



GLIDING NEW ZEALAND INCORPORATED

ADVISORY CIRCULAR
AC 2-13

MOUNTAIN & RIDGE SOARING
SAFETY PRINCIPLES

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1 Introduction

It is recognised that glider accidents occurring in mountain and ridge soaring are the most unforgiving in terms of fatalities or serious injuries to Pilots, and destruction of gliders. This is true both in NZ and internationally.

Between 1998 and 2016 in NZ, 10 of the 16 fatalities in glider accidents (over 60 %) involved terrain impact in mountains or ridges.

Generally the gliders involved were written off, at least for insurance purposes.

GNZ wants to reduce the incidence of such accidents and seeks to:

- Instil a good appreciation of mountain and ridge soaring safety principles in pilots early in their training, in the B Certificate training syllabus, and
- Refresh and review understandings of the principles by pilots as opportunities present, including pilot discussions, Biennial Flight Reviews (BFRs) and briefings / clearances for cross-country flights.

GNZ will maintain on its website (Training > Safety Information) best practice information and articles on safety. Included amongst these is the series on Threat and Error Management, and Safety in Mountain Flying.

2 Safety Principles

- **Safe speed**
Always maintain a **safe speed** close to the ground. Recommended minimum airspeed is (knots) **$V_s + 10 + 0.5 V_w$** . In turbulent conditions add additional speed to ensure controllability in roll. The wind speed needs to be assessed at the ridge at the relevant altitude.
- **Turn away**
Always make the first **turn away from the ridge/terrain** and use a medium angle of bank.
- **Early decisions**
Decisions to continue to turn towards terrain should be made early when flying parallel to the ridge so as to **preserve the turn away option**. The decision needs to be made each and every turn until a safe height above terrain. It is helpful to verbalise the decision to commit to the turn.
- **Co-ordination**
Never over-rudder. As with thermalling, the tail of the slip string should point slightly to the outside of the turn. With this slipping to the inside of the turn, the glider is unlikely to drop a wing on stalling but more likely to fall into an increased sideslip that is easier to control and recover from.
- **Escape route**
Always have an escape route planned that leads to lower terrain immediately, with a safe landing area.
- **Crossing ridges**
When crossing a spur or saddle, **the closer you are to the terrain the more oblique the crossing angle needs to be** in order to preserve the turn back option.

- ***Dangerous ridges***
Beware of ridges that have rounded or shallow-angle tops as these can be the most dangerous. Avoid circling near such terrain. Remember the safest looking hills are the most dangerous.
- ***Beware illusions***
Proximity to ridges presents risks of **false horizons** and distance **judgement**.
- ***Severe turbulence***
Severe turbulence is quite common in the mountainous regions of New Zealand, especially if the wind strengths are high. At times it can become difficult to retain controllability and also flying within the safe operating limits of the glider. Getting low in the mountains on such days can put you in a seriously compromised situation. It is essential to have good escape plans for wherever you are.
- ***Right of way***
When flying with others in the mountain it is of vital importance to consider rights of way. Be aware of where others are, and keep a good lookout.
- ***Risk of collision***
Collision has become a high risk in the mountains, especially when wave flying as the closing speeds can be very high. It is unlikely that you will have time to react, as from spotting an aircraft head-on you are typically only a couple of seconds to a potential collision. Also when there is a snow background sometimes it is almost impossible to see other gliders. Use radio to have a clear picture of where others are and to let them know where you are.
- ***Strong wind days***
Consider your ability on strong wind days. Just because others are flying does not mean it is safe for your level of experience and ability.
- ***Circling near the hill***
It is vitally important when considering circling near a hill that you consider the risk of sudden loss of height if sink is encountered. Many mountain flying accidents have occurred due to insufficient margin when circling near the hill. Both horizontal and vertical separation needs to be considered along with drift due to wind. Figure of eights should be used if you have any doubt turning away from the hill.

3 **Students**

Students will be introduced to these safety principles early in training as a soaring pilot, in the B Certificate syllabus. These principles will serve developing pilots well as mountain and ridge soaring experience and skills develop.

4 **Qualified Pilots**

Appreciation and observance of these safety principles will enhance enjoyment of mountain and ridge soaring throughout flying. Opportunities should be taken to refresh understandings and flying practices at pilot discussions, BFRs and briefings.

5 Instructors

Instructors have a key role to play in supporting students and pilots with good briefings and development or confirmation of good flying practices.

Opportunities should be taken when conducting BFRs for pilots to refresh appreciation of these safety principles. This may be achieved at briefings / debriefings and in ridge flight when opportune.

Briefings for pilots flying under supervision (pre QGP) should refresh on the safety principles before any solo consolidation flight is approved in the vicinity of ridges.

Obviously, instructors should be experienced and current in mountain and ridge soaring to provide credible support to pilots.

6 Flight Following

For flight following purposes, pilots should make their general intentions known by chatting to other pilots in the vicinity and/or by regular position reports to club base if possible. Use of a GPS flight tracking device (such as a SPOT messenger) is highly recommended, particularly if the area to be flown is likely to be outside VHF radio coverage.

Club Standard Operating Procedures (SoPs) should cover the need to actively log all position reports received.

References:

“Safety in Mountain Flying”, Centre National de Vol a Voile, Saint Auban.
(GNZ Website: Training > Safety Information)