January / February 2007

VECTOR

POINTING TO SAFER AVIATION

Forced-Landing Practice

Is That Part Genuine?

"You Have Control"

Changes to the Fit and Proper Person Process

CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND

VECTOR

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A forced landing can have a positive outcome if dealt with correctly. For your safety, and the safety of your passengers, forced landings should be practised regularly with a disciplined approach.

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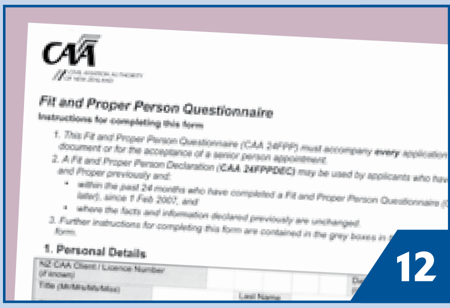
"You Have Control"

John Jones retired as Director of Civil Aviation in December 2006. An interim Director, Russell Kilvington, has been appointed for six months while recruitment takes place for a new permanent Director and CEO of the Civil Aviation Authority.



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Changes to the Fit and Proper Person Process

From 1 February 2007 all applicants for an aviation document, or anyone who has control over the exercise of the privileges of an aviation document, must use a new process to satisfy the Director of Civil Aviation that they are a fit and proper person to do so, as required by the Civil Aviation Act.

Cover: *Selecting your landing site and planning your approach are critical to a successful forced landing. The diagram on page 5 illustrates the critical points.*

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Forced-Landing Practice

Have you ever noticed how paranoia can make aircraft engines seem to run rough while flying over water and make your fuel gauges read half empty when they are, in fact, half full?

In New Zealand around 50 engine failures occur each year (see "From the Accident Files" page 18). Statistically, the chances of an engine failure or partial failure happening are small, but if you are not prepared chances are that it will happen to you.

Keeping current with forced-landing techniques is an important way in which pilots can increase the safety of every flight they conduct. It helps by giving us and our passengers the best possible chance of walking away uninjured after an engine failure and subsequent forced landing. Successfully handling an engine failure, or partial power loss, requires decisive pilot action combined with well-rehearsed forced landing cockpit drills.

This article is a reminder of the basic techniques for conducting a forced landing without power (FLWOP) in a light single-engine aircraft. It assumes an engine failure from above 2500 feet over an area that offers reasonable forced landing possibilities.

Immediate Actions

Prioritising your time after an engine failure will help you to accomplish as many of the critical drills as possible. The 'immediate actions' are the first part of the FLWOP sequence. They help ensure that the aircraft is trimmed for its best glide speed and that the engine is given sufficient time to respond to carburettor (or induction system) ice and fuel starvation checks. Here are the immediate actions:

Convert Excess Speed to Height

At the first sign of engine trouble, any airspeed in excess of the best glide speed, should be converted to valuable height. In many light aircraft with modest cruise speeds this simply means preventing unnecessary loss of height by holding the nose up until the best glide speed is reached.

After trimming for the best glide speed, apply the appropriate amount of rudder to remain in balance. Although drag can be reduced by stopping the propeller, it is not a recommended practice, as it requires bringing the aircraft close to the stall. It is also doubtful whether the reduction in drag will compensate for the height lost in the subsequent recovery to the best glide speed.

If the aircraft is fitted with a constant-speed propeller, selection of coarse pitch will reduce drag and improve gliding performance.

Carburettor Ice and Fuel Checks

Carburettor heat or alternate air should be applied as soon as possible. In the case of a carburetted engine, this will allow the remaining heat from the engine to be utilised in melting carburettor ice that may have formed. The electric fuel pump should also be switched on, mixture 'full rich' should be applied, fuel tanks changed (if possible), and the throttle closed.

Confirming Wind Direction

Particular attention must be given to the direction of the wind when selecting a landing area, as a landing into wind ensures the lowest possible groundspeed at touchdown. Landing with a tailwind could be fatal – it not only reduces your chances of achieving your planned aim point, but could also cause a much higher impact speed in the case of an overrun. **It is a good habit to keep track of the wind direction at all times while flying.**

Wind direction and speed can be confirmed using any of the following indicators:

Smoke

If there is any smoke in the area, it will provide the best indication of the surface wind speed and direction.

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Dust

Like smoke, dust provides a very good indication of the surface wind. Watch for vehicles moving along shingle roads, tractors working paddocks, fertiliser spreading, and even dust from river beds.

Tree or crop movement

The movement of large trees and wind ripples moving across the top of crops can give a good indication of the surface wind direction. Wind of 5 to 8 knots in willow and poplar trees turns the leaves upside down, exposing a silver side. The silver underside indicates the direction the wind is blowing from.

Wind lanes or wind shadow

In moderate to strong winds, water movement or waves can give an indication of surface wind direction, especially over large bodies of water. On the other hand, wind shadows are the result of water at the windward end of a body of water being protected by the shoreline, creating an area of calm. This effect is most noticeable in light to moderate wind conditions on small lakes or ponds.

Cloud shadow

The movement of cloud shadow over the ground indicates the direction of the wind at altitude, and is only an indicator of the 'general flow'. Care should be taken to ensure that there is not a marked difference between this indication and what is happening on the ground, especially in mountainous terrain.

Local knowledge

If you have local knowledge of the weather conditions in the area that you are operating in, then make full use of the information. The windsock indication and known takeoff direction at your aerodrome of departure (if nearby) may give an indication of wind direction.

Aircraft drift

By looking at any drift angle that you might be experiencing you can gain a limited indication of the wind direction at the aircraft's present altitude – but not at surface level.

Weather reports

If operating in close proximity to an aerodrome from which you have recently received weather information, such as an ATIS or METAR, then this could help to give you an approximate idea of the surface wind. This information should only be used to supplement that which you have gathered using the methods above.

Selecting a Landing Site

Selecting a suitable landing site in such a high stress situation can be difficult. In general, flights should always be conducted at an altitude that will allow sufficient glide time to plan and executed a forced landing.

The area of likely landing sites must be within easy gliding distance before any other selection criteria can be applied. The aircraft should be turned in the general direction of the area so as not to drift away and lose valuable height. Selecting a landing site can then be achieved by using a mnemonic such as 'the seven Ss', which stand for size, shape, slope, surface, surroundings, stock, and sun. They are listed in order of importance so as to help you narrow down the options.

Size

Look for the longest possible landing site that faces into wind. Your short-field-landing training will pay dividends here.

Shape

Don't limit your field selection to sites that resemble a rectangular runway. The perfect shape for a FLWOP is in fact a circle, as it allows approaches to be made from many different directions over obstacles and ensures a landing into wind. Landing diagonally across landing sites that are rectangular provides the longest possible landing distance.

Slope

An uphill slope for landing is preferred, as it will reduce the landing roll. A downhill slope should be avoided unless the wind strength negates the disadvantages of landing on a very gradual downhill slope. This should only be attempted when there is a strong headwind present and the gradient of the slope is known to be slight. It can be difficult to judge the gradient of a slope from altitude – rivers and creeks running downhill may give you some clues.

Surface

A dry, firm landing surface is preferred, in order to prevent the aircraft from digging in and then possibly nosing over. As with determining slope, assessing what kind of surface you are looking at has its problems. The colour and texture of the surface foliage can indicate how firm a potential landing site might be. The presence of surface water is always an indication that the site might be soft. A comparison of what each surface looks like in relation to a grass aerodrome runway can be useful.

Surroundings

Select a landing site that has a clear approach path. An approach should not be planned over tall trees, power lines and buildings that will prevent you from achieving an unimpeded profile. A clear approach path will also mean that undershooting your landing site is less likely to result in a collision with a solid obstacle. Some consideration should also be given to the possibility of an overrun. If an opportunity exists to land towards nearby buildings, which might have a telephone and people to assist you, then take it. If your forced landing does result in injuries, then you know that medical help will hopefully be only a phone call away.

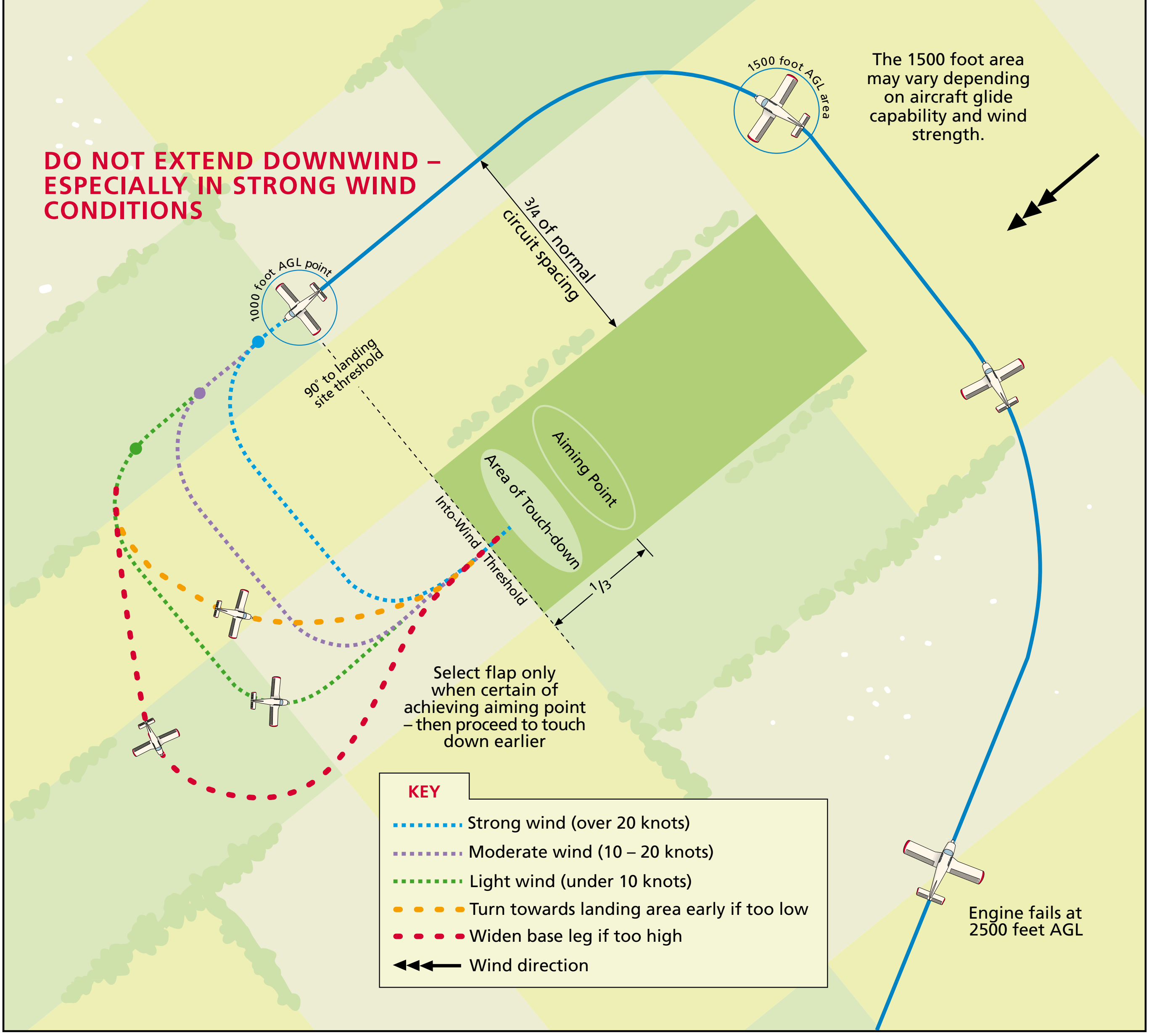
Stock

Try to avoid landing sites where stock are present. If, however, they are concentrated at one end of the paddock and are not tending to move around too much, then consider using the site – if there are no other equally or more suitable alternatives.

Sun

Normally a problem only at sunrise and sunset. Under these conditions an approach in the direction of the sun may blind you on finals.

Planning an Approach to a Landing Site



Planning Your Approach

Now that you have selected the most suitable into-wind landing site, you must plan your approach to it. This is one of the most important phases of the FLWOP process. A well planned approach profile will put you into a position from which you can turn onto a base leg at the correct height, and continue with a landing approach which is likely to have a successful outcome. The approach should be planned from the ground up. The following sequence is suggested for planning an approach to a landing site:

Aiming point

Selecting an aiming point that is approximately one third of the way into the landing site gives you a constant point to aim for, and it helps ensure that you do not undershoot the landing site (see diagram). Extending flap on short finals will move the touchdown point closer to the approach end of the field.

Circuit direction

A lefthand pattern is preferable, so that the pilot (sitting in the lefthand seat) has the best possible view of the landing site – unless there is a specific reason to fly a righthand pattern. (Righthand pattern FLWOP practice is important, however, because some landing sites may offer no alternative.) In the 'ideal' situation, try to maintain turns in a constant direction to improve an accurate judgement of drift, sink rate, and approach profile.

