

January / February 2001

CAA NEWS

Informing for Safer Aviation

Waiting in the wings

Maintenance engineers talk shop

Australia and New Zealand
harmonise licensing requirements

Robyn Reid retires

Waiting in the wings

On Good Friday 1999, a Squirrel helicopter was on a charter flight from Clifden, carrying a hunting party into Fiordland, when it collided with trees and the ground in the Rowallan Forest, killing all five occupants.

"Trev had been transporting hunters in and out of the bush. He'd taken off from his base to drop some hunters off at the lake. I found out through the operator, who gave me a call and said he was missing."





Although maintenance errors account for less than three percent of accidents, when an aircraft crashes there is always an engineer back in the hangar wondering what could have gone wrong.

While the pilot occupies centre stage, the maintenance engineer is working behind the scenes to ensure that the performance goes without a hitch. They balance maintaining high safety standards with pressure from owners and operators to keep costs down. What sort of day-to-day pressures do maintenance engineers encounter? The *CAA News* spoke to engineers from around the country about life in the wings.

Airwork (S. I.) Ltd's **Pete James** had been pilot Trevor Green's maintainer for 17 years when the accident happened. Pete says he wracked his brain for any clue as to what might have caused it and went over the maintenance he'd carried out on the aircraft over and over again in his mind.

Pete had a good relationship with the pilot and operator, and knew the aircraft and its history intimately. He had developed a strong friendship with both Trevor and his family.

"They chose our company to do their maintenance because of our reputation. The wives want you to work on the helicopters, the kids want you to work on the helicopters, because it's their husband and their dad whose going to be flying it. You don't just look after the helicopter; you're looking after the family too. It's more than looking after the physical machine, that's the hard bit. Some people are more than just clients, and with Trevor and his family that was the case. It is a huge privilege and responsibility," Pete said.

When something goes wrong and the cause is unknown, maintenance engineers can find themselves very much alone says Pete. Others may doubt you and you may even doubt yourself. An engineer's work must stand up to criticism.

"I went straight down to see his wife and family. It was very difficult knowing that they thought it may have been caused by a mechanical failure and I really felt that when I walked in. But you just have to put that aside. I just walked through all that and gave them a hug."

Although Pete was pretty certain the helicopter was not at fault, he didn't get much sleep that night.

"In the back of your mind you can't help wondering. You wrack your brain for any clue as to what might have caused it," Pete said.

The investigators could find nothing wrong with the helicopter mechanically, and their report findings suggest that Trevor may have suffered some form of incapacitation.

"Trevor was always a really fit guy so we never expected it would be something to do with him. Machinery is machinery. Look at that Auckland motorist who was killed by that driveshaft. You just never know. There's always a doubt."

Pete services turbine helicopters for corporate clients. Working for clients who are aware of the costs involved in maintaining an aircraft means that Pete doesn't encounter too much resistance when he presents them with the bill.



Pete James (right)

“Being involved with a corporate organisation, our maintenance standards are always paramount, but I do know what goes on out there. A lot of people won’t come here because they say we’re too expensive, but we’re not going to drop our standards for anyone. At the moment the pressure on engineers is huge.

“The American dollar is way up
and so is the cost of fuel.

Something’s got to give and every
cost but maintenance is fixed,”
Pete said.

Fieldair Engineering Ltd’s Company Manager **Tim Bartleet** says the reality is that engineers are working in a competitive environment and are vulnerable to commercial pressure.

“Engineers do the best they can with the resources at their disposal, and their situation will reflect the nature and the culture of the organisation they work for,” Tim said.

“The pressures definitely increase as you move to the margins of industry where engineers are more likely to be supporting older aircraft with fewer resources – often for operations that are barely economically viable. In these situations, where it is a continuing battle

to stay in business, retain your customers, and to get paid for what you do, the engineer’s focus on what is an appropriate and acceptable standard of maintenance, gets tempered by a number of competing considerations. Many operators believe that their maintenance costs are too high and many engineers feel that they are not doing any more than the minimum essential maintenance,” Tim said.

Despite all of these pressures, says Tim, it is vital that engineers don’t lose sight of their primary responsibility: continuing airworthiness. Staying in business and keeping the client happy are also important to business, but if decisions are made without a constant focus on safety, the cost could be the pilot’s life and the engineer’s business.

“My advice to all engineers is
don’t compromise your integrity.

In assessing risk, expect the
worst to happen and remember
that a decision made with the
best of intentions at the time,
which results in an accident, can
never subsequently be justified
on the grounds of pressure or
lack of resources,” Tim said.

