

vector

Navigating Cook Strait

External Loads – How Much
Do You Really Know?

Flying for Years... and
Still Going to AvKiwi

Top Five from Top Six




In this issue...



4 **Navigating Cook Strait**

To make a successful crossing, your flight planning needs to include all the relevant official aeronautical information from AIP New Zealand.




7 **External Loads – How Much Do You Really Know?**

Poor preparation is a factor in many helicopter sling load operation accidents in New Zealand. How much do you know about correct procedure?



12 **Flying for Years... and Still Going to AvKiwi**

"There's always something you can learn." Four vastly experienced aviators explain why they'll be trotting along to the 2017 AvKiwi Safety Seminars.



18 **Top Five from Top Six**

Six recipients of the CAA Flight Instructor Award share their five top tips for safe flying.

15A Investigations – a Fair Examination	3
Navigating Cook Strait	4
External Loads – How Much Do You Really Know?	7
A Safety Measure	9
The Flight Examiner as a Professional	10
Flying for Years... and Still Going to AvKiwi	12
Above the Bar	14
New Sport 'n' Rec Manager Greg Baum	16
Protection of ILS Trial	16
ADS-B – What's Happening Next?	17
Top Five from Top Six	18
Under Pressure	20
Navigating Your Way Through	22
Taking Control of Flight Path Management	24
Aviation Safety Advisers	24
How to Get Aviation Publications	24
Planning an Aviation Event?	24
Accident Briefs	25
GA Defects	26
New Portal for Flight Planning and Met	26
Aviation Safety Officer Course	27
Fuel for Thought – AvKiwi Safety Seminars	28

Cover: Tory Channel entrance between East Head and West Head into Cook Strait.
Photo: Rob Suisted / naturespic.com

Published by the

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

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

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

**Manager Communications
and Safety Promotion** Mike Richards.

Editor Peter Singleton.

The Vector Team

Charlie Brimmicombe, Pen Mackay,
Bridget Tunnicliffe, Rose Wood.

Design Gusto.

Publication Content

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

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

Free Distribution

Vector is distributed to all New Zealand
flight crew, air traffic controllers, aircraft
maintenance engineers, aircraft owners,
most organisations holding an aviation
document, and others interested in
promoting safer aviation.

For flight crew and air traffic controllers,
an aviation medical certificate must be
held, and a New Zealand address given,
to receive *Vector*.

Holders of pilot or parachutist certificates
issued by Part 149 certificated organisations
can also apply to receive a free *Vector*.

Vector also appears on the CAA's web site –
subscribe to our email notification service
to receive an email when it is published,
www.caa.govt.nz/subscribe.

Change of Address

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

Paid Subscriptions

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

Copyright

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

15A Investigations – a Fair Examination

Section 15A of the Civil Aviation Act 1990 is one of a number of regulatory tools available to the Director to maintain safety and security within the aviation system. While section 15A investigations are a serious step, no document holder subject to one should ever feel like their fate has already been predetermined.

Recently, the CAA introduced a revised section 15A investigation policy, which applies to the holder of an aviation document.

“That could be an organisation or an individual who holds an aviation document issued by the Director,” says Rob McLellan, the CAA’s new section 15A Investigating Officer, following Cathy Penney’s retirement.

There are a number of triggers that could result in a section 15A investigation being determined appropriate.

“It could be repetitive events, a serious occurrence, or the result of a risk assessment activity.”

Steve Pawson, the acting manager of the CAA Regulatory Investigations Unit, says information can come in to CAA from a variety of sources, and the CAA needs to establish its accuracy and reliability.

The Investigation Process

Steve has been involved in developing the new policy, which reflects the CAA’s approach to section 15A investigations.

“The first step is for the CAA to generate a terms of reference document which establishes a scope and focus for the section 15A investigation. This clearly sets out why a decision has been made to trigger the investigation; details of the team/panel; the statutory requirements that apply; and anticipated timeframes for completing the investigation.

“The terms of reference is provided to the document holder to fairly inform them of the existence of the investigation and to clarify how it will be carried out.”

Steve says once an investigation establishes the facts, that information will be assessed to determine the nature and extent of any safety and security risk.

This involves applying the fit and proper person criteria detailed in section 10 of the Act.

“From there, a review can be completed to determine if

regulatory action is required to mitigate or remove that risk to prevent future harm.”

He says the new policy helps ensure section 15A investigations are carried out consistently across the CAA.

“It’s important these investigations are completed in a timely fashion. Also, the document holder shall continue to be treated in accordance with the principles of natural justice.

“It can be very stressful being the subject of one of these investigations and it’s important the affected party is involved in the process from the outset, aware of what it entails, and is given the opportunity to respond.”

It’s Not About Punishment

Rob McLellan says while a section 15A investigation is a serious action to take, its focus is not on punitive action.

“It has the ability to address different areas and take wide-ranging levels of escalating responses to concerns or issues that the CAA may have identified.”

Chris Ford, CAA Deputy Director, Aviation Infrastructure and Personnel Group, says 15A investigations are never intended to result in prosecution.

“They’re actually a forward-looking safety risk management tool, and that’s what the revocation provisions in the Act are about.”

Chris says when the Director does decide to revoke an aviation document, it’s generally because the investigation has revealed information that the holder is no longer fit and proper to hold that aviation document.

That is only one possible outcome though, says Steve.

There are many other intervention options following a section 15A investigation which can be used to remove or mitigate identified areas of potential risk and promote safe outcomes.

The new policy can be found at, www.caa.govt.nz, “Public Info – A to Z Topics – CAA Operational Policies”. ■

Navigating Cook Strait

Water, water everywhere, but let's avoid the drink. Give yourself the best opportunity of making a successful crossing by gathering all the weather information you need, planning effectively, and making the crossing wisely.

When you're flying somewhere that's unfamiliar, thorough flight planning will help free up some headspace for aviating, navigating, and communicating.

The purpose of this article is to provide some key tips for would-be Strait crossers. It shouldn't be used as a definitive guide for navigating the Strait safely.

Make sure your flight planning includes all the relevant official aeronautical information from *AIP New Zealand*, especially the aerodrome charts (Vol 4) and the Visual Navigation Charts.

Jacob Halliburton, 500-hour CPL holder, recalls his first Cook Strait crossing.

"It was probably the first time I felt nervous in a plane, the first time I experienced that feeling of 'Wow, I'm in a small aluminium tub far off the ground'.

"It was a nice day, and we were tracking from Wellington to Okaia. We flew from Cape Terawhiti to The Brothers – the shortest over-water distance of about 13 nautical miles – and then tracked the coastline down to Woodbourne control zone. At that stage in my flying career, I'd been taught to take the safe option when crossing – the shortest over water route, rather than the most direct point-to-point route.

"What struck me was the navigational difference – you don't have features directly beneath you, they're ahead of you or behind you.

"I also found that the temptation to fly low if you encounter clouds is a lot stronger, over water, than over land.

"You can get the feeling that if it's perfectly flat water, you can go as low as you need to.

"I remember descending through about 900 feet once, trying to track from Wellington to Cape Campbell. Over land there's an instinctive desire to stay as high as possible, especially over unfamiliar ground, both for forced-landing potential and terrain clearance. Over water, I found myself thinking, if I have an engine failure, I don't have obstacles and I'm ditching into wind, so the height didn't seem as critical.

"When I got lower, I started questioning myself. How will I keep navigating without GPS? How confident am I that I'll still have a horizon with all this murk? Why am I pushing my limits so much further than I would in any other situation?

"I ended up turning around, and got better weather with a slightly different route. If I'd pressed on to Cape Campbell, the east coast would have been pretty unpleasant the whole way – assuming it was legally flyable," says Jacob.

Weather to Fly

Most pilots agree that a light northerly wind makes for ideal crossing conditions. A light southerly can be all right too, but they can be few and far between. Typically, light winds will exist during anticyclonic conditions, and after a southerly change.