1000-foot AGL point

The 1000-foot point should be at 90 degrees to the landing site threshold and about three quarters of the normal circuit distance out. The same point as during glide approach training. **You must be at this point to achieve a successful landing.** Arriving at the 1000-foot point will allow you to position onto a base leg depending on the wind strength.

Continued over...

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The stronger the wind the earlier you will need to turn on to a curved base leg (see diagram). Extending downwind in windy conditions would mean a very slow groundspeed on final approach, possibly causing an undershoot.

1500-foot AGL area

The 1500-foot area is situated at the upwind end of the landing site and helps you to position yourself correctly at the start of the downwind leg. The 1500-foot area works on the assumption that you will lose around 500 feet in the downwind leg (depending on aircraft type) meaning that you should arrive at the 1000-foot point at the correct height (see diagram).

Assessing Your Approach

Using your altimeter, work out how much height you have to glide to achieve the 1500-foot area. You can then make a decision, based on this information, whether to fly a direct line to the 1500-foot area, or purposely manoeuvre to lose height. Constantly assessing how your approach profile is going, is crucial. Estimate your height above ground level and the distance-to-run to achieve each reference point – and don't forget the effect wind will have on each segment of your approach pattern.

If you are too high relative to the 1500-foot area, commencing an orbit to lose height is the best course of action, but be careful not to lose sight of your landing site. When faced with turbulent and gusty conditions, it may be necessary to increase your airspeed a little above the aircraft's best glide speed to provide a greater margin above the stall. The same technique should also be applied when trying to make headway to a landing site into a strong headwind – it provides better forward penetration to the landing site relative to the amount of height lost.

Subsequent Actions

Once you have planned your approach to a landing site, and you feel that it is progressing well, the next priority is to carry out the subsequent actions. You can do this knowing that you have a definite plan to reach your landing site. It is very important to maintain good situational awareness while conducting any of the subsequent actions. You should fly the aircraft first and foremost, and then worry about completing the cockpit drills. Your pilot scan should be directed outside the aircraft cockpit on a regular basis so that small adjustments in heading can be made that ensure you are sticking to your planned approach.

Engine Trouble-Checking

Engine trouble-checking allows you the opportunity to assess what has caused your engine to lose power and to try and rectify the situation. There is little point in continuing with a forced landing if you are simply suffering from fuel starvation in one tank, when there is plenty in the other. If there is any doubt about whether your engine will continue to run, then you should stick with the forced-landing approach that you have planned. Trouble checks are based on the mnemonic FMITP (see Glossary) priority system and should be learned so that they are absolutely automatic. Check your progress to the landing site and make any necessary adjustments.

Emergency Radio Call

If you have a radio, it is important to transmit a MAYDAY call and also squawk 7700 on your transponder before you lose too much altitude, as this could reduce the range of your transmission. Details of the content of a distress call can be found in the 'pink' section of the *AIP New Zealand*. If time is limited, then at least transmit your present position and intentions to give authorities the best possible chance of finding you.

Check your progress to the landing site and make any necessary adjustments – by now you may be nearing the 1500-foot area.

Passenger Briefing

A passenger briefing is of great value to calm your passengers and to reassure them that you have the situation under control. It will not only remind them of what you told them during the preflight passenger briefing, but also enables you to stress that you need to concentrate on the rest of the forced-landing approach. For information on passenger briefing content, see the November/December 2006 issue of *Vector*. Check your progress to the landing site and make any appropriate adjustments.

Pre-Landing Checks

Pre-landing checks (BUMPFH – see Glossary) need to be completed before landing. Apart from being the normal pre-landing checks, they act as a reminder to check that everyone's harness is tight and to think about when hatches or doors should be unlocked. Pre-landing checks also provide a cue to consider when to put the undercarriage down. Leave the undercarriage up, however, until you are certain of reaching your landing site. By now you should be approaching the 1000-foot area that you selected. If you find that you are too high, then you will need to consider flying a wider base leg, and if too low, flying a closer base leg (see diagram).

Glossary

These checks are a general guide only. For comprehensive checklists refer to the aircraft's Flight Manual.

Trouble Checks

F Fuel pumps are on, change tanks, contents are sufficient
M Mixture full rich is applied
I Ignition is on both, check left mag, right mag
T Temperatures are in the green
P Pressures are in the green
Partial power check (advance throttle)

Pre-Landing Checks

B Park brake is off and there is pressure on the toe brakes
U Undercarriage is down and locked
M Mixture is full rich
P Propeller Pitch is set as required
F Fuel pumps are on
H Hatches and harness are secure

Shut Down Checks

F Fuel selector is off, pumps are off
M Mixture is full set to full lean
I Ignition is off

Final Actions

The final actions are to carry out the 'off checks' (FMI – see Glossary). It is extremely important that you arrive overhead the 1000-foot point as accurately as possible. as this will then set you up for a fairly normal type of glide approach.

Judging Your Final Approach

After you have completed the 'off checks', your focus must be drawn to judging the base leg and final approach to your aiming point. Do not extend downwind (especially in strong wind conditions) or you will run the risk of undershooting the landing site. It is better to fly a slightly wider base leg and use it to adjust your height as required. This can be achieved by turning slightly away from the landing site if too high, or turning towards the landing site if too low. This means that at no time are you committed to a final approach where there is insufficient space to control your height (see diagram). Final approaches directly into strong wind will mean low groundspeed and thus require greater judgement. In very strong headwind situations, it may be worth considering flying faster than the aircraft's best glide speed to avoid an undershoot. On the other hand, in light wind conditions you could end up high on final approach. The use of flap, side-slipping (if approved for your aircraft type), curved approach or S-turns are all effective ways of bleeding off extra height – but flap should not be selected too early. When you are absolutely certain that you can achieve your aiming point, then you can use flap to touch down earlier than your aiming point. If necessary, touchdown can now be attempted as close to the threshold as possible.

Landing the Aircraft

Touching down at the slowest speed possible will reduce your landing roll and reduce the amount of braking required to come to a complete stop. Previously unseen obstacles and ditches can be a problem on the rollout. If a collision is imminent then try at all costs to keep the cabin intact as this is your 'safety capsule'. Attempts to turn the aircraft should be used only as an absolute last resort, as an aircraft cockpit is designed for a forward impact, not a lateral impact. Once the aircraft has stopped, evacuate the aircraft and attend to your passengers. A call should be made to the emergency services and to the operator to inform them of the incident.

A forced landing is a situation that, if dealt with correctly, can have a positive outcome. If it is practised regularly with a disciplined approach, then you are giving yourself and your passengers the best possible chance. When was the last time you had a dual forced-landing training session? ■

AV KIWI Back to Basics…

Technology Tips and Traps

Technology can be a wonderful tool. Innovations available to pilots today can provide large amounts of information, making flying more efficient and arguably safer. There are some pitfalls, however, if technology is not used appropriately, or if it fails, or distracts pilots from other basic tasks.

The theme of the CAA 2007 series of AvKiwi Safety Seminars is "Back to Basics", with an emphasis on the tips and traps in using new technology. Topics covered will include:

- Lookout
- Route planning
- Communications

The first in our series of seminars will be presented by Jim Rankin, RNZAF Instructor, at the Great Plains Fly-In:

Ashburton Aerodrome

Sunday 4 February at 9:30 am

The seminar will be held during Great Plains Fly-In 2007, in the Mid-Canterbury Aero Club on the airfield.

At 9:00 am, prior to the Av-Kiwi Seminar, Rex Kenny, CAA Manager Sport and Recreation, will be giving an update on sport aviation regulation, with time for questions and answers.

Check out the CAA web site, www.caa.govt.nz, for a list of further seminars in this series (dates yet to be scheduled), see "Safety information – Seminars".

Is That Part Genuine?

During 2006, a maintenance provider received a replacement horizontal stabiliser for a Hughes 269 helicopter, to replace an item that had reached its 2500-hour finite life. Accompanying the part was a document from the US supplier, but the engineer's suspicions were aroused when he noticed that the document title contained the expression 'Release Note' – not a term used in the US system.

The stabiliser was sent to a New Zealand Part 145 organisation, and was returned with a CAA Form One, certifying that the part was "inspected, satisfactory, TTSN (total time since new) nil". Not satisfied that the Form One was actually supported by source documentation, the engineer contacted CAA, and was advised to treat the item as a "suspected unapproved part" and to quarantine it until further notice. Further investigation by CAA established that the part was genuine, but the documentation process for the part to be fitted to a New Zealand registered aircraft had not been complied with.

Be suspicious of any part that is not accompanied by the requisite documentation.

Advisory Circular (AC) 20-2A *Acceptability of parts* provides acceptable methods for showing compliance with Part 21, Subpart K and Part 43, Subpart B relating to the use of acceptable parts on type certificated aircraft. According to the AC, for this part to be acceptable, it should have been accompanied by at least an FAA Form 8130-3 *Airworthiness Approval Tag*, which is an "Authorized Release Certificate" under the FAA system. To be eligible for export from the USA, the part was **required** to be accompanied by a Form 8130-3. A specimen Form 8130-3 is shown opposite.

The US supplier, having obtained the part from the manufacturer, should have requested a Form 8130-3 to accompany it prior

to export, and this form should have been forwarded on to the New Zealand purchaser. Any such part arriving from the USA and not accompanied by a Form 8130-3 should be regarded as not acceptable. The first step to rectify this situation should be to request the form from the supplier, and ask for an adequate explanation as to why none was provided. In the best case, it could have been a simple clerical error on dispatch; in the worst case, the part could be counterfeit, or 'bogus'.

Be suspicious of any part that is not accompanied by the requisite documentation. Quarantine it until its provenance can be established beyond doubt, backed up by supporting documentation. A "suspected unapproved part" is just that until its acceptability is determined – if assistance is required, contact the CAA (email info@caa.govt.nz), or submit a CA005D Defect Report (available on the CAA web site, www.caa.govt.nz).

A counterfeit part is generally one manufactured by a non-approved firm or individual and represented as the genuine article, often down to realistic data plates and serial numbers.

Worst case scenario: this fatal accident was a direct result of fitting bogus parts to the aircraft.

Unapproved surplus military stock is sometimes marketed as 'genuine' parts, usually with forged documentation, and this can make determining acceptability a very difficult exercise. Time-expired parts are sometimes found back in the aviation system, having been refinished or otherwise treated to look like new, and also usually supplied with forged documentation.

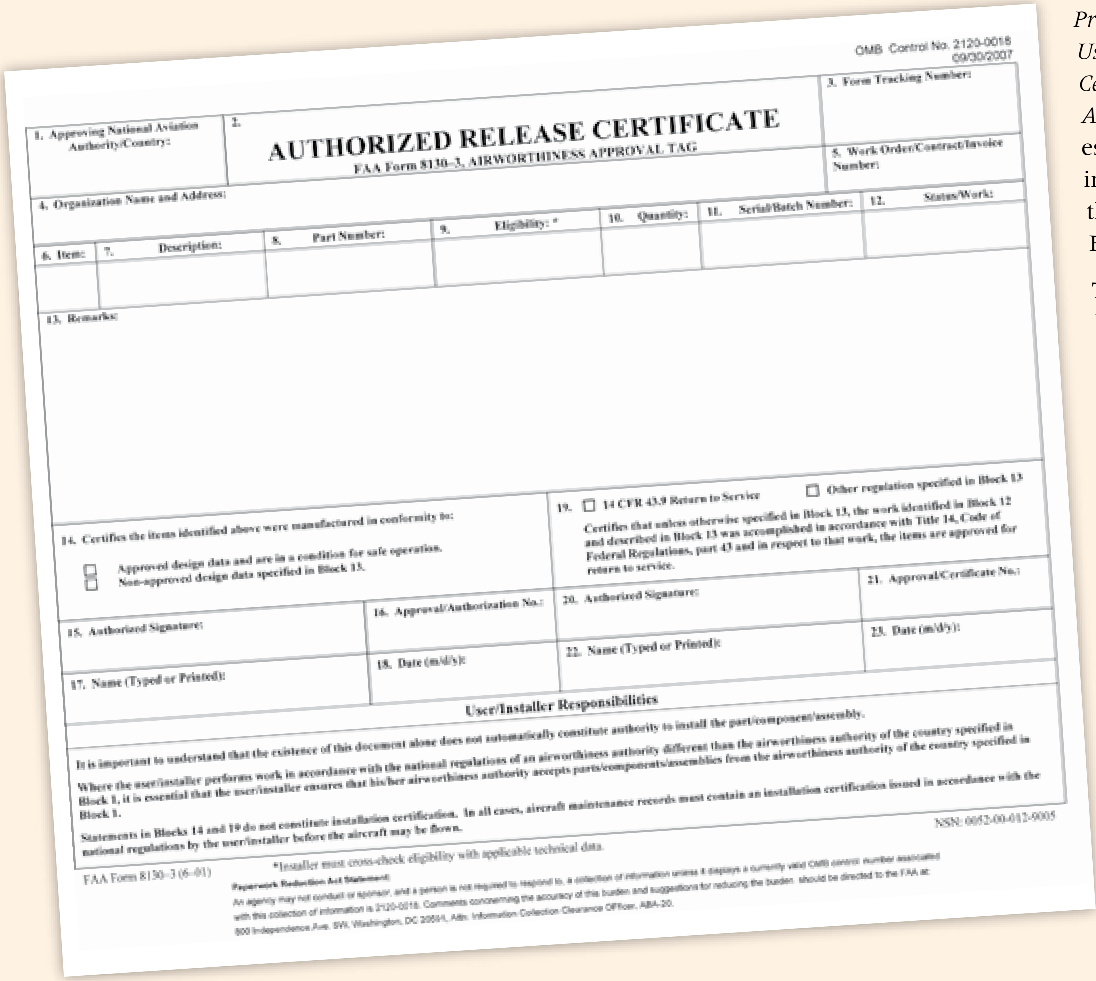
A classic case of 'bogus' parts was found during the investigation of a Robinson R22 helicopter accident some years ago. A tail rotor blade separated in flight, resulting in a loss of control and ensuing ground impact that killed both occupants. The tail rotor was found to be a non-standard part that had been fabricated from accident-damaged blades by an unauthorised person or organisation in the USA, and imported into New Zealand. To all appearances, the tail rotor blades were genuine, and this appeared to be backed up by the entries in the logbooks of the helicopter on which they had previously been fitted.

