



FAI Sporting Code

*Fédération
Aéronautique
Internationale*

Section 3 – Gliding

CLASS D (Gliders)
Including Class DM (Motor Gliders)

1999 Edition – AL6

This amendment is valid from 1 October 2005

*Avenue Mon-Repos 24
CH-1005 Lausanne
(Switzerland)
Tél.: +41(0) 21/345.10.70
Fax: +41(0) 21/345.10.77
E-mail: sec@fai.org
Web: www.fai.org*

FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

Avenue Mon Repos 24
CH 1005 - Lausanne
Switzerland

<http://www.fai.org>
e-mail: *sec@fai.org*

Copyright 2005

All rights reserved. Copyright in this document is owned by the Fédération Aéronautique Internationale (FAI). Any person acting on behalf of the FAI or one of its members is hereby authorised to copy, print, and distribute this document, subject to the following conditions:

1. The document may be used for information only and may not be exploited for commercial purposes.
2. Any copy of this document or portion thereof must include this copyright notice.

Note that any product, process or technology described in the document may be the subject of other intellectual property rights reserved by the Fédération Aéronautique Internationale or other entities and is not licensed hereunder.

Rights to FAI international sporting events

All international sporting events organised wholly or partly under the rules of the Fédération Aéronautique Internationale (FAI) Sporting Code¹ are termed *FAI International Sporting Events*². Under the FAI Statutes³, FAI owns and controls all rights relating to FAI International Sporting Events. FAI Members⁴ shall, within their national territories⁵, enforce FAI ownership of FAI International Sporting Events and require them to be registered in the FAI Sporting Calendar⁶.

Permission and authority to exploit any rights to any commercial activity at such events, including but not limited to advertising at or for such events, use of the event name or logo for merchandising purposes and use of any sound and/or image, whether recorded electronically or otherwise or transmitted in real time, must be sought by way of prior agreement with FAI. This includes specifically all rights to the use of any material, electronic or other, that form part of any method or system for judging, scoring, performance evaluation or information utilised in any FAI International Sporting Event⁷.

Each FAI Air Sport Commission⁸ is authorised to negotiate prior agreements on behalf of FAI with FAI Members or other entities as appropriate, of the transfer of all or parts of the rights to any FAI International Sporting Event (except World Air Games events⁹) which is organised wholly or partly under the Sporting Code section¹⁰ for which that Commission is responsible¹¹. Any such transfer of rights shall be by "Organiser Agreement"¹² as specified in the current FAI Bylaws Chapter 1, para 1.2 *Rules for Transfer of Rights to FAI International Sporting Events*.

Any person or legal entity which accepts the responsibility for organising an FAI Sporting Event, whether or not by written agreement, in doing so also accepts the proprietary rights of FAI as stated above. Where no formal transfer of rights has been established, FAI retains all rights to the event. Regardless of any agreement or transfer of rights, FAI shall have, free of charge for its own archival and/or promotional use, full access to any sound and/or visual images of any FAI Sporting Event, and always reserves itself the right to have any and all parts of any event recorded, filmed and/or photographed for such use, without charge.

- 1 FAI Statutes, Chapter 1, para 1.6
- 2 FAI Sporting Code, General Section, Chapter 3, para 3.1.3
- 3 FAI Statutes, Chapter 1, para 1.8.1
- 4 FAI Statutes, Chapter 5, paras 5.1.1.2, 5.5, 5.6, and 5.6.1.6
- 5 FAI Bylaws, Chapter 1, para 1.2.1
- 6 FAI Statutes, Chapter 2, para 2.3.2.2.5
- 7 FAI Bylaws, Chapter 1, para 1.2.3
- 8 FAI Statutes, Chapter 5, paras 5.1.1.2, 5.5, 5.6, and 5.6.1.6
- 9 FAI Sporting Code, General Section, Chapter 3, para 3.1.7
- 10 FAI Sporting Code, General Section, Chapter 1, paras 1.2 and 1.4
- 11 FAI Statutes, Chapter 5, para 5.6.3
- 12 FAI Bylaws, Chapter 1, para 1.2.2

NOTE

At the IGC meeting 2004, it was decided that at some future date verification of badge flights will require the use of a flight recorder.