Obtaining good pre-flight weather information for Cook Strait is very important, but happily straightforward. Both the MetFlight GA web site, and now IFIS, carry the STRAITS area



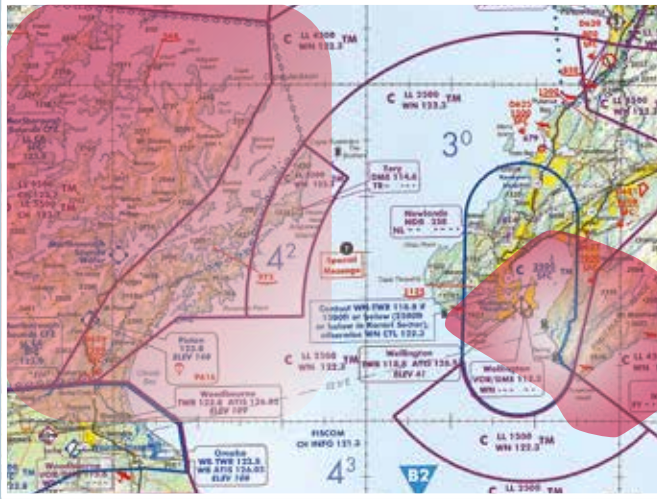


Figure 1
Pre-frontal weather conditions in strengthening northwesterly and westerly winds over 25 knots can provide very turbulent conditions over the area identified in Figure 1.

■ Area of turbulence, if the aircraft is flown below the ridge heights. Shading indicates severity of turbulence, from severe (dark shade) to light (light shade).

forecast (ARFOR), and the TAFs and METARs for Wellington, Woodbourne, and Paraparaumu. These sites also carry any SIGMET that may cover the area.

Remember too that you can request the latest ATIS report for any aerodrome through Christchurch Information, or ATC, or Flight Service at any of the aerodromes.

Jim Rankin, RNZAF Squadron Leader, has made numerous crossings and has a healthy respect for the potential conditions.

“Weather over the Strait has an almost unrivalled ability to change in a very short period of time and across small lateral distances.

“You can go from having a screaming southerly at Wellington, to light and variable at Woodbourne. The same goes for the sea. There can be huge seas and tidal effects on one side of the Strait, and calm seas on the other.

“Ninety-nine out of 100 times, it will be bumpy in the lee of the Sounds,” says Jim.

In windy conditions, it’s best to play it safe and stay away from the lee of the hills in the Marlborough Sounds.

Andrew Sims, CFI of Wellington Aero Club, cautions that conditions-wise, the south coast of the North Island catches people out sometimes.

“You can get pretty strong turbulence and northerly wind if you track via Karori Rock coming into Wellington. Typically, the predominant wind in the Strait is a northerly. To get a mental picture, think of the Venturi effect; the wind funnels through the Strait and accelerates.

“You’ll likely find any winds with a westerly or easterly component a bit rough. As you know, the upper winds will determine how much turbulence there is, but as a general rule, a westerly or easterly isn’t ideal for crossing.

Routing

Your best route will depend on your experience and the conditions on the day. The better the conditions, the more likely you’ll be able to take a direct route at altitude with good glide potential.

Jim Rankin tends to fly southbound as low as possible, and northbound as high as he can.

“If I’m flying north from Greymouth. I’d aim to be at 9500 ft with a strong south-westerly pushing me along.

“Normally I’d go south at 2500 ft (the lower limit of controlled airspace where you should be tuned into FISCOM on 121.3 MHz) and pick up the northerly wind.

“Quite often, across the Strait, if there is a northerly at 20 to 30 knots at the surface, the 5000 feet wind will be around 220 degrees true at 20 knots. If Wellington Control are too busy to accept me going through the CTA, I will even look at routing further west, clear of their airspace, to enable a higher climb when heading north. It may be further over water, but actually less time due to sometimes much higher ground speeds,” says Jim.

Continued over >>

Radar Monitoring

Cook Strait can seem daunting at times, but air traffic control (ATC) can provide some peace of mind. If you're going a long distance, or even the shortest over-water distance, it's wise to call up Wellington Control on 122.3 MHz and request radar monitoring. If their workload allows, ATC will be happy to help. If radar monitoring is available, the controllers will observe your track and help keep you in the right place at the right height. Remember though, that a clearance from Wellington Control is not a clearance into the control zone, for which you must call the tower on 118.8 MHz.

Also, remember that if you file a flight plan with Airways IFIS, a flight-following service will be provided.

If you are concerned about potential traffic during your crossing, ATC may be able to provide basic traffic information with their surveillance capability, if workload allows.

In Case of an Engine Failure

Crossing the Strait at a higher altitude provides more time to handle an emergency situation. It's recommended that pilots of single-engine aircraft operate above 6000 ft, if possible, to assure better gliding range to the shoreline.

"Always be mindful of the potential for an engine failure, and the consequences," says Jim.

In a successful ditching away from the coast, during the subsequent waiting game, a dinghy could prove the difference between life and death.

"The chances of surviving in the water around Cook Strait are not that great, because the water temperature never gets above 15 degrees Celsius," says Jim.

Also be aware that the vast majority of beaches on the Kaikoura coast and Cook Strait coast are very rough. Even if you can glide to the coastline, there's a good chance that ditching will be safer than trying to land on the rocky shoreline.

Andrew Sims always tells his students, "If you have an engine failure and you have to ditch, your first transmission should be a mayday call on your operating frequency – control or FISCOM.

"The boats in the Strait don't use the same international distress frequency as us, but we certainly take into account where they are, and continually look for them, the same way we continually look for good paddocks on cross country flights."

In an emergency, you need to be planning your imminent rescue, attempting to find the closest point of land, and alerting rescue services, rather than fumbling around for a life jacket.

Jacob Halliburton recalls a particular flight planning oversight.

"I remember one time we got to Cape Campbell and I said to my girlfriend, 'now, we'll put on our life jackets'. So I donned mine, and went to help her; shock horror, it wouldn't fit. This was a three POB flight – she was seven months pregnant.

"I wish I'd thought a little further ahead and we'd been wearing our life jackets the whole way up the east coast," says Jacob.

Any time there's a possibility that you'll need to ditch, you should be wearing your life jacket. That includes following coastlines, and taking off from Wellington. The sooner you try on your life jackets, the sooner you'll realise your pregnant partner can't fit into one!

Airspace Awareness

Be careful not to bust Wellington's controlled airspace. There's a tendency for pilots who are transiting from Turakirae Head to Cape Campbell, to cut the corner of the Wellington control zone. That airspace is particularly important as it's right next to the arrival and departure fan for IFR aircraft (down to 1500 ft), and it is also bordered by the instrument sector of the control zone – where jets are descending unrestricted. ■



Figure 2
In most northerly overflows, typically associated with the approach of warm or occluded fronts, the northern and eastern sections of the Strait will usually have low-level cloud. In these conditions, there is a high risk of being caught mid-Strait with neither island in sight.

Cloud base height in northerly flow

- Below 500 feet
- 500 feet to 1000 feet
- 1500 feet and above



Figure 3
Figure 3 shows the cloud base to be expected in south-easterly wind conditions. Moist easterly, southeasterly, and southerly airflows (except those abating behind a cold front) provide the worst weather conditions in the Cook Strait area.

Cloud base height in southeasterly flow

- Below 500 feet
- 500 feet to 1000 feet
- 1500 feet and above

External Loads – How Much Do You Really Know?

There have been 20 accidents – five fatal – involving external load work in New Zealand since 1990. Poor preparation, or poor rigging of the load, has been a major factor in many of those.

Increasingly concerned over the number of incidents and accidents involving external loads, the CAA wants to make operators more aware of the hazards of such work.

“In many operations, external load rigging has been passed down from one generation to the next with little real understanding of the type of rigging equipment that should be used, or how that load is best rigged for that flight,” says Pete Gordon, CAA inspector of helicopter flight operations.

“The Kiwi can-do attitude sees loads being prepared using trial and error. In 2016, there were 18 reported occurrences. As an industry, we need to improve external load safety.”

In late June 2016, the CAA hosted two seminars led by Mike Gelskey Jnr, a Los Angeles-based sling fabricator.

“Many folks doing external load work don’t really understand the limitations of the equipment,” says Mike. “Or they don’t appreciate the importance of frequent inspections of that

equipment, or take into consideration characteristics of the load that may result in an unsafe flight.

“So someone might take old, no longer really fit-for-purpose rigging and put it back in the active inventory to be used again.

“Or someone might take a brand new sling out of the box, rig it inappropriately, and damage it during the first use.

“Or slings that are 10 or 15 years old continue to be used time and again, without inspection, because ‘they’ve always been fine’.

“So incidents and accidents arising from those sorts of situations are sometimes not only about quality of equipment, but also about the lack of training in, and knowledge of, the equipment being used.”

Mike is emphatic that an operator carries out three stages of inspection of all external load equipment.

“The inspection process is critical, because the cost of failure resulting from the use of damaged equipment is too great,” he says.

The initial stage is done when the goods arrive.

