plains Fly-in 2011
Saturday 5 February, 9:30 am
Tony Schischka, Inspector Sport and Recreation, will be giving an update on Sport Aviation regulation
Saturday 5 February, 10:15 am
AvKiwi Safety Seminar
Seminars will be held in one of the hangars on the airfield – follow the signs

Queenstown
Thursday 10 March, 7:00 pm
St John Ambulance Centre,
10 Douglas Street, Frankton
Followed by refreshments across the road at Wakatipu Aero Club

Timaru Aerodrome
Monday 7 March, 7:00 pm
Brown hangar next to South Canterbury Aero Club

Dunedin
Tuesday 8 March, 7:00 pm
Mercure Leisure Lodge Hotel,
30 Duke Street, Dunedin

Invercargill Aerodrome
Wednesday 9 March, 7:00 pm
Southland Aero Club

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