



Light-Commercial Ops

**Attention owners/operators, pilots, engineers, and chief executives!
If you're involved in light-commercial aircraft operations, then this article is for you.**

Over the last four years there has been an alarming trend in the accident rate for aircraft in the 2,721 to 5,670 kilograms (revenue passenger and freight) category. In 1994 the CAA and industry set out to significantly reduce the number of accidents in this aircraft group (among others). A target of two accidents per 100,000 flying hours by 2000 was set. Currently the accident rate for this category is nearly five times greater than the target and significantly worse than in the USA and UK. But the problem is not just confined to this particular group, those aircraft which fall just below 2,721 kilograms also have a high accident rate.

Many accidents involved a significant degree of company or pilot error due to the more complex nature of the aircraft concerned and the type of operating environment. More often than not the finger is pointed at the pilot as the 'last line of defence' in the accident prevention chain, but the reality is that company safety culture usually plays a major role in setting the scene for an accident. This article looks at what you can do as CEO, aircraft owner, pilot, or engineer to operate safely – a factor that has a strong bearing on your business survival.

Aircraft between 2,721 and 5,670 kilograms (eg, Britten-Norman Islander and Cessna 421) and those that fall just short of this light-commercial category (eg, Piper Seneca and Cessna 210) operate in a very competitive sector of the aviation market. Many are involved in non-scheduled passenger services, the transportation of overnight freight, scenic operations, and flight training in what can be a challenging environment. Pilots working the light-commercial sector often have to contend with flying different aircraft types to a variety of destinations, handle IFR procedures (more often than not close to the freezing level), night operations, mountainous terrain, and deal with marginal climb performance when close to maximum weight. They may also be required to load the aircraft, refuel it, keep all associated paperwork up-to-date, and handle customer enquiries.

It is often said that this area of the New Zealand aviation industry is one of the most demanding of a pilot's abilities, and in this respect pilots have to be multi-skilled to deal with the wide variety of

problems that can confront them on a daily basis. The same is true of aircraft engineers. Keeping to a tight maintenance schedule and fixing aircraft defects at short notice are typical of the pressures that engineers face on a daily basis.

A sound company safety culture, thorough pilot and engineer training, and the adherence to well-documented company procedures are a must if an operation is going to be safe – and survive to be profitable. There is an old saying in aviation about 'making a small fortune in flying'. You have to start with a big one. It is rather a cynical view, but it has an element of truth to it. The theme of this article is, however, about keeping that 'small fortune' intact. The point is that it is the 'safe' organisations that will retain their 'small fortune'. Those that, for one reason or another, have pushed beyond the edge of the safety envelope have not survived.

The remainder of this article looks at common problem areas in light-commercial operations and offers some suggestions that should help improve an organisation's standard of safety.

Safety Culture

You often hear the term 'company safety culture' used with regard to accident prevention. It is now widely accepted that a good safety culture is the key to a safe operation. While it can not be changed overnight, a review of management structure and operating procedures is a good start in the right direction. If you can get the safety culture right then accident prevention becomes far easier.

An integral part of a good safety culture is having a comprehensive safety programme in place. Without it accident prevention is always going to be an uphill battle. Appointing an Aviation Safety Coordinator, who has the full support of the CEO to run the company's safety programme, is a vital step towards a better safety culture and a safer operating environment. If you are concerned about safety standards in your organisation and are in a position to make changes, then take active steps to do so.

Make your safety programme work for your operation. Ensure that staff have a working knowledge of hazard and

incident reporting systems that identify the problems – and ensure that they are using them properly. Improve safety awareness through safety notice boards and staff safety meetings, etc.

“...profits must come after – not before – meeting operational costs and investments in safety.”

The safety programme and perspective in a company ought also to extend beyond the company. The suppliers of services are part of the company's operational environment. Two key suppliers in this sector are the owners of aircraft you may lease and contracted maintenance organisations. The nature of this arrangement and the expenditure on timely and safety critical maintenance is paramount. The services that an external contractor provides need to be evaluated on a regular basis. If it is suspected that they are deficient, ask them some hard questions and move to resolve the problem quickly. The CEO's role is pivotal here – they are the person that is responsible for the provision of safe equipment for staff to work with.

The CAA runs Aviation Safety Coordinator training courses to help train your organisation in all of these aspects of safety management. Basically, this means the nuts and bolts that make up a safety programme and how to get it up and running. Besides assisting you to achieve a safer operation, it can meet many of the quality assurance aspects of certification under the Civil Aviation Rules and satisfy OSH legislation. These courses assist you to fine-tune your safety programme, which will undoubtedly have long-term benefits for your business. Watch *Vector* for details on when and where these courses will next be held.