And the pressure on engineers has increased says Tim.

“It’s much more financially competitive. The whole economy is, no matter what sort of business you’re running. We have an ageing fleet in New Zealand in a more competitive industry. It’s harder to get spares, they’re more expensive to maintain, and no owner likes to spend money – this all adds up to more pressure. In a relatively small industry it can be hard to say no to pushy owners. It’s an engineer’s job to judge what is safe and what is unsafe, and an engineer is qualified to do this.

“You have to be very strong minded and you have to accept that safety is your business. It must be number one; it must come first. If you’re not happy with something don’t be bullied. Expect the worst to happen because if you don’t, it will.”

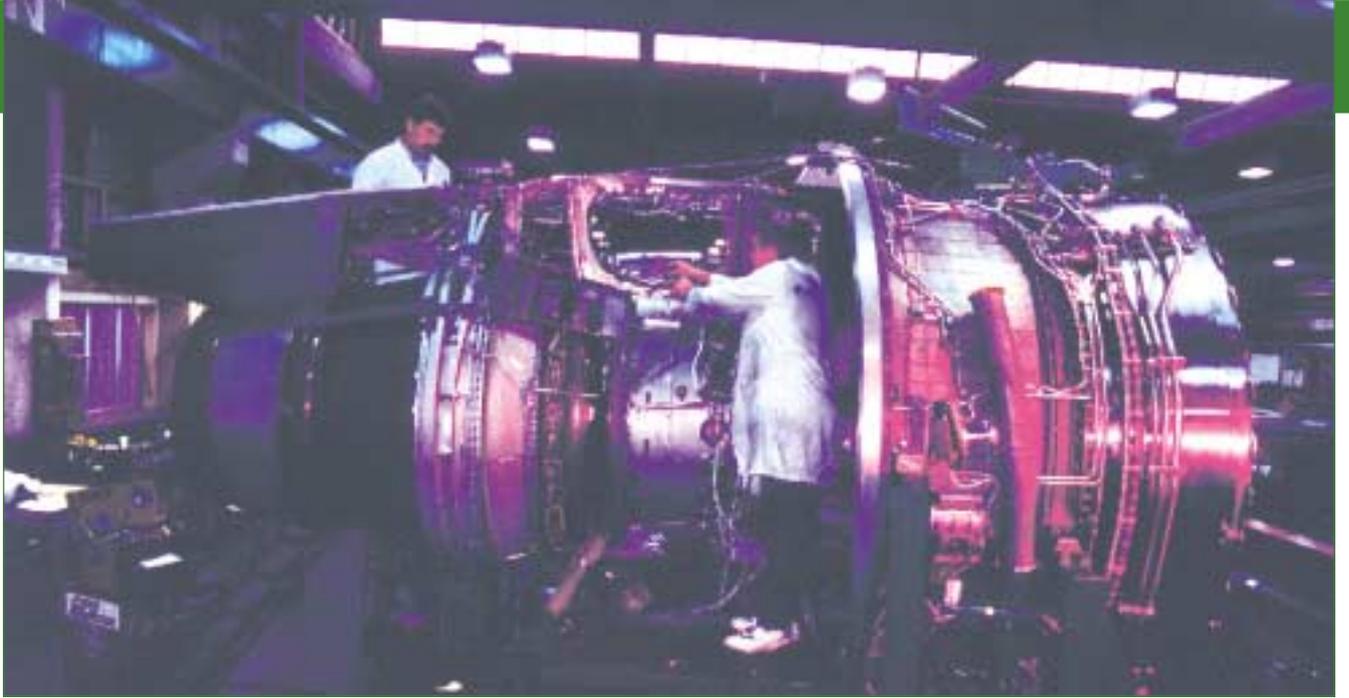


Tim Bartleet



Neil Mathieson





Neil Mathieson of Aero Support Feilding says that engineers must approach every job with safety and legality as the priority, rather than succumbing to commercial pressures.

“The difference between pilots and engineers is that pilots get into the aircraft thinking about the weather, the ATC, the deadline, the passengers. Meanwhile, we’re thinking of the aircraft as a piece of mechanical machinery that requires regular attention, which costs money. We’re in a difficult area of the industry, as reliability and cost to the operator are a constant juggling act for the engineer,” Neil said.

Neil, an owner himself, understands the position they’re in, but his experience has shown that good preventative maintenance programs are the cheapest option in the long term.

