

The Silver Distance

(Your first cross country flights)

Acknowledgements

Back in January 1984 I attended a winter lecture with the same title as this briefing note (though then we called it a 'Silver C' – there is no 'C' badge anymore). It was presented annually by Colin Dews and it was a requirement of attempting your Silver Distance that you had attended this lecture. Although the fine detail of the requirements of the Silver Distance task has changed, and the performance of the gliders available to the Bronze pilot has increased, the basic briefing hasn't changed that much. So this note is based on the lecture notes I took at the time, suitably modified for the passage of time.

FAI Requirements

All our gliding badges are issued by the BGA. However whilst some are National and defined by the BGA, others are International and defined by the FAI. The Silver Badge is an FAI defined badge.

For the low down on the BGA and Gliding Certificates, see sec. 19 of the BGA 'Laws and Rules'. These notes are based on the 16th edition from March 2009.

(<http://www.gliding.co.uk/forms/lawsandrules.pdf>)

The definitive rules for the FAI Badge and Diploma claims are contained in the FAI Sporting Code section 3 (gliding section) http://www.fai.org/gliding/sporting_code and its 4 annexes.

- The pilot must alone and unassisted (e.g. flying solo if in a two-seater, no radio help, no 'lead and follow').
- Pre-requisites – The Silver is an FAI badge, however they don't lay down any pre-requisites. The BGA National Certificates however have an ordered sequence through to the Cross-Country Endorsement. You'll need to have completed that, have had recent field landing checks in the motor glider, and picked a time of the year when there are many landable fields available (i.e. not June or early July).
- From the BGA (citing the FAI) - the distance must be not less than 50km (31.07 Statute miles) made as either:
 - a) An undeclared flight in a straight line; or
 - b) A pre-declared flight where one leg is of 50km or more (which could be a straight line flight).

In either case the loss of height between the start point (release height or logged point in the start zone) and the finish point (landing point or logged point in the finish zone) must not exceed 1% of the total distance flown.

- From the FAI - a flight on a straight course of at least 50 km. Any leg of 50 kilometres or more of a longer pre-declared course may qualify, subject to the requirements below on altitude difference applied to the whole course flown.
 - a) For distance flights of more than 100 kilometres, where the loss of height exceeds 1000 metres, a height penalty equal to 100 times the excess over 1000 metres loss of height shall be subtracted from the length of the course to give the official distance.

b) For distance flights of 100 kilometres or less, a loss of height exceeding 1% of the length of the course will invalidate the soaring performance.

- For the above two statements (BGA and FAI) to be valid, the BGA requirements relating to 'start' and 'finish' zones must apply to the whole flight, not the pre-declared remote start or finish of the Silver Distance qualifying leg. Two things to note: in (a) of the FAI statement above, no mention is made of where the distance should be subtracted from, this isn't a problem for most flights but could be pertinent for the Silver Distance. i.e. does it come off the qualifying leg for the Silver Distance? The flight could end up being disallowed – so don't start too high! In (b) of the FAI statement above the 'soaring performance' refers to your attempt at the Silver Distance.

FAI Proof

To put in any badge claim you need to satisfy an O.O. (Official Observer) that you've done what you've claimed to have done. To do that you'll need signatures from everyone involved. Get yourself a copy of a claim form (<http://www.glidering.co.uk/forms/faicclaim.pdf>) so that you can familiarise yourself with the details. It's not necessary to have all the signatures on the same piece of paper, as long as there is sufficient information on each piece to enable the glider, the pilot and the flight to be identified. You'll need:

- An O.O. to satisfy themselves that any height (and position if necessary) recording equipment is properly installed.
- An O.O. to satisfy themselves that you've declared any turning points which you intend to use before you take off (if you submit more than one declaration it's the last one that counts). See the BGA website for the recommended format of a declaration form (<http://www.glidering.co.uk/forms/declaration.pdf>). If you're using a Flight Recorder then enter the declaration into that. The written declaration needs to be signed as well as identifying you and the glider. If you use the BGA list of 3 letter codes to define your TPs, then you must specify the year of issue of the TP list you are using (the TP must resolve to a unique latitude and longitude). A straight line goal flight doesn't need a declaration.
- A tug pilot who will have to confirm the position where you released (obviously not necessary if you winch). If you do take an aero-tow, brief the tug pilot about your first declared turning point (or intended destination of a straight line flight) so that he can tow you in the opposite direction (that way you don't lose distance by releasing down track. Don't do a 'soft' release – the tug pilot may not notice you go!
- When you land you'll need signatures from either an O.O. or two local witnesses as to where you landed (it's useful to carry a few blanks in the pocket of the glider, so if you land out you have one to hand).
- You have to be able to prove that:
 - a) You didn't land during the attempt (i.e. you'll need to carry barometric height recording equipment suitably sealed).
 - b) You went around the declared turning points (if you declared any). Note that photographic evidence is no longer accepted, so that means you'll need either a GPS Position Recorder or a GPS Flight Recorder (which is a Position Recorder and Barometric height recorder and will take a declaration all combined).
- In order to turn a declared turning point satisfactorily you'll need to understand 'FAI sectors' and / or cylinders and the effect whichever you use has upon declared task length (and on the

leg you are hoping to use as your Silver Distance qualifying leg). For instance cylinders (a.k.a. beer cans) will knock ½km of the end of each leg and will shorten a leg between two turning points by 1km. You'll also have to understand how any navigation aid you are using has to be configured to meet those turning point rounding methods. Turning Point rounding is not included in this briefing.

