September / October 2007

VECTOR

POINTING TO SAFER AVIATION

Success for Flight Instruction

Recreational Pilot Licence

Talk the Talk

Safety Targets Update

CAA
CIVIL AVIATION AUTHORITY
OF NEW ZEALAND

VECTOR

Success for Flight Instruction

Flight instruction 'scooped the pool' at this year's Director's Awards, and the Walsh Memorial Scout Flying School featured in the organisation award and the CAA Flight Instructor Award. Here are the details, with comments from the Director of Civil Aviation and the winners.

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Recreational Pilot Licence

Are you finding it difficult or too costly to gain and maintain a Class 2 Medical Certificate? Are you only ever going to want to carry one passenger when you go flying? If so, then the Recreational Pilot Licence might be right for you.

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Talk the Talk

Feedback suggests that pilots are letting their standard of communication slip, particularly in uncontrolled airspace. It is essential to make clear, accurate, radio calls using standard call structures and phraseology. This requires self discipline. Here are some key points to help improve the clarity of your communication.

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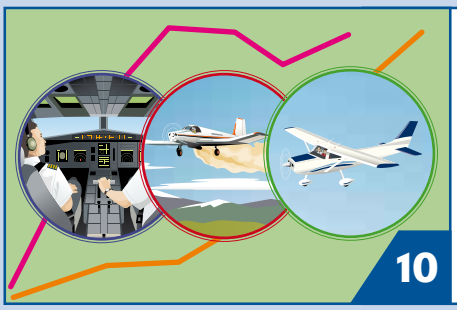

Safety Targets Update

The social cost of accidents is measured for each sector of the aviation community in New Zealand, and progress is reported on graphs published in reports by the CAA, quarterly and six-monthly. Targets are set to improve safety performance. Check out how your sector is doing in our summary article.

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Cover: *Flight instruction dominated the Director's Awards this year (see page 3), and the Walsh Memorial Scout Flying School featured in two awards. This photo is taken over Matamata airfield during the school in 2007.*

Photo courtesy of the Scouting Association of New Zealand.

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Manager Communications Bill Sommer.

Editor Peter Singleton.

Safety Education Publishing Team
Alister Buckingham, Dan Foley, Cliff Jenks, Jim Rankin, Anna Walkington, Rose Wood.

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Success for Flight Instruction

2007 Director's Awards and CAA Flight Instructor Award Announced

The flight training industry has swept all three categories of the Civil Aviation Authority's annual safety awards.

Each year the Director of Civil Aviation confers a safety award on an individual and an organisation that has gone out of their way to do things the right way.

The awards recognise direct actions that have resulted in a greater level of aviation safety, and that have encouraged others to adopt a similar safety culture and philosophy.

Director of Civil Aviation, Steve Douglas, announced the winners at the Aviation Industry Association (AIA) conference in Auckland during July.

CAA Flight Instructor Award – Mark Woodhouse

Nelson-based flight instructor Mark Woodhouse was awarded the CAA Flight Instructor award. Mark is an extremely experienced instructor who has taught both civil and military flying on aeroplanes and helicopters, and has experience on aircraft ranging from microlights to the Boeing 747. Among other things, he is currently Chief Flight Instructor of the Walsh Memorial Scout Flying School, which provides a safety-based start to young pilots aged between 16 and 19 in an annual training camp at Matamata airfield.

In presenting the award, Director of Civil Aviation Steve Douglas said Mark was an excellent instructor role model for the entire aviation community.

"The culture that he encourages is made clear from his often-heard comment, 'we don't want to hurt anyone out there,'" Steve said.

Mark says he was overwhelmed to receive the award.

"No-one achieves without the help and support of others, and I have been fortunate to receive the assistance and guidance of many dedicated, professional and empathetic instructors over the years – from the military, from general aviation, and from within the airlines," Mark said.

He says now is a crucial time for the training industry.

"The industry is in a time of rapid change with the draw into the airlines. One of the results of that recruiting is the challenge to maintain experience in the instructing ranks."

"It will require imaginative and bold solutions. Instructing will need to be restructured to be a career option and paid accordingly."

He says a coordinated approach is needed from all instructor bodies to achieve this.

Mark Woodhouse *Steve Douglas*

Director's Organisation Award – Walsh Memorial Scout Flying School

The Walsh Memorial Scout Flying School was awarded the Director's Award for an organisation.

Director Steve Douglas said no-one could have anticipated the effect the school would have on the aviation industry, given that it has now trained over 1250 students in the last 42 years.

"Many past students are now airline pilots flying for major airlines around the world; air force pilots; or members of one of the many aviation professions such as air traffic control, meteorology, or aviation engineering," Steve said.

"The safety culture instilled in them from their early days at Walsh is significant."

School Director Gordon Ragg said the school was a character-forming adventure for students.

"Over the two weeks they get eight and a half hours of flying, and can pay for more at a very good rate if they wish," Gordon says.

"They are totally immersed in flying. The training is very intensive, with several flights per day. They get excellent briefings and probably the best set of flying manuals that are around today."

In accepting the award, Gordon paid tribute to the succession of excellent instructors that had volunteered at the school over the years.

"Many of them are now prominent figures in New Zealand's aviation history. They have taught sound basic skills, good airmanship and self discipline, and a strict culture of safety awareness to a legion of young student pilots."

Continued over...

Gordon Ragg

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Director's Individual Award – Penny MacKay

Chief Executive of Nelson Aviation College, Penny Mackay, was awarded the Director's Award for an Individual.

Penny began her instructing career on gliders in the 1970s. She has gone on to head a busy organisation with a strong safety focus.

Steve Douglas said Penny had made an enormous contribution to aviation and aviation safety in New Zealand.

"She has demonstrated her belief in the principle of 'giving something back to the industry' with her flight training standards, and also as chair of the Aviation Industry Association's Training Division, which has worked closely with the CAA on flight syllabus development."

Penny says she is greatly honoured to receive the award.

"It is really nice that the flight training industry has been recognised. I have always been passionate about flight training. I guess there is a lot of teacher in me. I am not just a frustrated airline pilot.

"It is also a real honour to work with these amazing young people who come and train with us," Penny says.

Penny MacKay

AIA Awards

At the same function, the AIA presented three awards. Former Civil Aviation Authority member, Gordon Vette JP ONZM, was honoured for "outstanding services to aviation safety and the pursuit of new thinking". Gordon has 21,000 hours on aircraft ranging from the Tiger Moth to the Boeing 747. He has been awarded many international aviation safety commendations and is currently studying virtual reality synthetic vision and collision avoidance. Walter Wagtendonk received an award for "services to flight training and the pursuit of aviation excellence". Walter is known particularly for developing a widely used set of aviation theory textbooks covering all Private Pilot, Commercial Pilot, and Instrument Rating subjects, and several Airline Pilot subjects. Highly experienced Chief Flight Instructor and aviation author, Bryan Cox, was recognised for his "outstanding contribution to aviation and the development of New Zealand's aviation industry". ■

Walsh Memorial Scout Flying School

From its small beginnings to its present 42nd year, the Walsh Memorial Scout Flying School has trained well over 1250 potential aviation industry participants. Around a quarter of the students attending the school continue in aviation, either progressing to a career in the industry, or maintaining it as a hobby.

The school was established in 1967, and named to commemorate brothers Leo and Vivian Walsh, the New Zealand aviation pioneers who started New Zealand's first flying school at Kohimarama in 1914. They also constructed one of the first aircraft to fly in New Zealand.

The Walsh Memorial Scout Flying School has an exemplary safety record to date. Scouting New Zealand recognises that there must be a three-way partnership between their organisation, the students, and their parents/caregivers to help minimise risks. It is important that students and parents/caregivers understand that, although Scouting New Zealand uses only qualified instructors, there are still some risks involved. To mitigate these risks, Scouting New Zealand requires stringent adherence to a Flight Operations Manual.

The manual outlines all of the operational policies, procedures and rules that must be followed by all pilots and instructors alike. These are similar to standard operating procedures that airlines use to outline all of the do's and don'ts when flying.

Flight Instructor, Harley Sutton, demonstrating a pre-flight inspection to students in 2007.

David Jupp, Manager Flight Operations believes that, "outlining a direct chain of command in the Flight Operations Manual gives both students and instructors a clear reporting system should they see something that they aren't happy with. These young people, with such a keen desire for aviation, are more receptive to taking safety information on board."

During two weeks of intensive live-in training, the 60 to 65 students are exposed to different aspects of aviation, which range from hands-on flying to theory lectures. Students even participate in a training exercise where an 'aircraft down' simulation takes place. RNZAF and local fire services also have students actively participate in the demonstration involving fire extinguishers and hoses.

What is clearly evident in the students' aviation training is the underlying theme of safety. The school is clear on its stance, "flight safety is paramount".

If you want more information on the Walsh Memorial Scout Flying School, or a registration form, then see the web site, www.scouts.org.nz. ■

Recreational Pilot Licence

In 2001, after industry consultation, the CAA and groups within the aviation community agreed to develop the Recreational Pilot Licence (RPL) concept as a 'licence' under Part 61.

There are two reasons for this. First, there is a need to ensure that international recognition of the New Zealand PPL is not compromised. Second, it is desirable for all pilot qualifications relating to the flying of an aircraft issued with an airworthiness certificate to be included within one rule Part.

The main driving force behind the RPL has been the aviation community's request to address the problem of private pilots who are no longer able to meet the medical standard, or cost associated with the Private Pilot Licence (PPL), but who want to continue flying standard category or special category certificated aircraft.

Currently, many pilots who fail to meet the Class 2 medical certificate standards, or find the specialist reports too costly, take up flying 'non-certificated' sport and recreational aircraft under the umbrella of the Part 149 certification system where the medical standards are less stringent. A number of sport and recreational aircraft, such as some microlights, have higher performance characteristics than many 'certificated' aircraft. By flying these types of aircraft, some pilots may pose a greater safety risk to the public and themselves than if they were to continue to fly the 'certificated' aircraft with which they are fully familiar.

The CAA published a Notice of Proposed Rule Making (NPRM) on 28 August 2007 covering the RPL. Submissions closed on 21 September 2007.

Land Transport Medical Certificate

The proposed amendments to CAR Part 61 require a person wanting an RPL to hold a Land Transport New Zealand (LTNZ) Medical Certificate, valid for a Class 2, 3, 4, or 5 driver licence, with passenger endorsement. This will be issued by a General Practitioner (GP) in accordance with the Land Transport medical requirements. The cost of obtaining an LTNZ Medical Certificate will be about a quarter of the cost of the Class 2 aviation medical certificate.

This aircraft could be flown by someone with a Recreational Pilot Licence, but there will be operational limitations.

The CAA will not be involved in decision making for the issuing of the medical certificate. The GP will issue it. If a pilot is not satisfied with a GP's decision to decline to issue the LTNZ Medical Certificate, they will have to utilise the appeal process under the LTNZ legislation, not the Civil Aviation Act.

RPL holders who are aged over 40 and hold an LTNZ Medical Certificate, will be required to renew their Medical Certificate every two years. RPL holders who are under the age of 40 will be required to renew their medical certificate every five years.

For more information on LTNZ Medical Certificates, see the LTNZ web site, www.ltsa.govt.nz.

RPL Licence Privileges and Limitations

The proposed operating conditions and limitations for the RPL are designed to minimise any additional risks that may arise from the lower medical standards, and mitigate the consequences if something goes wrong. The proposals are:

- limited to simple, non-high performance, single-engine aeroplanes;
- carriage of one passenger only;
- flight by day under Visual Flight Rules;
- no flight over congested areas, except during takeoff and landing;
- no eligibility for aerobatic flight rating, glider tow rating, parachute drop rating, agricultural rating, or instrument rating; and
- the aircraft is not operated for hire or reward, and the pilot does not act for remuneration.

After careful consideration, the CAA have proposed that the RPL be limited to a single-engine non-pressurised aeroplane with a designed maximum take-off weight of 2000 kg or less, for which the pilot holds an aircraft type rating.

Carriage of Passengers

It is proposed that the carriage of one passenger will be permitted, but that the onus will be placed on the pilot to formally advise the passenger that they hold an RPL and that they are therefore not required to meet the medical standards applicable to the PPL.

International Precedent

There is strong international precedent for an RPL. The USA, Canada, and the UK have all adopted such a licence in one form or another. Australia is considering proposals on the matter.