Other means of verification shown in this edition of the Sporting Code will no longer be accepted.



**Fédération
Aéronautique
Internationale**

Sporting Code Section 3 – Gliders

The FAI Sporting Code for gliders (the “Code”) sets out the rules and procedures to be used to verify soaring performances. The essence of these rules is to ensure that a soaring performance is achieved to a level of proof that is consistent for all flights. When processing the evidence supplied, Official Observers (OO) and the National Airsport Control (NAC) should ensure that these rules are applied in the spirit of fair play and competition.

In Chapter 1 of the Code, a word or phrase appearing in small capital letters indicates that it has a distinct definition as it applies to the Code. The Code has three separate annexes:

*Annex A – Rules for world and continental soaring championships
Annex B – Requirements for equipment used in flight validation
Annex C – Official Observer and pilot’s guide to SC3*

References outside a chapter are by paragraph number.

Text in italic is informational in nature and not part of the rules and regulations of the Code.

Amendment list (AL) record

Formal amendments are published by the FAI Secretariat, acting for the International Gliding Commission (IGC). Within nations, the organisation responsible for National Airsport Control (NAC) for gliding is then responsible for distributing amendments to all holders of Section 3 of the Sporting Code (SC3). This amendment list is for SC3 only – separate lists exist for the annexes to SC3.

A proposal for an amendment to the Sporting Code or its annexes must be submitted to the IGC Bureau at least six months prior to the next IGC Plenary meeting. A proposal must refer to the paragraphs affected and give reasons for the amendment. It is preferable for the proposed change to be in the format of the Code.

The Bureau will review the proposal and determine if it is “substantial” or otherwise, following input from the specialist subcommittee. The Bureau will instruct the specialist subcommittee to process items that are clarifications of existing rules, or prepare discussion papers on substantial proposals for consideration at the next Plenary meeting. At the Plenary meeting, the philosophy behind a substantial amendment will be considered and set. The specialist subcommittee will then draft the Code amendment with Bureau feedback, and have it tested as required. The proposed amendment will then be put on the IGC web site prior to the following Plenary meeting, at which time it will be submitted for approval or rejection. See the action flowchart opposite for details.

A Code clarification becomes effective on the 1st of October following approval by the Bureau. A substantial change become effective on the 1st of October following the IGC meeting at which it is approved, except that if it has flight safety implications it may be approved by the Bureau prior to the IGC meeting.

AL #	Action date of AL	Amended by (signature)	Name	Date amended
1	1 Oct 2000	all changes incorporated		
2	1 Oct 2001	all changes incorporated		
3	1 Oct 2002	all changes incorporated		
4	1 Oct 2003	all changes incorporated		
5	1 Oct 2004	all changes incorporated		
6	1 Oct 2005	all changes incorporated		