Neil, who has been a LAME since the late ’70s, believes that many older aircraft are being operated outside of what the manufacturer intended and without adequate heavy maintenance programs to ensure their continued airworthiness.

Greg Best of Star Aviation Ltd in Rotorua says that pressure from owners is a day-to-day occurrence, but can be overcome by keeping the client well informed and, at times, taking a lateral approach.

“Sometimes you just have to put your foot down and sometimes you have to get the owner to come into the hangar and help. There are two advantages to getting the client to come in and help. Sometimes you get a problem that can take a lot longer than you expect, like an exhaust system. It can take an hour, but if the joints are rusted it can take all day.

If the client is there and sees this, they know why you are charging. It also means that they can understand how their aircraft works and their contribution to the labour reduces the cost,” Greg said.

Clear communication with the client can avoid nasty surprises and enable the engineer to find out more about the aircraft’s performance.

“We’ve had aircraft come in where a lot of work needs to be done and the client has kicked up a stink about it.

“All I say to them if they are reluctant to have maintenance done is ‘The only decision you have to make is whether you want to fly your aircraft or not’,” Greg said.

“If they’re not prepared to have the work done I say ‘Go somewhere else’. If you bend to the pressure and do it, and they have an accident it’s you who will lose your licence or go to jail.”

For some LAMEs the pressure isn’t just from clients, says Greg.

“Some of these engineers working for companies are getting pressure from both sides. Not just from the clients but from those above them. They are being told to move the machines through as quickly as possible.”

Greg’s advice to engineers is to remember that their job is to save lives.

“The first priority is always to make sure the aircraft is safe and if the client wants to avoid maintaining their aircraft to a standard that is safe, don’t have any part in it,” Greg said.



Greg Best



Peter Lacy

Some of the costs might be unexpected, but owners should remember that a good LAME will find a problem before it becomes a problem.

“People tend to forget about the number of lives engineers do save. There are defects, potential hazards, frayed or damaged control cables, cracks in the structure, all things you pick up in routine maintenance. We’ve found things that could have failed within the next few hours – and these things can rear up between the overhauls.”

Owners who avoid getting maintenance done early, says Peter Lacy of Skytech Aviation Ltd, will be the ones who pay in the end.



John Bushell

“Owners who exert pressure to keep costs down are usually the same people that keep shopping around for the cheapest maintenance provider, which invariably costs them more in the end. An experienced engineer continuously servicing the same aircraft can provide cheaper and more thorough maintenance because they know personally the history of the machine, its flying environment and the owner/operator,” Peter said.



Dale Trust

Engineers who bend to pressure from owners will also pay for it says former AIA engineering division chair **John Bushell** of Flightline Aviation Ltd (Papakura).

“Owners putting pressure on LAMEs to overlook faults is a problem, in fact, it’s one hell of a problem. I have to admit there have been occasions where I’ve told an owner to fundamentally bugger off. I’ve said ‘Okay take the aircraft’. And he’s said that he doesn’t have a maintenance sign off. Well, that’s his problem. If an accident happens then it’s my signature on the return to service. If they aren’t prepared to get a problem fixed then I want nothing to do with it. They can lose their licence – it’s not going to be mine that goes on the line,” John said.



Bruce Robertson (right)

Although owners may be reluctant to have maintenance done, if an accident happens because something has been overlooked, it will be the engineer who is held responsible.



Maurice Forster-Pratt

Dale Trust of Heliplane Services Limited found himself in the firing line early on in his engineering career.

“When I was training in the air force there was a crash. It was the pilot’s fault. He came up against rising ground and ran straight into it. Killed a good friend of mine. The immediate reaction from the hierarchy was that it was an engineering error. And they locked us down. I’m not kidding. No one could leave the maintenance hangar,” Dale said.



John Hobday

His vulnerability as an engineer was reconfirmed in the late ’70s when Dale was working in Hastings as chief engineer maintaining agricultural and venison recovery helicopters.

“We were working 20 hours a day seven days a week. It wasn’t unusual for engineers to work those sorts of hours, and maybe it still isn’t. We were absolutely shagged by the end of that stint. The only respite we got from it was when they wrote off

three Hughes 500s. After two years of that, the quack said if I didn’t lay off I was going to have a heart attack,” Dale said.

When the accident happened Dale was enjoying a rare day off with his family in Napier.