Submissions

Submissions are now being reviewed by the CAA's technical experts, before a summary of submissions and the CAA's responses will be published on the CAA web site. The Draft Final Rule is expected to be published on the CAA web site in mid October 2007 and we expect the RPL will become effective by February 2008. ■

"Say again"
"Radio calls are free"

In our article, "Back to Basics", in the July/August 2007 issue of *Vector* we said, "radio calls are free". Some readers took issue with us over this, so we say again, **radio calls are free.**

There appears to be a misconception in the aviation community that Airways New Zealand charges pilots flying VFR for making position reports en route. A number of pilots even held back from making position reports because they incorrectly believed that they would be charged for using this service.

Position reports should be given in a regular and timely fashion. They should always be given if deviating from your flight plan, and also in situations that can reduce search and rescue time if something were to go wrong. For example, if a pilot crosses from one side of the Southern Alps to the other, search and rescue time will be minimised if the Rescue Coordination Centre knows that the aircraft was last heard from on the western side of the ranges.

The CAA encourages pilots to use the FISCOM service for making position reports. This service can also be used to obtain weather and traffic information.

The FISCOM frequencies can be found in *AIP New Zealand*, Figures GEN 3.4–2 and 3.4–3.

Fees

Pilots who intend to fly VFR and file a flight plan on the internet will be charged $4.50 plus GST, and those that file the flight plan by telephone, or over the radio, will be charged $6.50 plus GST.

As well as the VFR flight plan fee, there are two other charges that a pilot might incur. A landing fee and an aerodrome fee. Sound like the same fee? Well, think again.

The landing fee is charged by the airport company and is used to develop the airport.

The aerodrome fee is charged by Airways New Zealand. This fee pays for the Air Traffic Control staff and the resources that they use to facilitate traffic movements.

Landing and aerodrome fees are only ever incurred on the landing portion of the flight, not the takeoff.

Operating VFR onto Controlled Aerodromes

If a VFR pilot lands their aircraft at a controlled aerodrome they will be charged an aerodrome fee and a landing fee.

Operating VFR onto Uncontrolled Aerodromes

If a pilot lands their aircraft at an uncontrolled aerodrome, they will only incur a landing fee if the aerodrome operator charges such a fee.

This is the case for all uncontrolled aerodromes in New Zealand with the exception of one, Milford Sound.

Milford Sound is an uncontrolled aerodrome, but it has a Aerodrome Flight Information Service. An aerodrome fee will apply there.

If a pilot takes off and lands their aircraft at a different uncontrolled aerodrome, they will still only incur a landing fee, if applicable. This is the case even if pilots make numerous position reports en route.

For example, if a pilot takes off from Paraparaumu and flies VFR to Masterton, and makes several position reports, they will not incur any Airways aerodrome fee for the flight. The pilot will have to pay a landing fee at the destination aerodrome, and pay a flight plan fee if they have filed a flight plan, but there will not be an Airways aerodrome fee for the flight, even if some or all of the flight is within controlled airspace.

As radio calls are free, why not use them? They could save your life and the lives of your passengers.

A list of all the terms and conditions, as well as fee structures, can be found on the Airways New Zealand web site, www.airways.co.nz. ■

Planning an Aviation Event?

If you are planning an event, large or small, such as an airshow, air race, rally, or major competition, the details should be published in an *AIP Supplement* to warn pilots of the activity.

The published cut-off dates for the AIP are listed below, but you must advise the CAA **at least one week** before those dates, to allow for inquiries and processing. Note that, even if you have applied to the CAA for an aviation event authorisation, this does not automatically generate an *AIP Supplement* or airspace request.

Email the CAA, aero@caa.govt.nz. Further information on aviation events is in AC91–1.

Supplement Cycle	*Effective Date*	*Cut-off Date With Graphic*	*Cut-off Date Without Graphic*
07/13	20 Dec 07	11 Oct 07	18 Oct 07
08/1	17 Jan 08	25 Oct 07	1 Nov 07
08/2	14 Feb 08	22 Nov 08	29 Nov 07
08/3	13 Mar 08	3 Jan 08	10 Jan 08

Talk the Talk

All pilots with a New Zealand licence will hold a Flight Radiotelephone Operator Rating and have passed an issue flight test. Private pilots will undergo a Biennial Flight Review (BFR) every two years, and Commercial pilots will sit a competency assessment every year. Their ability to communicate clearly and concisely using correct aeronautical phraseology will have been tested and deemed acceptable on each of these occasions.

Yet feedback suggests that pilots are letting their standard of communication slip, particularly in uncontrolled airspace. Pilots appear to be on their best behaviour when they have a flight examiner or instructor sitting beside them, and when they are communicating with ATS units. This standard of professionalism, however, is not being maintained between checks when outside controlled airspace.

It is essential to make clear, accurate, radio calls in uncontrolled airspace. This is critical for collision avoidance, and it requires self discipline.

Overcoming Obstacles to Clear Communication

First check a few basics as part of your pre-flight inspection. Make sure your headset plugs are in completely. Check that the receiver volume, and the volume control on your headset, are set at the optimum level. Make sure your headset is on comfortably and that the boom is sitting in the right position.

Work out what you are going to say beforehand. In other words – engage your brain before keying the microphone. Before transmitting, listen out on the frequency to ensure that your transmission will not interfere with a transmission from another station.

Remember to use standard call structures and phraseology

Press the transmit button, pause, then speak, so that your first word is not missing from the transmission. Speak slowly. A fast transmission is not more professional – it is just harder for other pilots and controllers to understand.

Try to speak clearly, good enunciation is essential, and remember to use standard call structures and phraseology.

Make accurate and helpful position reports so that other pilots in the area can build a mental picture of where you are, and know where to start looking for you. In the vicinity of an aerodrome, give a distance and bearing in relation to the aerodrome. When tracking towards an aerodrome, check the compass and directional indicator (DI) to confirm your bearing (eg, if the DI indicates a northwest heading, then you are southeast of the aerodrome). Work this out before making the radio call.

Elsewhere, give your position relative to a published visual reporting point. Do not use non-published local landmarks, as itinerant pilots will not know their location. Try to be as accurate as possible. Avoid using "abeam", or "approaching", as these are non specific. Instead give a distance and relative bearing from a reporting point, unless you are directly overhead. Remember the standard call structure for a position report is: position, time (if applicable), altitude, ETA, and intentions.

When making position reports in uncontrolled airspace, the practice of repeating which traffic you are addressing at the end of the call can be useful when transmitting on 119.1 MHz (in case your first word isn't transmitted or isn't picked up by other traffic on the frequency).

This is not necessary, however, when transmitting on a dedicated frequency, such as a Mandatory Broadcast Zone or Common Frequency Zone. You would just be repeating the obvious and cluttering the frequency.

Avoid giving long-winded accounts of your intentions or superfluous information. For example, when beginning

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Key Points to Remember:

- First work out what you are going to say.
- Listen out before transmitting so you don't talk over someone else.
- Press the transmit button, pause, then speak.
- Speak slowly.
- Speak clearly. Concentrate on your enunciation.
- Use standard call structures and phraseology.
- Make accurate position reports. In the vicinity of an aerodrome give a distance, bearing, and intentions in relation to the aerodrome. Elsewhere, give your position relative to a published visual reporting point.
- If you are doing something non-standard – say so. Otherwise avoid superfluous information.

If you would like to refresh your memory of standard call structure and phraseology, Advisory Circular AC91-9 *Radiotelephony Manual*, is on the CAA web site.

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a standard overhead join, the radio call should be, "Rangiora traffic, XYZ, overhead, joining for Runway 07". It is not necessary to say, "letting down on the non-traffic side" as this is part of the standard procedure. Only include additional information if you are not able to conform to a standard procedure, for example using a non-standard joining altitude due to cloud.

If you don't understand someone else's radio call, or missed part of their transmission, don't be afraid to ask them to repeat it.

Efficient and effective communication is an integral part of good airmanship as the old adage, 'Aviate, Navigate, Communicate' suggests. Don't let the standard of your communication slip when you are not being monitored by ATC, or tested by an instructor. Maintaining self discipline makes the skies safer for everyone. ■

Makeover for the CAA Web Site

We've given our web site a makeover to update its appearance and usability. Basically, you will follow the same links as before to find information, but we've added some features we hope will make it easier, for example the "Quick Links" on the home page.

There is still some work to be done – we're just trying to keep it simple and make things easy to find. Don't forget that the best tool for this is the "A to Z Topics" page.

Thanks to those who have sent in some feedback. We welcome your feedback and suggestions for improvements at any time, just email: info@caa.govt.nz.

English Language Proficiency

Effective and efficient radiotelephony is not just a prerequisite to ensure safety in the air, it is also the key to moving large amounts of traffic through what has become congested airspace in recent times.

Statistics published by ICAO indicate that during the period 1976 to 2000, over 1100 people lost their lives worldwide in aviation accidents where a lack of understanding of the English language was a contributing factor. Accordingly, all new Pilot, Air Traffic Control, and Flight Service Operator licences issued after 5 March 2008 will require an English Language Proficiency credit.

For domestic operations, all licences issued prior to 5 March 2008 do not require the holder to undertake a language proficiency test, but there will be no endorsement on the holder's licence.

Assessment

Language proficiency assessments are used to evaluate a candidate's knowledge of the English language that is used in everyday aviation radiotelephony.

The assessment is set in a broad aviation-related context, in which applicants are expected to be able to explain common and less common aviation-related tasks.

Telephone Interviews

Pilot applicants who are proficient in English are advised to sit the Level 6 Proficiency Demonstration. This is a supervised automated test which is conducted over the telephone. It is used as a quick and efficient test for those who speak English as a first language, or as a very proficient second language.

The only outcomes are "Level 6" or "not determined". If you talk your way through this 10 minute interview and meet level six proficiency, ASL will issue you with a Result Notice which you can forward to the CAA to have a licence endorsement issued.

A "not determined" result on the first attempt will require the candidate to undergo a Formal Language Evaluation. Pilot applicants who are not proficient in English are advised to bypass the Proficiency Demonstration and sit the Formal Language Evaluation. This will save them time and money.

The Formal Language Evaluation takes approximately 30 minutes, and is also supervised and delivered over the telephone. It includes a semi-automated section and a live interview.

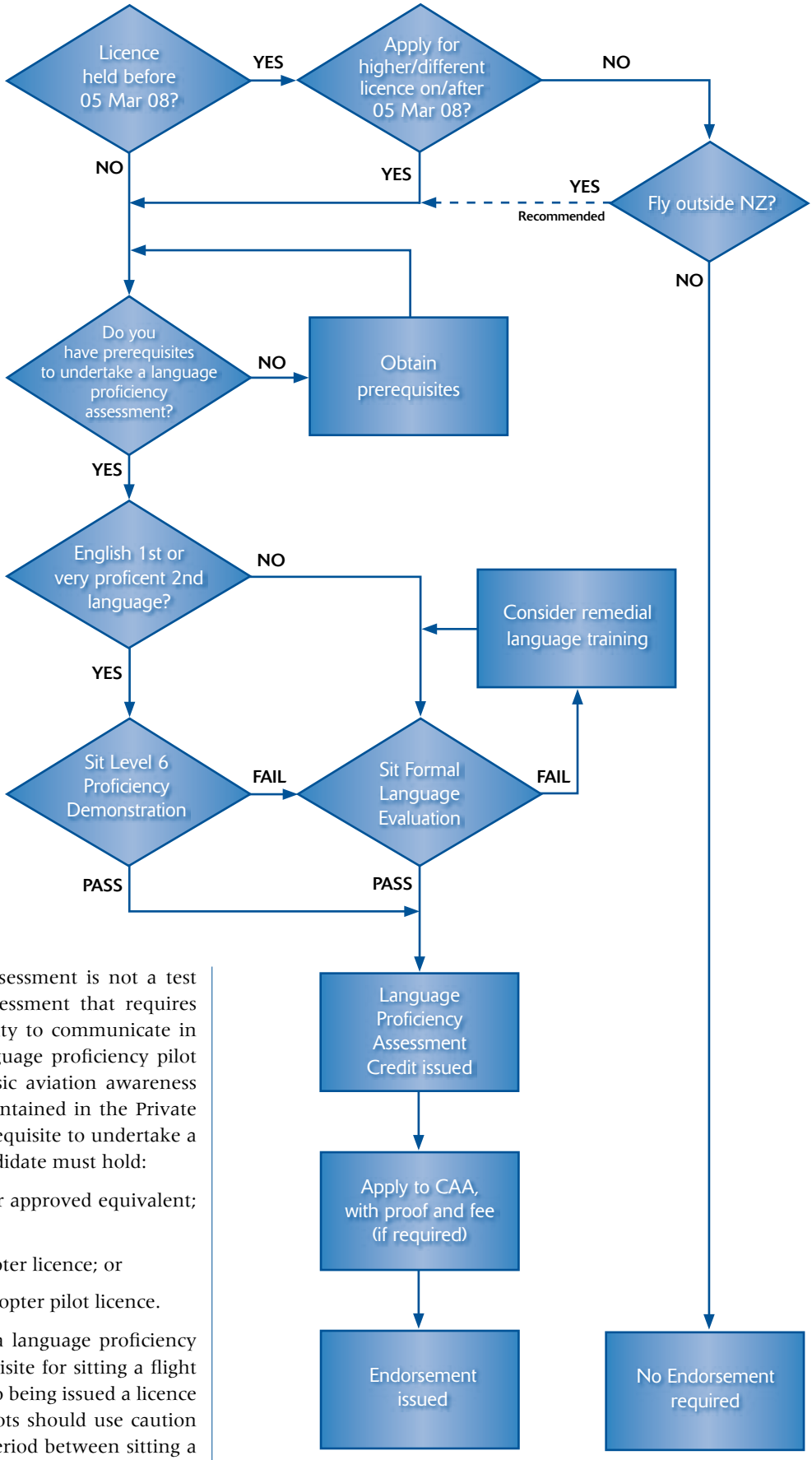
To book a Proficiency Demonstration or a Formal Language Evaluation, contact Aviation Services Limited, www.aviation.co.nz.

