

BGA Navigation Training and Airspace Awareness

Background

The BGA system of navigation training has evolved over many years, and in many places works extremely well. It is felt however that in these days of increasingly complex airspace, the existing training system needs to be more formalised. Most pilots will use GPS, the use of which is often not trained for. This document forms the basis of a formal training scheme for navigation training within the BGA Bronze flying syllabus.

Revised Process

- Before first solo
 - The candidate must pass a simple oral test. The test must cover simple rules of the air and local airspace issues as set out in this document.
- Before the Bronze Cross-country Endorsement navigation test
 - The candidate must undergo training, both theoretical and practical, in Navigation. This training may involve the use of GPS systems but must **involve and emphasise** the use of a Map.
- For the Navigation section of the cross country endorsement
 - Pass the full Air Law exam together with a repeated Local Airspace oral test.
 - Undertake the (revised, below) NST (Navigation Skills Test). A GPS may be used for the test but it must 'fail' at a random point during the flight to ensure that positional awareness is being fully maintained using a Map. (This test should be completed with an instructor who did not contribute to the training above)
 - Be signed off as being competent in the use of the GPS/Nav system intended for use in the pilot's early cross country endeavours.

The Pre Solo Oral Test

Laws and Rules Edition 16 requires that to qualify for the gliding certificate 'an appropriate level of knowledge of rules of the air and local airspace restrictions must be demonstrated to the supervising instructor at the time of the first solo flight'.

The BGA recommends that to meet this requirement that in addition to any pre-solo briefing regarding weather and airmanship precautions, etc, instructors require a locally formatted verbal test of pilots knowledge before the first solo flight to include the following;

- Height above the airfield and/or the surrounding area that the pilot can climb (indicated on the altimeter) before encountering airspace restrictions (reference current ICAO chart, NOTAMs and local LOA's)
- Areas of airspace to avoid horizontally (reference current ICAO chart, NOTAMs and local LOA's)
- Rules of the air pertinent to the solo flight including collision avoidance (reference BGA Laws and Rules)

The Bronze Cross Country Endorsement Navigation Skills Test (NST)

1. Purpose

The purpose of the navigation flight test is to ensure that the candidate is capable of navigating in the air by use of a map and compass as navigational aids. A GPS/Nav system may also be used, but the system will be “failed” during the course of the test to ensure that the map and compass navigation is being fully utilised. The candidate must plan the flight with regard to permanent airspace, temporary airspace, navigation warnings and any other aspects of good airmanship.

At the end of this test the examining instructor must be confident that the candidate can plan a flight and safely navigate in the air.

2. Task selection.

A task should be set of at least 100km with a maximum of two turning points such that the second leg does not come any closer than 15km from the home airfield. The reason for this is to avoid a flat triangle with the home airfield as its centre. Choose a route that avoids task legs that simply follow line features such as motorways, railways etc as this is not a good test of the candidate’s ability to navigate.

3. Pre flight preparation.

The candidate should be given about one hour to prepare to fly the task; however the length of time taken is not of great importance. During this time the candidate must obtain, and be able to extract relevant information for the day from NOTAMS and weather forecasts.

4. Turning points.

The turning points used for the test do not need to be from the BGA list; however they should be less than 150m across. For instance a specific building or junction within a town should be used but not the town itself. When selecting turning points, if an obvious turning point is used (Power station, Reservoir etc) then a more challenging one should also be included.

Ideally both turning points should be rounded however there are certain circumstances when this will not be possible or wise,

- a) The turning point is obscured by weather (shower etc)
- b) It is not soarable at the turning point and trying to round it will end in a field landing if not using a motor-glider.

On occasions the candidate can be within a few Km of the TP but still be unable to identify it. If this is the case, the examiner may point it out and continue with the test. This does not mean that the candidate has necessarily failed provided they are aware within a few Km of where they are.

5. Airspace

It is entirely the candidate’s responsibility to avoid airspace. If they attempt to enter airspace that does not allow VFR flight for gliders the instructor should stop the exercise at the edge of the airspace boundary, abandon the test and commence re-training. In other words attempted unlawful entry (vertically or horizontally) into airspace is an instant fail.

The candidate may hold a valid RT licence, in which case airspace may be penetrated provided that contact has been made with the appropriate controlling authority and permission to enter obtained.

Entering airspace such as Danger areas and Parachute drop zones whilst not unlawful demonstrates a distinct lack of airmanship. If the candidate attempts to enter a notified danger area or a parachute drop zone without first checking its status (an RT licence is not required in order to ascertain the activity at a drop zone), the candidate will be deemed to have failed the test.

