

GLIDING ACTIVITY IN THE UK.

1 Introduction

1.1 Gliding is a weather dependent air sport activity and although most active from March - October the activity takes place throughout the year during daylight hours. The vast majority of gliders launch from notified gliding sites. A number of self-launching gliders operate from other sites.

1.2 Gliding sites routinely experience intense activity within 5 nm of the site. Gliders routinely fly cross country using rising air and glide angles of around 1 in 50 to achieve cruising speeds not dissimilar to a typical small single engine piston aircraft. Occasionally, large numbers of gliders fly the same cross country route. In certain parts of the country gliders routinely fly above FL 100 in the lee of mountain ranges, or at lower levels along ridge lines. They will also seek to derive the maximum lift along less obvious vertical features such as the Chiltern escarpment.

1.3 This Circular intends to raise awareness of gliding activity within UK airspace.

2 See and Avoid

2.1 By design and similarly to other composite aircraft, gliders have a low frontal area and are usually white in colour. Gliders rarely fly wings level for long periods and when manoeuvring they become easier to see if subjected to effective lookout techniques. Gliders are most likely to be found below cumulus clouds and in particular lines of cumulus clouds, on the windward side of ridges and upwind of lenticular clouds.

2.2 A significant number of gliders are equipped with FLARM, an electronic aid to effective lookout that provides visual and aural warnings of other traffic within a few kilometres that is equipped with the same technology. This low cost equipment can be fitted in any aircraft although it tends to be exclusive to the gliding community. The recent development of Powerflarm allows any aircraft to detect both FLARM and transponder equipped traffic on a single instrument.

2.3 Advice on effective lookout technique is published in CAA Safety Sense Leaflet No 13 available on the CAA website. Glider pilots are more used to flying in close proximity to other gliders than are many powered aircraft pilots. As the canopy construction of most gliders permits an excellent field of view then there is a good chance that a glider pilot will spot a powered aircraft or other airspace user first. However, good lookout is the responsibility of all airspace users and the Class G environment relies on all parties maintain an effective lookout in order to avoid collisions.

3 Launch Methods

3.1 There are three methods of launching, all of which can result in approximately 30 movements per hour at glider sites during peak times ie at the middle of the day

3.2 Winch Launching

3.2.1 Winch launching is where a thin steel or fibre cable connected to a powerful winch launches the glider to anywhere between 1000-3000 ft above the site elevation dependent on the site and launch permission; note some sites are positioned on the top of hills, and as high as 1000 ft above sea level in some cases. The glider pilot relies on an appointed ground crew to confirm that the area behind the launch is clear of potential conflicting traffic prior to launching at an approximate 45 degree angle. It is dangerous to overfly gliding sites below the maximum launch height because of the limited manoeuvrability of the glider during launching and the presence of the cable. Any aircraft travelling faster than 120 kt will be difficult for the ground crew to see when launching a glider. After release the cable falls rapidly to the ground slowed by a small parachute that is difficult to see.

3.3 Aerotow Launching and Self-Launching

3.3.1 Aerotow launching uses an aeroplane to tow the glider to a pre-agreed point and height. Aerotowing aeroplane and glider combinations will generally climb at approximately half the tow aeroplane's normal performance. Aerotows are carried out by light aircraft, often ex-crop sprayers, with a light rope connecting the glider, and tows will normally be to between 2000 ft and 4000 ft agl depending on what the glider is planning to do. Some gliders are designed to self-launch and do so using a climb profile similar to that described for an aerotow.

3.3.2 There is an increasing interest in the discipline of gliding aerobatics, so aerotows could be flown up to 5000 ft above those sites. Returning aircraft may be trailing a long rope. Many self-launching gliders can climb at 1000 ft/min. Although launching takes place without any requirement for air traffic control, many clubs make use of VHF to increase situational awareness. During the tow both aircraft and glider are less manoeuvrable than normal and the Rules of the Air require other aircraft to give way to glider and tug combinations.

4 Circuit Patterns Around Gliding Sites

4.1 A glider circuit is a conventional descending pattern starting at approximately 800 ft agl. Traffic flow frequently results in circuits on each side of the aerodrome and multiple parallel approach paths. Effective lookout and operating 'as expected' is vitally important. Glider taxiing capability is limited to a turn at the end of a ground run but normal practice is to maintain a straight line to a stop. Once committed to the final approach a glider has no other options and consequently effective sequencing on the final approach is critical to avoid unintended consequences.

4.2 All gliding sites are PPR and most have websites which include visiting aircraft briefings. Overhead joins should be avoided (cables) and noise abatement is a very significant issue. Glider tugs often do short circuits of different shapes and onto selected areas of the aerodrome to fit with the local operations; A briefing on tug activity should be obtained when obtaining permission.

5 Cross-Country Gliding Activity

5.1 Although many gliders stay local to their launch sites, it is normal for glider pilots to plan and execute cross country flights. Gliders operating locally to their launch sites will normally be operating clear of controlled airspace up to cloud base and within a 5 nm radius of the site. The longest cross country flight in a glider in the UK to date is 1100 km. A typical cross country flight is 300 km in an A-B-C-A format. Gliders use rising air to climb and use a combination of rising air and their glide performance to cruise. At the end of the flying day, if the glider has not completed its task it will either start up its get-you-home engine (a turbo), if fitted, or land at either an aerodrome or in a suitable field. Occasionally gliders are subsequently towed out of fields by tug aircraft. Although cross country gliding is the predominant activity, glider aerobatics are increasingly popular. Glider aerobatics take place above or in close proximity to gliding sites in locally agreed aerobatic boxes, usually up to 4000 ft agl.