“Make sure the correct goods have been received, that they pass muster for your needs, that no damage was done during shipping, and that there are no defects in materials or workmanship.

“The sling capacities and other sling tag information must also be checked to make sure they comply with the specifications published by the manufacturer.

“The second, or ‘frequent’, stage is before each lifting operation. It should be done by people who are competent and responsible.”

Mike says the third, or ‘periodic’, stage is done by people specifically trained to do a very thorough inspection of all surfaces and components.

“At a minimum, a periodic inspection must be done annually for long lines in normal service conditions. The check should be done in a well-lit environment with good ergonomics, ie, working on a table top, where a 100 ft line is examined – about six feet at a time – for anomalies.



Mike is emphatic that an operator carries out three stages of inspection of all external load equipment.

Continued over >>

"The printed specs are beside the inspector, as are removal from service criteria.

"All three stages of inspection working together are an important part of all successful load handling activities."

Chief Pilot of Helicopters Hawkes Bay, Jimmy Guerin, says inspecting equipment before each use was one of the most significant things he learned from Mike.

"I took annual checks for granted. But it hadn't occurred to me to check equipment again before using it. But anything could have happened during storage after its annual check and before you use it again. The person storing it could have run a trolley over it, vermin could have damaged it. What Mike taught us about those regular checks really punched home how careful you have to be."

Mike also stresses that rigging should be treated as a 'consumable'.

"Synthetic rigging is not as robust as rigging made from chain and cable. In comparison with metal load handling devices, synthetics are less likely to damage the load.

"All rigging needs to be inspected regularly and the pilot and ground crew all need to be aware of possible damage from UV light and/or chemical degradation and shock loading.

"That's especially true of synthetics. They're beautiful to an aging workforce because they're lighter and easier to handle. They make a very ergonomic tool. But they're sensitive to sunlight, cutting, heat and abrasion.

"In land-based lifting operations in the United States, about 70 per cent of accidents involve the cutting of synthetic rigging from contact with damaging edges or surfaces. The edge need not be razor sharp. Enough tension and compression will damage synthetic, wire, and even chain rigging. It's extremely important sling users are aware of the need for sling protection."

"What Mike taught us," says Jimmy Guerin, "is 'if in doubt, throw it out'. If you feel the strops are a bit fragmented, they just don't feel right, trust your instincts and junk them. It's worth the cost of a new one, not to lose a load through the roof of a brand-new Department of Conservation hut."

"There's a host of other issues that cause accidents," says Mike Gelskey. "And often, it's not just one thing, but a number of factors that group up to create a disaster. It can be improperly calculating the load weight coupled with the use of damaged rigging. Or a load rigged below the centre of gravity with an inadequate number of slings, or an improper hitch configuration combined with gale force winds, causing the load to shift and roll out of its rigging.

"Understanding the dynamics of load handling is one of the most important things an operator can master – the centre of gravity, controlling the load, load-sharing between multiple legs and slings, how multiple legs and slings act, and the evaluation and planning necessary for non-perpendicular lifting and increased tension. Understanding these is critically important for successful flight operations.



Understanding the dynamics of load handling is one of the most important things an operator can master.

“There’s a host of other issues that cause accidents, and often, it’s not just one thing, but a number of factors that group up to create a disaster.”

“Operators also need to thoroughly understand what rigging methods best control which loads, and which type of rigging is best for different activities.

“For instance, HMPE – high-modulus polyethelene – fibre has a very low melt point. So not a good choice for fire fighting! Whereas Kevlar has a higher melting point.

“Knowledge like that ultimately allows operators to make better, informed decisions for a safer load handling operation.”

Pete Gordon agrees.

“As a start, operators can be asking their rigging suppliers what to use for which activity, and how to use it properly.”

Jimmy Guerin says one of the ‘light-bulb’ moments for him was Mike’s advice to ‘take charge’ of external load operations.

“Often the person who contracts you will try to be helpful and set up the loads before you arrive.

“But Mike’s advice was to always take a look first. Just because the person contracting you has done a reasonable job stroping up in the past, does not mean that, on this occasion, they have not given the work to someone less experienced.”

Pete Gordon says that with the introduction of Safety Management Systems (SMS) and new health and safety laws, operators are expected to manage the risks in their organisation.

“Clients tend to rely on operators to manage their aviation risks and are increasingly expecting operators to show how they do that.”

The largest single purchaser of commercial helicopter time in New Zealand is the Department of Conservation (DoC).

Its Director of Health and Safety, Harry Maher, says the safety of DoC staff is its highest priority.

“Obviously we want helicopter operators whose loading and flying complies with Civil Aviation Rules, and is in line with best practice.

“But more than that, they need to communicate, fully and frequently, with us, not just that they are doing that, but how they are doing that.

“For instance, working directly with our local staff to agree on who will be supplying the tested and certified lifting equipment, and agreeing on the accountabilities for day-to-day load rigging and management.”

Jimmy Guerin says operators who did not attend Mike Gelskey’s course could find out who did, and contact them about what they learned.

“People in this sector are pretty good at helping one another out, and talking to your peers is one of the best ways of learning.” ■

A Safety Measure

Who would have thought something as innocent as a tape measure could provide a serious safety issue? Here is the account of one workshop manager.

One of our engineers, doing a weight and balance on an aircraft using a particular tape measure, found the figures from a previous weighing did not match those of the more recent weighing.

To get the centre of gravity correct, we had to add 15 lbs of lead to the tail of the aircraft. But that didn’t seem too far from expectation, because a heavier propeller had been installed.

When the same engineer used the same tape measure on another aircraft, he advised the numbers again didn’t make sense, given what he would have expected of an aircraft of that type.

The centre of gravity on the second aircraft was measured again with a different tape, only because it was closer to hand. This time the measurements made sense.

We discovered that the tape we’d used in the first two readings had been sourced from Japan.

It had two separate scales on it: one marked in mm, and the second marked in units of “33/metre” (called a ‘shaku’ and approximately 30.3 cm). It was these units that were mistakenly thought to be 1 inch increments.

The original aircraft was re-weighed and the centre of gravity was found to be still within limits. The weight was removed from the tail and returned to the previous configuration.

The experience highlights the truism that when something doesn’t look right, it probably isn’t. ■



Additional Reading

- » Advisory Circular AC43-13 *Calibration of tools and test equipment for maintenance of aircraft.*
- » SAA/SNZ HB86.2:1998 *Guide to Selection, Care, Calibration and Checking of Measuring Instruments in Industry.*

The Flight Examiner as a Professional

They're the keepers of the standards, and the final and crucial check before a new pilot is unleashed into the skies. Here's what it means to be a 'professional' Flight Examiner.

While the Flight Examiner's role hangs off the flight test, there's an awful lot going on before, around, and after each one.

"Preparation and planning are key," says Brendon Bourne, a Tauranga-based Flight Examiner with Aspeq for the last five years.

"No two tests are the same. So I begin to think about, and plan for, an A-cat test for instance, sometimes up to a couple of weeks before the flight.

"Any Flight Examiner wants the best outcome possible for their candidate, but they also have to be aware that everyone else, in the air and on the ground, is putting their trust in the Flight Examiner to do their job well. It can never be 'once over lightly'. It has to be a really thorough examination of the candidate's flying skills, and according to the Flight Test Standards Guide.

"The Flight Examiner is really the 'upholder' of the standards, and that's a big responsibility."

Marc Brogan, CAA Aviation Examiner, says Flight Examiners are acting on behalf of the Director.

"So it's a highly significant job that's not just about assessing competence. There's a degree of mentoring and oversight of not just candidates, but instructors as well. There's also a role in feeding back to the flight school or aero club, any trends emerging in the quality of candidates being put up for a flight test.

"Flight Examiners have to possess really good communication skills. They should be positive but also honest. They should be effective communicators so the candidate, instructor, and organisation value their opinion.

"A Flight Examiner is in an almost unique role to observe the standard of aviation training across the board, but also within

organisations. They have a duty to report to those organisations what issues they see emerging from the flight training process."

Brendon Bourne agrees. "Flight Examiners totally have a responsibility to go to the school, especially if they identify a safety issue. Obviously, if the candidate has failed, the Flight Examiner debriefs with the student and their instructor. But with numerous fails, the Flight Examiner is obliged to talk with the CFI about possible improvements."

CAA's Principal Aviation Examiner, Bill MacGregor, agrees, saying that when Flight Examiners are on an airfield, their expertise isn't confined to the flight examination.