Complex Systems

A common theme that emerges from accident investigations involving aircraft in the light-commercial weight range is that of pilot unfamiliarity with aircraft systems and performance characteristics – especially fuel management and weight and balance. Light twins, for example, can have cross-feed fuel systems that differ markedly with aircraft type, the danger being that in an emergency, the pilot will automatically revert back to the system they are most familiar with.

In many cases, new pilots have had little experience of these larger and faster aircraft with more complex systems, and the learning curve can be steep. Being promoted to pilot in command of a larger aircraft, especially if single-pilot IFR, is a large step and demands a high level of training, support, and skill. Mentally, and physically, staying ahead of a much faster aircraft is hard enough, let alone dealing with IFR procedures (often in to and out of uncontrolled environments), single-engine performance, more complex fuel selection systems, airframe icing, and takeoff and landing performance. A newly appointed twin-engine pilot normally has to deal with most of these, and sometimes more!

Because of this greater complexity, it is important that pilots know their aircraft

their experience level, and this is especially important when it comes to the amount of 'hands-on time' they receive during the course of the type rating. For an operator, demonstrated competency is the requirement, after all it's your aircraft, business, and reputation that are 'on the line'.

Type ratings can be expensive; some operators may be tempted to keep the number of hours flown to a minimum to save money – especially when twin-engine aircraft are involved. Ironically, light-commercial operations is one of the very areas that comprehensive type-rating training is most needed, and inadequate type-rating training (and on-going training) has been a significant factor in a number of recent New Zealand accidents. Simply because an individual



systems and performance capabilities inside out – which is the reason why a comprehensive type rating is essential. It's worth taking the extra time to read the aircraft flight manual thoroughly and talk to other pilots that have experience of the machine you are about to be type rated on and to have proper supervision.

Type Ratings

Receiving comprehensive type-rating training is a vital ingredient for a safe operation – the more complex the aircraft the more critical it becomes. Aircraft type-rating requirements are laid down in Part 61 *Pilot Licences and Ratings* of the CAA Rules, but these are minimum requirements only. Additional training will often be required to bring a pilot up to a safe standard, depending on

already has experience on twin-engine aircraft does not make it acceptable to do a 'quick conversion' on to a more complex aircraft type (eg, Cessna 421).

Every aircraft is different, and new pilots should insist on spending as much time as it takes to feel totally comfortable and familiar with the machine when completing a type rating. The process must never be rushed, and as much attention must be paid to becoming familiar with the aircraft flight manual and its systems as is paid to flying the aircraft. Pilots, if you are not happy with the amount of time taken over your type rating then let management know – there is no point in taking on the responsibilities as pilot in command if you aren't competent. The advantages are just as likely to be economic ones –

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avoiding shock cooling, use of cowl flaps, and engine leaning for example can all affect the balance sheet!

Operational Training

Familiarity with an aircraft, however, is just part of a new pilot's training. Companies need to be careful that a new pilot also receives comprehensive operational training, ie, not specific to type.

Many pilots have not had multi-crew experience or are not familiar with emergency procedures associated with larger aircraft (more passengers) for example.

Thorough training in passenger safety, survival techniques, aircraft flight log usage, other documentation, and aircraft loading procedures are just some examples of the areas that need to be covered in addition to route and aerodrome training. Commercial passenger pressure is different from that when taking friends aloft, or even from local joyride passengers.

Note that most of these requirements are detailed in the applicable Civil Aviation rule Part (eg, Part 135), with further guidance being provided by its associated Advisory Circular.

Pilot Competency Checks

Light-commercial operations often require the pilot to be familiar with a large number of specific routes, IFR procedures, and aerodromes. Competency in mountain flying and short-field takeoff and landing techniques are also other important skills to acquire.

While the Flight Crew Competency Check primarily requires a pilot to prove that they are competent to safely handle the aircraft within their company's particular operating environment, it is also an opportunity to learn more from an

experienced pilot. It is important that the competency check debrief is treated as a chance to discuss problems and learn new ways of doing things.

If the flight examiner or flight instructor is not happy with a particular aspect of your performance, then determine what the problems are and ask what further training would be appropriate.



Photograph by Guy Clapham of Pacific Wings.

Remember that part of your pilot-in-command responsibilities is to remain familiar with your company's operating procedures and the Civil Aviation Rules and Advisory Circulars. Make a point of regularly 'brushing up' on the rules and procedures that apply to your type of operation – the next rainy day is probably a good time to start – and 'aim to impress' at your next competency check.

Pilot Experience Levels

Light-commercial operations are sometimes a stepping stone for pilots wanting to move to the relative security of an airline job. Because of this, some pilots tend not to remain with an operator for very long. Lack of experience in an organisation therefore becomes a problem. This not only becomes apparent in day-to-day operations,

but also when training and supervising new pilots. Without this depth of experience within a company, new pilots may not learn all they need to. While many operators set relatively high 'total time' requirements for new positions, such experience has often not been gained on the larger and more complex aircraft for which the position is sought.