Levels of Proficiency

In the Formal Language Evaluation, applicants will be assessed and graded to one of the six levels of language proficiency. Levels one to three require an applicant to undergo further English tuition before the endorsement can be issued. An applicant who reaches either level four or five is seen to have reached an 'operationally safe' standard, and an endorsement will be issued with some conditions to their validity. An applicant who demonstrates:

- Level 4 (Operational) will be issued a credit that is valid for three years from the date of assessment.
- Level 5 (Extended) will be issued a credit that is valid for six years from the date of assessment.

Once an applicant reaches level 6 (Expert) the endorsement is issued for the lifetime of the holder.



Prerequisites

The Aviation Language Proficiency Assessment is not a test of theoretical knowledge. It is an assessment that requires an applicant to demonstrate their ability to communicate in an aviation context. Therefore all language proficiency pilot candidates are expected to have a basic aviation awareness broadly covering the subject matter contained in the Private Pilot Licence theory syllabus. As a prerequisite to undertake a language proficiency assessment, a candidate must hold:

- A PPL written examination credit, or approved equivalent; or
- A New Zealand aeroplane, or helicopter licence; or
- A current foreign aeroplane, or helicopter pilot licence.

Currently it is proposed that holding a language proficiency assessment credit will not be a prerequisite for sitting a flight test, however, it will be a prerequisite to being issued a licence after 5 March 2008. Consequently, pilots should use caution when eating into the 3 month grace period between sitting a flight test and being issued a licence.

The endorsement can be processed onto your licence for no additional fee as part of the licence issue process. If you wish to have a language proficiency endorsement processed at any other time, you should complete and submit an *Application for Amendment to a Pilot Licence* form with the appropriate licence amendment fee.

For further information on English Language Proficiency endorsements see the CAA web site, "Quick Links – Advisory Circulars – AC61–1 *Pilot licences and ratings*". ■

Safety Targets Update

Growth Industry

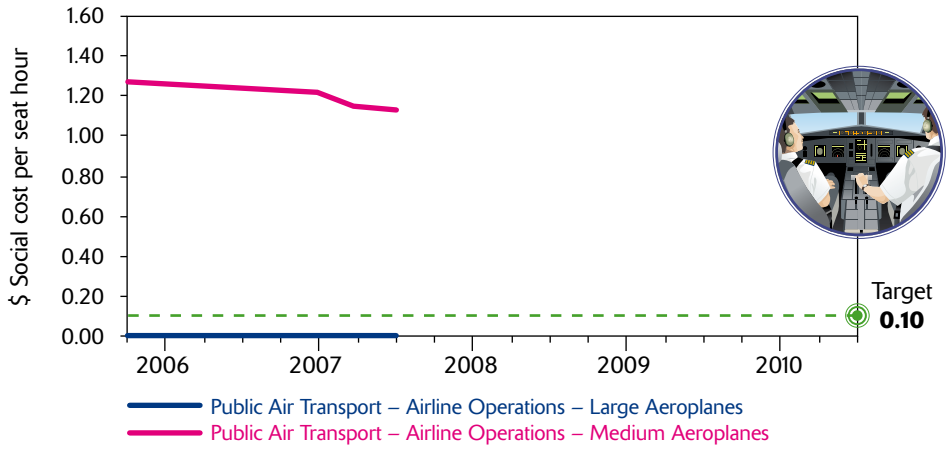
The aviation industry continues to grow. In the second quarter of this year (April to the end of June), there were 5.6 percent more aircraft movements than for the same period last year. There are 2.9 percent more aircraft on the register than last year, including 63 more sport aircraft.

In July 2005, the CAA set safety targets for each sector of the aviation industry to reach by 2010. The first two years of data show that several sectors look set to reach their targets.

The targets measure the social cost of accidents – not just numbers of accidents. They incorporate statistical values for fatalities ($3.05 million per life in June 2006), serious injuries ($305,000), and minor injuries ($12,200), as well as the value of aircraft destroyed.

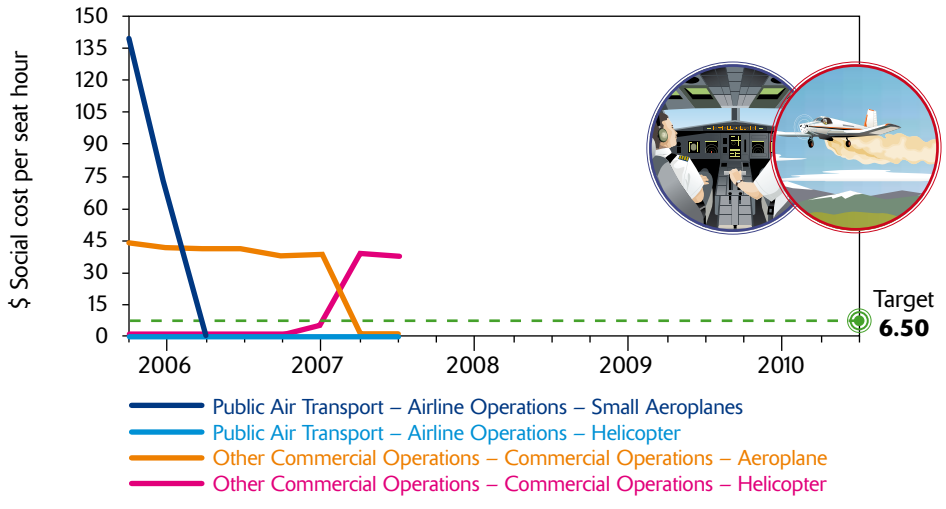
In total there have been seven fatalities, nine serious injuries and nine aircraft have been destroyed in the nine months to the end of June this year. For a full report see the CAA web site under, "Safety Info – Safety Reports".

Social Cost of Accidents
Airline Operations - Large and Medium Aeroplanes



Large aeroplanes are well below their target of $0.10 per seat hour. The medium aeroplane sector is well above the target and will not be able to meet it by 2010. The target for this sector has been calculated over a 10-year average, and a single Metroliner accident two years ago has caused a serious spike in the trend line. There have been no serious accidents or fatalities for large and medium aeroplanes over the nine months to the end of June.

Social Cost of Accidents
Small Aeroplanes and Helicopters



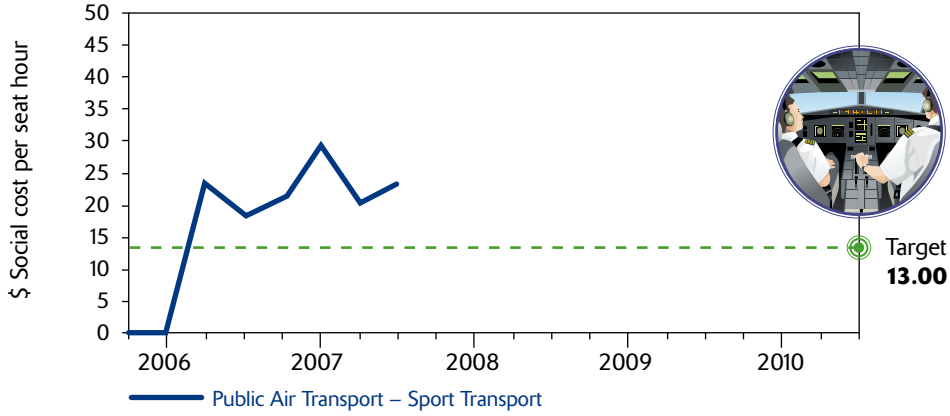
Small aeroplanes used for airline operations show a significant downward trend from a high starting point created by six fatalities in late 2004 and early 2005. This sector has been under its target of $6.50 per seat hour since April 2006.

Helicopters used for airline operations have suffered no fatal or serious injuries since 2003.

Aeroplanes used for non-airline commercial operations are well below the target of $6.50.

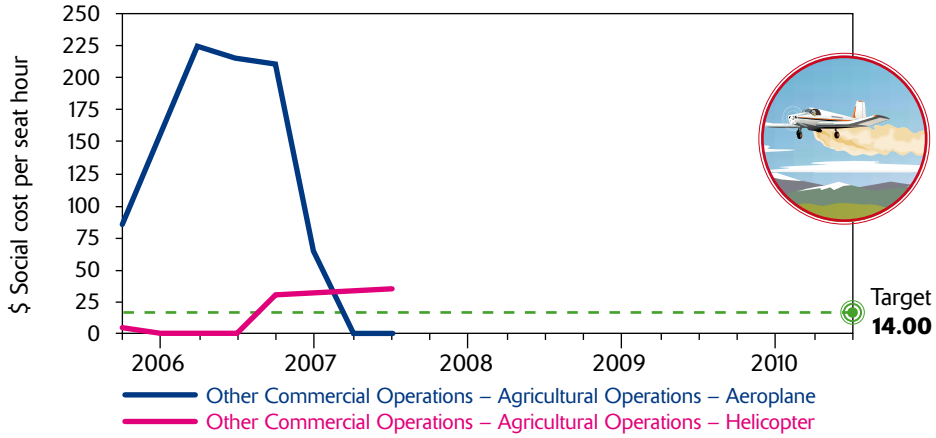
The trend for helicopters used for non-airline commercial operations has risen sharply after one person was seriously injured, and two helicopters (one single-engine and one twin-engine) were destroyed. This sector is now well above the target.

Social Cost of Accidents
Sport Transport



The trend for sport transport operations spiked up late last year. There have been five serious injuries in the nine months to the end of June.

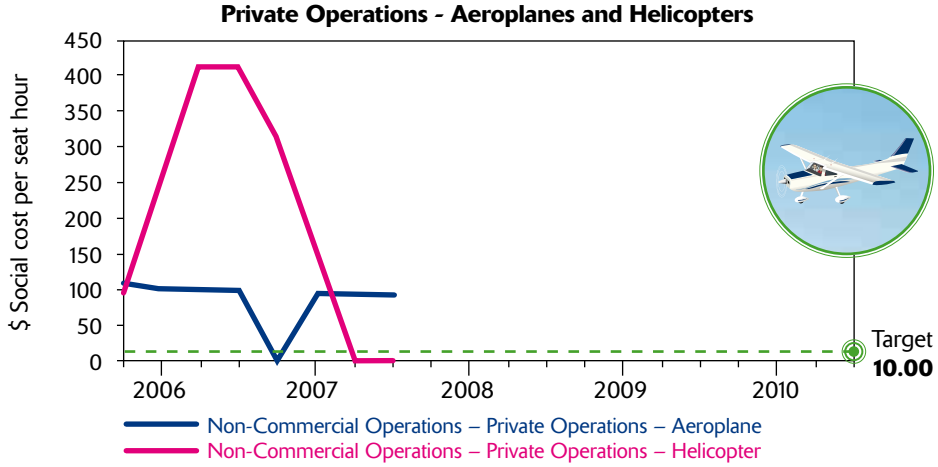
Social Cost of Accidents
Agricultural Operations - Aeroplanes and Helicopters



The outcome for aeroplanes used for agricultural operations has fallen below the target of $14 per seat hour.

Helicopters used for agricultural operations are now above the target, although the sector has suffered no serious injuries in the nine months to the end of June.

