

**IGC Sporting Code references  
to "Position Recorders" to replace Cameras for Silver and Gold Flights  
Effective 1 October 2009**

**SC3 - CHAPTER 4 - APPENDIX A ON "POSITION RECORDERS"**

The use of GPS position recorders for Silver and Gold badge flights

**A-1 General.** Many Global Positioning System devices can record the co-ordinates of their position at intervals. If this data can be downloaded in the same format as an .igc file, NACs may allow suitable GPS position recorders to be used to validate the horizontal position of the glider for Silver or Gold badges ONLY. Altitude data must be produced from a separate record of pressure altitude throughout the flight, to normal IGC standards (see A-7 below). This Appendix may duplicate some rules within Chapters 1 and 4, but only covers GPS units that are not IGC-approved flight recorders (FRs), and their use for Silver or Gold badges. Each NAC is to determine the specific types of GPS position recorders approved for use within their jurisdiction and to maintain a current list of them. A copy of the operating manual for each model together with any additional procedures needed to comply with this Appendix must be sent to the chairman of the IGC GFA Committee, who will comment if necessary on whether an individual NAC's proposal does comply. The GFAC will maintain a list of all NAC-approved units and their operating procedures and make it available on the IGC GNSS web pages. Further guidance is given in Annex C, para 6.1.

**A-2 Earth Model.** The GPS position recorders must use the WGS 84 Earth Model and it must not be possible to change this during the flight.

**A-3 Averaging and predicted positions.** Any GPS position recorder that can produce fixes both derived from real time satellite lines of position and estimated fixes produced through averaging or predicting based on past fixes is acceptable only if the estimation functions are disabled. The OO must supervise the disabling process or verify that it was completed before flight and certify that this was done.

**A-4 Frequency of fixes.** Fix frequency must be at least once per minute.

**A-5 Declaration.** A written declaration including all appropriate items listed in 4.2.1 is the only acceptable form.

**A-6 Downloading and verification.** Downloaded data from the GPS position recorder must be converted as closely as possible to the .igc format. Any download and conversion program must be approved by the NAC and include a validation system that will identify any changes to the .igc format file made after the initial download.

**A-7 Altitude** Evidence must be provided by a pressure altitude record that conforms to IGC rules and procedures for barographs (these include electronic pressure altitude recorders), and include calibration to the ICAO Standard Atmosphere (SC3 Annex C, Appendix 5). The profile of GPS-derived altitudes from a GPS position recorder must correspond to the profile of the pressure altitude record, but GPS altitude may only be used to prove continuity of flight. Where altitude measurement is required, pressure altitude is used in the normal way.

**A-8 Presence of GPS position recorder in the glider.** There must be incontrovertible proof, independent of the recorded data, that the recorder was in the glider flown by the pilot claiming the soaring performance.

**A-9 Before flight** The OO must ensure the GPS position recorder is installed, configured, or sealed in such a way that switches and buttons that could affect the downloaded flight data or allow connection to devices that could alter the data, cannot be used.

**A-10 Takeoff and landing.** The OO must ensure that there is evidence of the position and time of take off and landing. This evidence must be independent of the data produced by the recorder.

**A-11 After flight.** As soon as possible the OO shall check any seals applied before the flight, supervise the download of data from the GPS position recorder and perform a preliminary analysis of the flight claim. Both the .igc format data file and any other data file (if applicable) from the recorder shall then be sent, using NAC-specified methods, to a NAC-approved person to analyse the data.

**A-12 Analysis.** The analysis of the data must be done in the same manner as the data from an IGC-approved FR, including the validation process. See A-7 regarding altitude.

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## **Annex B to the Code (SC3B) on "Position Recorders".**

Amendment 5 to SC3B includes the following:

*Terminology - "Recorder" – previously the term "Recorder" was used as a short form of "IGC-approved Flight Recorder". With the creation of a new category of "Position Recorders", the term "Recorder" could have two meanings. Therefore, in Annex B, where the term "Recorder" was used, it is replaced by either "Flight Recorder" or "FR". This applies throughout the document and each case is not listed below, there are too many. However, the correction is made on the complete version of Annex B that is dated 1 October 2009 and available on the web.*