Fédération Aéronautique Internationale

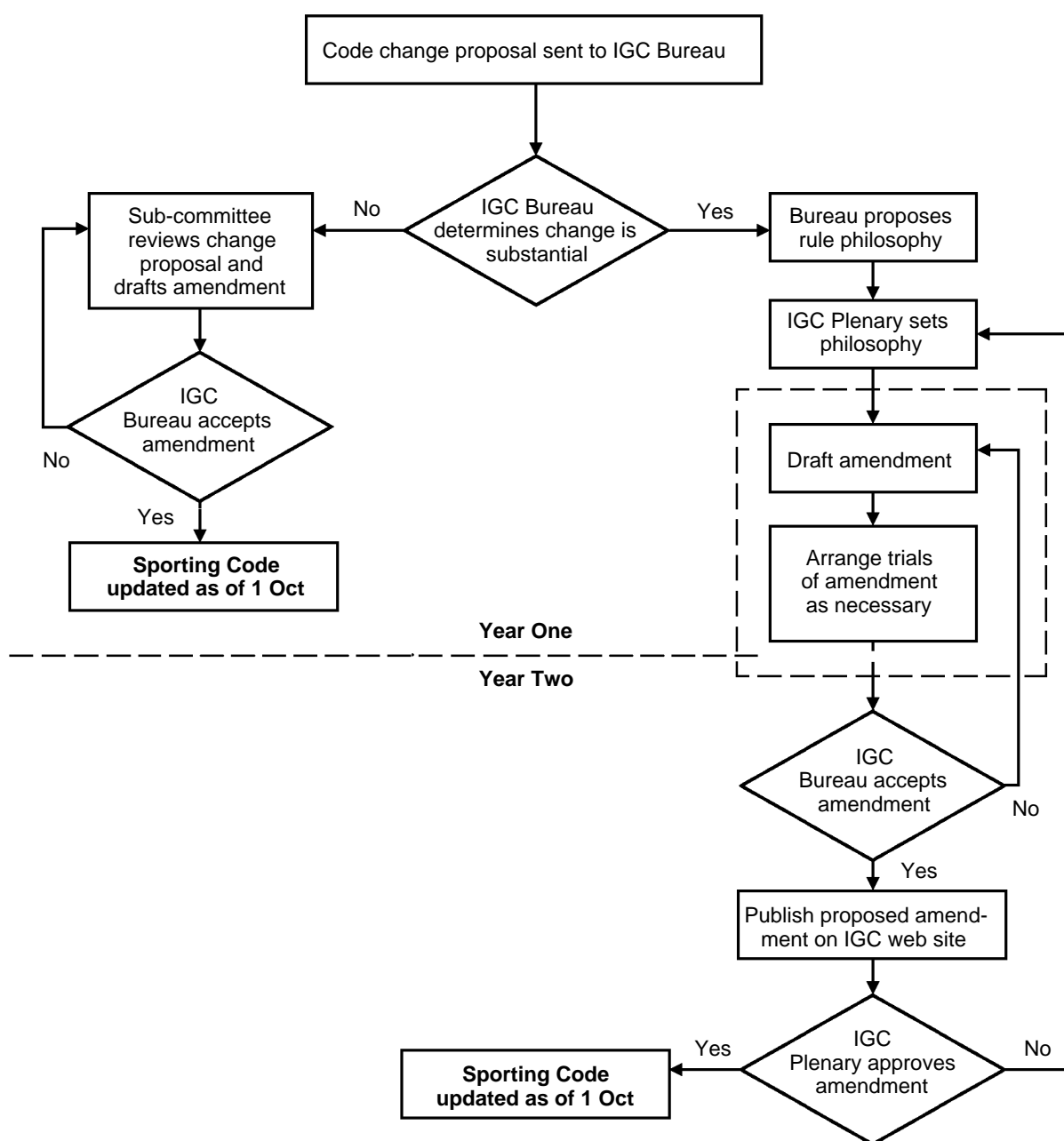
Avenue Mon Repos 24
CH 1005 – Lausanne
Switzerland

Tel: +41 21 345 1070 Fax: +41 21 345 1077

<http://www.fai.org/gliding/>

e-mail: sec@fai.org

Sporting Code review and change process



When amendments have been made to the text of the Code, a copy of the amendment list instructions should be inserted after this page so that, later, the subjects of the amendment may be easily identified. Alternatively, users may download the amended Code from the document page of the FAI web site.

The latest amendments are indicated by a vertical line to the right of any paragraph that has been changed, as shown here.

TABLE OF CONTENTS

<i>paragraph</i>	<i>page</i>
Chapter 1 General rules and definitions	
1.0 General	1
1.1 Definition of flight terms	1
1.2 Definition of soaring measurement terms	2
1.3 Other definitions	3
1.4 Types of soaring performances	4
Chapter 2 FAI badges	
2.0 General	6
2.1 Badge requirements	6
2.2 Badge design	7
Chapter 3 World gliding records	
3.0 General	8
3.1 Record categories, classes, and types	8
3.1.4 Table 1 – Types of record flights	9
3.2 Time limits on record claims	9
Chapter 4 Verification requirements and methods	
4.1 Flight data requirements	10
4.2 Declaration	10
4.3 Flight data verification	11
4.4 Calculations and calibrations	12
4.4.3 Table 2 – Minimum data requirements	13
4.4.4 Table 3 – Minimum accuracy requirements	13
4.5 Time measurement and evidence	14
4.6 Position measurement and evidence	15
4.7 Altitude evidence and control	18
4.8 Means of propulsion evidence and control	18
Chapter 5 Official Observers	
5.1 Authority	20
5.2 Certification of events	21
Chapter 6 Certificates and proofs	
6.0 General	22
6.1 Barogram	22
6.2 Landing certificate	22
6.3 Barograph calibration certificate	22
6.4 Timing device calibration statement	22
6.5 FAI record claim forms	23
Chapter 7 Glider classes and international competitions	
7.0 General	24
7.1 Conformity with class rules	24
7.2 Eligibility of gliders	24
7.3 Mass limits	24
7.4 Handicapping	24
7.5 Time scale for class changes	25
7.6 World championships	25
7.7 Competition classes	25
7.8 International competitions	26
Index	27