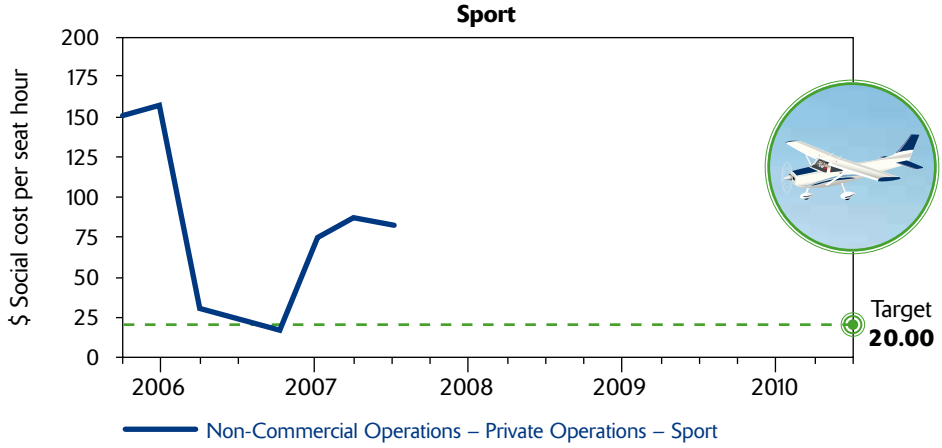
Social Cost of Accidents
Private Operations - Aeroplanes and Helicopters



Aeroplanes flown privately are well above the target of $10 per seat hour, following accidents in which two people were killed, and two aircraft were destroyed.

One piston-engine helicopter flown privately was destroyed, but the sector is still well within the target.

Social Cost of Accidents
Sport



There was a sharp rise in the trend for sport aircraft flown privately late last year. Over the nine months to the end of June five people were killed, three people suffered serious injuries, and four aircraft were destroyed.

The expressions "Non-Commercial Operations", "Other Commercial Operations", and "Public Air Transport" are used to explain in a simple way the groups that will be used in the analysis of data. These expressions do not reflect the legal definitions that are in the Civil Aviation Rules, or the Civil Aviation Act 1990.

Photo courtesy of The Boeing Company.

Dreamliner Nears Flight Testing

The CAA has been instrumental in helping Boeing develop the maintenance programme for its 787 Dreamliner. Now flight testing looks set to start later this year.

The CAA has been part of the multi-agency Maintenance Review Board that has been approving every detail of the aircraft's proposed maintenance programme. The work has been ongoing over the past two years, with regulatory agencies, airlines, and Boeing representatives looking at every aspect of the aircraft to establish what its maintenance programme should require. Working groups have focused on key parts of the aircraft, such as its structures, flying controls, avionics and carbon composite construction.

CAA Airline Inspector Bob Ellison has been a member of the structures working group, and has made at least a dozen trips to the United States over the past two years to assist.

"It was important that we took part in developing the maintenance programme because Air New Zealand is the launch customer for the long-range version of the 787 in 2010. It has ordered eight of the B787-9s," Bob says.

The structures group also included representatives from the FAA, Transport Canada, airlines, and Boeing.

"At each meeting we looked at a different part of the structure, such as the wings, tail or fuselage – which are mostly made up of carbon composite material – and then decided what maintenance should be in the programme for that part."

Bob also attended all of the international steering committees (ISCs), which met after each round of working group meetings to review and approve the results.

"It might sound like two years is a long time to develop a maintenance programme, but it was really quite quick. The 777 took three and a half years," Bob says.

The first thirty 787s (787-3s designed for city hopping) are scheduled for delivery to Japan's All Nippon Airways (ANA) in May next year. The airline is also taking twenty 787-8s, designed for normal range operations.

Bob says the new aircraft is going to be a much more comfortable ride for passengers.

"Because it is made up of composite materials that can handle moisture, cabin air will have twice the humidity of the 747, and the cabin pressure will be set at 6000 ft, instead of the 8000 ft found on a long-haul 747 flight."

The 63m-long 787-9 will carry up to 290 passengers. Its maximum cruise speed is 510 knots, with a maximum loaded range of 8500 nm. ■

The 787 heads into a strong Wellington nor'wester – not likely – but we couldn't resist the opportunity for this shot with CAA Airline Inspector (Airworthiness), Bob Ellison.

The Right Approach

Not all instrument approaches are for everybody – how do we know if a particular one is for us? In particular, which approaches may we fly using our GPS?

One type of approach currently has two titles, but only until all relevant charts are amended to reflect the current terminology. Take Hastings and Gisborne as examples, using the current (at 27 September 2007) amendment status of *AIP New Zealand*. Hastings has an approach entitled "GPS RWY 01" and in the chart's landing minima panel, the MDA (minimum descent altitude) is given as "GPS 650 (578) – 2000". The figure in brackets is the equivalent height above the aerodrome elevation, and the 2000 is the minimum visibility in metres. Gisborne has an approach "RNAV (GNSS) RWY 14", which is the same type of approach with an updated title and MDA presentation. The term "GPS" in the minima panel has been replaced with "LNAV" (lateral navigation). Note also the shading in the profile diagram of the approach – this is being progressively introduced on 'stepped' approaches, where there are altitude versus distance limitations on descent.

"GNSS" (global navigation satellite system) is replacing "GPS" in approach titles, and this reflects the existence and development of other satellite navigation systems such as GLONASS (Russia) and Galileo (Europe). The original NAVSTAR system developed by the US is synonymous with GPS, but GPS is now a subset of GNSS. For the time being, however, the terms GNSS and GPS may be regarded as synonymous.

"RNAV" stands for Area Navigation. Early RNAV equipment relied on ground station (VOR/DME) input to determine position, and permitted operation on tracks independent of those ground stations, in that tracking via overheads was not required. RNAV has gone through a period of rapid development in the last decade or so, primarily with the introduction of satellite navigation for civil use and more recently with the adoption of performance based navigation (PBN) by ICAO. These developments are also reflected in changes in the terminology and consequently presentation of procedures on the charts.

RNP (required navigation performance) is a statement of the navigation performance necessary for operation within a defined airspace or on a defined approach, and is always expressed with a value, eg, RNP10. In practice, RNP10 means that the total system error will be no greater than 10 NM for 95 percent of the time. RNP requirements include strict aircraft equipment standards, maintenance procedures for that equipment, specific operational approval by the regulator, and specific pilot training and currency requirements.

Referring to the Christchurch RNAV RWY 02 approach chart, we see that the minima panel has an MDA of 490 feet for LNAV/VNAV RNP0.3, and 520 feet for LNAV RNP0.3. Vertical navigation (VNAV) guidance is computed internally by the FMS (flight management system) computer and fed to the flight director/autopilot to give a constant-gradient descent. These minima are available only to aircraft meeting the requirements for RNP0.3, ie, the total system error will be no greater than 0.3 NM for 95 percent of the time, and the aircraft and operator must meet all the requisite standards.

The mere fitment of an IFR-approved GNSS set does not meet any RNP criteria.

In the Christchurch RWY 02 example, note that the minima achievable are actually higher than those for the ILS/DME and LLZ/DME approaches.

Looking now at the RNAV approaches for Queenstown, we can see the huge impact even a small difference in RNP value has on the associated minima. For example, for the RNAV RWY 05 approach, an aircraft operating to RNP0.11 is able to descend to 255 feet above aerodrome level, but an RNP0.3 aircraft can descend to only 1148 feet, a difference of 893 feet. Note in particular the condition printed on the chart, "For approved operators only".

This same condition is implicit on all charts with RNP minima – **you may not fly that approach unless your aircraft and crew are RNP-approved to the appropriate RNP value**.

So, the answer to the original question is, with only an IFR-approved GPS, you may fly only GPS and RNAV (GNSS) approaches.

See also the article, "Non-Precision Instrument Approaches" in the July/August 2006 issue of *Vector*. ■

In the Unlikely Event of...

Not all of us are pilots, not all of us are engineers, not all of us fit into the myriad categories of aviation community membership, but there is one category into which all but a very few of us will fit at some time or other – the airline passenger.

Passengers evacuating an Airbus A340 after an overrun at Toronto – note that the slide has not deployed. Photo courtesy of Transportation Safety Board of Canada.

Airline travel is a fairly streamlined process these days, especially compared to two or three decades ago – we book and pay on line, we can do our own check-in, we saunter though to the club lounge for a light meal or liquid refreshment and await our boarding call. After a briefly inconvenient security check, we are conducted down a long tube that connects with another long tube full of seats and overhead lockers.

Smiling, helpful flight attendants greet us, we shuffle down the aisle, and wait patiently (don't we?) while our fellow travellers get themselves organised, stowing their carry-on baggage and finding the right seat. Eventually the captain announces that the doors are closed and that we will soon be on our way. There is a short interruption to the background music while a safety video plays, with its own brand of soothing music, smiling actors and a gently reassuring voiceover. The attendants stand in the aisle waving a few things about and pointing occasionally with both arms. You don't take a lot of notice, as it's boring, and nothing ever happens anyway.

Here we go – the plane has lined up on the runway, there's a brief pause, then the engine noise increases to a roar; wow, feel that acceleration!

Meanwhile, over on the seashore, quite close to the runway, Jonathan Blackback has chanced upon a seafood dinner – the only problem is the hard shell around the outside. JB has a strategy for this, however, and seizes the meal in his beak for a quick flight to the nearest hard surface – the runway. Several of his kin see his prize, and thinking their entitlement is greater, all head for the drop zone to 'mussel in' on the feast.

Some of the passengers in the left side window seats see a series of black and white flashes disappear down the throat of number 1 engine – JB, his mates and the grit have well and truly hit the fan. An enormous fireball erupts momentarily from both ends of the engine, with a loud accompanying "boof! – boof! – boof!" sound, which almost drowns out the chorus of screams and sacred expletives that fill the cabin.

... safety briefing ...
sit up, look up, and pay attention!

Up front, the non-flying pilot has just opened his mouth to call "vee-one" when the whole plan changes. After the normal human reaction interval, the captain calls "STOP" and there is a well-rehearsed, orderly sequence of actions resulting in closed power levers, maximum braking and the roar of reverse thrust. Whew! Or not – something is not quite right. The cockpit voice recorder dispassionately records a statement from P2 hot mike, "Oh, (expletive) we're off the (expletive) end!" And we are!

To a renewed chorus of screams, the ride suddenly gets a whole lot rougher – there's a lot of bumping and jolting, during which some of the overhead lockers pop open and luggage drops out; you bang your head on the seat in front, and wind yourself as your chest jack-knifes onto your knees. The aircraft lurches to the left, there is a final 'thud' and suddenly everything stops. Whew! Or not...

A few seconds of the 'stunned mullet' syndrome then the noise starts again – from the passengers. On the flight deck, the captain decides that the prudent course of action is to get everybody off the aircraft, and calls, "Evacuate, evacuate!" over the public address system. Flight attendants quickly unbuckle and move to their designated exits; a lot of people stand up and begin groping in the overhead lockers, and the attendant seated at the rear checks outside his appointed exit before throwing it open. Just in the nick of time he realises that the slowly-forming puddle under the left wing isn't water, and abandons the attempt. A lick of flame appears from somewhere, and the puddle catches fire, slowly at first, but then more and more vigorously.

Quickly, the flight attendant grabs the interphone and advises the captain that there is fire behind the left wing and that the left rear and left over-wing exits are not available. There is a fresh outbreak of screaming and scrambling in the rear half of the cabin as people see the flames, but by this time the front left and right door exits are open, and an able-bodied passenger has managed to open the right over-wing exit and toss it outside. People at the front are moving to the exits, assisted by those same pleasant, quietly-spoken flight attendants who have now assumed the persona of the drill sergeant of your worst nightmares. **You have to do what they tell you to do!** Confiscated hand baggage is piling up between rows 1 and 2 on both sides of the cabin, and includes a guitar and a pair of tennis rackets!

Always have a plan, and revise it every time you fly.

Mid cabin, some passengers are reaching up for their carry-on bags as if nothing is amiss, but are soon disabused of that idea by the press of bodies and some pointed suggestions from the rear. There is a scrummage at the over-wing exit, but our able passenger has stationed himself outside the exit and is forcibly assisting people through. Another passenger, who turns out to be an off-duty crew member, is marshalling the passengers in a safe area upwind of the burning aircraft. The expanding fire eventually melts and burns through several left rear cabin windows, and a billowing cloud of acrid smoke invades the cabin.

Visibility drops, as do several passengers, who follow the floor-mounted emergency lighting to the right wing exit. Our flight attendant at the rear has donned his emergency smoke hood and checks the seat rows progressively from the rear, making sure that nobody is left behind. Seventy-two seconds after the call to evacuate, all persons are off the aircraft, and generally in good shape except for some sprains and grazes from the slide descent, some coughing and retching from the effects of the smoke, and some cut feet from walking over the rough ground in stocking feet. The latter were relieved of their high-heeled shoes before descending the slide.