"They should also keep their eyes and ears open to note standards of behaviour being displayed, and should intervene where they see unacceptable behaviour, be that during flying or ground operations."

Marc Brogan believes the thoroughness with which a Flight Examiner should carry out their role cannot be overstated.

"It's not just about what happens in the air. During the Dual Flight Training Review of a spate of accidents in 2014, we discovered that when the instructors involved in those accidents were students, their logbooks and other records had not been kept up to date. That says something about the quality of school they learned to fly with. Final responsibility for thoroughly checking such record-keeping lies with the Flight Examiner. If records and paperwork are not complete, the Flight Examiner must question why."

Marc also encourages Flight Examiners, once in the air, to 'stretch' the candidate a little.

"Mix it up a bit. A test is just a snapshot of the ability of the candidate on a particular day. Some candidates raise

"While it's not the Flight Examiner's job to unnecessarily or unfairly extend the candidate during the test, there are ways the Flight Examiner can do things a bit differently so they can know the candidate understands what good flying entails."

their game to just pass the test, and thereafter their performance dips.

"We also found in the Dual Flight Training Review, too many instances of people doing just what they had to, to chin the bar on the day – but they had no 'excess in the tank'.

"While it's not the Flight Examiner's job to unnecessarily or unfairly extend the candidate during the test, there are ways the Flight Examiner can do things a bit differently so they can know the candidate understands what good flying entails.

"Basically, it's about not being predictable in your testing, and challenging the candidate's depth of knowledge."

Marc also believes it's important that Flight Examiners talk to one another about the trends they're seeing in training.

"They can do that through their parent company, on an informal basis, or at a Flight Examiner seminar. It's always handy to hear what others' experience is."

Brendon Bourne says one of the most common features of the role is in answering questions about the Civil Aviation Rules.

"A Flight Examiner really has to know what they're talking about. I get up to about five rules-related questions a week, about their requirements, or the procedures to comply with them.

"They do have to keep up to date with what is going on, rules-wise.

"They also have to be across the technical side of aviation, because a Flight Examiner is also seen as someone who should know about proper maintenance."

Brendon also says Flight Examiners need to take every opportunity to keep current.

"Most of their time is spent sitting in an aircraft while someone else flies, so they do have to grab any opportunities to pilot an aircraft, because aviation is changing all the time, and Flight Examiners need to stay abreast of those changes."

Brendon says being a 'professional' Flight Examiner is also about being someone who is looked up to – not just on the airfield, but also outside it.

"They need to be a role model in how they live their life. So they can never really let their guard down. The New Zealand aviation community is small, and they have to make sure they maintain integrity in their private, as well as professional, life. They don't want to be in the limelight for the wrong reasons!"

Marc says the critical importance of what Flight Examiners do means they always have to maintain a professional approach.

"They're the final check in the licensing system, and the gatekeeper to flying privileges. The rest of us entrust them to do their job properly, so they must be more particular than anyone else in the system – and in a way that withstands scrutiny." ■



CAA Aviation Examiner Andy McKay (right) takes Keith Stephens, of Advanced Flight, for his A-Cat and Flight Examiner renewals.

Andy says a Part 135 operational competency check is also a time to reflect with a candidate on past issues and discuss pertinent topics relevant to the intended operations.

"The CAA is now actively encouraging scenario-based competency checks particularly in VFR Part 135 helicopter operations. As the CAA moves more to an SMS-based approach, the scenario-based test allows for a greater capture of the three key elements that make a competent pilot: situational awareness, decision making, and ability in handling-based skills."

Flying for Years... and Still Going to AvKiwi

“There’s always something you can learn.”

Apart from a shared passion for flying, and centuries – quite literally – of experience between them, the fliers talking on these pages share a common philosophy: you can never know enough.

Edith Robinson – PPL 1963

“Apart from a four year period when I was having a family, I’ve kept my PPL current.

“The more I flew, I realised the less I knew, especially when we owned our own PA-28 for a few years. Owning one’s own aircraft really teaches you about flying, and I was keen to learn as much as I could.

“Back in the day, accident reports sent out to the aero club would sit around the clubhouse and you’d pick them up and have a read.

“Later you’d be flying along, and suddenly, you’d be confronted

by a dickie situation, and you’d remember those reports, and how you didn’t want your name on the front of one of them!

“I also soaked up a lot of information from experienced pilots during ‘bar-talk’ – like how many seconds you had to live if you went into cloud, or flew low in bad visibility, instead of turning back.

“Now I listen to what Carlton (Campbell, veteran AvKiwi presenter) has to say. Then I’ll be flying along and think, ‘Oh, this is what Carlton was talking about, I’m out of here’.

“I see the first AvKiwi Safety Seminar sticker in my log book is dated 2006, and 10 years later I’m still finding something new to learn.”



Russell Baker – PPL 1964

"I was planning to be a vet, but I went for a ride with Bill Black, and I was captivated.

"I started gliding when I was 14, and had to wait until my 16th birthday to be sent solo.

"Then I started flying powered aircraft, got a PPL, a commercial, a C-cat, then a B-cat. I instructed with Southland, Southern Districts, and Wakatipu Aero Clubs. I was CFI for Fiordland Aero Club. Now I'm a Flight Examiner.

"In 1984, I helped set up Air Fiordland. We had two aircraft. By the time I retired from the company in 2010, we had 12.

"When I was young, I was 10 feet tall and bulletproof. Fortunately, I had some great mentors who would kick my arse when I did something stupid. But not everyone has people like that in their training and careers. That's why AvKiwi seminars are so valuable.

"I reckon it's something like 92 per cent of accidents are the result of pilot error. But 98 per cent of avoided accidents are the result of pilot intervention. We've got to keep pilots ahead of things so they can intervene and prevent an accident from happening.

"I used to present AvKiwis, so I've got professional interest in going to one, but I always learn something as well.

"If just one per cent of people going to an AvKiwi accept what is being said, and act on it, that's a win for everyone.

"I was bowled over by the latest AvKiwi. It was brilliantly presented and constructed. It made people think: 'So that's what happened'.

"I still go along to them. I've still got so much to learn!"

John Banks – PPL 1965

"I started flying at the Auckland Aero Club in Charlie Delta Papa, with Mike Foster. That same Mike Foster last year renewed my BFR in a Cessna 172.

"In August 1994 I started helicopter lessons with Adrian Bodley in the H269 at Flightline, not far from the old home of the Auckland Aero Club at Ardmore.

"When I was an MP, I flew with the Northern Districts Aero Club off the Onerahi airfield in the PA-28 and the much loved Victa 115 (DAC).

"My two most memorable flights involved a main rotor malfunction and forced landing in the Hughes 300, and in 1993

flying in the TA-4K Skyhawk (NZ 6251) out of Ohakea with Squadron Leader Mathewson.

"I'm flying about 20 hours a year these days, mainly with Warbirds in the CT4 syndicate, where the culture is at the highest level of aviation competence and safety.

"Safe flying is not about knowing everything. It's about understanding your own capabilities and continually learning – often from mistakes.

"I enjoy attending AvKiwi. It's an excellent safety programme that should be embraced by all recreational fliers. It's always a very good refresher update and audit of your own knowledge and gaps. And there's always something new to learn that may save your life."

Pam Collings – PPL 1965

"I trained as a librarian, with flying as a hobby, gaining my PPL in 1965. Nine years later I qualified as a C-cat instructor and later a B-cat, and aviation became my career. I instructed for more than 30 years, mostly part-time, and specialising in aerobatics.

"What was most satisfying about instructing was when the penny suddenly dropped in a student's progress. Some may have been struggling, say, in the circuit, then suddenly... they got it. It was great watching that development and being a part of it. And with the aerobatics, it was seeing my students be successful at competitions.

"These days I'm just a private owner. I fly a Piper Cherokee 180 – it's a good workhorse.

"I go to AvKiwis because, while you may not always hear anything completely new, we need to be reminded too.

"They're always good for a refresher. We can always extend our knowledge. Conditions change. There'll always be some little thing that's new or different.

"I also worked for the CAA for 22 years, firstly as an investigating officer, then with safety promotion. So AvKiwis are also an opportunity for me to catch up with past colleagues.

"But we never stop learning." ■

If you've missed some of the past AvKiwi Safety Seminars, you can catch up by taking our online courses. Go to www.caa.govt.nz/avkiwi.



Above the Bar

“Mother Nature is under no obligation to set us challenges meeting regulatory standards.” A world-leading authority on reducing human error in aviation says surviving the extraordinary begins with exceeding the ordinary.