Chapter 1

GENERAL RULES and DEFINITIONS

1.0 GENERAL

1.0.1 The General Section of the Sporting Code contains general definitions and rules applying to all air sports. This Section (SC3) gives specific rules that apply to gliders (GS 2.2.1.4 Class D). Rules for motor gliders (Class DM) are also included in this section.

Gliding aerobatic competition is covered in Section 6, hang gliders and paragliders (GS 2.2.1.13, class O) in Section 7, and microlights (GS 2.2.1.15, class R) in Section 10.

1.0.2 Section 3 rules apply to all glider flights for FAI badges and world records.

1.0.3 Section 3 includes annexes that contain specialised rules and guidance:

- a. Annex A Contains rules and other details on world and all other FAI-sanctioned gliding competitions.
- b. Annex B Covers requirements for equipment used for flight validation.
- c. Annex C Gives non-regulatory guidance, methods and sample calculations to assist Official Observers and pilots in complying with SC3.

The FAI document, "Technical Specifications for IGC-Approved GNSS Flight Recorders" gives information required by manufacturers of flight recorders.

1.0.4 **GLIDER** A glider is a fixed wing aerodyne capable of sustained soaring flight and having no means of propulsion. Class D is the FAI Class for gliders and includes Class DM for motor gliders. For records, gliders fall within one of the following sub-classes:

- a. OPEN any glider.
- b. 15 METRE any glider with a wingspan not exceeding 15,000 mm.
- c. WORLD a PW-5 glider as defined in Chapter 7.7.5.
- d. ULTRALIGHT a glider with a takeoff mass not exceeding 220 kg, and a MICROLIFT glider is an ULTRALIGHT glider with a wing-loading not exceeding 18 kg/m².
MICROLIFT gliders do not have separate world records.

Championship classes are defined in Chapter 7.7

1.0.5 **MOTOR GLIDER** A fixed wing aerodyne equipped with a means of propulsion (MoP), capable of sustained soaring flight without thrust from the means of propulsion.

1.0.6 Terms, rules, and requirements are defined first in their most general sense. Where an exception to a general rule exists, it will be described in the paragraph of the Code where the exception occurs.

1.1 DEFINITION of FLIGHT TERMS

SOARING PERFORMANCE

1.1.1 The performance during that portion of a glider flight from the START POINT to the FINISH POINT. A means of propulsion must not be used during the SOARING PERFORMANCE.

WAY POINT

1.1.2 A precisely specified point or point feature on the surface of the earth using a word description and/or a set of coordinates. A WAY POINT may be a START POINT, a TURN POINT, or a FINISH POINT and has an associated OBSERVATION ZONE.

LEG

1.1.3 The straight line between two successive WAY POINTS. The length of a LEG is subject to a correction in the circumstances given in 1.2.11.