By this time, fire crews have arrived and are attacking the seat of the fire. The last few occupants to leave via the front left exit are greeted by a welcome 'fog' from the first fire appliance, to protect them from the radiant heat of the now-intense fire.

A happy ending? Well, sort of. The scenario is fictitious, but has been based on a compilation of several accidents, not all of which had such a fortunate outcome. What can you, as a passenger, do to maximise your chances of survival in an aircraft evacuation?

Before You Board

There are several things you can do before the flight that may make the crucial difference. One is to carry as little cabin baggage as possible, and if travelling overseas, stow your passport and money on your person. This should eliminate any need or desire to go hunting for your bag while everything is chaos around you. If you are buying duty-free liquor, do so when you get to the other end, not before departure. Most spirits do not require much encouragement to burn, and bottles can be lethal missiles in an accident sequence.

Wear clothing made from natural rather than artificial fibres to protect from flash burns, and the footwear in which you would be prepared to walk home. Open sandals, high heels and thongs (flip-flops) are not going to help you in any cabin evacuation where time is critical and conditions are hostile.

This 4-year old amazed his fellow passengers by finding the briefing card himself, studying it and practising the brace positions during the safety demonstration.

On the Aircraft

As you make your way to your assigned seat and before you sit down, count the number of seat backs between your seat and the nearest exit. Then count again to an alternative exit, and memorise these numbers. Sit down, fasten your seal belt, and before you get too settled, pull out the safety briefing card and study it thoroughly. Work out and mentally rehearse how the exits open, reach under and touch your life jacket (it's a bit further back than you might expect), check which side of the aisle the emergency floor lighting runs. Undo your seat belt and refasten it a couple of times so that you can do it by feel if necessary. Just before takeoff, cinch it up that last extra bit, and keep it that way until well airborne.

If you happen to be seated in an exit row, a flight attendant will discuss the operation of the exit with you, and generally there will be a supplementary briefing card outlining your obligations if you accept that seating position. Be aware that 'armed' door exits can require a force of up to 35 kg to open, and that the over-wing emergency exits can weigh 15 kg or more. Take note of where the briefing card says to put the exit panel – most often outside the aircraft. You do not want people tripping over it on the way to the exit. Always check the outside environment for fire or other hazards before opening an exit.

Take note of the safety briefing, whether it be recorded or in person. Even if you

Continued over...

Briefing card courtesy of Air New Zealand.

... continued from previous page

are a frequent traveller, **sit up, look up, and pay attention!** It's more than just according the flight attendants the courtesy they deserve, it may save your life. The aircraft type may not be the same as on the last flight, you may be in a different part of the cabin and several safety features may differ subtly. Yes, as we said in the heading, the event may be unlikely, but rest assured that when it happens, you will need to call on every piece of safety information that you (should have) learned beforehand. Remember, not all your flights will be on top-of-the-line carriers, and not all overseas operators have English as their first language. Always have a plan, and revise it every time you fly.

In the Event

The event can be expected, as in an undercarriage problem before landing, or totally unexpected as described in our fictitious scenario. The cabin crew can cater for an anticipated event by passenger briefing, stowing potentially hazardous items more securely, moving disabled persons closer to primary exits, and selecting able-bodied passengers to assist them. Brace positions can be explained in detail and rehearsed, and crew commands can be explained in advance. All of this will result in a more orderly evacuation if it becomes necessary. In an unanticipated event, there are a huge number of variables,

Three passengers were struck by overhead passenger service units that came loose in this relatively benign overrun accident. A good reason to get your head down early. Photo courtesy of Australian Transportation Safety Bureau.

which have to be evaluated at the time, and very quickly so. One constant, however, is that **you must abandon your carry-on baggage**.

If there is fire, resist the urge to panic, even if all about you are doing so. Think about where you need to go and how to get there – crawling may be required to remain in breathable air. A hazard here is being trampled, but if the smoke and fumes are intense, this will discourage others from standing anyway. If the aisle becomes blocked, climbing over the seat backs may work, although this is generally easier from the rear if the seat backs fold forward.

Once clear of the aircraft, move to a safe distance upwind to minimise the risk of injury by fire or explosion, or even emergency vehicles. If you are able, help others less mobile than yourself. Do not worry about your baggage – in the best case, it will eventually be reunited with you; in the worst case, that's why you have travel insurance.

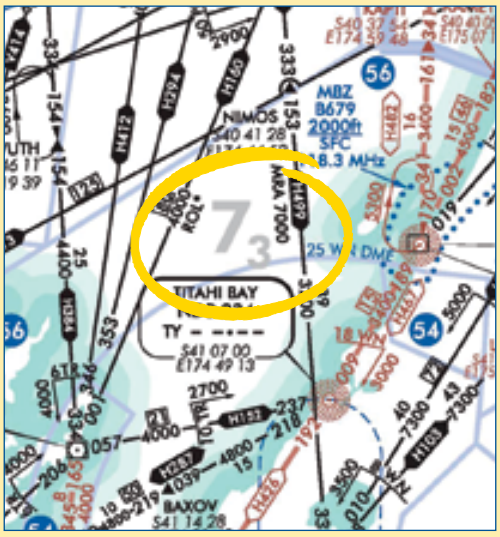
We cannot hope to cover all possible scenarios in a short article, but the keys to survival are preparation, forethought, and **taking notice of the safety briefing**. Think about it before the next time you fly. ■

Area Minimum Altitudes

A new feature on the *AIP New Zealand* Enroute and Area Charts effective on 22 November 2007 is the addition of 'Area Minimum Altitudes' (AMA). An AMA is defined as

> "The lowest altitude to be used under instrument meteorological conditions (IMC) that will provide a minimum vertical clearance of 1000 feet, or in designated mountainous terrain 2000 feet, above all obstacles located in the area specified, rounded up to the nearest (next higher) 100 feet."

AMA will be depicted on the charts in a similar manner to that used for Maximum Elevation Figures (MEF) on the Visual Navigation Charts (VNC) series A to D. The larger figure represents thousands of feet, the smaller figure hundreds of feet. The AMA values will be shown for each one degree (of latitude and longitude) quadrilateral on Area Charts, and for each two-degree quadrilateral on the Enroute Charts. The computation of the AMA for a particular quadrilateral also includes a 5-NM buffer outside the quadrilateral border.



Note again that the AMA figures on the Enroute and Area Charts are not to be confused with the MEF figures on the VNCs – the latter represent the highest known feature in the quadrilateral.

Old Licences Invalid

It has become apparent that a number of pilots who do not hold a current licence issued under Part 61 have been flying in the New Zealand system. The people concerned have expired licences issued under the licensing system that was discontinued in November 1992.

It is illegal to fly using these expired documents, even if the holder has been completing BFRs and Part 67 medicals on a regular basis. Completion of these does not validate the old licences.

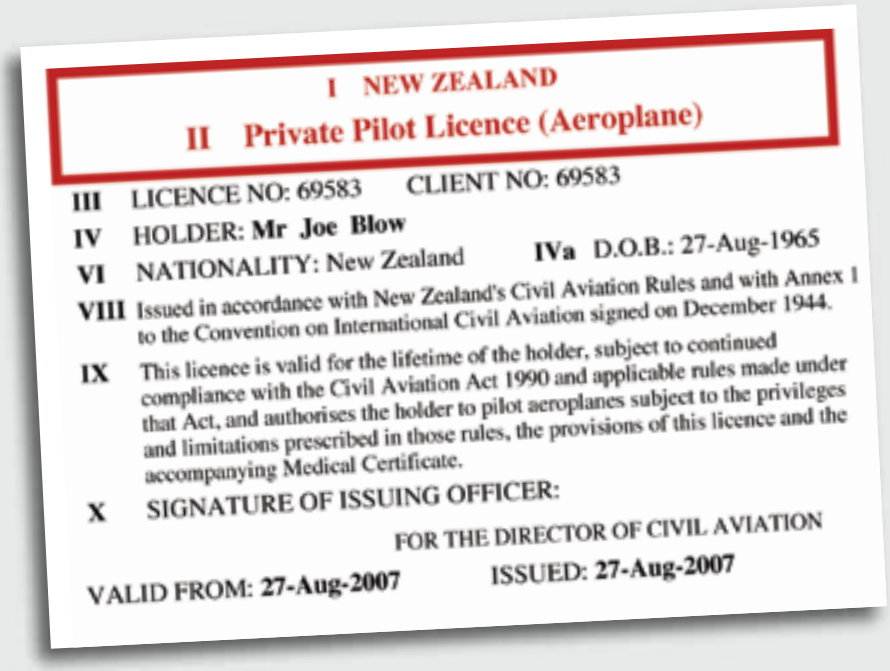
Cases that have come to light indicate that some pilots have completed up to seven BFRs, and that not one instructor has picked up the fact that these people were not appropriately licensed and had been flying illegally.

Do not accept any verbal assurance from people who say that they hold a current licence – insist that you sight the actual document.

When you are conducting BFRs, it is very important that the applicant's pilot licence is carefully inspected to ensure it has been issued under Part 61. The same applies to any other training, such as type conversion, that a licensed pilot may request.

Do not accept any verbal assurance from people who say that they hold a current licence – insist that you sight the actual document. Every Part 61 pilot licence is issued in the format illustrated (class and category of licence will vary); note particularly the 'small print' paragraphs beginning with, "Issued in accordance …" and, "This licence is valid for …".

If the person concerned does not hold a Part 61 licence, do not conduct the training requested. The affected people should be told to stop exercising the privileges of their assumed licence immediately, and to contact staff at the CAA Personnel Licensing Unit. ■



I NEW ZEALAND

II Private Pilot Licence (Aeroplane)

III LICENCE NO: 69583 CLIENT NO: 69583

IV HOLDER: **Mr Joe Blow**

VI NATIONALITY: New Zealand IVa D.O.B.: 27-Aug-1965

VIII Issued in accordance with New Zealand's Civil Aviation Rules and with Annex 1 to the Convention on International Civil Aviation signed on December 1944.

IX This licence is valid for the lifetime of the holder, subject to continued compliance with the Civil Aviation Act 1990 and applicable rules made under that Act, and authorises the holder to pilot aeroplanes subject to the privileges and limitations prescribed in those rules, the provisions of this licence and the accompanying Medical Certificate.

X SIGNATURE OF ISSUING OFFICER:

FOR THE DIRECTOR OF CIVIL AVIATION

VALID FROM: **27-Aug-2007** ISSUED: **27-Aug-2007**

A sample PPL(A) as they appear at present. Note that licences issued early in the Part 61 regime have a different print style, and may include the word "Lifetime" in the title.

A Reminder From Personnel Licensing

If you are applying for the issue or amendment of CAA Licences, please get your applications in early if you require your licence before the Christmas/New Year holidays. This is a very busy time for personnel licensing, and everyone considers their own applications urgent.

They are dealt with on a first-in, first-processed basis. Please do not call the Personnel Licensing Unit – this will not give your application greater priority, and it only takes staff away from the important job of issuing the many licences applied for.

Be aware that, if applying for a new licence, you will need to meet the fit-and-proper person requirements of the Civil Aviation Act, and that obtaining the necessary information can take several weeks. As a rough guide, allow six weeks before your flight test to complete the FPP process.

BFRs for Foreign Pilots

Pilots with a current overseas licence issued by an ICAO member state can gain a New Zealand Validation Permit to fly here privately, under Visual Flight Rules (VFR), for a maximum of six months.

Applicants must complete a New Zealand Biennial Flight Review (BFR) before they can apply to the CAA for the issue of a permit. Here are some guidelines to help instructors when they conduct BFRs for foreign pilots.

First check they meet the eligibility requirements. Instructors must sight the candidate's overseas medical certificate, confirming it has not expired. Any competency requirement set by their home state for currency of the licence itself, their equivalent of a BFR, must also be up to date. Instructors must also check the pilot's logbook to confirm they meet the full New Zealand PPL flight experience requirements laid down in AC61-3 *Pilot licences and ratings – Private pilot licence.*

Validation applicants are not required to sit an Air Law exam. Instead, the instructor conducting their BFR must give a comprehensive briefing covering all appropriate aspects of VFR operations in New Zealand airspace.

The aim of this briefing is to identify the fundamental differences between operating in the pilot's home country and operating in New Zealand. Make sure the pilot is aware of the differences and what is required of them here. Take nothing for granted, as even the smallest things could be done differently there.

Go over the New Zealand section of the aircraft flight manual. Cover which documents must legally be carried, the Certificate of Airworthiness, Technical Log, Group Rating System, and how to use P charts (if they have been retained).

Explain the *AIP New Zealand* Vols 1 and 4, *AIP Supplements*, NOTAMs, AICs, and VNCs including the different scales available and their colour codes. Point out that complete airspace information is available only on the 1:250 000 and 1:125 000 charts.