The workmanship and materials used in the remanufacture were well below standard, and readily detectable once the blades were opened up – but in their 'as presented' state, they were indistinguishable from genuine blades.

A strong suggestion to maintenance providers and operators: when a time-expired part is removed from an aircraft, and there is no provision for overhauling or restoring that part to 'zero time', render it completely unserviceable so that there is **no possibility** of its being reused either deliberately or inadvertently. The same applies to critical parts such as rotor hubs that have been involved in an accident. Judicious use of a cutting blade and the separate disposal of the resulting pieces **and the data plates** is a sure-fire method of avoiding the reappearance of a part (or a copy with the original data plate) at a later date. See also AC20-3 *Storage and distribution of aeronautical supplies*, specifically the section relating to quarantine stores.

Not only engineers, but also aircraft owners and operators, maintenance controllers, and stores personnel should be aware of the possible pitfalls that can be encountered when purchasing aircraft parts, particularly from overseas. Owners and operators should consult their maintenance provider before purchasing any parts, as it is the maintainer who takes the responsibility when fitting the parts. Advisory Circulars AC20-2A, AC21-80A and AC43-3 Rev 1, all available on the CAA web site, give a great deal of valuable information on the subject. FAA Order 8130.21D *Procedures for Completion and Use of the Authorized Release Certificate, FAA Form 8130-3, Airworthiness Approval Tag*, is essential reading for those involved in sourcing parts from the US, and is available on the FAA web site, www.faa.gov.

The FAA has a 'Suspected Unapproved Parts' programme, details of which can be found on the FAA web site, www.faa.gov/aircraft/safety/programs/sups/. Although the CAA does not have a similar programme at present, we request that any New Zealand cases of suspected unapproved parts be notified to CAA so that an investigation can be undertaken. Use either an email to info@caa.govt.nz or Form CA005D to make the notification. ■



OMB Control No. 2120-0018
09/30/2007

1. Approving National Aviation Authority/Country:
2. AUTHORIZED RELEASE CERTIFICATE
FAA Form 8130-3, AIRWORTHINESS APPROVAL TAG
3. Form Tracking Number:
4. Organization Name and Address:
5. Work Order/Contract/Invoice Number:

6. Item:	7. Description:	8. Part Number:	9. Eligibility: *	10. Quantity:	11. Serial/Batch Number:	12. Status/Work:

13. Remarks:

14. Certifies the items identified above were manufactured in conformity to:
☐ Approved design data and are in a condition for safe operation.
☐ Non-approved design data specified in Block 13.

19. ☐ 14 CFR 43.9 Return to Service ☐ Other regulation specified in Block 13
Certifies that unless otherwise specified in Block 13, the work identified in Block 12 and described in Block 13 was accomplished in accordance with Title 14, Code of Federal Regulations, part 43 and in respect to that work, the items are approved for return to service.

15. Authorized Signature:
16. Approval/Authorization No.:
17. Name (Typed or Printed):
18. Date (m/d/y):
20. Authorized Signature:
21. Approval/Certificate No.:
22. Name (Typed or Printed):
23. Date (m/d/y):

User/Installer Responsibilities

It is important to understand that the existence of this document alone does not automatically constitute authority to install the part/component/assembly.
Where the user/installer performs work in accordance with the national regulations of an airworthiness authority different than the airworthiness authority of the country specified in Block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts parts/components/assemblies from the airworthiness authority of the country specified in Block 1.
Statements in Blocks 14 and 19 do not constitute installation certification. In all cases, aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

NSN: 0052-00-012-9005

FAA Form 8130-3 (6-01)
*Installer must cross-check eligibility with applicable technical data.

Paperwork Reduction Act Statement:
An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number associated with this collection of information is 2120-0018. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ABA-20.

"You Have Control"

Russell Kilvington, who has been the Director of Maritime New Zealand for the past 13 years, has been appointed interim Director of Civil Aviation until 31 May 2007.

Former Director of Civil Aviation John Jones retired in November last year.

Chairman of the Civil Aviation Authority Rick Bettle said Mr Kilvington's fixed-term appointment would enable the authority to undertake a robust and considered process in recruiting an appropriate permanent replacement for John Jones. Mr Jones has agreed to remain with the CAA in an advisory role until March to further facilitate the transition.

Mr Jones has headed the CAA since 2001, and he has an extensive background in aviation. He was president of the Aviation Industry Association for eight years and spent 31 years flying and in management roles at Mount Cook Airlines, including 10 years as Chief Executive.

"He has devoted his working life to aviation, and I would like to thank him for the contribution he has made throughout his long career."

– Minister for Transport Safety Harry Duynhoven.

Minister for Transport Safety Harry Duynhoven said Mr Jones had made a significant contribution to New Zealand aviation over almost four decades.

"He is regarded as a highly experienced airline captain who has had extensive experience in airline and corporate management, as well as his role as Director of Civil Aviation since 2001.

"As Director he made strenuous efforts to assess the areas of the industry with highest risk and put in place programmes to reduce risk factors. As a result, aviation safety has improved," Harry Duynhoven said.

"He has devoted his working life to aviation, and I would like to thank him for the contribution he has made throughout his long career."

John Jones took over the reins of the CAA in October 2001, just weeks after the September 11 terrorist attack on the World Trade Centre.

"When I arrived, there was a huge downturn in aviation and we had no reserves. That meant the CAA was projecting a big deficit for the financial year," John Jones said.

"With sensible restraint by managers right across the organisation, we've turned that around to $7 million in reserves, which is a suitable amount for the short term," he said.

"We have also seen huge improvements in industry safety performance over the past five years. People are taking responsibility for their decisions, and that is showing in the accident rates, particularly in the general aviation sector.

This beautifully restored Auster J5G had John Jones reminiscing with ZK-BDK syndicate member, Paul Morrison, about learning to fly in an Auster.

John Jones promotes safer aviation at an Oamaru Open Day in 2006.

"General aviation is now 39.6 percent safer than it was in 2000. I am proud of that, and the industry should be too," John Jones said.

Chief Executive Officer and General Manager of Eagle Airways Doug Roberts said John Jones was a responsive Director in a role that presented a difficult balancing act between the requirement to foster aviation development, and the public's need for a genuinely safe, responsible and sustainable aviation system.

"His greatest strength, based on his first-hand knowledge and experience built up over years of active involvement as a pilot in a variety of roles, lay in his understanding that aviation and risk go hand in hand. One does not exist without the other, and while risk can never be eliminated, it can be managed through sound, logical and practical measures," Doug Roberts said.

"John's contribution will hopefully live long after he has departed the role."

John Jones said he was particularly gratified to see significant safety improvements in the helicopter and sport and recreation areas of the industry.

"That is a credit to the staff of the CAA who have worked hard to get the safety messages out. We have run countless safety seminars and have supported industry safety initiatives and been a constant presence at industry forums.

"From an airline passenger's perspective the story is even better. The Flight Safety Foundation has just announced that New Zealand as part of Oceania is the safest place in the world to be an airline passenger (see page 16)," John Jones said.

"The CAA has also been making significant internal changes. In the last 15 months we have adopted a new system for measuring safety performance that includes the social cost of accidents and fatalities to New Zealand (see page 14). We also have three major projects nearing completion that will provide marked improvements to the way we certificate, audit, and assess safety risk," he said.

"The CAA also has a dynamic new Chairman in Rick Bettle. I feel I am leaving the organisation in good hands, and am looking forward to some new challenges in retirement." ■

From left: Neil Foreman, Murray Taylor, Bert Gregory, and John Jones after he opened a new hangar for the Northern Recreational Flying Club.

Russell Kilvington has an extensive background in transport planning, both professionally and academically.

He has worked in urban and regional planning, economics, transport planning and management, and is a former Deputy Director of Oxford University's Transport Studies Unit.

Over his 13 years at the helm of Maritime New Zealand (formerly the Maritime Safety Authority) he saw its staff triple and its functions increase dramatically.

Maritime New Zealand's customers include about 3500 commercial vessels and over 300,000 pleasure boats, in addition to the over 2000 foreign-flagged international merchant ships that operate in New Zealand's waters each year.

"Operationally, there are similar challenges and parallels between the maritime and aviation communities," Russell Kilvington said.

"Quality systems and operator responsibility are crucial to both. I appreciate this opportunity to work in the aviation environment.

"It is a hard act to follow John Jones, who clearly has tremendous support in the industry.

"It is my intention to carry on where he left off in being accessible, available and responsive. The CAA is the regulator, but we will not be able to achieve anything unless we can take the whole aviation industry with us.

"There are a number of urgent internal tasks to be done in the short term and a lot of learning to be done, but I am looking forward to gradually upping my contact with industry representatives over the coming six months," Russell Kilvington said.

Changes to the Fit and Proper Person Process

If you are in aviation you will have heard about the fit and proper person assessment. In simple terms, anyone holding or applying for an aviation document, or anyone who has control over the exercise of the privileges of an aviation document, must satisfy the Director of Civil Aviation that they are a fit and proper person to do so.

This is a requirement of the Civil Aviation Act 1990, Section 9(3). You can read an article that gives more information about the process in the May/June 2006 edition of *Vector*. This can also be seen on the CAA web site, www.caa.govt.nz, see "Safety information – Publications".

Examples of aviation documents are licences and air operator certificates. Certificated organisations must nominate Senior Person(s), and they must go through the fit and proper person process. This is what we mean by, "anyone who has control over the exercise of the privileges of an aviation document".

In 2006, the Director of Civil Aviation, John Jones, decided to improve the fit and proper person process to better fulfill his responsibilities under the Civil Aviation Act. More information needed to be supplied in order to make an informed assessment of an applicant's fit and proper status, and new forms were designed to provide that information. The opportunity has also been taken to clarify the meaning of some questions that may not have been clear to applicants in the past.

Applicants are required to complete a new form for the fit and proper person assessment for applications received by the CAA from 1 February 2007. The new form is called 24FPP and has clear instructions outlining what is required, and how to comply. It requires applicants to do four new things:

1. **Provide proof of identity.**

   This can be a copy of a document (you can choose from a list of eight) signed by a referee. The requirements for a referee are on the 24FPP form and summarised later in this article.

2. **Provide proof of address-for-service.**

   There are four acceptable documents in this category. You need to provide a copy of one – it must have your current name and address for service on it, and be signed by your referee.

3. **Provide a Criminal Record History from the Ministry of Justice.**

   You must apply in writing, on the correct form, which can be downloaded from the internet. The Ministry requires this signed authority from you before they can access your information, so your application must be posted to them. Details are on the 24FPP form.

4. **Obtain an Offence History Report from Land Transport New Zealand (LTNZ).**

   You apply to LTNZ in writing (fax is acceptable). Details are on the 24FPP form.

All applicants must provide these official records of their Criminal and Transport Offence History from all countries that they have resided in for more than 6 consecutive months within the past 5 years. Even if you have no offences or criminal record, you must still obtain the reports to show that fact.

