

**NEW ZEALAND GLIDING
ASSOCIATION**

***ADVISORY
CIRCULAR***

BIENNIAL FLIGHT REVIEWS

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1. Introduction

- 1.1 This Advisory Circular provides guidance on the following:
- The background to Biennial Flight Reviews (BFRs)
 - A description of what is to be covered in BFRs
 - Guidance on the conduct of BFRs

BACKGROUND

It has long been a GNZ recommendation for all glider pilots to undergo an annual competency check by the club CFI or suitable deputy. In 1998 this was formalised as a Biennial Flight Review (BFR) that would be a once every two year requirement for pilots to retain authority to operate under the auspices of GNZ. Clubs can of course choose to have more frequent checks but the BFR has become the accepted means of reviewing ongoing pilot competency.

The following notes are offered as guidance for those engaged in conducting such flight reviews. It is acknowledged that the spectrum of pilot experience in a club is very broad, and that doubts have been expressed as to the practicality of arranging a suitable flight review that is worthwhile and capable of encompassing all experience ranges. It is for this reason that for any such review to be effective in promoting safe, efficient and effective operation of a glider it must be well planned, briefed, conducted, debriefed and recorded.

Regardless of pilot experience, there are certain common factors essential to safety in the air. It doesn't matter whether we are talking about a 30 hour K-6 pilot or a triple-diamonded Nimbus 4 owner. The focus of the review is on safe flight habits and manipulative flying skills. It is an opportunity to promote the value of continually striving for improved standards of airmanship as well as soaring skills. From this comes safe, successful, enjoyable soaring for all.

As pilots, we should realise that we never stop learning... so long as we remain open to seeing the lessons to be learnt from. For professional pilots like the military and airline pilots, there is ongoing training and their competency is checked regularly. It is acknowledged that gliding is a sport, indulged in by amateurs, and that the military or airline approach to check flights would not suit us well. However, there are some useful pointers for us in the professional aviation system and a significant one is that a military or airline pilot is subject to periodic training and checking flights, regardless of rank or status, to help keep them operating safely and efficiently. This is an accepted fact of their aviation lives and no-one expects otherwise. Such benefits are recognised in the recreational power flying clubs and all power licence holders in NZ are now subject to a BFR.

Check flights should not be used for punitive purposes. Nothing is achieved by such an approach, and the use of a check flight for legitimate checking purposes is brought into disrepute by such practices. Quite often a lot of actual training can be achieved on BFR flights, turning the flights into educational experiences. The necessity for such training should not be thought of as being to any pilot's detriment, nor should it

necessarily result in "failing" a BFR flight. The review may highlight the need for further training and this can be discussed and planned for at the earliest opportunity.

Finally, before proceeding to the mechanism of the BFR flight itself, lets look at what the Danish Gliding Association developed to help assess supervisory requirements of their pilots. Their "Training - Condition Barometer" has stood the test of time very well, and is absolutely relevant to us.

"TRAINING-CONDITION BAROMETER"

HOURS / LAUNCHES in last 12 months

25	35	- More flying than this - you are in good training!
20	30	- You are likely to make elementary errors.
15 x/winds	20	- Be careful in adverse conditions; rain, wind>15kts,
10 INSTRUCTOR	10	- If not flown for 3 mths - FLY WITH AN
5 INSTRUCTOR	5	- Difficult wx conditions - FLY WITH AN

PRE FLIGHT ACTIONS.

Check the pilot's logbook. Any unwillingness to allow an instructor to inspect a logbook must be regarded with a healthy suspicion. Check how often the pilot flew, how many different types and at how many different sites. Does the pilot hibernate during the winter and only surface to give us all a fright as summer approaches?

What you see in a pilot's logbook, together with a frank discussion about that persons flying background, can lay a lot of useful groundwork for the flight(s) to come. Bear in mind that the traditional method of glider pilot training involves quite intensive instruction to first solo standard, a reasonable amount of supervision to, say, about 20 hours experience, and almost nothing at all after that. Unsafe habits develop unchecked and a lot of retraining may be necessary to ensure that the pilot is steered back in the right direction.

Pilots vary greatly in their attitudes towards BFRs. Some object strongly, others take fright at the thought. The great majority accept the need for such flights, while at the same time suffering some degree of nervousness about the imagined ordeal. This is especially true if spinning is contemplated during the flight. It is also quite common to meet pilots who agree that BFR flights are necessary, **but only for someone else!**

It is therefore essential that the Instructor sets out to put the pilot at ease and shows that the review is worth doing; that it will benefit the pilot by either confirming that their airmanship and manipulative flying skills are still good or provide some

guidance on any areas that may help them improve and gain greater satisfaction from the sport.

So, right at the start, define accurately what you want the pilot to do during the review, not just the flight. This is an age-old instructional principle, but is still often forgotten by many instructors. There is nothing worse, in either training or checking, than to spend time with one or both parties uncertain of the objectives of the exercise being done. If the pilot being reviewed has any doubts or concerns about any aspect of the BFR process or flight, now is the time to talk them over. It goes without saying that the checking instructor's ability should be beyond reproach, both as a pilot and as a coach.