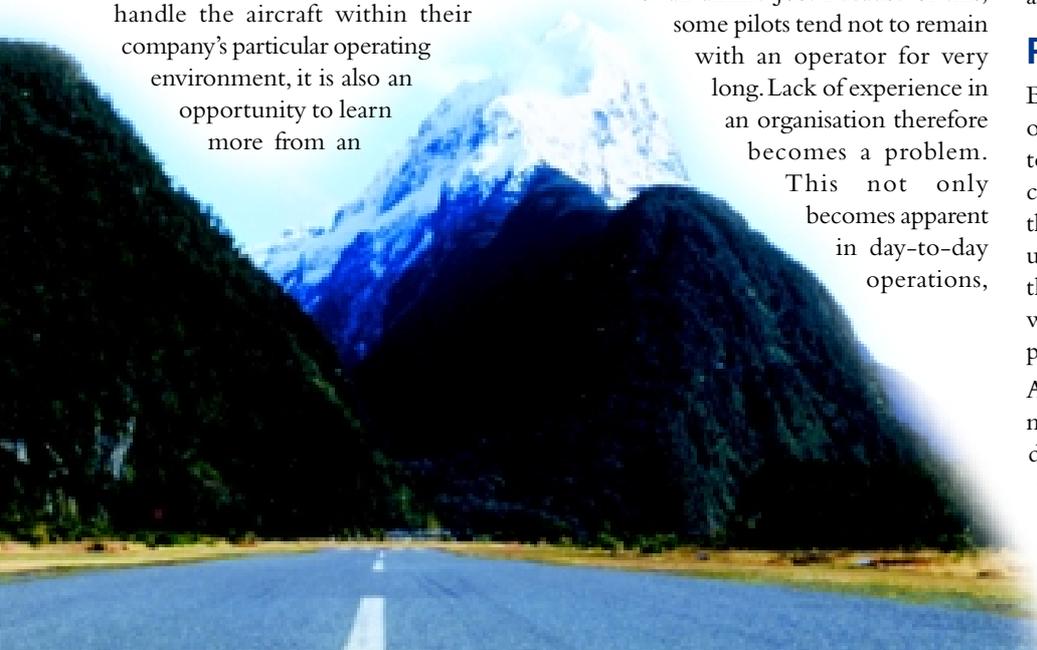
The cycle can be self-perpetuating, meaning that pilot experience levels diminish to the point where safety may be compromised.

The most effective way to break this cycle is for light-commercial flying to be made more attractive as a career option. Unfortunately wage structure and job security have a lot to do with this problem, and until these improve it will be difficult to attract pilots to longer-term positions. This problem can clearly not be solved overnight, so the least we can do is to recognise that it exists and compensate for it with extra pilot training and support.

Pilot Pressure

Because profit margins are often slim, operators are sometimes under pressure to fly as many hours as possible to avoid cash flow problems. Pilots are aware of this and may feel that they will be looked upon unfavourably by management if they don't get the job done, and they worry about the security of their position.

A pilot must feel confident that there will not be any repercussions for them if they decline to do a flight that they consider will be unsafe. Management must make it clear that operational decisions need



to be made free from commercial pressure. The concept that ‘we want you to get the job done – but safely’ should always be promoted.

It is widely acknowledged that pilots working in this sector of the industry are not well paid for their skill level. Operators that pay by the flying hour are unwittingly placing unnecessary pressure on their pilots. The maintenance equivalent of this is where speed is traded for accuracy. The incentive to complete a flight can become great and result in risks being taken.

“Operators that pay by the flying hour are unwittingly placing unnecessary pressure on their pilots.”

Many pilots want to log flying hours towards an airline career as quickly as possible and may place pressure upon themselves to fly as often as they can – this can also lead to taking unnecessary risks. The temptation to look upon a flight as another flying hour must be resisted. Flight and duty time limits can also be compromised. These benchmarks are not only there to protect the pilot’s wellbeing, but also the public from fatigued pilots.

Management should also be careful about the way the company’s services are advertised to the public – slogans that promise always to get passengers to their destination should be avoided – especially for VFR charters. Staff who handle customer bookings should be trained to emphasise that all flights (VFR in particular) are subject to the weather being suitable on the day. This removes unnecessary pressure on the pilot to complete a flight when conditions are marginal.