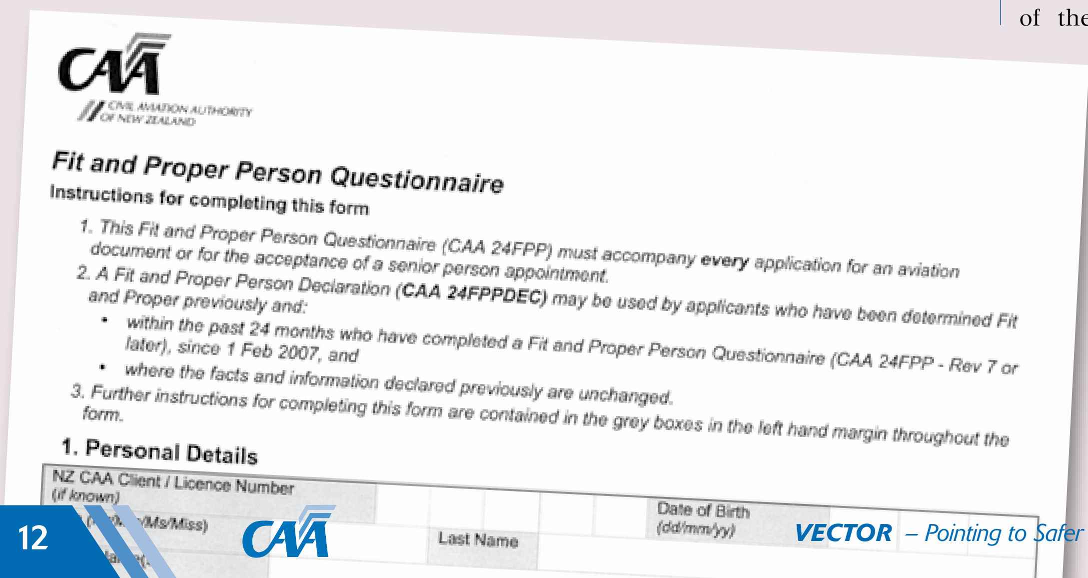
Aircraft owners do not need to use the 24FPP form – the existing forms for change of possession of an aircraft have appropriate questions for dealing with the fit and proper person assessment in this context.

Your referee must hold a position of standing in the community, eg, a solicitor, police officer, Justice of the Peace, MP, religious or community group leader, medical professional, chief flying instructor, CEO or Quality Manager of an Aviation Organisation. The referee must be contactable during normal business hours. The referee must not be: related to the applicant, or a partner or spouse of the applicant, or a resident at the same address as the applicant.

It will take three to four weeks to obtain the reports from the Ministry of Justice and LTNZ – applicants need to consider this when applying for individual documents, or when nominating Senior Persons for organisations.

Most of the individual application forms have been changed because of the new fit and proper person process. Some of the organisation forms have also changed. All the new forms are on the CAA web site.

Applications received by the CAA on or after 1 February 2007 will not be processed unless they use the new forms and provide all the required information – there is a checklist at the end of the 24FPP form to help with this. ■



CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND

Fit and Proper Person Questionnaire

Instructions for completing this form

1. This Fit and Proper Person Questionnaire (CAA 24FPP) must accompany **every** application for an aviation document or for the acceptance of a senior person appointment.
2. A Fit and Proper Person Declaration (**CAA 24FPPDEC**) may be used by applicants who have been determined Fit and Proper previously and:
   - within the past 24 months who have completed a Fit and Proper Person Questionnaire (CAA 24FPP - Rev 7 or later), since 1 Feb 2007, and
   - where the facts and information declared previously are unchanged.
3. Further instructions for completing this form are contained in the grey boxes in the left hand margin throughout the form.

1. Personal Details

NZ CAA Client / Licence Number (if known)

/Ms/Miss) | Last Name | Date of Birth (dd/mm/yy)

Certification Seminars for Flight Training Organisations

Part 61 Stage 3 NPRM

The CAA will be conducting a series of seminars around the country in early February 2007 to inform interested parties of proposed amendments to Part 61 *Pilot Licences and Ratings* and associated changes to Part 141 *Aviation Training Organisations – Certification*.

Here is a brief outline of the key points of change. For more information see the November/December 2006 issue of *Vector*.

The rule amendments in the NPRM propose that all training and assessment required by Part 61 for the issue of a pilot licence or rating be undertaken by a person operating under the authority of an aviation training organisation certificate, issued in accordance with Part 141. The NPRM also proposes to establish four types of training organisation certificate:

- **Aviation Training Organisation Certificate.** For all Part 61 pilot licence and rating training including Biennial Flight Reviews. This certificate also covers flight tests and assessments required under Part 61.
- **Flight Training Organisation Certificate.** For conducting private pilot licence, type rating and aerobatic rating training. This certificate also covers Biennial Flight Reviews.
- **Special Training Organisation Certificate.** For specialist training, including dangerous goods training and security training.
- **Restricted Training Organisation Certificate.** For a single training course being held during a specific period.

The CAA invites interested parties to attend one of the following presentations (all run from 3:00 to 5:00 pm).

Location	Venue	Date
Ardmore	Air Training Corps Hall	13 February
Christchurch	Canterbury Aero Club	7 February
Dunedin	Mainland Air	9 February
Hamilton	Waikato Aero Club	14 February
Hastings	Hawke's Bay and East Coast Aero Club	15 February
Nelson	Air Nelson Building	1 February
Paraparaumu	Associated Aviation	2 February
Timaru	South Canterbury Aero Club	8 February
Wanganui	Wanganui Aero Club	16 February
Whangarei	Northland Districts Aero Club	12 February

A copy of the NPRM is available on the CAA web site, www.caa.govt.nz, under "Rules & more – Notices of Proposed Rulemaking". Submissions close 2 March 2007. ■

CAA Safety Videos

We have begun converting the CAA Safety Videos to a digital format in preparation for making them all available on DVD. Availability of the new compilations will be advertised on the CAA web site, www.caa.govt.nz, as they are completed. The complete list of CAA Safety Videos can be seen on the web site under "Safety information – Videos".

In the meantime, if you hold a New Zealand aviation document, you can still borrow them on VHS tape from the CAA library for free. Just email info@caa.govt.nz with your client number, postal address, and the title you would like to borrow. Please return them within one week.

Apart from the two DVD titles below, the videos will not be available to purchase until the new compilations are prepared. We will provide updates in *Vector* and on the web site.

These two titles are now available on DVD for loan from the CAA Library, or for purchase:

VFR in Controlled Airspace

Safety Around Helicopters

Note: The Aircare DVDs, *Managing Risk in Aviation*, and *An Aviator's Guide to Good Decision Making*, are available from the Aviation Industry Association (AIA). Tel: 0–4–472 2707, Email: admin1@aia.org.nz.

Safety Results Towards 2010

The first 15 months of progress towards the 2010 aviation safety targets have been analysed. Check out how your sector of the industry is doing.

In July 2005, the CAA began measuring the cost of aviation accidents differently. Rather than just tallying accident numbers, the CAA now calculates the 'social cost' of accidents, incorporating a monetary value for serious injuries and lives lost, as well as the actual value of aircraft destroyed. The costs are then divided by the number of seat hours (or equivalent) flown by each sector of the aviation industry.

The shift to measuring the social cost of accidents was made in consultation with the aviation industry. The statistical values ascribed to serious injuries and fatalities have been developed by the Ministry of Transport, and are used in its policy development. The values of aircraft hull losses are an average of international figures.

The CAA is leading the world in valuing the impact of aviation accidents in this way, and aviation authorities in the United States, the United Kingdom, and Australia have already expressed interest in the approach.

CAA Safety Analyst Michael Campbell says developing an understanding of the social cost of aviation accidents improves safety analysis.

"Under the old way of measuring accidents, each one had the same value. So, at its most extreme, if your grandmother slipped off the steps climbing out of a 747 and broke her ankle – it would be measured as one airline accident – as would the Erebus crash.

"When we set up the new measuring system, we also changed the way we grouped sectors of the industry for developing safety targets. The new groupings aim to put similar types of operations together. The way each group trends toward its safety targets over time gives a clear picture of the effect our safety efforts are having, and where we need to focus our energies," Michael says.

Where do you fit in?

The 13 safety target groups each belong to one of three main categories: Public Air Transport, Other Commercial Operations, or Non-Commercial Operations.

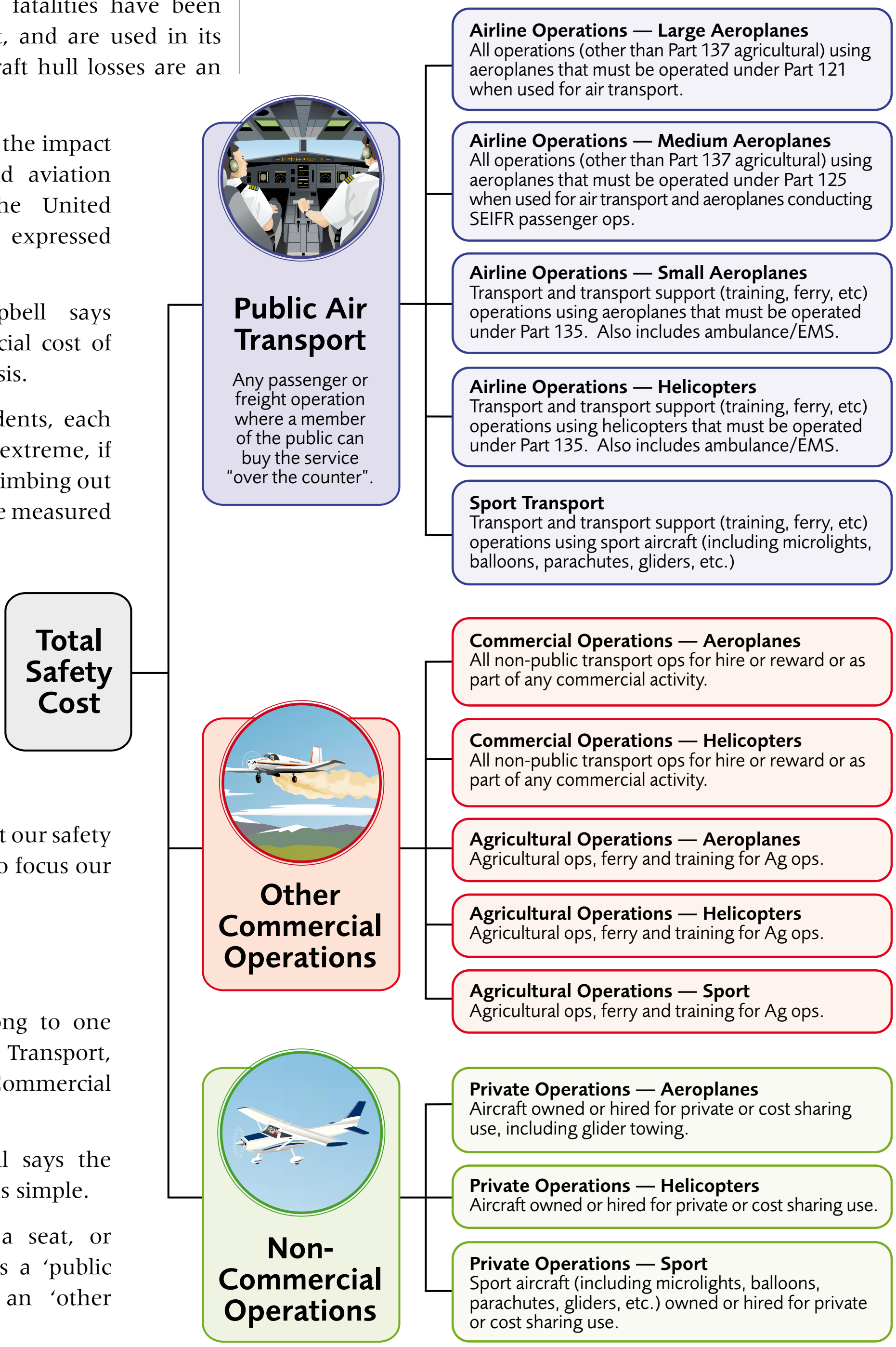
CAA Safety Analyst Michael Campbell says the difference between the first two groups is simple.

"If you can go to a shop and buy a seat, or cargo space, over the counter, then it's a 'public air transport operation'. If not, it's an 'other commercial operation'."