### **Detailed amendments:**

Add: Position Recorder - a stand-alone GPS unit (different to an IGC-approved Flight Recorder), data from which may be used for position (Lat/Long) evidence for Silver and Gold badge flights only. This is under special rules and procedures given in the Sporting Code for Gliding (SC3) that allow NACs to approve the use of such units for this purpose. For altitude measurement, IGC uses Pressure Altitude to the ICAO ISA and this is required for Silver and Gold flights in the normal way. The IGC criteria for barographs and their calibration, apply, including Chapter 2 of this document Rules and procedures for Position Recorders are given in the appendix to SC3 Chapter 4, and in Annex C (SC3C) para 6.1 and Appendix 5 on Pressure Altitude Calibrations. (AL5)

Validation, Vali check – add: A less rigorous form of file validation applies to Position Recorders (see above) where Validation of the file at any time later may be provided either by part of the program that downloads the data or by another method accepted by the NAC and GFAC. When a flight data file from a Position Recorder is checked later by the appropriate Validation function, it must show that the file is identical to when it was originally downloaded. This differs from IGC-approved FRs, where the signature generation and Validation program originates from the FR manufacturer and the serviceability and sealing of the FR itself is also checked as part of the Validation process. (AL5)

### **Main Annex B paragraphs**

B1.7 Second sentence and later to read: " An IGC-approved Flight Recorder must also be used for evidence for FAI/IGC Badge and Diploma Flights except that, for Silver and Gold badge flights only, evidence from a Position Recorder may be used under special Sporting Code rules (for definition and

SC3 references see the Glossary under "Position Recorder"). IGC-approved FRs may also be used by NACs for other flights where FAI/IGC standards are specified by the NAC such as for competitions, national and regional records. For the different levels of IGC-approval, see para

## **SC3B Chapter 2**

B2.1.1.2 (new numbering), to read: **GNSS altitude**. Where this is recorded in an IGC-approved FR or a Position Recorder, GNSS Altitude may be used for evidence of flight continuity (proof of "no intermediate landing") if pressure altitude recording has failed. See also para 2.4. (AL5)

B2.2.2 to read: **Other Barographs – Silver and Gold badge flights**. Barographs and pressure-altitude sensors that are not part of an IGC-approved GNSS Flight Recorder may be used on flights for FAI/IGC Silver and Gold badges in conjunction with a Position Recorder (see the Glossary for "Position Recorder" with SC3 references). For FAI/IGC World Records, Diamond badge flights and distance diplomas, an IGC-approved GNSS Flight Recorder shall be used (para 2.3 below and SC3 para 4.5.2).

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## **Annex C to the Code (SC3B) on "Position Recorders".**

**C1.1 The Sporting Code.** The 2009 edition is a major rewrite to update rules on flight evidence. The major changes were the deletion of camera evidence for position and the addition of procedures for the use of GPS position recorders as a direct replacement for the camera.

**C1.5 Terminology.** Where the abbreviation "FR" is used in the Sporting Code and here, it refers to flight recorders that have been given IGC-approval (para 6.2) after testing by the GNSS Flight Recorder Approval Committee (GFAC). Other units that are approved by individual NACs for restricted use are termed "GPS position recorders".

**C3.3 Notes on declarations.** C3.3 a. ... A written declaration is always required when using a GPS position recorder. ...

**C6.1 GPS position recorders.** These recorders may be used for evidence of horizontal position for Silver and Gold badge claims in accordance with the SC3 Chapter 4 Appendix. For altitude measurement, refer to para A-7 of this Appendix. Position recorder approvals by a NAC shall include any operating limitations it intends to apply in order that a given unit conforms to the Sporting Code, such as requiring certain switches or buttons to be sealed or placing it out of reach of the crew. The associated software approved by the NAC to download and later to validate flight data shall also be specified. Before issuing an approval, NACs must send to the GFAC chairman a copy of the operating manual of the GPS unit, the proposed operating limitations, and a copy of the download/validation software with some specimen flight data files. This will enable a global list to be compiled of the types of position recorders used by all NACs, how they are to be operated, typical flight data files produced, and what download/validation software is used. This data will be posted on the IGC GNSS web pages for use by other NACs and for general information. Queries on GPS aspects should be addressed to the GFAC chairman, and on Sporting Code rules to the chairman of the IGC Sporting Code committee. For contact details, see the IGC web pages. Currently these are: GFAC <[ian@ukiws.demon.co.uk](mailto:ian@ukiws.demon.co.uk)> and Sporting Code <[106025.2661@compuserve.com](mailto:106025.2661@compuserve.com)>.

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