“We stopped for an ice-cream and I heard about it on the car radio. It was a Hughes 500. The guy went out in the morning doing hunting and was waved in to pick up a deer. He had a heart attack and crashed. The helicopter just ran into the ground and broke up. He was killed. We were waiting for a part to arrive because we were going to replace the tail rotor blade the next day. The initial reports were that the tail rotor had failed.

“When someone goes and kills themselves it’s a very, very lonely time. Because we’re trained to question everything, you do it to yourself as well. After an accident even the cat has doubts about your ability,” Dale said.

“You’re not sure what to think. All you think is ‘Oh no, you’re in the gun’. The only thing you know for sure is that the engineer will cop the flak until the cause is sorted out.”

So when he comes under pressure to overlook maintenance Dale says he has no problem telling clients to “get stuffed”.

The Aviation Industry Association engineering division chair **Maurice Forster-Pratt** believes engineers are better off getting rid of difficult owners.

“There is always the expectation from owners to control costs, and quite rightly so. Most of the owners we deal with are operating their aircraft commercially and costs are important. The trick is to ensure maximum reliability at a reasonable cost, and it is reliability that owners demand. If your owner is constantly reluctant to heed your advice, dispense with this owner, as surely he will drag your business down. Good owners understand their responsibilities,” Maurice said.

John Hobday, owner of Taupo’s Rotor & Wing Maintenance Ltd, says that he’s been careful to choose clients who have a good approach to safety, rather than letting unsafe operators choose him.

In addition to the ability to overhaul an aircraft and carry out a 100-hour inspection, a good engineer possesses another valuable skill: communication.

“From a technical perspective, we have enough experience and knowledge to see what can go wrong from a seemingly small problem. From the owner’s perspective, it may seem like a very small thing and they don’t always see the safety implications it might have. I see a vital part of my job as being able to explain to clients why work must be done and

the potential consequences of ignoring it,” John said.

Bruce Robertson of Aviation Teknology Ltd says that conflict between clients and engineers over the cost of maintenance is not unusual.

“Some aircraft owners will pull up to the hangar in a new car twice the value of their aircraft and quite happily pay \$50 an hour to maintain the car, but question the cost of maintaining their aircraft. Whether it is the charge out rate or the cost of parts, they forget that their

backsides are relying on the serviceability of the aircraft. A car can generally pull over if there is a problem. In the sky the consequences are potentially far more serious.”

Bruce suggests young engineers look to their more experienced peers for advice and support if they are uncertain.

“If you are unsure as to the safety of the aircraft you are about to release to service, then it shouldn’t be released. There is a well-rehearsed saying: ‘No good turn goes unpunished.’”

Owner responsibilities

Owner responsibilities for maintenance are laid down in Part 91 *General Operating and Flight Rules*.

Maintenance – you are responsible

As an owner you are responsible for your aircraft’s airworthiness. Your aircraft must undergo maintenance inspections at set intervals, and be airworthy every time it is flown. Only a qualified aircraft maintenance engineer holding a licence (LAME) or, in addition, an approval (an IA) can carry out and certify the necessary inspections, modifications and repairs on your aircraft. It is your responsibility to ensure your aircraft has its inspections done correctly and that your aircraft has been released to service after maintenance before it is flown again. This is not your engineer’s responsibility.

Annual Review of Airworthiness

The Annual Review of Airworthiness (ARA) is an airworthiness audit of your aircraft. It includes checks that the aircraft still meets its type certificate, that maintenance inspections have been done, that Airworthiness Directives (ADs) have been complied with, that the aircraft’s flight manual and records are current, and whether any modifications or repairs have been properly recorded. Any fault found during an ARA must be repaired by a LAME who must release the aircraft to service before it is flown again.

Airworthiness Directives

Ensuring your aircraft complies with all relevant Airworthiness Directives (ADs) is your responsibility, not your aircraft maintenance engineer’s, and is one of the things that will be checked during initial certification and your aircraft’s ARA. You can receive ADs either by subscribing

to the CAA web site’s free notification service, or by calling 0800 GET RULES (0800 438 785). Through the free phone you can arrange to receive only the cover page of the AD schedule, allowing you to see whether your aircraft is in the schedule before you buy it. In some cases emergency ADs will be sent directly to aircraft operators so it is vital that your address is kept up to date on the CAA’s database. You may also contract your engineer to provide an AD alerting service.

Pilot maintenance

Pilots who are appropriately trained are permitted to carry out some maintenance, with the owner’s authorisation, on aircraft for which they hold ratings. This includes tasks such as replacing tyres, some greasing and lubrication, some simple fabric repairs and replacing fuses. Pilots who carry out this work must certify what they have done in the aircraft’s maintenance records. For a list of maintenance tasks that pilots may carry out see Part 43 *General Maintenance Rules* Appendix A.