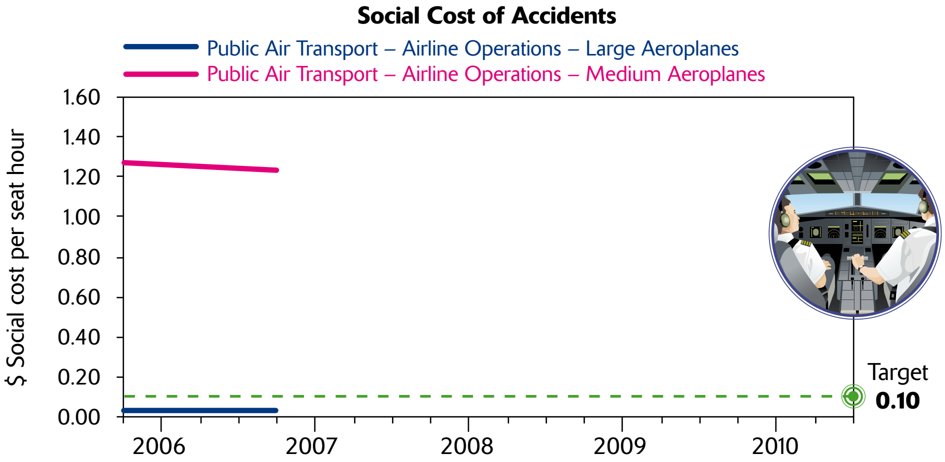
The third group is for non-commercial or private operations.

"The key thing to remember is that we are measuring what accidents happen throughout the whole course of an operation. So if a medium-sized airliner suffers an accident during a training flight, that still counts as an air transport flight," Michael says.

Safety Target Structure

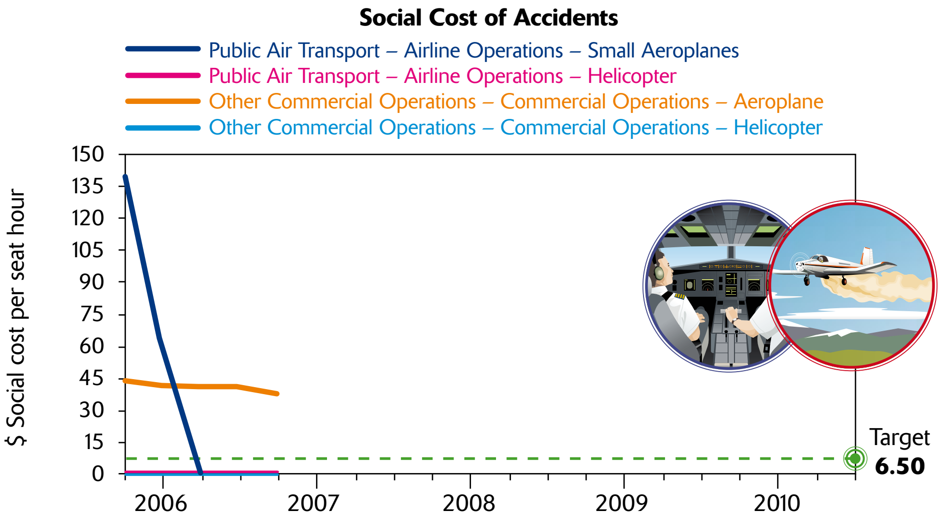


Results for the first 15 months (to 30 September 2006)



Large aeroplanes are already well below their target of $0.10 per seat hour.

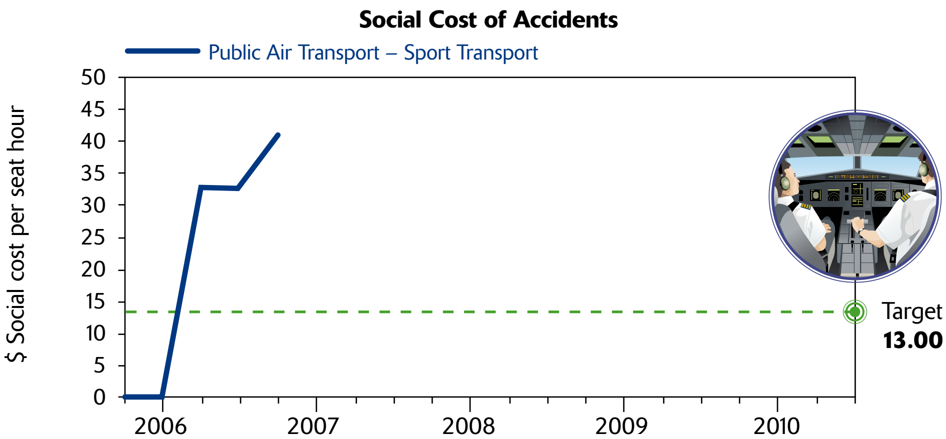
Medium aeroplanes are considerably above their target, although they are trending down. The target for this sector has been calculated over a 10-year average, and a single Metroliner crash two years ago has caused a serious spike in the trend line. It will not be possible for this sector to achieve its safety target until after 2010.



Airline operations – small aeroplanes is showing a significant downward trend from the high starting point created by six fatalities in late 2004 and early 2005. This group has been under its target level since April 2006.

Both helicopter airline operations and other helicopter commercial operations are well below their targets. There have been no fatal or serious injuries for these sectors since 2003.

However, the other commercial operations – aeroplane sector is well above its target, although trending down. If this trend continues, the sector could be on target by April this year.



The sport transport sector is well above its target and is trending up. There have been five serious injuries in this group since the new target was set.

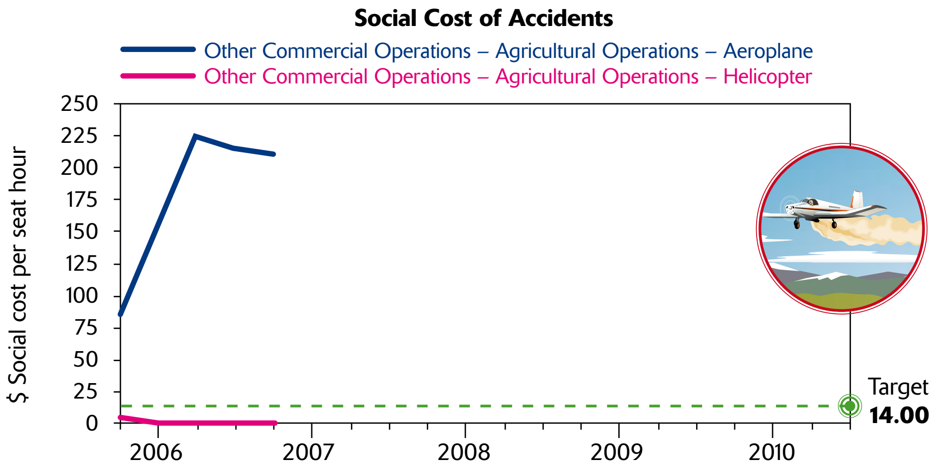
The activities in this group are currently commercial hang gliding, paragliding, ballooning, and parachuting.

Continued over...

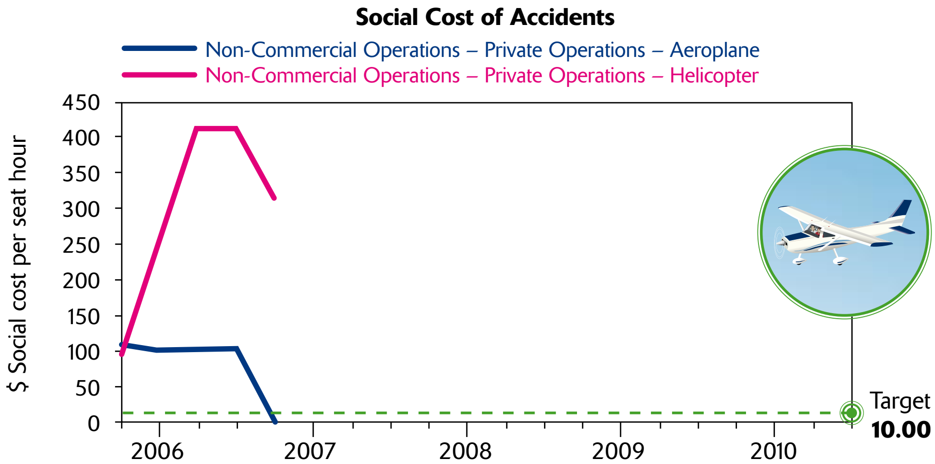
What is a life worth?

Human life is priceless but the value of a statistical life in New Zealand is $3.05 million. The value of a statistical serious injury is $0.305 million.

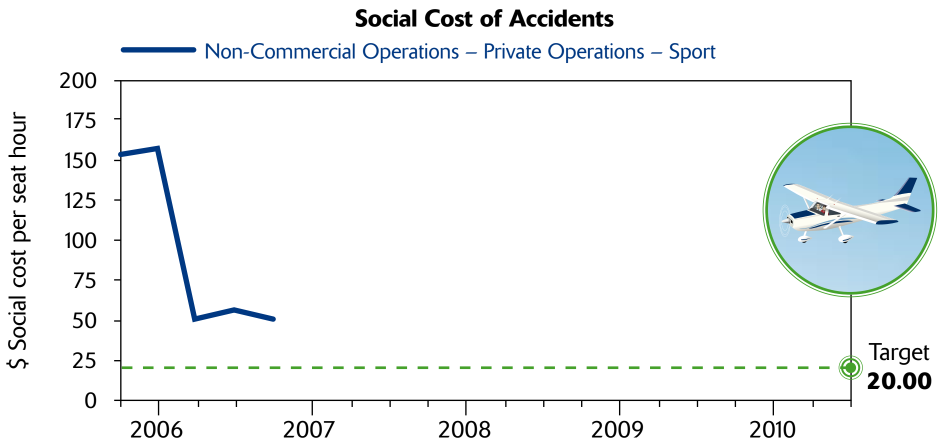
... continued from previous page



The agricultural operations – aeroplanes sector remains well above target level, although it has recently begun trending down. The target is expected to be reached in 2007. The agricultural operations – helicopter sector is well below the required target.



The private operations – aeroplane sector has reached its target, however privately operated helicopters are well above target. This group has begun trending down, and could reach its target in 2007.



This group has been progressively heading toward its target, and could reach it during 2007.

The wider safety picture

- Worldwide, 2006 was the best year for airline safety since 1963. Internationally, 1,292 people died in aeroplane crashes, according to the Geneva-based Aircraft Crashes Record Office. About 1.2 million people die each year in car crashes, and a further 50 million are hurt.
- The international Flight Safety Foundation announced at its Aviation Safety Seminar late last year that New Zealand (as part of Oceania, including Australia and the South Pacific) was the safest place in the world to be an airline passenger.
- Airline passengers in New Zealand enjoy an excellent safety performance – 97.3 percent of the seat hours in New Zealand are flown by large and medium airlines. Yet they are responsible for just 3 percent of the social cost of accidents. The rest results from general aviation operators.
- The overall accident rate in New Zealand continues to fall. In 1996, the number of accidents per 100,000 hours flown was 11.18. In 2005 the figure was 8.68.

You can read more information about aviation safety performance in the *Aviation Safety Summary Report* (quarterly), and the *Aviation Industry Safety Update* (six monthly), on the CAA web site, www.caa.govt.nz, see “Safety information – Safety Reports”. ■

SIGMET Changes

The current format used to present SIGMETs in New Zealand does not comply with International Civil Aviation Organization (ICAO) Annex 3 Standards.

New Zealand SIGMETs are currently being changed to bring them into line with ICAO standards. This has become necessary because of the increasing use of electronic systems used to deliver and file SIGMETs, as well as an ICAO requirment to disseminate the SIGMETs to overseas OPMET (Operational Meteorological information) databases.

Figure 1 is an example SIGMET given in both the old format and the new format, to highlight the changes.

- The only dates and times Annex 3 permits in a SIGMET are UTC. In the new format any reference to local dates and times will be removed as well as the abbreviation UTC (as this is now redundant).
- The FIR identifier, in this case NZZC, must be placed at the beginning of the second line and the name of the FIR must be spelled out in full following the identifier.
- Turbulence (TURB) can be described only as severe (SEV).
- BTN NZNS-NZCH has been replaced by NZNS/NZCH. Ranges must be indicated by use of a "/". The abbreviation BTN will no longer be used.
- No full stops will be used in SIGMETs.
- Specific places will only be referred to by using recognised navigation aid abbreviations or ICAO location indicators, and geographic features will only be used if they are well known internationally.

  SI RANGES has been expanded to SOUTH ISLAND RANGES because SI is not an abbreviation familiar to overseas pilots, and in some circumstances can indicate a unit of measure.
- The intensity of a phenomenon can be described as either intensifying (INTSF), weakening (WKN) or not changing (NC). The abbreviation for intensity (INTST) used before NC in the old example will no longer be used.

Other Changes

The abbreviation MOV will be used to show movement of a phenomenon, followed by the direction of movement given as one of the eight points of the compass, not 16 points as were used previously.

The format of latitude and longitude are changing to conform with ICAO standards. These will be given in degrees and minutes, and points will be separated by a hyphen, for example, S4536 E17424-S4854 E17948.