It is also the candidate's responsibility to choose appropriate altimeter settings for the flight. If controlled airspace is about to be entered due to an incorrect altimeter setting then the examiner should again abandon the test.

6. Getting Lost

When navigating it is not always necessary to know exactly where we are all the time. However it is important to know where we are going, where we are not (i.e. in controlled airspace) and to a lesser extent where we have been.

Candidates will be under significant pressure during the test and even an experienced pilot could take some time before they are able to pinpoint precisely where they are. Because of this care should be taken when trying to ascertain whether the candidate knows their position. It may be better for the examiner to pick an obvious feature and see if the candidate can identify it. If the candidate flies over an obvious feature ask them how far down the track leg they think they are. It is also good enough for a candidate to be able to pick out and identify a main feature within 10Km even if they cannot pinpoint precisely where they are.

If the test is being carried out in a glider then it is unlikely that you will be flying straight down the track line, which leads to the question how does the examiner know whether a candidate knows where he is going. As a rule unless there is a good reason for diverting from track (Soaring conditions, bad weather or airspace) if a candidate heads off track by more than 45 Degrees for more than 10 minutes the examiner might assume that the candidate is disorientated. This situation should be left for as long as possible as candidates can often realise their mistake and rectify the situation.

If the flight becomes more than 20km off track the examiner can point this out and see if the candidate can recover the situation. The examiner should however still avoid telling the candidate where they are now unless they are totally disorientated in which case the test should be abandoned.

7. Use of a glider for the test

A glider is arguably the best tool to use if testing somebody's ability to navigate in gliders but unfortunately it is not always the easiest or most convenient. In an indifferent season opportunities are few and far between and a 'less than good' soaring day isn't a good reason to conduct a 'less than adequate' test. In addition there is always a great temptation for the instructor to stay within his/her soaring/navigational comfort zone, thus spoiling the opportunity to discover any ability the candidate may have to recover from error.

However when such pure gliding tests are feasible the candidate should be encouraged to do as much as possible, even though the examiner may need to take control and "re-centre" or even do the majority of the thermal flying on a difficult day. After this and prior to setting off the candidate should again be flying the glider and told to select the track and move off when ready. Once on track the instructor can offer advice on cloud selection if required.

The purpose of the flight is to test the ability of the candidate to navigate so it isn't mandatory to round all the turning points, especially if soaring conditions are poor. As long as they have navigated to within about 5Km of the feature that should be sufficient.

8. Use of a motorglider for the test.

The ability to be able to fly a heading down a track does little to test the candidate's aptitude at navigating in a glider under soarable conditions. Instead, circling, soaring, either attempted or successful, significant changes in altitude, periods with the engine at idle and even field landing practice can be used to add realism, although the examining instructor must bear in mind the costs involved. 'Added realism' should be applied at least once per leg so as to more realistically simulate glider cross country conditions.

Important considerations for the Instructor are as follows,

- a. The examining Instructor needs to establish the minimum weather criteria (wind strength, cloudbase etc) under which it is fair and effective to conduct the exercise.
- b. The examining Instructor takes overall responsibility for the flight, takeoff to landing, and must deal with engine and fuel management.
- c. Input during the course of this test should include adjustment of sink/climb (throttle) and indicating to the student location of 'thermals'.
- d. The student is to be tested on his/her ability to deal with disorientation due to 'circling in thermals' and 're-establishment of navigation after getting low'.
- e. Should one of the failure criteria be breached, an immediate end may be called to the test so that no more expense than necessary is incurred.

9. Other notes

An up to date map and serviceable compass is essential for the flight and they must be the primary navigation tools. A GPS/Nav system may be used but must be "failed" no later than at the first turning point. It is important to note that the GOTO function on a simple GPS can take a pilot directly through intervening airspace if the candidate is not aware of their position at all times on the paper map. The use of a GPS should at all times be an aid to navigation. The examiner should be able to take the GPS away at any point and the candidate should be able to tell within a 10Km circle where they are on a map.

11. Pass / Fail Criteria

This is left to the judgement of the examiner however certain errors will normally result in further training being required:

- a) Failure to read NOTAM's before the flight.
- b) Attempting to enter controlled or other restricted airspace without permission.
- c) Demonstrating poor airmanship with regard to parachute drop zones and danger areas.
- d) Getting lost and being unable to recover position.
- e) Being unaware at any time of the correct altimeter setting and its importance.

End.