THE FLIGHT REVIEW

It is of course impossible to review everything in one glider flight, so we have to decide what it is essential to check, and what we can check if we get time. It is usually better to cover one or two aspects thoroughly than to skim shallowly over several. **It will often be appropriate to conduct two or more flights to achieve a valid review of competency.**

One basic essential is airmanship. Does the pilot do a walkaround inspection before getting into the glider and do they discuss the prevailing conditions? Is an emergency plan laid before hooking the rope / wire on? It can eliminate a lot of surprises if a pilot expects an emergency on each launch, instead of sitting there, fat, dumb and happy assuming everything will be O.K. What about the pre-take off check itself?

One of the first signs of overconfidence in a pilot is a tendency to treat checks in a slapdash manner, so watch closely for this one. Pilots trained very rapidly to solo (eg. on a one week course) can demonstrate skill levels greatly in excess of their airmanship capability. Such pilots will need much more careful checking and post-solo training than the average club-trained pilot - a course-trained pilot may never have experienced strong breezes or turbulence, for example.

Still on the subject of airmanship, there are several things in this category which are somewhat elusive and difficult to judge. Note their lookout - the single most important aspect of airmanship and usually the first to fall victim to complacency and overconfidence. The pupils are not altogether to blame for this - many instructors spend a lot of time on analysing manipulative and judgment faults, sometimes to excess, while ignoring the fact that the pilot hasn't looked out for some time. It is sufficient to say that poor lookout is one of the few things which, if not positively improved on during the flight, constitutes definite grounds for curtailing further solo flying and returning the pilot to the two-seater for more instruction. Remember, numerous fatal midair collisions and a number of in flight "touches" overseas in recent years, and some very close calls here in NZ...and we have some of the clearest weather in the world.

The launch. On winch or auto-tow, the development of overconfidence is revealed by an early rotation into the full climb, usually on the grounds that "there is enough

speed there". It doesn't matter what the ASI says, if the glider is rotated too early into full climb, and something goes wrong (the defensive pilot reckons that something will go wrong), an extremely hazardous situation is engendered. Don't let them do it.

On aerotow, lack of decent station-keeping is usually an indication that the pilot doesn't care very much, and the instructor should insist on a higher standard. A useful measure of aerotowing skills is a pilot's ability to "box the slipstream". Brief them before take off that you want them to do this. During this exercise if something goes wrong, release the rope yourself and take control - in that order. Do not delay. At the releasing stage, look for any tendency to go too high or to turn before actual release occurs. You may choose to have the tow pilot wave you off with the "wing rock" to see if the pilot knows the signal and appropriate response. Ensure the tow pilot is properly briefed on your requirements and on any other desired exercise to avoid possible confusion.

The exercises chosen by the instructor will vary somewhat, but since we are talking about BFRs, we will always include spinning (unless it is known beyond doubt that the pilot has done some spinning very recently). Certainly, most private owners will not have done spinning for some time. If you don't operate a readily, fully spinnable two seater or you operate off a short wire, you have a bit of a problem as there should be no concession to the spin training and checking requirement. You should aim to gain access to a spinnable glider and if this means you have to go to a neighbouring club or arrange for them to visit you so you can do these check flights, then consider doing so. However, if this really isn't practical, at least conduct stall / incipient spin training emphasising that all gliders are capable of autorotating to extreme attitudes that require considerable height to recover from. Indeed, all gliders can be spun if provoked!

Coordination. This is a much underestimated exercise. To fly in a coordinated manner is not only a desirable thing from the point of view of being a smooth pilot - it is absolutely essential to safety in the air. The reason for this is not always clearly understood.

Gliders spend a lot of their time at low speed, sometimes at speeds only a few knots above the stall in circling flight. It is a known fact that low speed plus any significant amount of yaw can result in the glider entering a spin - in fact an over-ruddered turn is a surefire way of getting a glider to spin when all other methods fail. If insufficient speed is the big villain of the piece in stall/spin accidents, then the presence of yaw on the aircraft is surely the second biggest. It doesn't matter that the yaw is caused by over-ruddering or whether it is adverse yaw caused by insufficient rudder, the effect is the same - uncoordinated flight. Such uncoordinated flight carries with it the real risk of loss of control if the speed is allowed to fall.

Spinning. There are 3 stages of spin training in gliders; spin prevention, recovery at the early or incipient stage, and the full spin and its recovery. Glider characteristics in stalling and spinning have changed somewhat over the years, and it is sufficient to say

here that a pilot should be conversant with the qualities of the glider he flies, in terms of its pre-stall/spin behaviour and warning symptoms and its behaviour in the various stages of any spin which may develop. Strict adherence to the concept of "safe speed near the ground" should in theory be enough protection to keep spin problems at bay, but life isn't like that and we get enough spin accidents and near-accidents in any one year to make it necessary to train pilots to be knowledgeable and confident in all aspects of stalling and spinning. No part of spin training and checking can be neglected. If the pilot is conversant with spinning, look at some variations on the basics like stalling with brakes out in a turn (the simulated base turn) or stalling while turning off a simulated winch launch failure. They may not have done these before.