Figure 1

Current New Zealand Format
NZZC SIGMET 03 VALID 031929/032329 UTC OR 040729/041129 NZST NZKL-
NZFIR SEV TURB OBS BTN NZNS-NZCH BLW FL160. ISOL SEV TURB FCST BLW FL180 ABT/E SI RANGES. INTST NC

ICAO Annex 3 Format
NZZC SIGMET 03 VALID 031929/032329 NZKL-
NZZC NEW ZEALAND FIR SEV TURB OBS NZNS/NZCH BLW FL160 ISOL SEV TURB FCST BLW FL180 ABT/E SOUTH ISLAND RANGES NC

Cancellation SIGMETs

A cancellation SIGMET will only be issued when the phenomenon for which a SIGMET has been issued is no longer occurring or expected. In all other circumstances they are self-cancelling.

The format of cancellation SIGMETs will also change. See Figure 2.

Cancellation SIGMETs will now have their own identification number. In the example below SIGMET 03 has been issued to cancel SIGMET 02.

The first line will now conform to the standard ICAO layout for a SIGMET. The validity will start at the time the cancellation SIGMET is issued and end at the same time the validity of the SIGMET being cancelled ended.

The second line will give the FIR identifier, the full name of the FIR, the abbreviation CNL (for cancel), the SIGMET sequence number being cancelled, and the validity of the SIGMET being cancelled.

Cancellation SIGMET changes and the move to using UTC only in SIGMETs will be implemented by 28 February 2007. All other changes mentioned above were effective from 15 December 2006.

You may have noticed that SIGMETs refer to flight levels above 10,000 feet, for example FL120, rather than only using flight levels above the transition layer. This convention is also necessary to comply with ICAO Annex 3 standards. ■

Figure 2

Current New Zealand Format
NZZC CANCEL SIGMET 02
NO FURTHER ISSUE

ICAO Annex 3 Format
NZZC SIGMET 03 VALID 101920/102250 NZKL-
NZZC NEW ZEALAND FIR CNL SIGMET 02 VALID 101850/102250

This is a further article in the series that takes an in-depth look at recent aircraft accidents in New Zealand. The aim is to amplify the safety messages that can be derived from the accidents.

The following brief reports are from accidents that have occurred in the last two years in New Zealand.

- The pilot reported that, while the aeroplane was in the cruise, the engine began to lose power and then stopped. A forced landing was made into dense scrub.
- The aeroplane was climbing out in bad-weather configuration when the engine did not respond to the extra power required. When carburettor heat was applied the engine momentarily gained power and then began to die. A forced landing was then carried out in the only paddock available. Disassembly of the carburettor revealed in the float bowl a number of grass seeds and insects, and a seed and insect in the main nozzle cavity. The operator is modifying the run-up procedures to ensure where possible that they are carried out on a clean sealed area to prevent ingestion of grass seeds.
- The helicopter suffered a loss of power, so the pilot jettisoned the load and carried out an autorotation onto a road. The helicopter landed heavily and slid off the road, rolling onto its side in a ditch. The fuel system was found to be contaminated with a clear gel-like substance. Despite extensive testing, the source of the contamination could not be determined.
- The aeroplane was on a cross-country training exercise with a planned approach and overshoot enroute. At the pre-determined go-around point, the trainee pilot flying the aeroplane advanced the throttle to full power, but the engine power increased only momentarily then failed. The throttle was retarded to idle then reapplied – with no apparent effect. The instructor took control and attempted to land on the airfield, but in the process the aeroplane landed heavily. On testing after the accident, the fuel control unit was found to be set slightly lean at low power settings. This was considered to be the most likely cause of the intermittent power losses.
- The aeroplane had just taken off when the engine began to run roughly. The instructor selected carburettor heat, but this did not help. The aeroplane landed safely in a field, but the undercarriage separated during the landing roll. Carb icing was suspected to have caused the engine rough running.
- The microlight was taking off when, at approximately 60 feet, it was observed dropping the left wing and then turning steeply towards the ground. The pilot managed to partially recover the aircraft and land it heavily off to one side of the runway. The aircraft sustained substantial damage. The pilot reported that the aircraft engine had suffered a sudden power loss. The engine was tested but no fault was found, and there did not appear to be any fault with the fuel system or settings. Carburettor icing was not suspected, as the atmospheric conditions were not conducive to icing. No cause for the accident could be determined from the information available.
- The helicopter was hovering over a lake when it experienced a loss of rotor rpm and descended into the water. The carburettor heat had been left in the ON position while approaching the hover. The decrease in performance was such that a hover could not be maintained.
- The aeroplane had departed for a local scenic flight. On board were the pilot and a passenger. During the climb a very loud bang was heard, accompanied by a severe vibration. The pilot elected to carry out a forced landing. During the final stages of the approach a wingtip struck the road, the aeroplane hit a power pole and broke up, and an intense fire started. The cause of the vibration could not be determined.
- The helicopter had just taken off when it suffered a loss of power. The pilot carried out an autorotation, but the helicopter landed heavily and tipped onto its side.
- During a touch-and-go, the engine coughed and spluttered. The pilot decided to abort the takeoff but was unable to stop the aeroplane in the distance available. The aeroplane went through a fence and into a drain. It was considered that the incident occurred from the pilot opening the throttle too quickly.
- The pilot pressed on into deteriorating weather and became disoriented at about the same time as the engine began to run roughly. The engine eventually failed, probably because of carburettor icing. The pilot carried out a forced landing into a paddock, which caused damage to the aeroplane.
- The microlight made a precautionary landing after experiencing a rough-running engine. The landing was heavy, and the microlight ended up on its nose. The cause of the rough running engine was investigated and found to be fouled spark plugs.
- The helicopter was topdressing when the engine misfired 2 or 3 times. An rpm drop was observed, along with a substantial power loss. The pilot immediately dumped the load and attempted to land on a ridge. The helicopter hit the

ridge hard, damaging the tail boom and blades. Investigation revealed that the alternator and starter cables had abraded at a crossover and shorted together, causing a 15-degree retardation of the engine timing.

- During a local flight a significant vibration occurred in the engine. The pilot immediately carried out an emergency landing into a paddock but was unable to prevent the aeroplane from entering a ditch. Investigation found that the rocker assembly locking mechanism on the #2 cylinder had failed owing to fatigue, and this ultimately led to the cylinder not operating effectively.
- During takeoff the engine burst into flames. The aeroplane veered off the strip and through a fence, damaging the propeller and airframe. An engineering investigation revealed the cause of the engine failure was the breaking of two compressor turbine blades at their root due to fatigue failure. The broken blades then damaged other blades and parts in the engine gas path.

Modern aircraft engines are very reliable, but as the list above shows, engine failure or power loss is still a significant causal factor in accidents. Aircraft involved range from microlights to helicopters, and even include turbine-powered aircraft. Operations ranged from sport, to flight training, to commercial. Pilot experience levels ranged from student pilot to 10,000 hours plus.

Some of the incidents were caused by mechanical failure, some due to fuel contamination. Carburettor icing still catches pilots out, and incorrect engine handling caused some of the accidents. The reason for some failures was never conclusively determined.

The key safety message for pilots is that you must be prepared for, and practised in, what to do in the event of power loss. Not only that, but Murphy's Law will fairly well guarantee that any power loss you do suffer from will always happen at the worst possible time (just after takeoff, over unlandable terrain, with a heavy load, and so on). If you can avoid such situations, do so! Always use the full length of runway available. Select a flight route that maximises your forced landing options, and minimises time spent over unlandable areas.

How good are your engine failure drills?
How good are your practice forced landings?

See the article, "Forced Landing Practice", page 3 in this issue of *Vector*. ■

Summary of Public Submissions

Summaries of Public Submissions have been completed for both the Part 11 Review and the Omnibus 2005 Rule Fix-Up Projects.

You can see them on the CAA web site, www.caa.govt.nz, under "Rules & more – NPRMs Closed for Submissions".

HUMS NPRM

Part 125 NPRM Update Open for Submissions

An NPRM will be published soon detailing proposed amendments to Civil Aviation Rules, Part 125 *Air Operations – Medium Aeroplanes*.

The proposed rule changes will affect any air operator who operates a single turbine engine aeroplane on IFR passenger operations (SEIFR) under Part 125.

These rule amendments are required to update the existing rule, consistent with current engine health and usage monitoring system (HUMS) capability, and to meet industry best practice regarding use of HUMS data to meet maintenance requirements.

The purpose of HUMS is to ensure that engine performance and condition is normal before each SEIFR flight. This can be assured through timely and detailed electronic monitoring of the engine performance.

The study group for this project consulted widely with manufacturers, operators, and aviation industry sources, including overseas aviation authorities. The feedback from this has formed the basis of this NPRM.

The major rule amendments in the NPRM propose that:

- HUMS will need to be serviceable before each flight and also for ground runs. This will ensure that parameter exceedances during ground runs are captured.
- HUMS records must be accurate and retrievable and kept as part of the aircraft maintenance data.
- The engine trend monitoring programme and associated HUMS procedures must be incorporated in the maintenance programme for the aircraft.
- Procedures must be established in the maintenance programme for continued SEIFR operations in the event of adverse trends.
- After engine maintenance, a period of time is required to set the 'normal' operating limits of the aircraft-engine-propeller combination. The HUMS uses this information as a baseline.
- Alternative trend monitoring programmes to those supplied by the engine manufacturers may now be permitted by the Director of Civil Aviation.

Editorial changes have been included in the NPRM to reflect current legislative drafting styles and to clarify the rule requirements.

We expect industry will welcome the changes because they address deficiencies in the original HUMS rules. The proposed new rules also provide more flexibility for operators to select a HUMS system that best suits their needs and provides enhanced engine reliability monitoring.

When published, the NPRM will be on the CAA web site, www.caa.govt.nz, under "Rules & more – Notices of Proposed Rulemaking". ■

Cabin Crew Safety Guideline

While cabin crew do not currently receive *Vector*, all certificated organisations do. Please make this article available to all cabin crew in your organisation. It is also available on the CAA web site, www.caa.govt.nz, see "Safety information – Publications".

In 2003 the CAA was designated to administer the provisions of the Health and Safety in Employment Act 1992 in respect of the aviation sector, specifically for aircraft while "in operation".

Since then, the CAA has received a number of concerns and reports of injury from companies, unions, and individual cabin crew members covering issues such as fatigue, slips, trips and falls, scalds, and limb and back injuries caused by lifting weights and manoeuvring service carts in turbulent conditions. By virtue of the CAA's designation to administer the provisions of the Act, the CAA has a responsibility for promoting and helping to improve safety and health for cabin crew, as persons employed in a place of work on board an aircraft while in operation.

Under the Act, there are several tools that may be used by the CAA to intervene in order to improve health and safety for cabin crew members. These tools include Approved Codes of Practice and Safety Guidelines. Approved Codes of Practice are prescriptive documents similar to the Civil Aviation Rules, while Safety Guidelines are similar to CAA Advisory Circulars. Given the wide range of issues that need to be covered in the case of cabin crew, the CAA believes that the production of a Safety Guideline is the best approach to address the identified issues.

The Safety Guideline will encompass the purpose of the Act, which is to provide systematic management of health and safety for persons at work. It requires employers and employees, such as cabin crew, to maintain safe working environments and to implement best practice health and safety work methods. The objective of the guideline is to set safety standards for operations in an aircraft cabin that should be met or exceeded.

The CAA is inviting organisations and individuals to be involved in the development of the Safety Guideline, which is being coordinated through the CAA Health and Safety in Employment (HSE) Unit.

Initially, this will involve providing the HSE Unit with feedback about the proposed content, and following that, a consultation meeting will be organised with interested groups to find out their views on health and safety matters affecting cabin crew. There will also be an opportunity to review and give feedback on draft Guideline documents as they are produced. Agreement will be sought on the content, format, and production of the Guideline.

The CAA HSE Unit has determined that the project scope should include the areas set out below and would appreciate feedback about the proposed content for the Guideline. This content may change as the Guideline progresses.

Project Scope

The guideline will include the following areas with respect to cabin operations:

- Manual handling.
- Overweight passenger hand luggage.
- Burns and scalds.
- Slips, trips, and falls.
- Accident/incident investigation and reporting.
- Serious harm investigation and reporting.
- Employee and employer responsibilities under the Health and Safety in Employment Act 1992.
- Carts and their stowage/in-flight equipment.
- Standard units and their stowage.
- Turbulence procedures.
- Stress and fatigue management.
- Duty hours – recording data.
- Inflight rest provisions.
- Safety during training.
- Bullying/harassment.
- Crew Resource Management (CRM).
- Operation on a multiplicity of aircraft types.
- Contracting standards (ie, hotels, crew transport).