Pilot Decision-Making

Learning to assess a situation and make a safe decision about whether or not to complete a particular flight (both prior to or during a flight) is a skill that comes with experience and training in good pilot decision-making. It is important that such training is provided for new pilots and that experienced pilots are always on hand to provide valuable guidance and support when it is needed. If you are not comfortable with doing a flight, you must assert your authority as



Cutting corners can be costly.

pilot in command and explain to your passengers (or the boss) why you believe the situation to be unsafe. Companies must openly support pilots when it comes to making these operational decisions. Know your company minima (and your personal minima) and stick to them. You should be totally conversant with things like VFR meteorological minima and minimum fuel requirements. Refer to “Pilot Decision-Making” in *Vector* 1999, Issue 1 for further reading on this topic.

Aircraft Maintenance

Correct scheduling of aircraft maintenance with your maintenance organisation, whether it be in-house or external, is important for safety reasons. While routine maintenance can usually be planned, aircraft defects which arise that can not be deferred to the next routine maintenance cycle can be more difficult. If your aircraft develops a defect, you should be careful not to put your

maintenance organisation under pressure to get the problem fixed in an unreasonable length of time – maintenance errors can occur when engineers are put under pressure. So in other words, don’t always expect to have your aircraft back the same afternoon because it is sometimes just not practicable.

Given that many of the aircraft in the light-commercial sector are older, snags can appear between scheduled maintenance that can be compounded by component supply delays. Operators know that the economics in this sector of the market are tight, but the profits must come after – **not before** – meeting operational costs **and investments in safety**.

If a non-deferrable defect develops that can’t be fixed at short notice, **do not** be tempted, or coerced, to operate with it – it’s dangerous and illegal. An aircraft that is flown with defects is definitely a sign

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of a poor operation. Most passengers would not be impressed if they knew that the aircraft they are about to fly in is not 100 percent airworthy.

Fatigue

Because of the low wage structure in many light-commercial operations, some pilots are forced to work other part-time jobs to make ends meet. This may involve working at night (or on rostered days off) and flying during the day. Such a combination usually causes fatigue that ultimately affects performance. If you are feeling tired and stressed **you do not** belong in the cockpit. Ask yourself "Am I up to the task today?" If the answer is no, you must be prepared to tell your employer that you do not feel 100 percent. A good employer will not want you to fly feeling 'below par' and will usually have staff replacement contingency plans in place anyway. The same is true of engineers – you can't afford to be fatigued on the job and risk making a mistake.

If the same situation keeps occurring on a regular basis, try discussing the problem with your employer(s) to see what can be sorted out – they may be more accommodating than you imagine.

Summary

Getting the light-commercial aircraft accident rate down requires change. Regardless of whether you're a pilot, an engineer, or the CEO, you should be constantly reviewing the way you do things and trying to make improvements. It is only through having a pro-active and open management structure that a safe operating environment can be created. Everyone should be actively taking part in the company's safety programme and communicating information and new ideas freely.

If you're the CEO, make sure that you are providing a working environment that is conducive to safe operational decision making. Do not try to cut costs in critical areas such as equipment and training for your staff – it is much cheaper

in the long run to spend time and money on safety **now** than it is to have an accident later (which could be tomorrow). Give praise to your staff when a job is done well and make them feel part of 'the team'. Ask for their feedback on all aspects of the operation, and involve them in decision making.

If you're a pilot, know your company and personal minima and stick to them religiously. Don't do anything that you are not totally comfortable with, and be prepared to say "No" if you are being pressured. If you observe that some aspect of the operation is unsafe, then bring it to management's attention along with suggested improvements – they may not have noticed the problem yet.

If you're an engineer, don't let an operator pressure you to get a job done quickly. Be firm and make it clear what you expect with regard to the scheduling of maintenance.

Remember that safety is a team effort that requires constant communication between all levels of your organisation. ■

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A new **How To** booklet is now available from the CAA. *How to Own an Aircraft* details the considerations and responsibilities involved in owning an aircraft and is presented in an easy-to-read format. It is recommended for every aircraft owner or potential owner.

The **How To** series aims to help interested people navigate their way through the aviation system to reach their goals. The other **How To** booklet produced to date is *How to be a Pilot*.

A new **GAP (Good Aviation Practice)** booklet is also now available. *Mountain Flying* covers some of the skills and knowledge that are required to operate safely in the mountains. We suggest it is essential reading before your next flight in to, or over, mountainous terrain.

GAPs aim to provide the best safety advice possible to pilots. Other **GAP** booklets that are available are:

- Winter Operations**
- Bird Hazards**
- Wake Turbulence**
- Weight and Balance**



How To and **GAP** booklets are available from most aero clubs, training schools or from Field Safety Advisers (FSA contact details are usually printed in each issue of *VECTOR*). Note that *How to be a Pilot* (the first booklet in the series) is also available from your local high school.

Bulk orders can be obtained from:

The Safety Education and Publishing Unit
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