Discuss with them the different classes of airspace in New Zealand and their

Instructors carrying out BFRs for foreign pilots are tasked with safe-guarding the standard of New Zealand licences.

associated procedures, as well as special use airspace such as MBZs and CFZs. Cover what Air Traffic Services are available, that VFR cruising levels in New Zealand are based on a north/south magnetic track, the concept of nominating a SARTIME, and how to file a flight plan.

Make sure they have a good understanding of Part 91, their responsibilities under Part 12, and how to fill in and submit a CA005 form. It can be a good idea to go over a sample Air Law exam with them.

The logging of flight time varies around the world. This must be done correctly to New Zealand's requirements. For example, New Zealand does not allow time to be logged as 'pilot in command under supervision'. All flying done with an instructor must be logged as dual. These subtleties should be explained.

Spend time talking about New Zealand's climatology. Many overseas pilots will be used to a continental climate which is more stable and predictable than ours. New Zealand is a mountainous island nation in a large oceanic expanse. Explain how this influences our weather patterns and emphasise the changeable nature of New Zealand's weather. Make sure you go over New Zealand's met minima and highlight any differences. For example, in Australia, pilots with the appropriate endorsement are allowed to punch through a layer of cloud to go VFR on top. Make it clear this is not legal here. Explain how to obtain weather information using the Metflight-GA and IFIS web sites.

Radio use is an important topic to cover. Make them aware that New Zealand does have blind spots where they will not be able to contact ATS units. Show them the FISCOM pages in the *AIP*, explain about making position reports on these frequencies, and what services are available from the Flight Information Service. Go over the standard phraseology used here, plus any colloquialisms you think may trip foreign pilots up. For example an instructor discovered that, "go round" and, "overshoot" meant two different things to one foreign pilot.

During the BFR, the instructor must assess whether the candidate has sufficient ability to read, understand, and speak the English language, in order to communicate successfully and safely.

If the country that issued their licence does not have a separate Flight Radiotelephone Operator Rating, and their radio skills are just assessed as part of the flight test process, they will need to sit the FRTO written examination in addition to completing a BFR.

Watch them carry out a pre-flight inspection, as practices vary around the world – especially when it comes to refuelling. Don't just assume that they know how to do things, and discuss best practice for the first flight of the day, explaining the operator versus pilot responsibilities.

During the flight exercise part of the BFR, the foreign pilot must demonstrate that they can carry out all manoeuvres to the competency standard required for the issue of a New Zealand licence.

There are variations between countries as to how exercises are carried out, and some exercises may be totally new to a foreign pilot. For example, the standard overhead join is not common in many other countries. It is a good idea to brief this exercise thoroughly on the ground before flight. Another thing to cover on the ground are the correction factors for making compass turns, as these differ around the world. During the logbook assessment, you will have checked that the pilot meets the five hour instrument time requirement, but during the flight it may be appropriate to check that they meet the instrument flight competency standard.

Forced landings without power also need to be briefed thoroughly as many pilots who come from an urban environment will not know how to evaluate a paddock's surface when choosing a suitable place to land. Many may not have landed on grass before, so will not appreciate the issues relating to braking on grass, prop clearance on undulating surfaces, and judging drift relative to a non-existent centreline. A lot of pilots will never have experienced actually landing in a confined environment, as they will have practised precision landings by nominating a spot on a 3000 metre runway. Therefore, forced landings, precautionary landings, and precision landings should be assessed carefully.

In many places stalling is only practised in the climb attitude, whereas we require it to be demonstrated from straight and level.

A short term validation can be endorsed, 'not valid for night operations' or 'not valid for cross-country operations'. The instrument time requirement cannot be endorsed. Pilots must have completed five hours and reached the competency standard to be eligible for a Validation Permit.

Instructors carrying out BFRs for foreign pilots are tasked with safeguarding the standard of New Zealand licences. This is a responsibility to be taken very seriously. During the groundwork section of the BFR, the key is to find the gaps in their knowledge and make them aware of the fundamental differences between operating in their home state and operating here in New Zealand. During the flight it is essential to check that the candidate meets the competency standards required for the issue of a New Zealand licence. If they do not, then further training may be required in some areas. The Flight Test Standards Guides on the CAA web site are a good reference to check against.

All of the considerations mentioned in this article are also valid when completing a BFR for a foreign pilot applying for the issue of a New Zealand PPL, rather than a Validation Permit. ■

Rules Update

Civil Aviation Rules

Effective 30 August 2007, Civil Aviation Rules, Part 11 *Procedures for Making Ordinary Rules and Granting Exemptions* was revoked, with consequential amendments to Parts 101, 133, 139, 141, 149, 174, and 175 (in each case revoking the rule relating to exemptions). Updated CAA consolidations are available on the CAA web site.

A Notice of Proposed Rule Making (NPRM) relating to the Part 61 Recreational Pilot Licence has closed for submissions. See the article on page 5.

Stage 2 of the Part 61 review will have progressed to the Draft NPRM stage by October, but as there will be insufficient time to have it available for public comment before the Christmas break, a series of industry presentations is planned for late October/early November. The venues will be advertised on the CAA web site and by mailouts to potential interested parties.

Advisory Circulars

AC139-1 is withdrawn as its contents have been incorporated in AC139-6, AC121-2, AC125-1, and AC135-1.

AC139-6 has been updated and retitled. The AC now covers the aerodrome standards and requirements for aerodrome operators and the operators of –

- All aeroplanes conducting air transport operations irrespective of their size.
- All aeroplanes above 5700 kg MCTOW irrespective of the type of operation.

As there are aerodrome use requirements in Parts 121, 125, and 135, this AC has also been listed as AC121-2, AC125-1, and AC135-1 to enable the information to be accessed under the appropriate rules.

AC 139-7 has been updated and retitled. The AC now covers the aerodrome standards and requirements for aeroplanes at or below 5700 kg MCTOW when they are not operating on air transport operations. This AC has been also numbered in the Part 91 series as AC91-15, as there are aerodrome use requirements in Part 91, requiring aeroplane operators to ensure the suitability of any place used for taking off or landing.

The aim of these articles is to pass on the safety messages that can be derived from aircraft accidents in New Zealand. CAA accident reports are published on the CAA web site.

'Spring Loads'

A Lucky Escape

In February this year, an AS350 (Squirrel) helicopter was being used to transport building materials over a 25-NM distance to a remote site. The loads were to be slung beneath the helicopter on a 50-foot strop, which consisted of three 12-mm polyester ropes plaited together. The pilot had a swivel on board the helicopter, but did not incorporate it into the lifting sling assembly.

About 17 minutes into the flight, the strop broke as a result of the load spinning and binding up on the strop. The strop catapulted upwards when relieved of the weight of the load, and struck the main rotor resulting in the **failure of one of the arms of the 'Starflex' rotor head**. Significant? You bet!

In the article "Strike One – You're Out" in the November/December 2005 edition of *Vector* we described the effect of the failure of a Starflex arm – the immediate and catastrophic departure of the rotor and transmission from the helicopter. There have been three fatal Squirrel accidents in New Zealand involving this failure mechanism – all three were the result of a main rotor blade striking another object, usually with the outer foot or two of the blade. This allowed the affected blade to move in the lead-lag sense, offsetting the centre of gravity from the hub, with the resulting unbalanced forces being strong enough to fracture the transmission mounts.

The difference in the case described was that the strike was about the middle of the blade, and the blade appeared not to have been moved rearwards in the plane of rotation enough to displace the rotor centre of gravity. It stayed in approximately the correct angular relationship to the other two blades, but having lead-lag freedom, caused a severe vibration. The pilot force-landed the helicopter on a beach, and the machine was later determined to be an insurance total loss.

Photo courtesy of John Shanks.

Not a New Accident

It is often said that there are no new accidents – just variations on a theme. There have been two fatal variations on this theme in the last nine years, both involving lifting slings with elastic properties. These are described more fully in CAA accident reports 98/1250 and 03/2 respectively, on the CAA web site.

The first sling comprised a combination of synthetic rope and steel chain, with the rope section attached to the helicopter cargo hook. The 18-foot rope strop was a doubled length of 10-mm polypropylene rope, and the 22-foot chain sling was attached to its lower end by D-shackle. The Schweizer 269 helicopter was being used to transport bundles of punga logs from several different pickup points in a forestry block to a central collection area.

Section of main rotor blade showing chain strike marks on leading edge.

Repositioning from one pickup point to another, the pilot took along the 'hook-up' man as a passenger, with the unladen sling assembly still suspended beneath the helicopter.

In transit, the hook at the lower end of the chain sling snagged on a tree, momentarily stretching the polypropylene rope (which will stretch up to 20 percent of its original length before breaking) before freeing itself. The stored energy in the rope was enough to catapult the chain upwards into the main rotor, destroying the rotor within one revolution. The helicopter free-fell to the ground.

The second example was another synthetic rope sling being used on a UH-1E helicopter for carrying cut logs to a temporary sawmill. The pilot had previously used a 200-foot steel wire rope longline for the purpose, but had recently obtained a 230-foot length of 12-mm 'Vectran' rope, claiming a weight saving of some 60 kg. The day of the accident was the first time that the pilot had used the new longline, and the only reported difference from the previous one was that he was experiencing a 'bounce' on some loads.

The longline was originally manufactured as yacht rigging line and was not intended for use as a helicopter longline. It consisted of a braided inner Vectran core in a braided polyester sheath. The core had a breaking strain of 6500 kg, more than adequate for the 1200 kg loads being transported. The polyester sheath was to prevent abrasion damage and ultra-violet degradation, but where the Vectran itself would elongate only 3 percent before failure, the polyester sheath could stretch up to 20 percent.

The lower end of the longline was attached to an automatic grapnel, which once placed in the correct position on a log, would grip the log when tension was applied to the longline. Once the weight came off as the log was placed on the ground, the grapnel would release.

After dropping the thirteenth log at the mill, the helicopter began to lift for the return trip to the logging area. There may have been some slack in the line initially, but for whatever reason, the longline tugged abruptly on the grapnel, causing it to re-engage on the log just dropped. The resulting shock load tore the line free at the grapnel end, and the longline whipped up into the path of the main rotor, where it was picked up and whirled into the tail rotor. The tail rotor and gearbox separated from the helicopter, and the main rotor vertical control rods were broken by the rope becoming tightly wound around the swashplate area, depriving the pilot of all control. The helicopter was destroyed in the subsequent ground impact and fire.

All that remained of a UH-1E helicopter after the main rotor was struck by the longline.

Stroppy Slings

These have resulted in three deaths and the loss of three helicopters in the last nine years. Can we learn anything from these accidents? Some suggested preventive measures are as follows:

- Use a wire rope or chain sling in preference to synthetic rope slings or strops.
- Where a synthetic strop is employed, using a length less than the distance from the cargo hook to the main rotor should prevent it striking the main rotor.
- Always use a swivel.
- If using a combination sling comprising both chain and synthetic strops, placing the chain at the top will reduce the risk of a 'recoil' rotor strike.
- When transiting with an unladen sling, always ensure the sling is clear of potential snags before transitioning to forward flight.
- When using self-releasing hooks or grapnels, make sure that the hook has not re-engaged on the load before taking off.
- If a weak link is deliberately included in the lifting tackle, install it at the top end.

This is by no means intended to be a comprehensive lesson on sling loads, but it does point up some areas where caution is required. The article is not intended to cover all contingencies, particularly in the area of human sling loads, where other factors may come into play.

Recommended reading for all helicopter operators is the Department of Labour *Approved Code of Practice for Load-Lifting Rigging* on their web site, www.dol.gov.nz. ■

Changes at the CAA

A reorganisation of the CAA implemented last month has been designed to improve the flow of information between key parts of the CAA.

In the reorganisation, most Groups will remain un-changed, but two new Groups have been formed. A Business Support group includes the CAA's human resources, finance, information technology, and administration teams, and a Safety Information group puts together the Safety Investigation team, the Enforcement team, and the Analysis and Education specialists. The health and safety team is also now part of the Personnel Licensing and Aviation Services group.

Safety Information Group

The newly formed Safety Information Group is headed by General Manager Safety Information, John Kay.

"The reorganisation will enable the CAA to work even more proactively. We have very good processes for gathering safety data, both from industry and from our own investigations. Improvements now need to be made in interpreting that data and in using it to drive safety initiatives.

"We have for many years been gathering data about incidents that have implications for the safety of the aviation sector. We are very good at quantifying these events and identifying common causal factors.