COURSE	1.1.4	All the LEGS of a SOARING PERFORMANCE.	
OBSERVATION ZONE	1.1.5	The airspace a glider must enter to verify that a WAY POINT has been reached (see 4.6.2f). A given SOARING PERFORMANCE may use only one type of OBSERVATION ZONE (OZ). The shape of OZ may be either:	(AL6)
	a.	a SECTOR OZ (1.2.9),or	
	b.	a CYLINDER OZ (1.2.10). This OZ may only be used when a FLIGHT RECORDER (see 1.3.5) is used for verification	
RELEASE POINT	1.1.6	The point on the ground vertically below where the glider releases from launch or ceases to use any means of propulsion.	(AL6)
START	1.1.7	The beginning of the SOARING PERFORMANCE. It must be either:	(AL6)
	a.	The release from launch, or stopping the use of any means of propulsion, or	
	b.	Leaving the OBSERVATION ZONE of a START POINT, or	
	c.	Crossing a START LINE.	
START POINT	1.1.8	The WAY POINT marking the beginning of a SOARING PERFORMANCE. It must be either:	(AL6)
	a.	The RELEASE POINT, or	
	b.	A WAY POINT declared as a START POINT, or	
	c.	The midpoint of a START LINE.	
START LINE	1.1.9	A horizontal line, 1 km in length, oriented approximately perpendicular to the first LEG. The midpoint of the line (the START POINT) is at ground level.	(AL6)
TURN POINT	1.1.10	A WAY POINT between two LEGS of a flight.	(AL6)
FINISH	1.1.11	The end of the SOARING PERFORMANCE. It occurs on:	(AL6)
	a.	Landing the glider, or	
	b.	Entering the OBSERVATION ZONE of the FINISH POINT, or	
	c.	Crossing a FINISH LINE, or	
	d.	Starting an MoP.	
FINISH POINT	1.1.12	The WAY POINT marking the end of a SOARING PERFORMANCE. It is:	(AL6)
	a.	The point at which the nose of the glider comes to rest without external assistance after landing, or	
	b.	A WAY POINT declared as the FINISH POINT or goal, or	
	c.	The midpoint of a FINISH LINE, or	
	d.	The point at which an MoP is started.	
FINISH LINE	1.1.13	A horizontal line, 1 km in length, oriented approximately perpendicular to the final LEG. The midpoint of the line (the FINISH POINT) is at ground level.	(AL6)
GOAL	1.1.14	A FINISH POINT specified in a DECLARATION (see 4.3.4).	(AL6)
CLOSED COURSE	1.1.15	A GOAL flight where the glider is required to return to the START POINT at the FINISH of the SOARING PERFORMANCE (see 4.3.4).	(AL6)

1.2 DEFINITION of SOARING MEASUREMENT TERMS

Depending upon the type of flight, the following parameters may be determined to assess a SOARING PERFORMANCE. The requirements for gathering soaring measurements and the precision of measurement are given in Chapter 4.

START TIME 1.2.1 The time that the SOARING PERFORMANCE starts.

START ALTITUDE 1.2.2 The altitude of the glider above sea level at the START.

FINISH TIME 1.2.3 The time that the SOARING PERFORMANCE finishes.

FINISH ALTITUDE	1.2.4	The altitude of the glider above sea level at the FINISH.
DURATION	1.2.5	The time elapsed between the START TIME and the FINISH TIME.
SPEED	1.2.6	The OFFICIAL DISTANCE divided by the DURATION.
LOSS OF HEIGHT	1.2.7	The START ALTITUDE minus the FINISH ALTITUDE (see also 1.4.7).
GAIN OF HEIGHT	1.2.8	The difference between the maximum altitude and a previous minimum altitude during the SOARING PERFORMANCE.
SECTOR OZ	1.2.9	This OBSERVATION ZONE is the airspace above a 90-degree sector with its apex at the WAY POINT. This sector is: <ul style="list-style-type: none"> a. For a TURN POINT, symmetrical to and remote from the bisector of the inbound and outbound LEGS of the TURN POINT, b. For a START POINT, symmetrical to and remote from the outbound LEG, c. For a FINISH POINT, symmetrical to and remote from the inbound LEG.
CYLINDER OZ	1.2.10	This OBSERVATION ZONE is the airspace in a vertical cylinder of 0.5 kilometres radius centred on the WAY POINT.
OZ CORRECTION	1.2.11	Each time a LEG crosses a CYLINDER OZ boundary, 0.5 kilometres shall be subtracted from the length of that LEG. This correction does not apply where FLIGHT RECORDER fixes are used as WAY POINTS in free distance record performances.
HEIGHT PENALTY	1.2.12	A distance equal to 100 times the excess over 1000 metres LOSS OF HEIGHT. (See 4.4.2 for how the penalty is applied.)
OFFICIAL DISTANCE	1.2.13	The sum of the LEGS, with OZ CORRECTION deducted where applicable, less any applicable HEIGHT PENALTY.