For private owners, it is entirely appropriate to take a look at their glider's Flight Manual and discussing the stall / spin characteristics of their machine. Many high performance gliders are not certified for intentional spinning; this does not mean they won't spin! The limitation is usually a consequence of the likelihood of exceeding the glider's V_{NE} in the spin recovery should you get in one. A discussion of how unintentional spins occur then some airborne exercises of such situations and possible extreme recovery attitudes is likely to be worthwhile for the private owner who may not have done such flying for some time, if ever. A classic would be a competition finish that goes wrong for whatever reason and leaves them in an unfamiliar position / attitude low to the ground... running out of airspeed, altitude and ideas.

Circuit, approach and landing. This stage of the flight more than any other tests the pilot's accuracy, airmanship and judgment all at the same time. Watch for over-reliance on the altimeter and any tendency to fly with reference to fixed objects on the ground. These characteristics will almost certainly be present in pilots who have become site-bound, and it is essential that these pilots are retrained in the use of the angle/distance relationship when planning the circuit. Keep your eye open for loss of coordination at low altitude - it is a known characteristic of pilots under training, and if it remains unchecked can be very hard to eradicate. It is a known killer, for reasons explained earlier. Finally, on the approach, look for any tendency to open the airbrakes "automatically" on base or as soon as the final turn is completed. Such action almost certainly means that the pilot is not consciously monitoring the overshoot / undershoot situation on final approach, and is known to have caused many problems of undershooting into the boundary fence. Pilots who do this may never really have been taught the proper use of airbrakes - yet another case of training work needing to be done on a check flight.

The types of circuit that can be flown as an exercise are of course many and varied. There will certainly be benefit in conducting some sort of variation on the basic circuit. This could be a circuit in the opposite direction, joining from an unusual point like direct on to base leg, being too high or lower than normal, simulated malfunction of the airbrakes, landing cross wind; these are all worthwhile options to review pilot competency in varying conditions. For all circuits, ensure the safe speed near the ground is calculated so you know what the pilot is aiming to achieve. Ensure the landing performance is able to be self debriefed by having the pilot discuss the factors that determined where the glider touched down and where it stopped, particularly in relation to where they intended it to be. Encourage such self assessment to be made on

all flights so they develop their skills and make every flight count towards building their experience base.

OTHER EXERCISES

The BFR provides an opportunity to look at many other aspects of our operations that we might assume the pilot is quite okay with. Consider the experience level and type of flying the pilot is likely to be doing and try to find topics for discussion and exercises that will be thought provoking and educational while still enabling you to review their airmanship skills as well as judgement and manipulative skills. A discussion of topics like airspace rules and how to work with ATC to get full use of the airspace on a soaring flight, flight authorisation for private owners, and human factors topics like self medication or dehydration can be invaluable and will help ensure pilots are up to date with operational requirements.

For the more experienced pilots being reviewed, it is good to pick topics that relate to the sort of flying they are doing. For example, if at a wave site, discuss the failure of the oxygen system; how to recognise the situation and what to do about it. When airborne, do a timed max rate descent and work out how long it takes to come down from say, 20,000 to 10,000 and relate this to time of useful consciousness. The pilot may have never really considered this let alone practiced a life saving manoeuvre of this nature so will benefit from the exercise and allow you to review their judgement and handling skills.

One further thing to be looked at on an opportunity basis on check flights is the adverse sensitivity of some pilots to low G situations. This phenomenon of low G sensitivity may be a potential problem that some individual pilots are unaware they have. Use the training notes from the A Certificate Training Syllabus exercise *Reduced G Famil* to discuss the phenomenon and carry out appropriate exercise once airborne to check for any over sensitivity.

AFTER FLIGHT

For any flight review to be effective a full debrief must be completed. Anything less will seriously undermine the value of the exercise. There should be a focus on what is done well and any aspects that need remedial attention. If further dual instruction will assist with raising the competency then this should be organised. Guidance for exercises that can be completed solo should also be made to ensure all reviews offer positive and constructive feedback. Remember, the aim of the biennial flight review is to check pilot competency; to check they are safe to fly a glider in a manner appropriate to their level of experience. It is a key opportunity to promote safe attitudes and to motivate pilots to be open to learning in our sport so make sure you, as the Instructor, leave the pilot looking forward to the next BFR.

Once completed, there must be a record of having done the review. The OPS 11Flight Review Form should be completed and a copy filed in club records. An entry in the pilot's logbook stating the BFR is completed and valid to a nominated date should be made, signed and dated by the Instructor completing the BFR.