Standards set by aviation safety regulators around the world are the *minimum* required for safety – they’ll get you through everyday activities.

But for skills needed to cope well with a crisis, pilots and operators need to work, every day, way above those minimums.

That’s the belief of a former United States Air Force command pilot, and expert on human performance in high-risk environments, Tony Kern.

Dr Kern, who is a founding partner and chief executive officer of Colorado Springs-based Convergent Performance, thinks regulators have safety standards about right.

“If they set them higher,” says Dr Kern, “we wouldn’t have many pilots left. You cannot regulate against all the challenges that an aviator may someday have to respond to.

“The point is, though, that if you’re a professional aviator, or operator, you set your own standards, and they are always above the minimums.”

And the reason for this, he says, is because when that almost inevitable crisis occurs, someone used to chugging along at the minimum level of skill and safety will likely be incapable of meeting the challenge. They simply won’t know what to do, in the time they’ll have to do it.

“You hope someone’s survival instinct will kick in and get them through,” says Marc Brogan, CAA Aviation Examiner, “even if they’re not that skilled. But I hate to think of a checklist coming out during an emergency when the response should be automatic – almost a motor response.”

Marc says 2014 research carried out by CAA specialists identified a link between accidents during dual instruction flights, and the way the instructors involved in those flights had, themselves, been taught to fly.

Marc says there were common themes.

“Many took multiple attempts to pass tests, they learned to fly with organisations with a history of marginal student results, there was an apparent lack of supervision of those instructors when they were students, and an apparent lack of supervision of their instructors. There was, seemingly, a lack of mentoring and upskilling of those instructors, and the training appeared fragmented, with lessons in an illogical sequence, rather than one built on the one before it.”

In other words, those instructors who’d, as students, learned to fly with organisations and instructors who just ‘chinned the bar’, themselves only ‘chinned the bar’. And they were the ones disproportionately involved in the dual instruction accidents.

“Someone’s performance almost always peaks on exam day,” Marc says. “We know that it drops away when the test is over. It’s human nature.”

Jeremy Anderson, the Chief Flying Instructor at Nelson Aviation College, agrees that success in aviation is not about passing an exam. It’s about learning to fly well.

“I think it’s the flying instructor’s job – and for that matter the organisation’s job – to decide if a candidate is good enough to hold a licence. The Flight Examiner gets to see only a snapshot of the student’s ability on the day. It shouldn’t be whether the candidate is going to pass or not – that should almost be a given – it should be a matter of how well they will pass.

“A candidate should never be put up for a flight test if the instructor knows they’re not safe and don’t meet the standard. For one, it’s a waste of time and money, but more importantly, what if this unsafe, ‘below the bar’ pilot just wings it and actually passes on the day?”

“If you’re a professional aviator, or operator, you set your own standards, and they are always above the minimums.”

Jeremy says there's a big difference between knowledge and understanding. Somebody knowing the correct answer, he says, does not mean they understand it.

"Not much frustrates me more than a student pilot reciting the correct answer but when asked 'why?', not only do they not know, but they also appear to not really care. I think that is the bigger issue."

Jeremy says wider industry has a responsibility as well.

"It's easy to blame the flying schools for a lack of knowledge and/or experience, but I think it's important to remember that the newly qualified CPL holder is not going to be able to just get in and go.

"The good operators realise that, and they have ongoing training programmes that extend the pilot beyond the minimum.

"Why not do a competency check every three or six months instead of annually?" he poses.

Marc Brogan says quite often, people don't know they're only mediocre.

"You don't know what you don't know. But all pilots, including instructors, should be constantly upskilling, no matter where they think their current ability lies.

"They can ask for regular check rides, or do revision, or some dual instruction."

Marc Brogan says there's a duty of care to the people being carried in the aircraft that goes way beyond passing an exam.

"I've seen pilots – who've performed 'okay' the day of their check – preparing to take off into really iffy weather, with the passengers in the back looking terrified."

Marc says he encourages such pilots to lift their game.

Tony Kern agrees, saying aviators should continually "evolve their performance toward higher levels of precision.

"It actually improves their habit pattern, and their recognition of what to do, as deviations occur.

"There is life and death beyond the minimum standards. Too often we see pilots trained to those standards, but still fail in an emergency that demands more of their ability.

"Actually, there's fun above the bar. Once you're performing at the highest level you can perform, you really enjoy what you're doing." ■



New Sport 'n' Rec Manager **Greg Baum**



The new manager of special flight operations and recreational aviation is looking forward to sinking his teeth into an area of aviation that is rapidly evolving.

Up until his recent appointment, Greg Baum had been working in the Aircraft Certification Unit as an airworthiness engineer.

For Greg and his team, summer is a busy time, providing authorization for airshows, while the tourist season also heats up.

The main operations the team oversees are Part 115 Adventure Aviation operations.

"That includes warbirds, tandem parachuting operations, hang gliders, microlights, and balloon flights," says Greg.

Steve Moore, the Deputy Director, General Aviation, says the team Greg leads, works with a huge range of participants in adventure aviation and sport and recreation.

"Increasing tourism means more operators applying for certificates, and current operations are getting bigger. There's quite a bit of pressure in that area," says Steve.

Another huge growth area the unit looks after is remotely piloted aircraft systems (RPAS).

Greg says, "The things that people want to do with unmanned aircraft is increasing. The technology is changing every day, which enables new areas of use never thought possible."

Last year, certification for RPAS operators was introduced (Part 102) and Steve Moore says, "there is a steady stream of applications for certificates. Each application is looked at on its merits because the rules are risk-based."

Greg, who has nearly 20 years' experience as an engineer across various industries, says he's looking forward to the challenge of working in a unique area of aviation.

"Also, because these rules are new, it's wise for the CAA to be evaluating their effectiveness – what is the impact on safety, are they having the desired effect?" ■

Protection of ILS Trial

Airways is about to conduct a trial of revised protection of ILS critical and sensitive areas procedures at Auckland, Wellington, and Christchurch aerodromes.

The proposed changes are intended to improve efficiency and capacity while maintaining safety standards.

During ILS (Instrument Landing System) operations, the ILS signals need to be protected from interference, and this is achieved by designating ILS critical and sensitive areas.

The presence of aircraft and vehicles within these areas can cause interference to the ILS signal.

The existing procedure requires separation that is very broad. This is not meeting the needs of our busiest airports, and the differing runway and taxiway requirements of new aircraft, such as the A380 and A320.

The proposed new procedures, about to be trialled, will vary the level of protection provided, taking into account the aircraft, aerodrome navigation equipment level, and weather conditions.

To assist in identifying the cause of any anomalous course disturbances, pilots should advise ATC immediately they are observed.

Pilots of aircraft flying coupled approaches should be especially alert in monitoring the automatic flight control system.

Pilots will be warned if there is an inadvertent incursion into the critical or sensitive areas.

During the trial, practice auto-landings may also be carried out at Auckland and Christchurch under appropriate conditions.

Details of the trial will be promulgated through *Aeronautical Information Circular* (AIC) 1/17. Subscribers to the AIP will receive this automatically, but it is also freely available to everyone through the AIP web site, www.aip.net.nz. ■



ADS-B – What's Happening Next?

New Zealand's current surveillance radar system will reach the end of its life by the end of 2021. ICAO guidance supports the replacement of secondary radar with ADS-B to provide richer, more accurate, and more frequent data to air traffic controllers.

As part of the New Southern Sky (NSS) programme, secondary surveillance radar will be replaced by Automatic Dependent Surveillance – Broadcast, or ADS-B OUT.

ADS-B OUT is the functionality that transmits ADS-B information out of the aircraft to air traffic control and other aircraft that are equipped to receive ADS-B information.

The CAA is releasing a Notice of Proposed Rule Making (NPRM) that will require all aircraft operating above FL245 to have operational ADS-B OUT systems by the end of 2018.

The NPRM will include proposals about fitting ADS-B to aircraft coming into New Zealand, or new aircraft being registered. There are different proposals for aircraft that already have ADS-B, and those that will be newly fitted.

We want you to have your say on the proposals. You can do this by putting in a submission once the NPRM is released. To receive an email when the NPRM is published, subscribe to our free notification service, www.caa.govt.nz/subscribe. Select the rule parts you operate under, and also the "New Southern Sky" tick box under "Other CAA Information".

If you are fitting ADS-B OUT to your aircraft, make sure the transponder is, or can be, upgraded to Mode ES (extended squitter) 1090 MHz, and that the GNSS sensor is compatible with the transponder.