1.3 OTHER DEFINITIONS

OFFICIAL OBSERVER	1.3.1	The Official Observer (OO) is the person who has the official control of flights undertaken for FAI badge or record attempts and of the data gathered to prove a SOARING PERFORMANCE (see chapter 5).
DECLARATION	1.3.2	The official description of the task and other data as listed and defined in 4.2.
BAROGRAPH	1.3.3	A recording device measuring external air pressure.
BAROGRAM	1.3.4	The trace, recording, or electronic data output of a BAROGRAPH.
FLIGHT RECORDER	1.3.5	An electronic device that has been approved by the IGC to record data, including position and altitude, during a flight.
MoP RECORDER	1.3.6	A device that either: <ul style="list-style-type: none"> a. Records the time and altitude of any operation of the MoP or a change in configuration of the glider after which the MoP cannot be operated, or b. Records the fact that the MoP is not being used. It must operate in such a way that failure of the device will indicate that the MoP is being used.
GEODESIC	1.3.7	(Also geodesic line and geodesic distance.) The shortest distance between two points on the surface of an ellipsoidal world model. See also 4.4.1 and Annex C, Appendix 2.

1.4 TYPES of SOARING PERFORMANCES

1.4.1 General requirements

- a. A SOARING PERFORMANCE may be claimed for gain of height, absolute altitude, duration, distance, and speed.
- b. A SOARING PERFORMANCE may be claimed from any flight that meets the requirements of proof for that performance except where specifically prohibited in the rules (see 3.0.2b).
- c. A DECLARATION is required except where specifically not required in the rules.
- d. WAY POINTS must be declared and used in the sequence declared except where specifically not required in the rules.

1.4.2 Altitude, gain of height, and duration performances

No DECLARATION is required.

- a. ABSOLUTE ALTITUDE
A SOARING PERFORMANCE measured for maximum altitude achieved. An absolute altitude performance is valid only if preceded by a GAIN OF HEIGHT of at least 5000 metres.
- b. GAIN OF HEIGHT
A SOARING PERFORMANCE measured for GAIN OF HEIGHT.
- c. DURATION
A SOARING PERFORMANCE measured for DURATION.

1.4.3 Free distance performances for records only

The WAY POINT(S) of free distance record flight performances may be declared post-flight. Although only one distance record may be claimed (see 3.0.2b), free distance courses may be claimed in conjunction with any other flight course in 1.4.4, 1.4.5, and 1.4.6 using declared WAY POINT(S) if desired. The free distance record types are:

- a. FREE DISTANCE
A flight from a START POINT to a FINISH POINT with no TURN POINTS.
- b. FREE OUT AND RETURN DISTANCE
A CLOSED COURSE flight having one TURN POINT.
- c. FREE DISTANCE USING UP TO THREE TURN POINTS
A flight from a START POINT via up to three TURN POINTS to a FINISH POINT. The TURN POINTS must be at least 10 kilometres apart and may be claimed only once.
- d. FREE DISTANCE AROUND A TRIANGLE
 - (i) A CLOSED COURSE flight via three TURN POINTS independent of the position of the START/FINISH POINT. The OFFICIAL DISTANCE is given by the sum of the LEGS of the triangle formed by the TURN POINTS.
 - (ii) A CLOSED COURSE flight via two TURN POINTS.
 - (iii) For record flights of 750 kilometres or more, no LEG of the triangle may have a length of less than 25% or more than 45% of the OFFICIAL DISTANCE. For shorter record flights, no LEG may have a length of less than 28% of the OFFICIAL DISTANCE.

Note that the start and finish points are not turn points unless specifically declared as such (this applies to 1.4.4b also).

1.4.4 **Distance performances for badges and records**

The following COURSES may be used only for distance flights:

- a. **STRAIGHT DISTANCE TO A GOAL**
A flight from a START POINT to a declared FINISH POINT with no TURN POINTS.
- b. **DISTANCE USING UP TO THREE TURN POINTS**
A declared flight from a START POINT via up to three TURN POINTS to a FINISH POINT. If the FINISH POINT is the landing place it need not be declared. The TURN POINTS must be at least 10 km apart and may be claimed once, in any sequence, or not at all.

1.4.5 **Distance performance for badges only**

STRAIGHT DISTANCE

A flight from a START POINT to a FINISH POINT with no TURN POINTS. No WAY POINT DECLARATION is required unless a START POINT other than the RELEASE POINT is used or the FINISH POINT is also to be a GOAL.