- An O.O. should remove the recording equipment from the glider after the flight (with the exception of built in flight recorders where they can download the flight).
- A calibration chart for the barometric recording device isn't generally required, though the BGA can ask for one to be submitted (and if you intend to combine the distance claim with a height claim in the same flight then additional requirements for the barograph's calibration come into effect).

Plan before hand (during the winter)

- If you are going to use a club glider make sure you are familiar with its instruments. Make sure you are competent at rigging and de-rigging it. Make sure its trailer is serviceable. If you think it's pertinent, get your own batteries for the glider so that you can charge them up at home the night before. This applies to batteries for the flight recorders as well if they aren't powered from the main glider battery.
- Maps / charts / airspace. You must fly with a current ½ million aeronautical chart. The Southern sheet comes out annually around March. This means that in the planning stage the previous winter you'll have to use a chart that'll probably be out of date when you come to fly.
- Downwind dashes

Using a ½ million map, assume a 2000' aerotow, draw a circle with radius 61km (this is for the 1% rule). Always assume that your launch height is your start height. 2000' should give you a good chance of getting away.

Look for gliding clubs just outside this circle. For each determine a maximum launch height based on the 1% rule, the distance from Gransden and the height difference of the 2 airfields.

If there is a gliding club just inside the circle but still over 50km from Gransden then it would be possible to use it. Again determine a maximum launch height based on the 1% rule, the distance from Gransden and the height difference of the 2 airfields. It will probably require a maximum launch height of less than 2000'. It is always best to launch to the minimum height you can get away from as it'll reduce any additional distance you have to do over the 50km.

Club	Distance from GRL	Max start height (1% ± field hgt. diff)*	Bearing from GRL	Notes etc.
Rattlesden	68km	2230 + 51 = 2281 ft	090°	
Tibenham	92km	3018 – 68 = 2950 ft	070°	
etc. etc.				

* Note, if you start at this height and then land short of the goal, you'll not have achieved your Silver Distance

For each destination gliding club you have identified, draw a track line on the map and prepare a 'feature list' of what you'd expect to see if you were flying along the track. Make a note of

any airspace issues. Also make a note of what to avoid (Old Buckenham near Tibenham for instance, done by going to Diss and then following the railway line north). If you have all these prepared in advance, then on the night before you can look at the forecast wind direction and choose which one to concentrate on.

Why gliding clubs? because landing there will be easier than at a power airfield.

If you are going midweek, beware that some clubs do not operate midweek. Also be aware that military zones could be more active at that time.

DON'T pick Dunstable (their local airspace is entwined with Luton's).

DON'T pick Bicester (if you overshoot you are into all manner of airspace problems).

- **Out and Returns**

This has the benefit of not necessarily requiring a retrieve. The down side is that you don't get to do an 'off site' landing - though with the modern requirement for field landing practice in a motor glider that isn't a major consideration. You will also need position recording equipment as well as height recording equipment.

The distance - only one leg can count for your Silver Distance, so your remote point still has to be over 50km away (after allowing for any reduction of the leg length due to selecting 'barrels' over 'FAI sectors' etc.).

You also need to be careful of the 1% rule, depending on your start height you may still need to get part way back. For instance, with a 2000' launch you will need to do a minimum of 61km. If your TP is 55km away you'll need to get at least 6km back on the return leg. Of course, if you get all the way back it isn't a problem, but don't store up problems for yourself by starting high assuming you'll get back.

- **Triangles**

As O/Rs, this has the benefit of not necessarily requiring a retrieve. The down side is that you don't get to do an 'off site' landing - though with the modern requirement for field landing practice in a motor glider that isn't a major consideration. You will also need position recording equipment as well as height recording equipment.

The additional benefit over the O/R is that you can configure a flat triangle where you fly 25km upwind, 50km downwind and 25km upwind again back to base. This means you're never more than 25km away, you can have 'practice flights' of 25km O/R to each TP on previous days to learn the landmarks.

The distance - only one leg can count for your Silver Distance. You would make it the central leg and its length has to be over 50km (after allowing for any reduction of the leg length due to selecting 'barrels' over 'FAI sectors' etc.).

As O/Rs again beware the 1% rule, though the part of the flight out to your first TP will count towards the distance, so by the time you get round the second TP you'll be well past the 50km in total task length achieved.