Modifications and repairs

Any changes to your aircraft could affect its ability to fly. To preserve the integrity of the manufacturer’s design, any intended modification to an aircraft must first be approved by the CAA or a CAA-authorised person, and must be carried out by a LAME. If your aircraft is modified without the prior approval of the CAA, your aircraft’s certificate of airworthiness will be invalid and the safety of the aircraft may be compromised. For a list of approved design organisations

contact the CAA. If your aircraft is modified or repaired, your engineer must release it to service before it can be flown. If an engineer notes in your aircraft’s records that the aircraft is not fit for release to service, it is your responsibility to ensure that no one flies it until the problem is repaired and signed off by a LAME.

Records

Modifications, repairs and maintenance must be recorded in a permanent and retrievable form. This is your responsibility. Even if you delegate this job to your engineer, you must check that it is done. Your aircraft’s maintenance records contain the total time in service of the airframe, each engine, propeller, rotor and any other components which have a finite life or overhaul life. They also signal when the aircraft is next due for its annual review of airworthiness and all other required maintenance inspections. Your aircraft must also carry a technical log. The CAA provides a general technical log (Form CAA006) and guidance on its use in Advisory Circular 91-6 *Aircraft technical log*. This daily log should be checked by the pilot before each flight to ensure that the aircraft’s maintenance is up to date and any defects noted in the log have been rectified and signed off.

The technical log is also used to record daily hours flown and any defects that the pilot finds. Part 91 *General Operating Rules* Subpart G, and Part 43 *General Maintenance Rules* Subpart B list what must be recorded.

In perfect harmony

Australia & New Zealand get set to harmonise licensing requirements

Australia and New Zealand have agreed to work together to adopt common licensing requirements.

This will make it simpler for maintenance engineers, pilots and air traffic personnel to work on either side of the Tasman, regardless of whether their licence was issued by Australia's Civil Aviation Safety Authority (CASA) or the New Zealand CAA. Operators will also benefit from the introduction of common standards, such as recent experience and renewals for pilots.

The Directors of both authorities signed the deal for a joint project in November last year. The move comes in support of the Open Skies agreement, also signed in November, which allows Australian and New Zealand international airlines to operate across the Tasman and then beyond to third countries without restriction.

CAA and CASA are both currently revising their pilot licensing rules, making it an ideal time to standardise requirements.

CAA Manager Personnel Licensing Richard MacFarlane says the project will initially focus on Part 61 *Pilot Licences and Ratings*, and will later extend to Part 65 *Air Traffic Services Personnel Licences and Ratings* and Part 66 *Aircraft Maintenance Personnel Licensing*.

"This initiative is a keystone to the implementation of a seamless single aviation market that will enable licence

holders to practice anywhere in Australasia and at the same time allow airlines to take advantage of efficiencies not currently available," Richard said.

Procedures are currently being amended to allow a New Zealand licence to be issued to Australian licence holders, replacing the old validation registration system.

Personnel Licensing departments in each country will work together to set the framework for the project. Industry input will be welcomed when details for the project are finalised. Check the *CAA News* for updates.

Trans-Tasman Mutual Recognition Agreement

The Trans-Tasman Mutual Recognition Agreement between New Zealand and Australia requires the authorities of both countries to recognise each other's qualifications, including professional flight crew and aircraft engineer licences. Licensing requirements, however, vary quite significantly in some areas, and require harmonisation to support a seamless transition for licence holders wanting to work across the Tasman.

Details of the package offered by CASA, along with the relevant application form, CASA contacts and an Australian-New Zealand conversion chart, are available on the CAA web site www.caa.govt.nz in the 'Pilots' section.

Open Skies

In November last year Australia and New Zealand endorsed the Open Skies agreement, which will liberalise air travel between the two countries and beyond.

The agreement will allow Australian and New Zealand international airlines to operate across the Tasman and then beyond to third countries without restriction. Previously, beyond services were limited to 12 Boeing 747s per week to a maximum of 11 countries. In addition, the international airlines of both countries will be able to operate dedicated freight services using what are known as seventh freedom rights. They will be able to operate from any international airport in Australia and New Zealand to third countries, providing greater opportunities for exporters.

Also included in the agreement is a commitment to adopting mutual recognition of aviation-related certification by December 2003. Minister of Transport Mark Gosche said that the CAA and CASA would work together to achieve this.