- Health issues – pandemic preparedness, pregnancy, exposure to radiation.
- Food handling.
- Hygiene.
- Passenger sickness/illness.
- Passenger psychiatric illness.
- Disposal of needles.
- Violent passengers/passenger restraint.
- Drugs and alcohol.
- Passengers under the influence of drugs or alcohol.
- Guidance on the preparation of emergency procedures.
- First aid.
- Biological hazards/protection from bodily fluids.
- Deaths on board.
- Chemical fumes.
- Noise Induced Hearing Loss (NIHL).

If you want to participate in the consultation process for the Cabin Crew Safety Guideline, contact the CAA Health and Safety Unit.

Tel: 0800–HSU CAA (0800–478 222)

Email: hsu@caa.govt.nz

Fax: 0–4–569 2024

Post: P O Box 31 441, Lower Hutt 5040 ■

International Volcanic Ash Workshop

New Zealand is hosting the Fourth International Workshop on Volcanic Ash 26 to 30 March 2007 at Rotorua. Representatives from the eight International Airways Volcano Watch Volcanic Ash Advisory Centre member states, as well as from other relevant aviation and scientific organisations, will attend.

There are a number of areas of interest to be covered, such as forecasting and detecting volcanic eruptions, ash dispersion modelling, and eruption data-set development and use.

Sponsors are the World Meteorological Organization, Civil Aviation Authority of New Zealand, Bureau of Meteorology Australia, and the Meteorological Service of New Zealand.

Information on the Workshop is on the CAA web site, www.caa.govt.nz, see "Airspace – 4th International Workshop on Volcanic Ash".

World Meteorological Organization

Weather • Climate • Water

How to get Aviation Publications

Rules, Advisory Circulars (ACs), Airworthiness Directives

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

AIP New Zealand

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

Pilot and Aircraft Logbooks

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

Planning an Aviation Event?

Do you have an event such as an airshow, air race, rally or major competition coming up soon? If so, you need to have the details published in an *AIP Supplement* to warn pilots of the activity in a timely manner. The information should be submitted to the CAA with adequate notice. (Refer to AC 91–1 *Aviation Events*.)

Please send the relevant details to the CAA (ATS Approvals Officer or AIP Editor) **at least** one week before the appropriate cut-off date indicated below.

Supplement Cycle	*Supplement Cut-off Date (with graphic)*	*Supplement Cut-off Date (text only)*	*Supplement Effective Date*
07/4	1 Feb 2007	8 Feb 2007	12 Apr 2007
07/5	1 Mar 2007	8 Mar 2007	10 May 2007
07/6	29 Mar 2007	5 Apr 2007	7 Jun 2007
07/7	26 Apr 2007	3 May 2007	5 Jul 2007

Flight Instructor Seminars

BACK TO THE FUTURE

August 2007

For all instructors in the aviation community

In September 2003 the CAA held four two-day Instructor Seminars throughout New Zealand in response to concerns raised at the Towards 2005 Safety Seminars held in Wellington in 2001 and 2002.

The first round of seminars concentrated on the basics of instructional techniques and considerable effort was made by the CAA and the microlight organisations to encourage new instructors and microlight instructors to attend (and 205 did so).

In April 2005 the CAA held three more two-day seminars for Flight Instructors and Flight Examiners. This series had the theme, "Attitude", and 120 attended.

In August 2007 the CAA will present the next round of Instructor Seminars with the theme of "Back to the Future" (back to basic instruction for future instruction).

These seminars will be held over two days with learning continuing through the informal parts of the days and evenings. To achieve this, all participants will be staying at the venues for the seminars. A nominal (non-refundable) registration fee will be charged, and this includes all accommodation (share twin) and meals. Planning is well under way for the 2007 seminars, but final content and speakers are awaiting confirmation. Keep an eye on *Vector* and the CAA web site, www.caa.govt.nz, under "Safety Information – Seminars & Courses" for updates.

Flight Instructor Seminars 2007

For all current Part 149 and Part 61 Instructors

Hamilton – 1 and 2 August (Hamilton Airport Inn)

Masterton – 9 and 10 August (Copthorne, Solway Park)

Ashburton – 14 and 15 August (Ashburton Hotel)

Closing date for registration is 1 July 2007

All current Part 149 and Part 61 Instructors are invited to register. Places are limited, so please register early. The registration form is on the CAA web site, and updated information will be posted there as well. All registrations must be accompanied by evidence of instructor rating currency (ie, copy of last renewal flight test report) and the $50 registration fee, which is non-refundable (substitutions will be permitted).

Maintenance Rules Seminars and IA Renewal Course

Maintenance Rules Seminars

On 1 March 2007, some significant rule changes become effective, and these will affect the way operators plan and have maintenance carried out on their aircraft. In particular, the amendments to Parts 43 and 91 introduce changes to the Annual Review of Airworthiness (ARA), engine overhauls and maintenance programmes. See *Vector*, September/October 2006 for a summary of the changes.

To help explain the changes, the CAA is planning a series of seminars on Operator Maintenance Requirements throughout the country, as indicated in the timetable opposite. These changes are particularly important to operators as well as maintenance providers. To see how they will affect you as an operator, we recommend that you attend one of the seminars.

There will be a morning seminar (9:00 to 11:00 am) for operators and an afternoon (1:00 to 4:30 pm) seminar for LAMEs, IAs and other maintenance providers. (The afternoon seminar is a prerequisite for IA renewals – see below.) These seminars are free, but as numbers may be limited by the size of the venue, registration is required. A registration form is available on the CAA web site, www.caa.govt.nz.

For further information, please contact:

John Bushell
Airworthiness Coordinator
Tel: 0–4–560 9427 Fax: 0–4–569 2024
Email: bushellj@caa.govt.nz

Certificate of Inspection Authorisation (IA) Renewal Course

IA Renewal Courses will be run at six locations in conjunction with the Operator Maintenance seminars. Each course will be held on the day after the seminar at that location, and will run from 9:00 am to 4:30 pm. They are open to holders of IA certificates that either have expired, or are due to expire, within the next 18 months, or to those who do not meet the recent experience requirements of rule 66.207. A course prerequisite is attendance at one of the afternoon sessions of the Operator Maintenance seminars.

A course information sheet is available on the CAA web site.

If you require further information, please contact:

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Examiner AME
Tel: 0–4–560 9619 Fax: 0–4–569 2024
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Operator Maintenance Seminars and IA Renewal Courses		
Location	Venue	Dates
Ardmore		
Operator/LAME seminars (2)	Heli-Flight (NZ) Ltd	14 and 15 February
IA course		16 February
Christchurch		
Operator/LAME seminars	Russley Golf Club	8 March
IA course		9 March
Dunedin		
Operator/LAME seminars	Dunedin Airport Terminal	16 March
Hamilton		
Operator/LAME seminars	Airport Motor Inn	20 February
IA course	CTC Aviation	21 February
Hastings	Hawke's Bay and East Coast	
Operator/LAME seminars	Aero Club	23 February
Nelson		
Operator/LAME seminars	Air Nelson	6 March
North Shore		
Operator/LAME seminars	North Shore Aero Club	12 February
Palmerston North		
Operator/LAME seminars	Manawatu Districts Aero Club	27 February
IA course		28 February
Queenstown		
Operator/LAME seminars	Copthorne Lakefront Hotel	13 March
IA course		14 March
Wellington		
Operator/LAME seminars	Miramar Golf Club	20 March
IA course		21 March

Advisory Circular Numbering

The numbering of Advisory Circulars (ACs) has become a little inconsistent over the years. The Rules Development Unit is currently reviewing the inconsistencies with a view to amending where appropriate. This will standardise the numbering, and make their relative functions clearer.

The content of the ACs will not change and they will still be numbered relative to the Rules. Formal notification will follow in the Civil Aviation Rules Register Information Leaflet (CARRIL) when changes are finalised. The CARRIL is published on the CAA web site, www.caa.govt.nz, every month.

young eagles RNZAC

Young Eagles News

Young Eagles Scholarship Winners 2007

The following Young Eagles have been awarded Flying Scholarships as a result of entries received from Royal New Zealand Aero Club (RNZAC) affiliated clubs.

Carlton Boyce	*Southland*	Andrew Stewart	*South Canterbury*
Leigh Cresswell	*New Plymouth*	Kevin Weller	*Tauranga*
Benjamin Humphrey	*Canterbury*	Daniel Wooding	*Marlborough*

The winners will be invited to attend the RNZAC National Championships in New Plymouth, 15 to 17 February 2007.

Field Safety Advisers

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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".

Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

0508 4 SAFETY
(0508 472 338)

info@caa.govt.nz

For all aviation-related safety and security concerns

OCCURRENCE BRIEFS

LESSONS FOR SAFER AVIATION

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

ACCIDENTS

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

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

ZK-HJH, Bell (Western Int'l) UH-1H, 4 Jun 01 at 17:15, 3 E Taumarunui. 3 POB, injuries 3 fatal, aircraft destroyed. Nature of flight, ferry/positioning. Pilot CAA licence CPL (Helicopter), age 51 yrs, flying hours 13425 total, 610 on type, 54 in last 90 days.

On Monday 4 June 2001 at about 1715, ZK-HJH, a Bell UH-1H Iroquois helicopter, was approaching Taumarunui when it was seen to enter a turn and fall to the ground, killing the three occupants. The helicopter was observed to break up before it hit the ground.

This report (01-005r) summarises the results of a resumed investigation of the event and supersedes the original report (01-005). The investigation was resumed because there was some new and material evidence from two other UH-1 helicopter accidents.

After considerable component and metallurgical testing and examination of all the available evidence, the resumed investigation could not support the original theory that the accident sequence was probably caused by the tail rotor crosshead coming loose, because of incorrect maintenance.

The resumed investigation found that a bent tail rotor blade pitch link and its subsequent fatigue failure during the accident flight brought about a loss of control and in-flight break-up of the helicopter. The link had been bent earlier at some point during the accident flight, which allowed it to crack and eventually fail from bending fatigue. The reason the link was bent could not be determined.

Main sources of information: Abstract from TAIC Accident Report 01-005r.

CAA Occurrence Ref 01/1947

ZK-NBC, Boeing 767-219, 8 Dec 02 at 14:00, Brisbane, Australia. 200 POB, injuries nil, damage substantial. Nature of flight, transport passenger A to B. Pilot CAA licence ATPL (Aeroplane).

Approximately six minutes after takeoff from Brisbane for Auckland, the aircraft sustained an uncontained failure of the left engine, necessitating a return to Brisbane.

Failure of the General Electric CF6-80A resulted from the fracture and liberation of a large segment from the first-stage high-pressure turbine disk. The disk failure initiated from a radial fatigue crack at the base of a turbine blade slot, one of three similar cracks that were found during the investigation. The imbalance and rapid engine seizure produced extensive damage to the engine casing, accessory components and the engine pylon. The released disk segment impacted the leading edge flap panel immediately above the engine - damaging a 600-mm length and resulting in the flight crew electing not to use the leading edge flaps for the approach and landing at Brisbane.

ATSB laboratory examination found that the disk cracking had originated from the rear break-edge corner of the blade fir-tree slots, an area that sustained heavy surface microstructural damage as a product of the manufacturing and/or repair shot peening processes. It is known that overly heavy or abusive shot peening can prove detrimental to fatigue performance. As a result of the investigation, the engine manufacturer implemented several changes to the manufacturing and repair shot peening processes. Also, inspection requirements for CF6-80A disks were revised to include the more thorough examination of the slot bottom and rear break-edge areas required for the CF6-80C series engines.

Main sources of information: ATSB Air Safety Investigation Report 200205780.

CAA Occurrence Ref 02/3534

ZK-HJM, Hiller UH-12E, 20 Oct 03 at 6:55, Taumarunui. 1 POB, injuries nil, damage substantial. Nature of flight, agricultural. Pilot CAA licence CPL (Helicopter), age 47 yrs.

The helicopter had just taken off on its second spraying sortie when the pilot felt 'feedback' through the tail rotor. He jettisoned the load and made a precautionary landing, but the helicopter fell over on the soft ground. No engineering defect was found.

Main sources of information: Accident details submitted by pilot plus further enquiries by CAA.

CAA Occurrence Ref 03/2954

ZK-HLC, Bell 206B, 30 Jan 04 at 10:30, Whatatutu. 1 POB, injuries nil, damage substantial. Nature of flight, agricultural. Pilot CAA licence CPL (Helicopter), age 45 yrs, flying hours 14662 total, 378 on type, 60 in last 90 days.

The helicopter was conducting agricultural operations when the engine ceased operating. An autorotation was then carried out but the aircraft received substantial damage on landing. An engineering inspection later determined that the PC line to the fuel control unit had failed.

Main sources of information: Accident details submitted by pilot plus CAA engineering investigation.

CAA Occurrence Ref 04/288

ZK-LRV, Vans RV 6A, 6 Mar 04 at 17:15, Rotorua. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence CPL (Aeroplane), age 64 yrs, flying hours 400 total, 20 on type, 10 in last 90 days.