Transponders that meet TSO-C166b and a compatible sensor that complies with TSO-C145 or 146 will meet the proposed rule requirements.

Do not fit universal access transceiver (UAT) systems that transmit on 978 MHz. These will not work in New Zealand.

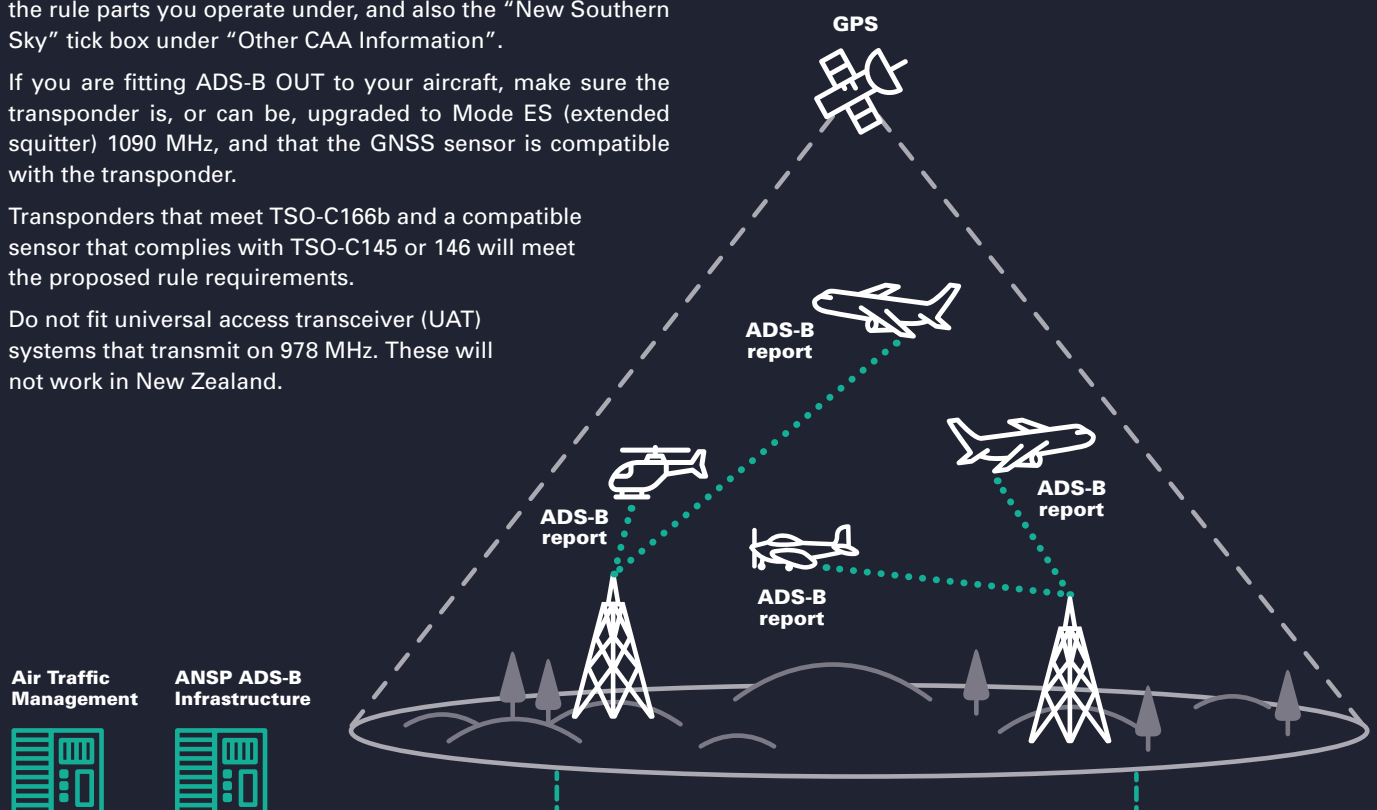
For more information on avionics, please contact Clayton Hughes in the CAA Aircraft Certification Unit, avionics@caa.govt.nz.

If You Fly Below FL245

If you operate in controlled airspace below FL245, you should also consider the equipment requirements outlined in the NPRM. If you are planning on equipping your aircraft with ADS-B for the proposed 2021 mandate, some proposed requirements will be relevant to you. For example, we are proposing that all ADS-B data transmitted will need to meet certain standards to ensure it's accurate.

A discussion document about introducing ADS-B below FL245 will be out for consultation in mid-2017.

You can find out more about NSS and ADS-B, including frequently asked questions, at the NSS web site, www.nss.govt.nz. ■



Top Five from Top Six

Six winners of the CAA's Flight Instructor Award give their five top tips for safe flying.



Peter Dixon (2016)

1. Maintain a good lookout, particularly in a glass cockpit.
2. Maintain situational awareness. Listen to the radio, use the radio, build a mental picture of where everyone else is in relation to you, what they are doing, let them know what you are doing.
3. Stay current in procedures, ie, getting in and out of control zones, being up to date with boundaries and airspace requirements.
4. Stay current on aircraft. That may seem obvious but if you haven't been in a particular aircraft for a while, do some circuits to get used to how it operates.
5. Hope for the best, but plan for the worst possible scenario.



Mark Woodhouse (2007)

1. Listen to the whispers. If you get a feeling that things are not quite right, they probably aren't, and you should take alternative action – early.
2. I believe humility is a critically important component of safe flying. No-one can know it all. Be open to continuously expanding your knowledge and skill.
3. It's okay to give it away and go around, and the earlier you decide the easier it is. Power up, nose up, clean up (and don't be in a hurry to clean up).
4. The investment you make in learning from a quality instructor, be they old and grumpy or young and enthusiastic, will pay you dividends a hundred-fold, and possibly save your life.
5. You can't spend too long practising the basics. Fools learn till they can do it right, wise folk practise until they can't do it wrong.



Carlton Campbell (2015)

In no particular order, as priority varies according to circumstance:

1. Always have options.
2. Keep eyes always scanning.
3. Anticipate, anticipate, anticipate.
4. What are the specific threats right now?
5. Fly by outside reference, nose relative to real/imaginary horizon.



Jeremy Anderson (2014)

1. Look out the window. Too often people get tied up looking at instruments. You'll actually fly better if you learn to use attitudes rather than dials.
2. Know where other aircraft are and what they are doing. It can be as simple as looking at what's happening on the aerodrome and in the circuit as you walk out to your aircraft.
3. Always be thinking 'what if?' Be on a constant lookout for possible landing areas should you suddenly need to carry out a forced landing.
4. Know what your limits are, and don't be afraid to stop before you hit them. Over time your limits will widen. This is called experience.
5. Often people try to run before they walk. Don't focus on the next jazzy thing and forget to learn or teach the basics well first. Instead of trying to get your fancy avionics package to do every trick under the sun, just learn how to keep the ball in the middle.



Paul Kearney (2008)

1. Ask plenty of questions (especially dumb ones).
2. Keep reading and learning from accident reports and flight safety magazines.
3. Constantly review and question decisions, always looking for the best outcome.
4. "What would I do if ..." spend time planning and practising for abnormal situations, especially items not in the syllabus.
5. Stay current with theory and flying. Find a good instructor and practise the stuff you don't do very often.



Dave Brown (2013)

1. Get your head out of the cockpit, away from the glass screens and GPSs, and improve your lookout.
2. Prepare for every flight by checking weather forecasts, Supps, and NOTAMs, even for local flights. Take time to study the route on your map, trying to visualise the topography and looking for prominent navigation features. That will reduce your workload during the flight, and give you greater capacity to deal with abnormal situations en route.
3. Set targets for yourself. For example, nominate an altitude to fly at and then aim to maintain it. Not accepting inaccuracies or low standards will raise your own standards and improve your flying skills.
4. Don't be afraid to ask an instructor for help. Many pilots feel that once they've got their licence they're expected to know or be able to do everything, but in aviation, you're always learning.
5. In an abnormal situation, don't rush your thought processes or actions. Evaluate the situation and your options, and use all the resources available to you, including air traffic control. Don't be afraid to declare a MAYDAY or PAN PAN as it will give you priority over other traffic, and if the situation ends up not being as critical as you first thought, then you can always downgrade your status. ■

Under Pressure

The car manufacturer, Henry Ford, said that under pressure, the mouth speaks when the brain is disengaged. This aviator would agree.

As is often the case, the incident started happening long before it actually occurred.

I was under the hammer that morning with a lot of jobs, and the clients – a group going into the bush for a week of possum hunting – turned up late.