"We are able to say how often an incident occurs, and what has most probably caused it. The next step is deciding what to do about it. That's where very high quality, evidence-based analysis comes in – and the answers may not be limited to operational matters.

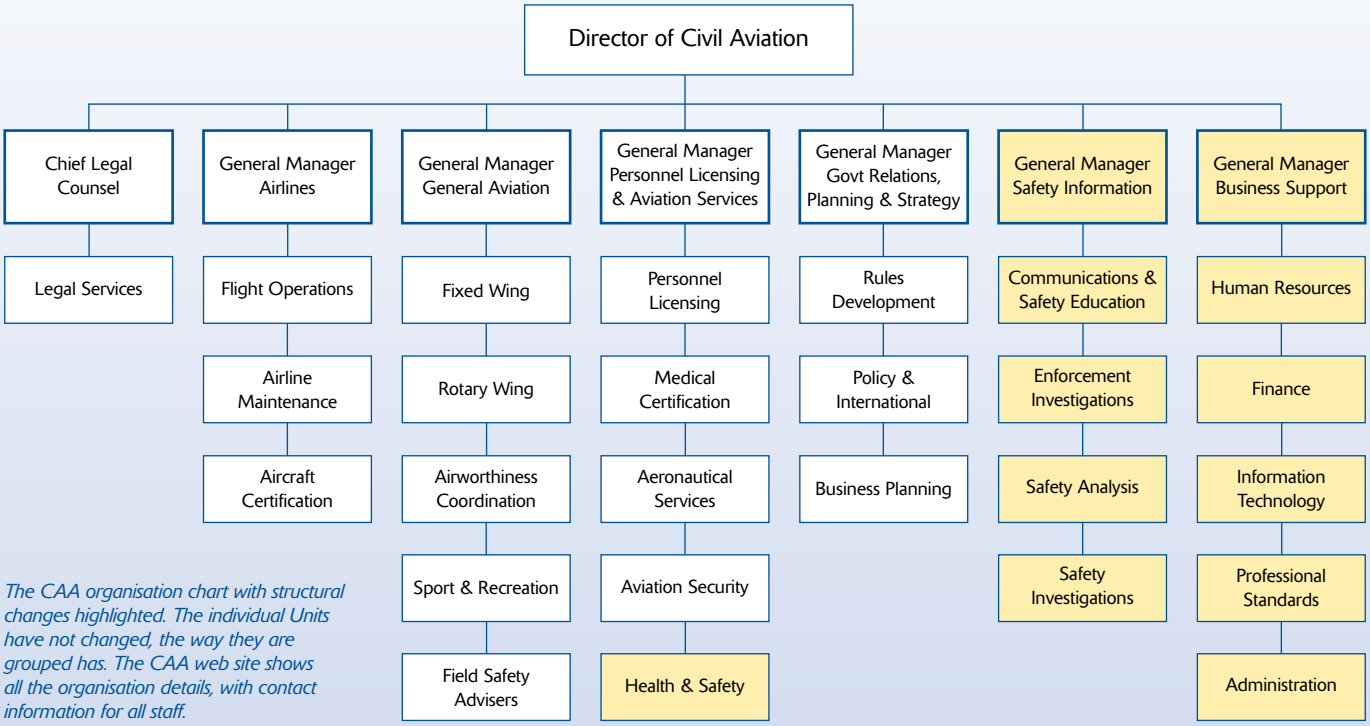
"There are parallels in road transport. Land Transport New Zealand found an intersection in the Waikato was a real black spot for accidents. The engineers went over and over it, and decided there wasn't much more they could do – but specialist psychologists pointed out that there was too much visibility at the intersection. By broadening their analysis, LTNZ found that because drivers were 'distracted' by what was in the distance, they were making poor judgements about what was close to them. The point is that broad-based, sophisticated analysis techniques can turn data into quality, evidenced-based information, which can reliably drive CAA interventions," John says.

"The CAA's safety investigation and enforcement functions have been grouped together in the past, but were separated over recent times. Now they have been put back in the same group.

"To my mind the fact that these two functions are in the same group is no different to both units being in the CAA. The important point is that they are now both with the safety analysis unit, which is entirely appropriate.

"There may be some disquiet within the industry that this reorganisation will lead to an increase in prosecutions or a decrease in self-reporting.

"Let me allay those concerns. The CAA is the regulator, and requires compliance with the rules. Information provided for safety purposes will be treated in the same way as it has been previously, and will not be shared with a view to increase prosecutions. At present we prosecute very infrequently, and in a perfect world, we would not need to prosecute at all," John says. ■



The CAA organisation chart with structural changes highlighted. The individual Units have not changed, the way they are grouped has. The CAA web site shows all the organisation details, with contact information for all staff.

Is the Aerodrome Open?

Finding out it isn't after arriving overhead and seeing white crosses and vehicles on the runway is just a little bit late. Somebody hasn't prepared for the flight.

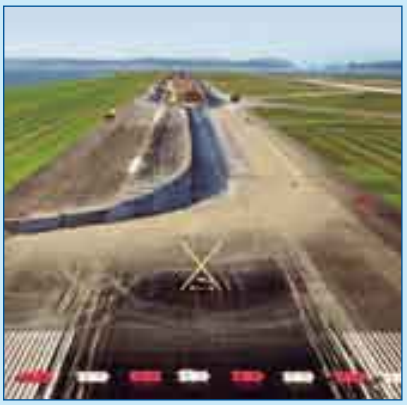
Long-term works can be notified in *AIP New Zealand*, and the Auckland yellow and green pages in the AD section of Vols 2 and 4 are an example – although this was an exceptional case in both the duration and scope of the works.

Even if you are not filing a flight plan, the information is still available.

A more common example is the RESA (runway end safety area) work being undertaken at Wellington airport. This is described in a stand-alone *AIP Supplement*. AIP Supplements are issued every 28 days, and contain information that:

- is of a temporary nature not urgent enough to warrant promulgation by NOTAM, or
- contains extensive text or graphics that cannot be clearly promulgated by NOTAM.

AIP Supplements are mailed to *AIP New Zealand* subscribers, and are also available at no charge from the AIP web site, www.aip.net.nz. Issuing an



AIP Supplement requires a substantial lead time (see table on page 6), but when this time is not available a NOTAM can be issued instead.

A NOTAM can be issued immediately the requirement is known, and can contain information on the status of an aerodrome's operational areas, lighting, navigational aids and obstructions, among other things. Pilots can obtain NOTAMs via the AFTN (aeronautical fixed telecommunications network) where access to this facility is available, via the internet at www.ifis.airways.co.nz, or by phone or fax from the National Briefing Office. Even if you are not filing a flight plan, the information is still available.

Rule 91.217 requires certain pre-flight actions by pilots – checking on the current aerodrome and en-route information falls into the rule requirement. The information is there, it's free, so use it.

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).

Aviation Safety & Security Concerns

Available office hours (voicemail after hours).

0508 4 SAFETY

(0508 472 338)

info@caa.govt.nz

For all aviation-related safety and security concerns

Accident Notification

24-hour 7-day toll-free telephone

0508 ACCIDENT

(0508 222 433)

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

Field Safety Advisers

Don Waters

North Island, north of a line, and including, New Plymouth-Taupo-East Cape

Mobile: 027–485 2096

Email: watersd@caa.govt.nz

Ross St George

North Island, south of a line New Plymouth–Taupo–East Cape

Tel: 0–6–353 7443

Fax: 0–6–353 3374

Mobile: 027–485 2097

Email: stgeorger@caa.govt.nz

Murray Fowler

South Island

Tel: 0–3–349 8687

Fax: 0–3–349 5851

Mobile: 027–485 2098

Email: fowlerm@caa.govt.nz

Bob Jelley

Maintenance, South Island

Tel: 0–3–322 6388

Fax: 0–3–322 6379

Mobile: 027–285 2022

Email: jelleyb@caa.govt.nz

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-HXT, Robinson R22 Beta, 10 Jan 04 at 11:30, 6 NE Taupo. 2 POB, injuries 2 fatal, aircraft destroyed. Nature of flight, private other. Pilot CAA licence PPL (Helicopter), age 50 yrs, flying hours 200 total, 22 on type, 33 in last 90 days.

The helicopter was discovered, after an extensive aerial search, lying inverted in an open paddock. Both occupants were killed. Analysis of the wreckage and debris trail indicated that the probable cause was that an uncorrected low-G situation was likely to have initiated the accident sequence, which caused the helicopter to roll rapidly and become uncontrollable. A full accident report is available on the CAA web site.

CAA Occurrence Ref 04/39

ZK-RAH, R Simmes 2 Place Gyro, 13 Apr 04 at 17:00, Taieri. 2 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 46 yrs, flying hours not known.

The pilot reported that the aircraft lost power after takeoff, and he had to make an emergency landing. The gyrocopter rolled over on landing and was substantially damaged.

CAA Occurrence Ref 04/1180

ZK-GLN, Schempp-Hirth Mini-Nimbus HS 7, 22 Aug 04 at 15:30, Taylor River, Omaka. 1 POB, injuries nil, damage minor. Nature of flight, private other. Pilot CAA licence nil, age 51 yrs, flying hours 200 total, 100 on type, 10 in last 90 days.

While operating out of Omaka in a 20-knot westerly, the glider was unable to reach the aerodrome and landed in a river bed.

CAA Occurrence Ref 04/2731

ZK-SWT, Seawind 3000, 16 Jan 05 at 20:10, L Taupo. 2 POB, injuries 1 fatal, 1 minor, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 60 yrs, flying hours 1429 total, 221 on type, 20 in last 90 days.

The float-plane had sustained some damage on the nose area from earlier takeoff attempts and, after repairs had been carried out by the pilot, crashed on the 4th takeoff attempt. This was possibly due to contact with a boat wake on the takeoff run. The pilot later died from his injuries. A full accident report is available on the CAA web site.

CAA Occurrence Ref 05/40

ZK-RDP, M. Gillespie Helithruster, 9 Jun 05 at 14:06, Feilding. 2 POB, injuries 1 serious, 1 minor, damage substantial. Nature of flight, training dual. Pilot CAA licence nil, age and flying hours not known.

During takeoff the pilot lost control of the gyroplane. The propeller hit the runway, and the aircraft came to rest upside down in an adjacent paddock.

CAA Occurrence Ref 05/1802

ZK-LOW, Airborne Windsports Redback 503, 30 Oct 05 at 14:00, Riversdale. 1 POB, injuries 1 serious, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 53 yrs, flying hours not known.

Emergency services were alerted to a microlight accident on a farm property near Riversdale. The pilot sustained serious injuries. The pilot had been carrying out a routine landing into a paddock; the weather was fine.

CAA Occurrence Ref 05/3443

ZK-EMD, Gippsland GA200C, 7 Nov 05 at 8:30, 2 E Pongaroa. 1 POB, injuries nil, damage substantial. Nature of flight, agricultural. Pilot CAA licence CPL (Aeroplane), age 32 yrs, flying hours 463 total, 175 on type, 91 in last 90 days.

While positioning for the second sowing run, the pilot turned in front of a hill with insufficient height/speed to get around. After passing PNR, he went to full dump and applied flap, but the aircraft sank in the turn and clipped a small ridge, damaging the undercarriage and right wing tip. A normal landing was made at the same airstrip, during which a prop strike occurred.

CAA Occurrence Ref 05/3596

ZK-PKT, Tecnam P92 Echo, 15 Jan 06 at 15:15, Dargaville. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence nil, age and flying hours not known.

Student under instruction failed to take remedial action after a bounce on landing. The nosewheel collapsed and the propeller was damaged.

CAA Occurrence Ref 06/11

ZK-CAD, Avid Mark IV Microlight, 1 Apr 06 at 12:38, Taeri River Mouth. POB not known, injuries nil, damage minor. Nature of flight, private other. Pilot CAA licence nil, age and flying hours not known.

When landing on a beach, the microlight hit soft sand, causing it to tip over.

CAA Occurrence Ref 06/1161

ZK-HOD, Robinson R22 Beta, 3 May 06 at 13:00, Tauranga. 2 POB, injuries 2 minor, damage substantial. Nature of flight, training dual. Pilot CAA licence CPL (Helicopter), age 20 yrs, flying hours 333 total, 330 on type, 97 in last 90 days.

The instructor was demonstrating a practice engine failure in the hover. The instructor lost control, and the helicopter hit the ground from a low level, digging in and tipping over.

CAA Occurrence Ref 06/1563

ZK-HGM, Robinson R22 Beta, 12 Sep 06 at 16:00, Turangi. 2 POB, injuries 2 minor, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Helicopter), age 40 yrs, flying hours 252 total, 252 on type, 33 in last 90 days.