6 Ridge Flying

6.1 Air flowing up a ridge and/or the sun heating a south facing slope will result in rising air. In the UK, the topography can result in the rising air from ridges being useable by gliders up to two or three times the height of the ridge. This depends on the strength of the wind. In some areas in the UK, ridge formations facilitate cross country flights by gliders in meteorological conditions that would not generate other types of rising air. An example is the South Downs where throughout the winter months and primarily with strong northerly winds, cross country flying by gliders takes place along a line running east/west along the South Downs ridges. Similarly, in the Black Mountains, gliders fly cross country using a complex formation of ridges which can be used in various wind directions. The Cotswold Edge from Bath to Broadway is another example in W to NW winds.

7 Thermal Flying

7.1 Thermals form when air heated by the ground rises through unstable air. A thermal stops rising when the thermal cools to the same temperature as the surrounding air. Where the condensation level is at a lower temperature than the inversion, cumulus cloud will form at the top of the thermal. The ideal but certainly not the only meteorological conditions for this type of gliding are increasing atmospheric pressure and an unstable airmass, for example in the days following the passage of a cold front ahead of a building ridge of high pressure. In the UK summer months, thermals generally start to become useable by gliders from approximately 10 am until around 7 pm, with peak conditions for gliding cross country flying occurring from approximately midday to 5 pm.

7.2 Gliders usually operate in the higher half of the thermic layer below cloud base. For example, on a typical day where the cloud base is 4000 ft, glider pilots will aim to operate above 2000 ft. Occasionally if the cloudbase is high, for example 7500 ft above sea level or more, gliders will be using that airspace. Fair weather cumulus is the most common form of thermal indicator. Sea breezes and convergences can also provide similar soaring conditions. When these conditions are forecast, gliders will often follow the sea breeze line, which may establish itself along the coast or several miles inland. Very occasionally, where the pilot and glider is equipped to do so, a glider may climb in a cumulus cloud to cross a large area of stable air.

7.3 Cross country routes are planned to avoid notified airspace restrictions and relevant navigation warnings. Gliders will, subject to soaring conditions, usually operate within 10 nm either side of the planned track and turn within 0.5 km of the planned turning points. In some parts of the UK, airspace design results in cross country routes passing through relatively narrow portions of Glass G Airspace. In these areas and particularly in the summer months, it is inevitable that gliders (and other Class G users) will generate a higher than usual density of Class G traffic. Meticulous lookout is essential to safe flight in these areas.

7.4 Thermals may result in a large group of gliders operating in close proximity to a source of lift, whatever that might be. Gliders will often spend up to 50% of their time circling continuously with approximately 30 degrees or more of bank to optimise their climb within a thermal. In conditions with cumulus clouds, these thermals and associated circling gliders will classically be found from the centre to the upwind side of the cumulus and will usually climb to close to cloud base or until the climb rate reduces before leaving the thermal and moving on elsewhere. All gliders in a particular thermal will fly in the same direction of turn as the first glider present and join the thermal at their cruise altitude. Thermalling gliders attract other gliders to the lift source, so if you are passing a group of thermalling gliders look out for others joining the stack.

8 Wave Flying

8.1 Lee waves caused by air flowing over a significant obstacle and then effectively bouncing to generate an atmospheric wave occur throughout the UK, but reliably in gliding terms in areas in close proximity to mountain ranges. The ideal conditions for wave soaring in the most predominant wave areas is a relatively stable airmass flowing across topography at more than 15 kt and with little change of direction with height. A low pressure centred north or east of Scotland generating a strong west or northwesterly wind across the Scottish mountains is a good example. Gliders are either launched into lee wave rising air or climb using other rising air to transition to a lee wave. Lee waves may generate cloud formations lying across the wind which are typically identified by a solid leading edge, a laminar smooth top and a ragged trailing edge. Wave flying can take place from dawn to dusk.

8.2 Gliders flying in lee wave operate in clear air above gaps formed by wave in the lower cloud, or when climbing past clouds, they operate upwind of those clouds in clear air. Glider pilots who are flying cross country in wave will operate where possible between the base of any cloud formation and FL 195. Gliders can also be found up to FL 245 in notified wave boxes.

9 Competitions

9.1 As gliding is an air sport, competition flying is a normal activity. British Gliding Association competitions are subject to NOTAM. Ad hoc competitions are not subject to NOTAM, but they rarely exceed 15-20 gliders. Cross country competitions typically involve up to 80 gliders launching during a window of opportunity, usually around the middle of the day, prior to setting off on a typically A-B-C-A task at different times. Scoring is based on time taken to complete the GPS logger recorded task rather than racing to first past the post. Aerobatic competitions are subject to NOTAM.

9.2 Details of gliding sites are available at www.gliding.co.uk.