I knew the destination airstrip had challenges. It's quite steep, sloping upwards for landing, and a downhill takeoff. It's also really narrow.

There's not much leeway for go-rounds or other contingencies, and once you're committed, not a lot of room for mistakes, or the ability to change plans at the last minute.

It's half-way up a valley, above the bush line, and very susceptible to wind. In the morning, wind tends to come down the valley, which works in your favour, but by 10 or 11, the wind starts to move up the valley, which works against you in landing.

I knew the sun also affected that airstrip, and I knew the approximate time on this mid-winter day that it would do that. The sun moves across at about 15 degrees an hour so it doesn't take many minutes for the sun to come up over that hill. I knew that too.

For that reason, I flew over the airstrip for a look, and it was in shadow.

I made my approach from about two miles back, because you had to come up the gully, round the corner, and on to the airstrip.

As I got in sight of the airstrip, everything was still all right, it was still in shadow.

But about half-way along the landing roll, the sun suddenly rose above the hill and straight in my eyes.

I couldn't really see anything. I kept trying to look out the side of the aeroplane, out the window. My focus moved and I didn't keep the plane completely straight.

It ran two feet to the left, hit a rock and burst a tyre.

So that was the final result of being under work pressure and not saying to the client, earlier, "Sorry mate, you came late, it's too difficult, we'll do it tomorrow."

Well, we got the aeroplane turned round and unloaded, startled clients and all. We jury-rigged a ski to go under the flat tyre and took off for home base.

Once there, we inspected for more damage, but fortunately there was none.

A couple of guys I respect had a word with me. They wanted to know where – given that I knew the sun would be an issue – was my head during the approach and landing?

Good question. I had felt like I was committed, I hadn't wanted to let the clients down, it was a really short-haul trip when I was more focussed on the much longer ones later in the day, I didn't want to come back during a very busy work period, and I thought I really could beat the sun to land without incident.

I stood back later and thought, "Well, all of that was really stupid of me".

What did I learn? Well, the pressure put on you by clients can influence you to do things you really know you shouldn't.

But, in truth, the main pressure came from me. Not really the clients, and certainly not from my employer.

But it's the sort of pressure that's been around forever and ever, right up until today – the pressure to fly.

Anyone wanting to learn from my experience needs to recognise when they're under pressure, and examine the decisions they make during that time.

There's also the importance of planning well ahead, not just a wee bit ahead, but well ahead.

Because when you leave a place, it might be nice. And at the time of your departure, where you're going might also be nice. But even during a 15-minute flight, things can change.

The conditions changed for me in just a few minutes.

Know your flying areas well, so well that your destination is going to be as safe as what you anticipate.

I should have been thinking ahead during the approach, especially since I couldn't actually see the strip the whole time.

I sure learned, and from then on, there was many a time when I would go to a place and say, "nah, we're not going in there" and we'd either return home or go to an alternate.

While I put pressure on myself that day, and accepted the clients' pressure, I've always been careful not to do that to my own staff.

If, for example, somebody didn't feel confident to do a job, rather than go and do it myself and say, 'oh you're bloody useless and I'll have to do it for you,' I would take them and show them how it could be done so that it built their confidence up.

I never, ever, did a job another pilot said they couldn't handle.

So I was pretty aware of not putting pressure on my staff – it's just a shame I had to break one of my aircraft to learn the lesson for myself. ■

"While I put pressure on myself that day, and accepted the clients' pressure, I've always been careful not to do that to my own staff."



Navigating Your Way Through

Aviation really, truly, deeply, loves acronyms. The New Southern Sky programme of moving aviation from ground-based to satellite-based navigation is no different. If you're drowning in a sea of ciphers, read on.

PBN

Performance Based Navigation describes the broad range of technologies that are moving aviation away from a ground-based navigation system toward a system that relies more on the performance and capabilities of equipment on board the aircraft.

Instead of ground-based navigation aids emitting signals to aircraft receivers, the onboard PBN systems receive satellite signals that advise the aircraft's position to the crew.

That means shorter, more direct routes between two given points and more efficient takeoffs and landings.

In turn, this reduces fuel burn, airport and airspace congestion, and aircraft emissions.

RNP

Required Navigation Performance allows the aircraft to fly a precise path between two points in space. RNP is particularly helpful where terrain, lack of infrastructure (such as ground-based navigation aids, or surveillance), limits on airspace, or even occasional low visibility conditions at an airport restricts operations.

The RNP technology also monitors system performance, and alerts the pilot when it thinks there is a problem with the satellite signal.

RNAV

An aircraft with aRea NAVigation can fly along a planned flight path using ground-based, satellite-based, or on-board navigation aids, or a combination.

However, RNAV technology does not monitor the navigation performance of the aircraft, so it cannot alert the pilot to any problems.

RNAV1 and RNP1

Keep the aircraft within one nautical mile of the centre line of the flight path 95 per cent of the flight time. But RNP1 also monitors its own performance and notifies the pilot when it thinks it isn't performing as it should.

RNAV2

Keeps the aircraft within two nautical miles of the centre line of the flight path 95 per cent of the flight time.

GNSS

The Global Navigation Satellite System is a general term for a satellite navigation system, including the American GPS network, the Chinese BeiDou, Russian GLONASS and European Galileo systems.

GPS

The Global Positioning System is the Global Navigation Satellite System which is owned and operated by the United States. The New Zealand aviation community currently uses only this system.

RAIM

Receiver Autonomous Integrity Monitoring assesses the 'integrity' of GPS signals in a GPS receiver system.

ABAS

Aircraft-based Augmentation System adds to and/or integrates the information obtained from the other GNSS elements with information available on board the aircraft.

SBAS

The Satellite-Based Augmentation System measures small variations in the GPS signals, and provides regular corrections to aircraft receivers within the specific geographic service areas covered by the system's ground stations. SBAS provides for greater navigation accuracy than GPS on its own – particularly in the vertical plane – to those aircraft equipped to use it.

New Zealand is not currently covered by an SBAS service area.

LNAV

Lateral navigation refers to navigating over a ground track with guidance from an electronic device that tells the pilot (or autopilot) of their lateral deviation from the required track.

VNAV

Does the same as LNAV, but in the vertical plane.



ADS-B

Automatic Dependent Surveillance – Broadcast is a satellite-dependent surveillance system. The aircraft receives data from navigation satellites, then broadcasts information on its identification, position, altitude, speed, intention, and other relevant data up to twice a second. The broadcast system is the ADS-B transponder.

The data received by ground stations are then transmitted to the air traffic management system for display to air traffic controllers who use it to maintain aircraft separation in controlled airspace.

SSR

Secondary Surveillance Radar is a co-operative surveillance system, meaning that it relies on a transmission to, and a response from, an aircraft transponder.

NDB

A Non-Directional Beacon is a ground-based, low frequency radio transmitter used for navigation. NDBs can be used for non-precision instrument approaches to airports and offshore platforms. NDBs are very old technology and will gradually disappear from the New Zealand aviation system.

VOR

The Very High Frequency Omni-Directional Radio Range is the present form of ground-based navigation.

DME

Distance measuring equipment is radio navigation technology that measures slant range distance by timing the propagation delay of UHF radio signals. ■

Taking Control of Flight Path Management

A CAA seminar on 8 March 2017 aims to update operators and pilots on the latest strategies for getting the best out of automation, while resisting becoming a slave to it.

Automation has been a boon to aviation. But does aircraft designers' ability to automate make all automatic functions useful? Are the possible hazards of a new automatic function always properly recognised?

Operators and pilots have tended to focus on the technology itself, rather than the ultimate objective of controlling the aircraft's flight path. But automation is just a tool to assist with aircraft operation, and not all situations can be solved by a technological response. Sometimes a pilot just has to take manual control of the aircraft, and 'aviate-navigate-communicate' becomes just as important as it was to the early fliers.

Operators, worldwide, are struggling with how to manage the emerging threats of over-reliance on automation, passive participation, and de-skilling. We are working, globally, with others to understand those problems and consider possible best practice solutions.

Experts will share experiences and present the newest information on:

- » Operator automation policies
- » Maintaining manual flying skills
- » Pilot monitoring
- » Aircraft upset and Loss of Control in Flight (LOC-I)
- » Human Factors and CRM.

Keep an eye on the CAA web site "What's New" page for the date and location of the seminar. ■

How to Get Aviation Publications

AIP New Zealand

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

Pilot and Aircraft Logbooks

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

Rules, Advisory Circulars (ACs), Airworthiness Directives

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

Planning an Aviation Event?