Police reported a helicopter had crashed into bush northeast of Turangi. Both pilot and passenger were injured. The helicopter crashed while conducting low-level operations in preparation for landing.

CAA Occurrence Ref 06/3401

ZK-HYM, Aerospatiale AS 350B2, 3 Feb 07 at 13:00, Milford. 1 POB, injuries nil, damage substantial. Nature of flight, other aerial work. Pilot CAA licence CPL (Helicopter), age 35 yrs, flying hours not known.

The pilot was carrying out external load operations when the strop broke. The strop rebounded, striking one of the main rotor blades and breaking one arm of the starflex. The pilot made an emergency landing on a beach. The strop broke because a swivel had not been fitted. The helicopter was damaged by the strop and the ensuing heavy landing.

CAA Occurrence Ref 07/361

ZK-HFF, Robinson R22 Beta, 9 Feb 07 at 1:30, Whangarei Harbour. 2 POB, injuries nil, damage substantial. Nature of flight, training dual. Pilot CAA licence CPL (Helicopter), age 44 yrs, flying hours 910 total, 875 on type, 90 in last 90 days.

The helicopter was being utilised for training and had just turned crosswind out of the climb from the active runway when a jolt was felt, followed immediately by rotor rpm decrease. The instructor initiated an autorotation into the surrounding harbour, from which both instructor and student managing to escape without injury. CAA investigation of the accident found that the transmission drive belts had failed. Tests were conducted on the one recovered section of belt, and the drive belt clutch actuator assembly, but no reason for the belt failure could be determined.

CAA Occurrence Ref 07/324

ZK-PET, Aerosport Scamp U/L, 13 Feb 07 at 12:20, Ardmore. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence PPL (Aeroplane), age 61 yrs, flying hours 623 total, 471 on type, 3 in last 90 days.

During landing in a crosswind, the aircraft suddenly pitched nose down. The aircraft was successfully brought to a stop without further incident. On inspection it was found that the nose landing gear had collapsed, and as a result the propeller was severely damaged.

CAA Occurrence Ref 07/365

ZK-PTK, Air Tractor AT-502B, 5 Mar 07 at 14:00, Waipoapoa Station. 1 POB, injuries nil, damage substantial. Nature of flight, agricultural. Pilot CAA licence CPL (Aeroplane), age 52 yrs, flying hours 11,800 total, 3500 on type, 146 in last 90 days.

The aircraft encountered sink shortly after becoming airborne from the airstrip. The pilot immediately initiated a load jettison. The aircraft struck a fence, however, causing damage to the rear wing spar and ailerons. The pilot continued the flight and made a successful out-landing in a paddock approximately three miles away.

CAA Occurrence Ref 07/935

ZK-HCR, Robinson R22 Beta, 8 Mar 07 at 8:00, Turangi. 1 POB, injuries nil, damage substantial. Nature of flight, private other. Pilot CAA licence CPL (Helicopter), age 30 yrs, flying hours 650 total, 304 on type, 110 in last 90 days.

The helicopter developed a rate of sink on approach to land with an external load. The rotor rpm decayed, and the pilot was unable to regain rotor rpm before contacting the ground. The pilot did not jettison the external load.

CAA Occurrence Ref 07/672

ZK-TAR, Cessna 172N, 19 Mar 07 at 12:07, Makarora Ad. 3 POB, injuries nil, damage substantial. Nature of flight, training dual. Pilot CAA licence CPL (Aeroplane), age 22 yrs, flying hours 1270 total, 350 on type, 150 in last 90 days.

The aircraft was on a normal approach to land in gusty conditions, and during the flare a gust of wind hit the starboard side, causing the wing to contact the ground. The pilot's recovery was unsuccessful, and the aircraft came to rest on the right side of the runway with substantial damage to its right wing, propeller, and landing gear.

CAA Occurrence Ref 07/850

GA DEFECTS

The reports and recommendations that follow are based on details submitted mainly by Licensed Aircraft Maintenance Engineers on behalf of operators, in accordance with Civil Aviation Rules, Part 12 *Accidents, Incidents, and Statistics*. They relate only to aircraft of maximum certificated takeoff weight of 9000 lb (4082 kg) or less. These and more reports are available on the CAA web site, 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
NDT = non-destructive testing
P/N = part number
SB = Service Bulletin
TIS = time in service
TSI = time since installation
TSO = time since overhaul
TTIS = total time in service

Aerospatiale AS 350B2
Starter generator & battery

The pilot noticed that the generator and fuel pressure lights were on just after liftoff, and the fuel pressure gauge, the oil temp gauge, and the oil pressure gauges all read zero. The fuel quantity gauge read below 10%, the instrument lights on the centre console switch panel were out, and the radios were not illuminated. A precautionary landing was made back on the Glacier, and the aircraft was secured overnight. The next day engineers installed a replacement battery and starter/generator. The helicopter was started and left running at flight idle for five minutes before flying back to the hangar. The u/s batteries and starter/generator were sent to the overhaul agency for investigation.

ATA 2400 CAA Occurrence Ref 07/1717

Bell 206B
Fuel nozzle P/N 23077068

The engine fuel nozzle centre was burnt out around its air holes. The shroud did not have air entry holes as intended. Manufacturer advised and nozzle replaced. TSO 1378.6 hours.

ATA 7240 CAA Occurrence Ref 06/4764

Bell 206B
Longeron

During an inspection of the rear fuselage, an upper tail boom attachment longeron and fitting were found to be cracked. The cracked components were replaced.

ATA 5310 CAA Occurrence Ref 07/1489

Cessna 172M
ECI cylinder P/N AEL65102

The aircraft was in cruise when engine performance was noticed to be degrading, accompanied by loss of a quantity of oil. A precautionary landing was made without further incident. Engineering inspection found that a cylinder had separated from the engine. A bulk strip of the engine was carried out to assess any further damage. TTIS 456 hours.

ATA 8530 CAA Occurrence Ref 07/1009

Cessna 172N
Earthing screw

The aircraft was returned to the maintenance provider because of a rough running engine. Engineers discovered 'Loctite' on an earthing screw. They removed the screw and cleaned the area. This fixed the problem.

ATA 7430 CAA Occurrence Ref 06/5000

Cessna TU206A
TU 206 throttle bracket P/N 1250318-1

During a scheduled maintenance inspection, it was found that the throttle cable outer clamp bracket was cracked through 95% of the bracket material. The submitter attributed the cause of the crack to metal fatigue.

ATA 2100 CAA Occurrence Ref 07/693

Cessna TU206A
Cessna TU206A cigar lighter

The cigar lighter was arcing, and the ammeter showed a full scale discharge when an accessory was plugged in to it. It was found that the positive contact in the cigar lighter was loose and had rotated to contact the negative frame of the receptacle. There was no fuse between lighter and busbar. It was then established that Airworthiness Directive DCA/CESS206/125 had not been embodied (removal of cigar lighter wiring) despite the aircraft logbooks showing that it had been. The cigar lighter wiring was removed as required by DCA/CESS206/125.

ATA 2460 CAA Occurrence Ref 07/1123

Cessna 421C
Teledyne Continental 520 engine oil system P/N GTSIO-520-L

A large quantity of metal contamination was found in the oil filter. A bulk strip inspection of the engine revealed that the big-end bearings had suffered damage due to metal contamination in the engine lubrication system. Aluminium flakes were found in the oil galleries to the No 4 bearing, No 1 propeller shaft bearing, No 4 camshaft journal and No 5 main bearing. The source of the metal contamination could not be associated with any failure of an engine component. As there was no evidence of metal contaminants in the main oil gallery, it was unlikely the contamination had been introduced previously during replenishment of the lubricating oil. It was therefore concluded that the metal contamination had been introduced to the engine during initial manufacture and assembly. The manufacturer has been sent a report but had not completed their investigation when this occurrence was closed. TTIS 23 hours.

ATA 7900 CAA Occurrence Ref 07/1053

Diamond DA 42
Not determined

After takeoff, a "L ECU B Fail" caution appeared on the PFD. FADEC data log read, and MA sensor on ECUB over-reading. All fittings on lines checked for debris. Engine ground run, found satisfactory. Wastegate system checked and found satisfactory. Unable to replicate fault on ground.

ATA 7920 CAA Occurrence Ref 07/1782

Gippsland GA8
Dukes auxiliary fuel pump P/N 4140-00-17

The pilot reported a low fuel pressure reading and loud noises from the auxiliary fuel pump when it was loaded. The pump was removed for investigation. On disassembly of the auxiliary fuel pump motor, it was found that the armature shaft had worn excessively on one side at the fuel pump end. Both end bearings had excessive wear and were unserviceable. It was found that the armature balance weight had been added to the wrong side of the armature, effectively doubling the out-of-balance condition of the armature; this caused the damage to the bearings and the excessive wear on the armature shaft. TSI 25 hours, TSO 250 hours, TTIS 878.1 hours.

ATA 2820 CAA Occurrence Ref 07/1131

Grumman American AA-1C
Grumman American AA-1C idle setting

As the aircraft taxied off the runway after landing, the engine speed slowly reduced until the engine stopped. There had been no engine problems experienced during the flight. The engine was able to be started, but the idle rpm was found to be very low. It was set up in accordance with the manufacturer's maintenance manual instructions. The mixture rise was tested and found to be satisfactory. The aircraft has subsequently completed two further scheduled maintenance inspections, and the engine idle rpm and mixture rise have both been found to be satisfactory. No cause was established for the original engine idle problem.

ATA 7300 CAA Occurrence Ref 07/694

Hughes 269C
Righthand main window

The right main window blew out during a ferry flight while travelling at 85 knots. No damage was done to the aircraft or pilot. The component was manufactured in error from material under the 0.08 inch nominal thickness, which is the design thickness for the window.

ATA 5610 CAA Occurrence Ref 06/4302

Hughes 369D
Gearbox

A "heavy fuzz" was noted on the bottom chip detector. The fuel control/oil pump gear was deformed, with localised cracking and metal loss off the gear teeth. The spur adapter gear shaft which mates with this gear also had metal loss off its teeth. The problem was caused by incorrect meshing of the above gears when the compressor assembly was installed during the engine build at an overseas facility. The gearbox was repaired in accordance with the manufacturer's instructions, and both gears were replaced.

ATA 6320 CAA Occurrence Ref 06/3818

NZ Aerospace FU24-950
Pacific Aerospace Corporation outer wing rear fitting P/N 241311

The outer wing attachment fitting was discovered with a crack about 20 mm long near the attachment bolt hole. An inspection of the attachment bolt and its associated hole did not highlight anything abnormal. The fitting was not bent or preloaded with any stress. The cause for the crack was not determined. The outer wing rear attachment fitting was replaced. TSI 100 hours, TSO 1314.1 hours, TTIS 7184.36 hours.

ATA 5720 CAA Occurrence Ref 07/1478

Pacific Aerospace Cresco 08-600
PAC 08-600 longeron P/N 08-10271-4

During a scheduled maintenance inspection, the lefthand longeron was found cracked through the rear attachment bolt hole for the welded strut. The crack was attributed to fatigue caused by stress loads induced by the weight of the engine. TSI 95 hours, TTIS 2029 hours.

ATA 5300 CAA Occurrence Ref 07/1334

Partenavia P 68B
Partenavia P68B undercarriage support girder P/N 68-2.3067

During the completion of the manufacturer's service bulletin (SB 99) 500-hour inspection on the main landing gear to fuselage attachment, it was found that the girder slides were cracked around the bolt holes, and there was a significant amount of exfoliation corrosion. The cracks were attributed to heavy landings. The girders were replaced.

ATA 3200 CAA Occurrence Ref 07/1184

Piper PA-31
CB for audio panel

The pilot reported hearing a "click" followed by a loss of the aircraft VHF communications. No circuit breakers appeared to have operated, but a functional test indicated the aircraft audio panel had failed. Transponder code 7600 selected and VFR descent and landing made at the nearest airfield. It was found that the circuit breaker for the audio panel had activated, but the button for the circuit breaker had not extended. The button appeared to have seized in place, but after exercising it a few times it freed up. No circuit overload state could be attributed to the audio panel, so arrangements were made to replace the circuit breaker. TTIS 10765 hours.

ATA 2430 CAA Occurrence Ref 07/1663

Piper PA-31-350
Fork main gear lock rod

During scheduled maintenance of the undercarriage components, it was found that the end of the fork main gear lock rod attachment was badly worn. The fork end was replaced.

ATA 3200 CAA Occurrence Ref 07/1332

Robinson R44 II
Bypass valve

The pilot reported that aircraft was indicating a high oil temperature during the flight. The fault was traced to the bypass valve not seating.

ATA 7930 CAA Occurrence Ref 06/3617

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