On the day

You will have obtained an up-to-date ½ million aeronautical map (and checked your possible tasks against it). There are also ¼ million maps available, and some experienced cross country pilots will deride their use. Too right, for them – they've seen so much of the country from the air they'll have no difficulty locating themselves without a map and only need the ½ million to confirm the airspace. You don't have that luxury – take whatever maps you think you'll need, but don't leave

the ½ million behind as you must have a map that shows all airspace (and the ¼ million only goes up to 5,000’).

So your day on the glider is looming and the forecast looks good (high cloud-base, a gentle breeze). You pick a suitable task from the ones you’ve prepared and get yourself to the airfield.

You need to check the NOTAMs for the day. How to do this is a bit in flux at the moment, you’ll need access to the NATS web site with a user ID and they seem to be changing the user interface at regular intervals. The duty instructor may be able to help you here as they might well have already checked them on the day – though it won’t help you if your planned track goes through a purple airway (which means you’d have to rethink your entire task).

Find the duty instructor and ensure they are happy with your choices – find someone prepared to come and retrieve you. Make sure the glider and trailer are serviceable.

Find an O.O. who can guide you through the preparation process. Make a declaration if you need to and get the flight recorder(s) installed in the glider. If you’re using club equipment it might still be pertinent to have your own batteries (which you ensured were charged the night before) for the glider and/or the flight recorder.

Find the tug pilot, brief them on what you’re trying to do and agree where and how high they will drop you (the opposite side of the airfield from where you want to go, not too high).

If you’re planning on winching you’ll need to make sure that it’s reasonably easy to get away from the winch (i.e. are the thermals consolidated enough at the height you’d winch to). If gliders are falling out of the winch and only getting away from aerotows you may have problems.

Make sure you’ve got food, water, mobile phone, contact number for your retrieve, cash etc.

Go to the loo.

Wait for the ideal conditions.

Airborne

The first thing to do is to ensure that your release height (and therefore your start height) is obviously marked on the barogram. If you aero-towed then the tug has dropped you off, hopefully, in a thermal so ‘notch’ the barogram by leaving the thermal, dropping 150’, hold it for 30s and then re-enter the thermal. If you’re not dropped in a thermal then don’t bother (you’ll be descending anyway). If you winch launch then it is possible to go straight into a thermal – so as with an aerotow, leave the thermal to ‘notch’ the barogram.

Climb to cloud-base (less a couple of hundred feet). Whilst you’re climbing establish which direction is down track and start looking for suitable thermal sources in that general direction. You need to do this before you get too close to the cloud and it blocks your view of other clouds. Locate a landmark on the ground in the direction of your anticipated next climb (which could be either side of the actual track to the goal / TP). If this is your first climb, ensure that the thermals are going high enough – you should be looking for at least 4,000’.

Set off towards your landmark for the next climb. Regarding MacCready settings – a complete book could be written on the subject (and probably has), but for early cross-countrys, the lower the better. If you must set it to something other than zero, then use ‘1’ or maybe ‘2’, but never more than half the average climb rate of your last thermal (which you’ll probably over estimate). When you reach your next thermal – repeat these last two paragraphs.

Regarding thermal selection – this couples in with MacCready and is only pertinent if you need to get the most out of the day. It won’t apply to your Silver Distance because you’re only going to be

sent on it if conditions are relatively good. Therefore, stay high and only reject a thermal if you're still *relatively* near cloud-base or you're *convinced* you can find a better one (i.e. you can see another glider below you and out-climbing you in a thermal which you can reach).

By staying high you can concentrate on navigation rather than field selection. Watch the wind – it may change in direction and / or strength. Features on the ground which you've planned to use can 'disappear' if they are into sun or under a cloud shadow. The lift under the clouds may be under a particular part of the cloud (up/down wind, into/down sun) – once you've worked it out for one cloud you can apply it to the rest, and bear in mind that if you're doing and out-return or triangle then the part of the cloud giving lift relative to your track will change for each leg.

Note that from 4,000' you could cover 32km at 35:1 before being down to 1,000' – so from 4,000' at the halfway point of a 64km straight line flight you could either get home or to the goal without finding another thermal and still have 1,000' available for a circuit (assuming you don't find any sink and there's no wind to contend with).

You should plan to arrive at your destination with at least 2,000' in hand if it's an airfield you haven't flown at before – this should give you a chance to work out which runway they're using and which side they are flying their circuits on. Check for any cross-wind component. Check for anything that could give you curl-over problems whilst on approach.

When you've landed get some witness signatures for the landing certificate. If you've landed out either in a field or at another gliding club, get in touch with your retrieve crew.

Aborts (field landings)

This is another topic that could take a complete briefing session, and should've been covered by training sessions in the motor glider. However – a few points to remember :

Wind strength and direction

Field Size (into wind)

Field Slope (into wind)

Stock – they won't necessarily get out of your way!

Wires – pylons are obvious, telegraph poles not so, and electric fences very difficult to spot.

Geoff Brown

CGC – February 2010