"The New Zealand and Australian aviation markets are taking on an increasingly Australasian character, with Air New Zealand's purchase of Ansett Australia and Qantas' franchising of its brand in New Zealand. Mutual recognition is very important as a foundation for maximising the commercial and consumer benefits made possible by these arrangements," Mr Gosche said.

Civil Aviation Amendment Bill

Make a submission

The Transport and Industrial Relations Committee has called for submissions on this bill. Copies can be purchased at Bennetts Government Bookshops.

The purpose of this bill is to amend the powers of the Director of Civil Aviation and also ratify the Montreal Convention relating to international air carrier liability.

Please forward 20 copies of your submission by Friday, 2 March 2001.

If you wish to appear before the committee, state this clearly with your submission, providing a contact name and daytime phone number. Submissions to select committees generally become public. Please contact the committee secretariat before sending information of a private or personal nature.

For further guidance on making a submission, the publication *Making a Submission to a Parliamentary Select*

Committee can be found on the web site www.clerk@parliament.govt.nz.

To make a submission or enquiry, contact Lyn Main.

Tel: 0-4-471 9527

Transport and Industrial Relations Committee Secretariat

Bowen House

Parliament Buildings

Wellington



Robyn retires

Robyn Reid of Nelson Helicopters has retired from the CIRAG executive.

Former chair of the Aviation Industry Association's (AIA) helicopter division, and a staunch representative of helicopter operators, Robyn has volunteered many hours to joint CAA/Industry projects and has a reputation for keeping a clear head when dealing with some very emotive issues.

Manager Rules and Standards Peter Blacker worked closely with Robyn on the CIRAG, the review of the original Part 135 *Air Operations – Helicopters and Small Aeroplanes*, and the review of the contracting out process.

"Robyn has been instrumental in several major projects and has consistently provided a balanced view. She always put forward good, sound arguments without getting involved in the emotive side of things. She worked very hard for industry and has made a great contribution to the CAA's work. This has been very time consuming and on a voluntary basis. She has shown real commitment and generosity," Peter said.

Her involvement in the revision of Part 135 saw the rule split into two – Part 135 *Air Operations – Helicopters and Small Aeroplanes* and Part 125 *Air Operations – Medium Aeroplanes*.

Robyn is a strong advocate of Quality Management Systems, which she has applied to her business procedures allowing her to gain Part 135 certification with ease.

"Robyn became involved in Quality before it was a requirement and has always been at the forefront," Peter said.

AIA past-president John Jones says that Robyn used her wide knowledge of helicopter and Part 135 operations to great advantage on the CIRAG.

"Her contribution to the industry has been superb. She has an excellent understanding of all the CAA legislation through her vast experience and her own business," John said.

Robyn was the first recipient of the Director of Civil Aviation Award and was described by the Director, Kevin Ward, as being "someone who has shown a willingness to support, give time, and be involved in helping other operators improve their approach to safety management. The company procedures have already been shown to avert disaster".

Robyn says that though she has enjoyed her involvement in the CIRAG, the space needed to be opened up for a new face and a new perspective.

"I believe that there needs to be a rollover of industry representatives to ensure that new blood is brought in. Everyone has different opinions and now it can be viewed with a fresh pair of eyes. A lot of committees end up with just the same old faces, and I thought that after two years it was time to move on. I really enjoyed being a part of it. When I got involved I was concerned that Part 135 had been written without much industry input. Now that the CIRAG has been set up, every new rule and every change to a rule can't happen without consultation with industry. I believe that there is more industry input in New Zealand than probably anywhere else in the world," Robyn said.



The CAA Industry Rules Advisory Group (CIRAG) aims to enhance the aviation rulemaking process by increasing industry input. It is a joint undertaking of the CAA and the aviation industry.

The CIRAG's main objective is to assess and recommend potential regulatory changes through cooperative rulemaking activities.

The CIRAG executive appoints industry representatives – such as operators, maintainers, manufacturers, professional associations, and other aviation-related groups – to Technical Study Groups (TSGs) to research issues and recommend how they should be addressed.

Information on current CIRAGs, including Terms of Reference for each TSG, meeting minutes, and contact details, is available on the CAA web site www.caa.govt.nz under 'Rules & more/CIRAG'.

Any questions or comments on the CIRAG can be directed to the CAA's Manager Rules Development Peter Blackler.

Tel: 0-4-560 9413

Email: blacklerp@caa.govt.nz