1.4.6 **Distance and speed performances for badges and records**

The following COURSES may be used to claim distance and/or speed performances.

- a. **OUT AND RETURN FLIGHT**
A CLOSED COURSE flight having one TURN POINT.
- b. **TRIANGLE FLIGHT**
 - (i) A CLOSED COURSE flight via three TURN POINTS independent of the position of the START/FINISH POINT. The OFFICIAL DISTANCE is given by the sum of the LEGS of the triangle formed by the TURN POINTS. The minimum OFFICIAL DISTANCE for this type of course is 300 kilometres.
 - (ii) A CLOSED COURSE flight via two TURN POINTS.
 - (iii) For records only, the restrictions on triangle geometry noted in 1.4.3d (iii) also apply.

1.4.7 **Loss of height – alternate calculation for distance flights**

A distance flight (1.4.4, 1.4.5 and 1.4.6) starting as defined in 1.1.7b (a declared START POINT) may be claimed where the LOSS OF HEIGHT (1.2.7) is measured from the release height to the elevation of the finish point.

The release point is not the start of the course in this case.

Chapter 2

FAI BADGES

This chapter defines and gives the requirements to meet the international standard levels of soaring achievement.

2.0 GENERAL

The FAI badges are international standards of achievement that are not required to be renewed. Flights qualifying for badges shall be controlled in accordance with the requirements of this Code. The distance requirement for each badge shall be the calculated official distance (1.2.13).

2.0.1 A flight may count towards any badge performance for which the conditions are fulfilled. The pilot must be alone in the glider, and the OO must certify that this was the case.

2.0.2 Badge flight registers

Each NAC should keep a register of badge flights it has validated.

(AL6)

2.1 BADGE REQUIREMENTS

The soaring performances required to qualify for the FAI badge standards of achievement are:

2.1.1 Silver Badge

The Silver badge is achieved on completing the following three soaring performances:

- a. SILVER DISTANCE a flight on a straight course of at least 50 kilometres.

Any leg of 50 kilometres or more of a longer predeclared course may qualify, subject to the requirements of 4.4.2 on altitude difference applied to the whole course flown.

The Silver distance flight should be flown without navigational or other assistance given over the radio (other than permission to land on an airfield) or help or guidance from another aircraft.

- b. SILVER DURATION a duration flight (1.2.5) of at least 5 hours.

- c. SILVER HEIGHT a gain of height (1.2.8) of at least 1000 metres.

2.1.2 Gold Badge

The Gold badge is achieved on completing the following three soaring performances:

- a. GOLD DISTANCE a distance flight of at least 300 kilometres,

- b. GOLD DURATION a duration flight of at least 5 hours,

- c. GOLD HEIGHT a gain of height of at least 3000 metres.

2.1.3 Diamonds

There are three Diamonds, each of which may be worn on the Silver, Gold, and the badges for flights of 750 kilometres or more (see 2.1.4). NACs should maintain a register of these badges and on notification by a NAC, FAI will enter the names of pilots attaining the 3 Diamond award in an international register. (AL6)

- a. DIAMOND DISTANCE a distance flight of at least 500 kilometres.

- b. DIAMOND GOAL a goal flight of at least 300 kilometres over an out-and-return or triangular course (1.4.6a and 1.4.6b).

- c. DIAMOND HEIGHT a gain of height of at least 5000 metres.

2.1.4 **Badges and Diplomas for flights of 750 kilometres and more**

These are a family of badges that are achieved on completing a distance flight of 750 kilometres or more, in increments of 250 kilometres (ie. 750 km, 1000 km, 1250 km, etc.). One badge is awarded per flight for the incremental distance immediately less than the distance flown. NACs should maintain a register of these badges and on notification by a NAC, FAI will award a special Diploma for flights of 1000 km and more. (AL6)

2.2 **BADGE DESIGN** (reproduced approximately twice real size):



2.2.1 **Silver and Gold Badge**



2.2.2 **Three Diamonds Badge** (1 & 2 Diamonds similar)



2.2.3 **750 Kilometre and more Badges**
(1000 km illustrated, others and with one and two Diamonds, similar.)