It was reported that the aircraft landed heavily, causing the nose wheel to collapse.

Main sources of information: Accident details submitted by pilot.

CAA Occurrence Ref 04/788

ZK-GPG, PZL-Swidnik PW-5 "Smyk", 2 Jan 05 at 14:20, Tauranga. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 200 total, 50 on type, 10 in last 90 days.

The glider was caught in heavy sink created from a wave effect set up from the wind across the Kaimai Ranges. A forced landing was carried out 3 km west of Tauranga. On the approach the glider clipped a power pole. The pilot was attempting to reach a park, which subsequently was determined to be an unsatisfactory landing area.

Main sources of information: Accident details submitted by pilot and operator.

CAA Occurrence Ref 05/1

ZK-JNX, NZ Aerospace FU24-954, 6 Mar 05 at 12:00, Rotorua. 1 POB, injuries nil, damage substantial. Nature of flight, agricultural. Pilot CAA licence CPL (Aeroplane), age 53 yrs, flying hours 18612 total, 3235 on type, 189 in last 90 days.

Approaching the loading area after landing, the pilot attempted to slow the aircraft down by selecting beta, but there was no response. Full reverse was then selected, which kicked in at the last minute, and the aircraft stopped successfully before reversing itself down a slope. The aircraft was not controllable with the nose so high while going backwards. On numerous occasions over the previous months, the pilot had reported a sticking beta control to the engineering staff. They investigated the defects but could find no fault with the beta control system.

Main sources of information: Accident details submitted by pilot plus CAA engineering investigation.

CAA Occurrence Ref 05/689

ZK-TWO, Rand KR-2 UL, 11 Mar 05 at 18:30, Raglan. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 132 total, 13 on type, 13 in last 90 days.

The aircraft nosewheel leg collapsed on the second bounce of a landing on a rough surface at Raglan, and the aircraft tipped over before coming to rest, damaging the propeller, canopy, fin and nosewheel.

Main sources of information: Accident details submitted by pilot.

CAA Occurrence Ref 05/775

ZK-HVN, Robinson R22, 26 Aug 05 at 17:15, Murchison. 2 POB, injuries 1 fatal, 1 serious, aircraft destroyed. Nature of flight, private other. Pilot CAA licence CPL (Helicopter), age 51 yrs, flying hours 1000 total, 1000 on type, 10 in last 90 days.

During the approach to land at the pilot's home base, at the end of a local flight, the helicopter was seen to yaw rapidly to the right and then continue to rotate uncontrollably. The helicopter subsequently crashed inverted in a paddock close to the intended landing site. The pilot was killed and the passenger suffered serious injuries. Further detailed technical investigation revealed that the tail rotor driveshaft had failed due to having been incorrectly assembled during previous maintenance. A full accident report is available on the CAA web site.

Main sources of information: CAA field investigation.

CAA Occurrence Ref 05/2733

ZK-TMP, EAA Acro Sport UL, 28 Aug 05 at 14:12, 535 Swamp Road. 1 POB, injuries 1 minor, damage substantial. Nature of flight, private other. Pilot CAA licence nil.

The aircraft was making a forced landing into a paddock after an engine failure. The undercarriage hit a bank and caused the aircraft to tip over.

Main sources of information: Accident details submitted by pilot.

CAA Occurrence Ref 05/2734

ZK-GKY, Slingsby T.59D Kestrel 19, 6 Feb 06 at 17:00, Kawhatau. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, flying hours 814 total, 288 on type, 8 in last 90 days.

The glider made a high circuit rejoin. After turning onto final and approaching the strip, 'curl-over' became apparent. The pilot reduced flap, deployed braking parachute and airbrakes, and decided to land in a paddock approximately 150 ft lower than the airstrip. The glider ground-looped violently during the landing, causing the tail boom to break in torsion about one metre behind the trailing edge.

Main sources of information: Accident details submitted by pilot plus further enquiries by CAA.

CAA Occurrence Ref 06/275

ZK-OWE, Tecnam P2004 Bravo, 25 Feb 06 at 16:50, Wanaka. 1 POB, injuries 1 serious, damage substantial. Nature of flight, private other. Pilot CAA licence , age 68 yrs, flying hours 227 total, 12 on type, 17 in last 90 days.

The pilot states that the takeoff run began normally, but just before lift-off speed the aircraft veered off the runway to the left, so far that he was faced with a fence that ran parallel to the runway. As he was nearly at lift-off speed, he lifted off abruptly to clear the fence and planned on reducing the power and landing on the other side. In the short time he was airborne, however, it appears the left wing stalled, and the aircraft rolled to the left, striking the ground almost inverted.

Main sources of information: Accident details submitted by pilot plus further enquiries by CAA.

CAA Occurrence Ref 06/572

ZK-GGO, Schleicher ASW 15, 1 Apr 06 at 16:05, Woodville. 1 POB, injuries nil, damage minor. Nature of flight, training solo. Pilot CAA licence nil, flying hours 166 total, 94 on type, 18 in last 90 days.

During a glider flight it became necessary for the pilot to make an outlanding, and he chose a sealed airstrip. Concerned about the effect of the seal on the glider's tail skid, and also the sheep scattering on the strip, the pilot omitted the landing checks. The glider landed on the airstrip with its wheel up, damaging the underside of the cockpit.

Main sources of information: Accident details submitted by pilot.

CAA Occurrence Ref 06/1250

GA DEFECT INCIDENTS

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

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

Key to abbreviations:

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

Aerospatiale AS 355 F1

Allison 250-C20F turbine engine

The helicopter's righthand engine chip light came on when crossing a remote area; a decision was made to carry out a precautionary landing. The cause of the chip light activation was found to be small metal contaminants on the chip plug. The metal contaminants were removed and the engine ground run for 10 minutes and the chip plug rechecked. No contaminants were evident. The aircraft returned to service but subsequently had two further chip light activations over the next few weeks. The engine was removed and stripped. A worn bearing was identified in the engine as the cause of the metal contaminants.

ATA 7200 CAA Occurrence Ref 06/872

Auster J1B

De Havilland Gipsy Major valves P/N 1302-6

A lack of compression was found in the number 4 cylinder. Investigation found that an inlet valve had been installed in the exhaust port and vice versa. All other cylinders had valves correctly installed. Care should be taken when working on Gipsy Major cylinder heads, as the inlet and exhaust valves can easily be put in the incorrect position due to being the same size. TSI 68.98 hours, TSO 1299.01 hours, TTIS 1906.08 hours.

ATA 8530 CAA Occurrence Ref 05/2616

Britten-Norman BN2A-26

Kelly Aerospace MHB 4016 starter motor P/N MHB 4016

There have been two reported cases of bolts that hold the starter motor to the Bendix drive housing being missing or loose. The manufacturer has not been applying the correct torque to the attachment bolts. The bolts have been found missing after as little as 150 hours TIS, and in one case a bolt had been overtightened and the thread stripped. TSO 150 hours.

ATA 8010 CAA Occurrence Ref 06/357

Cessna 152

57375 5.00 x 5 Wheel Hub P/N 161-30598

During a pre-installation inspection for a cracked nose wheel hub, a yellow dye was seen on the outside of the bead flange. This hub had previously been cracked, and the dye had leaked through the paint. Further inspection revealed an even larger crack in the hub web, one that penetrated through to the other side. The part was returned for repairs.

ATA 3200 CAA Occurrence Ref 05/3293

Gippsland GA200

Hopper operating arms

The aircraft was sowing urea when, at the end of a sowing run, the A-frame on the hopper door opening broke on both sides of the hopper door. The front of the spreader dropped down and caused a vibration. Power was reduced and the aircraft landed back on the strip. Investigation revealed the A-frame tubing had failed due to extensive corrosion. The A-frame tubes were replaced with a solid bar.

ATA 5300 CAA Occurrence Ref 06/2675

Grumman American AA-1C
Cigarette lighter

The pilot noticed smoke coming out from behind the instrument panel while repositioning the aircraft following scheduled maintenance. The source of the smoke was found to be the cigarette lighter, which had been broken off and forced in on the heater element. The cigarette lighter was repaired.

ATA 3910 CAA Occurrence Ref 05/4388

Hughes 369E
Sprag Assembly P/N 369D25351

During a scheduled inspection, one sprag element was found broken on the end. The element was retained in the cage and so did not present any safety to flight issue. The cause was attributed by the submitter to the parent material being too brittle. TSO 708 hours, TTIS 708 hours.

ATA 6300 CAA Occurrence Ref 05/3398

NZ Aerospace FU24-950
Walter M601D - 11NZ Power turbine

When power was being applied for takeoff a loud howling sound was heard from the engine. The takeoff was aborted. Inspection revealed that the tip of one power turbine blade was missing. The Walter engine was removed from the aircraft and sent back to the Walter factory for rectification. Walter reported that the power turbine blade failed due to fatigue. There appear to have been two initiating points for the failure. One was possibly due to a depression in the convex side of the blade caused by something hitting the blade. The other was a crack on the blade surface that was created either during manufacture or during engine operation. TSO 3660 cycles, TSO 997 hours, TTIS 8412 cycles, TTIS 3402 hours.

ATA 7250 CAA Occurrence Ref 06/999

Pacific Aerospace Cresco 08-600
PAC Cresco 08-600 Wing rib P/N 08-20072-2

The wing leading edge rib was found to be cracked in five places at the leading edge skin attachment flange. This rib is also the fuel tank outboard rib. This has been a recurring defect, and it was attributed by the manufacturer to worn tooling that has since been revised. The maintenance organisation now have their own ribs manufactured, and these are a machined rib. TSI 100 hours, TTIS 5774 hours.

ATA 5700 CAA Occurrence Ref 05/3478

Piper PA-44-180
Prestolite U/C Power pack motor P/N 96671-02

The pilot reported an unsafe gear indication during an IFR training flight. After troubleshooting the problem, the aircraft over-flew the runway for an undercarriage inspection by the tower and was informed that the gear appeared to be down. Investigation revealed the hydraulic power pack motor not functioning. This was caused by an internal short between the link wire from the negative brush holder and over-temperature bi-metallic switch to the negative brush holder rivet. The link wire was repositioned and insulated with RTV along with the rivet heads to prevent a recurrence. The other aircraft in the fleet were checked and insulated in the same manner. TSI 117 hours, TTIS 3993 hours.

ATA 3200 CAA Occurrence Ref 06/109

Robin R2120 U
Robin 2120u Flexible Oil Pressure Hose
P/N 53-21-14-000

The oil pressure transmitter flexible hose was found to be cracking. The maintenance provider considered the pipe unsuitable. The manufacturer's item was removed and replaced with modified pipe assembly NSA/MOD/153. TTIS 1000 hours.

ATA 7920 CAA Occurrence Ref 05/3291

Robinson R22 Beta
Chord arm yoke

During an overhaul, the maintenance shop reported finding a chord arm yoke that was bent. This was probably caused by overtightening of the clamping bolt. The yoke assembly is the subject of SB-88A, but it is not within the lot number range noted, DCA/R22/38 refers. The yoke was replaced with a new item, P/N A203-7.

ATA 6220 CAA Occurrence Ref 06/1989

Tecnam P2002-JF
Tecnam P2002-JF tube

During a training flight an unusual noise was detected coming from the right wheel during a touch-and-go. A full-stop landing was completed after the next circuit, whereupon it was noted that the right main wheel tyre was flat. It was subsequently found that the wrong size tube had been fitted by the aircraft manufacturer, and that the tyre pressure recommended by the manufacturer was too low for the aircraft weight. The tube size problem was attributed to an isolated batching issue at the manufacturer's facilities, and the tyre pressure has been increased in a subsequent revision of the Flight Manual. TTIS 200 hours.

ATA 3241 CAA Occurrence Ref 05/3996

Tecnam P2002-JF
Tecnam P2002-JF tube

During the landing roll the aircraft began to veer to the left. When the aircraft came to a halt it would not move any further as a result of the left main tyre coming off its rim. It was found that the wrong size tube had been fitted by the aircraft manufacturer and that the tyre pressure recommended by the manufacturer was too low for the aircraft weight. The tube size problem was attributed to an isolated batching issue at the manufacturer's facilities, and the tyre pressure has been increased in a subsequent revision of the Flight Manual. TTIS 200 hours.

ATA 3241 CAA Occurrence Ref 05/3997

Zlin Z-37T
Flaps

The pilot reported that the flaps were unserviceable. The rear fuselage area was found to have large amounts of superphosphate dust in it. Some of this dust had entered the flap transmission and overloaded the electrical circuit, causing the 5 amp circuit breaker to trip. The circuit breaker was held in to operate the flaps, and the overloading caused the control relay to weld the contacts together and the flaps to become unserviceable. A new relay was fitted.

ATA 2700 CAA Occurrence Ref 06/1692


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