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

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

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

CAA Cut-off Date	GroupEAD (Airways) Cut-off Date	Effective Date
18 Jan 2017	25 Jan 2017	30 Mar 2017
15 Feb 2017	22 Feb 2017	27 April 2017
15 Mar 2017	22 Mar 2017	25 May 2017

Visual Navigation Charts 2017 (scheduled dates for change requests)

16 Mar 2017	20 Apr 2017	09 Nov 2017
-------------	-------------	-------------

See www.caa.govt.nz/aip to view the AIP cut-off dates for 2016/17.

Report Safety and Security Concerns

Available office hours
(voicemail after hours).

0508 4 SAFETY
(0508 472 338)

isi@caa.govt.nz

For all aviation-related safety and security concerns.

Accident Notification

24-hour 7-day toll-free telephone

0508 ACCIDENT
(0508 222 433)

www.caa.govt.nz/report

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

Aviation Safety Advisers

Contact our Aviation Safety Advisers for information and advice. They regularly travel the country to keep in touch with the aviation community.

Don Waters
(North Island)

Mobile: +64 27 485 2096
Email: Don.Waters@caa.govt.nz

Carlton Campbell
(South Island)

Mobile: +64 27 242 9673
Email: Carlton.Campbell@caa.govt.nz

John Keyzer
(Maintenance, North Island)

Mobile: +64 27 213 0507
Email: John.Keyzer@caa.govt.nz

Steve Backhurst
(Maintenance, South Island)

Mobile: +64 27 285 2022
Email: Steve.Backhurst@caa.govt.nz

Accident Briefs

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

Key to abbreviations:

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

ZK-COS Cessna 172S

Date and Time:	03-Jun-2016 at 11:10
Location:	Raglan
POB:	2
Nature of Flight:	Private other
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	29 yrs
Flying Hours (Total):	120
Flying Hours (on Type):	110
Last 90 Days:	1

The aircraft ran through the fence at the end of the runway and came to rest about 100m into the next paddock. The aircraft suffered damage that required it to be moved by truck to a repair facility. The pilot stated that he was attempting a second approach after a go-around due to pedestrians crossing the runway. He described having an aiming point, but had trouble maintaining that approach profile. The aircraft then floated during the flare and once the nose wheel was on the ground he realised he only had about 50m to stop. After the accident, he also noticed he had landed with a slight tail wind that was not noticeable by observing the windsock while he was in the air. The pilot advises that he will seek additional airstrip flying and tuition as a result of this accident.

[CAA Occurrence Ref 16/2772](#)

ZK-RXL Rans S-6 ES (XL)

Date and Time:	20-Dec-2014 at 15:12
Location:	Papakaio
POB:	1
Damage:	Substantial
Nature of Flight:	Private other
Age:	72 yrs

A total engine power loss occurred while in the cruise. During the subsequent forced landing, the aircraft ran into a stand of trees causing substantial damage to the aircraft and minor injury to the pilot.

Disassembly of the reduction gearbox found that the bolt securing the primary reduction gear attached to the crankshaft had worked loose. This had allowed the drive splines to wear, causing a loss of drive between the engine and propeller.

[CAA Occurrence Ref 14/6012](#)

ZK-GDF Schleicher ASW 20L

Date and Time:	19-Jan-2014 at 16:44
Location:	Drury Glider Aerodrome
POB:	1
Damage:	Substantial
Nature of Flight:	Private other
Flying Hours (Total):	212
Flying Hours (on Type):	86
Last 90 Days:	8

A Schleicher ASW 20-L glider crashed onto a farm property three quarters of a nautical mile south east of Drury aerodrome.

Witnesses who were first on the scene found that the pilot had not survived the accident. A CAA field investigation determined that the accident occurred when the glider, having stalled and spun during a reversal turn, was not sufficiently recovered within the height available to avoid impact with terrain. The full safety report is on the CAA web site.

[CAA Occurrence Ref 14/151](#)

ZK-FMT Piper PA-28-236

Date and Time:	19-Jan-2014 at 12:05
Location:	Springfield
POB:	1
Damage:	Destroyed
Nature of Flight:	Towing
Pilot Licence:	Private Pilot Licence (Aeroplane)
Age:	55 yrs
Flying Hours (Total):	601
Flying Hours (on Type):	8
Last 90 Days:	2

The pilot was conducting a glider tow flight from Springfield aerodrome when the tow plane was observed by witnesses both on the ground and in the glider to roll to the right, descend and strike trees. An intense fire broke out and burnt most of the aircraft. The first responders to the accident scene attempted to extinguish the fire with hand-held extinguishers but they had little effect. The fire was eventually extinguished by the fire and rescue emergency responders who found the pilot deceased within the wreckage.

Investigation found that the accident occurred as a result of a lateral tow upset during the aero tow, causing the tow pilot to momentarily lose control of the tow plane. Due to the low altitude at which the tow upset occurred, the pilot was unable to recover the situation before the aircraft struck trees.

There was minimal Gliding NZ training material available to pilots regarding lateral tow upsets. A safety recommendation was raised about this with Gliding NZ, and has now been actioned.

A full report is on the CAA web site.

[CAA Occurrence Ref 14/155](#)

GA Defects

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

Cessna U206C

Cylinder

Part Model:	IO-520-F
Part Manufacturer:	Engine Components Inc (ECi)
ATA Chapter:	7100
TTIS Hours:	320

While in the cruise, the pilot heard an explosion-like bang, light to moderate vibration, and the smell of burnt oil was detected. The IAS reduced by 5 to 8 kts, there was no on-going oil smell or smoke and no visible signs of damage from the cockpit. The pilot altered course to return to the aerodrome remaining within gliding distance of the shoreline and maintaining altitude within the confines of the controlled airspace. When the engine power was reduced for the approach, the vibration ceased. A normal landing and shut down was carried out.

Maintenance investigation found that the number 5 cylinder head had separated from the barrel. Further inspection (soapy water check) also revealed that the number 3 cylinder was defective. Six new cylinder kits were installed. The failed cylinders were returned to ECi for evaluation.

CAA Occurrence Ref 15/829

Eurocopter AS 350 BA

Bearing Lock

Part Model:	AS350
Part Manufacturer:	Airbus Helicopters
Part Number:	350A37-1183-22
ATA Chapter:	6200
TSI Hours:	1401.9
TTIS Hours:	8884.3

During unscheduled maintenance, the engineer observed that the main rotor mast assembly bearing lock had failed. Portions of the bearing lock contacted the splines of the main mast, causing minor damage.

The engineer provided a description and photos to Airbus Helicopters, and the manufacturer responded with instructions for repairing the main shaft for return to service.

Based on the manufacturer's instructions, the mast splines were honed, reworked, inspected, and resurfaced. The Timken bearings, thrust washer, and bearing lock were replaced.

CAA Occurrence Ref 16/4122

New Portal for Flight Planning and Met

It's now easier to file your flight plan and check out the weather at the same time, with IFIS providing a single portal.

The single preflight portal will allow access to NOTAMs, aerodrome information, NAV info, and Met info all in the one place.

"At this stage, the site doesn't allow any graphical information like graphical SIGMETs or MSL charts," says Peter Lechner, CAA's Chief Meteorological Officer. "We're hoping to roll those features out later in the year."

"However all the text-based weather information such as ARFOR, TAF, METAR, and SIGMET are available."

To access, use your existing IFIS log in username and password. If you don't have an IFIS login, you can get one at www.ifis.airways.co.nz, "User Account". ■

Aviation Safety Officer Course

Auckland

2 to 3 March 2017

Sudima Hotel Auckland Airport
18 Airpark Drive, Mangere

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

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

Attend this free two-day course to understand the role of a safety officer, or for those who are already in a safety role, to refresh your skills.

You will get comprehensive guidance material and access to all the latest CAA safety resources and support.

Lunches are provided (but you will have to arrange and pay for your own accommodation, transport, and other meals).



Take a step on the ladder to SMS



FUEL FOR THOUGHT



The runway behind you,
The air above you,
and the fuel you left behind...

Whether you're starving for new information, or too exhausted to find out the real gas, there's more to fuel than you think.

To understand more about the fuel system in *your* aircraft, at the seminar you'll get early access to our new online tool, *Know My Aircraft*.

AvKiwi Safety Seminars are FREE – all the venues are shown on the map (more dates and times will be added as they become available). See the CAA web site, www.caa.govt.nz/AvKiwi for updates, and for online courses from past seminars.