(AL6)

Chapter 3

WORLD GLIDING RECORDS

This chapter defines and explains the general handling of FAI world record claims. General rules relating to records are in the General Section of the Sporting Code.

3.0 GENERAL

FAI world gliding record attempts require no advance notice provided that arrangements have been made for controlling the flight (5.1.2 and 5.1.3).

3.0.1 FAI Sporting Licence

The pilot must possess a valid FAI Sporting Licence (GS 8.1) in order to attempt and to claim an FAI world record.

3.0.2 Records in any one flight

Any record or records may be broken in any one flight for which the requirements are met, except that:

- a. A speed record will be certificated for the record distance immediately less than the official distance of the flight.
- b. Within any single class and/or category, only one distance and one speed record may be certificated for the flight. (See Annex C para 4.5.)

3.0.3 Verification of world records

World records must be verified with the evidence of a flight recorder approved by the IGC for world records. FRs with lower levels of approval are acceptable for the badges noted in their approval documents (see Annex C para 6.1) Other techniques described in this Code are acceptable for badges.

3.0.4 World record margins

A new record claim must exceed the current value by 1 kilometre for distance, 1 km/h for speed, and 3% for altitude.

3.1 RECORD CATEGORIES, CLASSES, and TYPES

Record categories are concerned with the pilot, record classes with the glider, and record types with the nature of the soaring performance.

3.1.1 Pilot categories

There is a General category for all pilots, and a Feminine category where all members of the flight crew are female.

3.1.2 Aircraft classes

World records are recognised in the classes listed in 1.0.4. Multi-place gliders and motor gliders are integrated into these record classes where applicable.

- a. MULTI-PLACE GLIDERS All persons on board the glider must named on the claim form and be at least 14 years old. Only flight crew members possessing a valid Sporting Licence will be listed by name in the records of the FAI.
- b. ALTITUDE RECORDS Absolute altitude and gain of height records are listed in both pilot categories but only in the Open record class (3.1.4i and 3.1.4j).

3.1.3 Designation of records

Glider records are designated by code letters, starting with the FAI code letter for gliders (D), then the glider class concerned, and finally the pilot category (general or feminine).

Open Class glider records are designated by adding the letter O.
 15m Class glider records are designated by adding the numbers 15.
 World Class glider records are designated by adding the letter W.
 Ultralight glider records are designated by adding the letter U.

The General pilot category is designated by the letter G.
 The Feminine pilot category is designated by the letter F.

Examples: DWF – Gliding, World class, Feminine
 D15G – Gliding, 15 metre class, General

TABLE 1

3.1.4 Types of record flights		<i>Ref.</i>	<i>Remarks (see Chapter 1 for details)</i>
<i>Flight Performance</i>			
Distance records			
3.1.4a	Free Distance	1.4.3a	Way points claimed post-flight
3.1.4b	Free Out-and-Return Distance	1.4.3b	Way points claimed post-flight
3.1.4c	Free Three Turn Point Distance	1.4.3c	Up to 3 turn points claimed post flight
3.1.4d	Free Triangle Distance	1.4.3d	Way points claimed post-flight
3.1.4e	Straight Distance to a Goal	1.4.4a	Pre-declared goal with no turn points
3.1.4f	Three Turn Point Distance	1.4.4b	Up to 3 pre-declared turn points
3.1.4g	Out-and-Return Distance	1.4.6a	1 pre-declared turn point
3.1.4h	Triangle Distance	1.4.6b	2 or 3 pre-declared turn points
Speed records			
3.1.4i	Speed over an out and return course of 500 km and all multiples of 500 km	1.4.6a	1 pre-declared turn point
3.1.4j	Speed over a triangular course of 100, 300, 750, 1250 km; also 500 km and all multiples of 500 km	1.4.6b	2 or 3 pre-declared turn points
Altitude records			
3.1.4k	Absolute altitude	1.4.2a	Open class only, 5000m gain required
3.1.4m	Gain of Height	1.4.2b	Open class only

3.1.5 Minimum achievement for new record classes or types

Where a new record category, class, or type is created, a minimum level of performance may be set by the IGC that must be exceeded before a world record will be validated. It may be published in this Code, or published separately by the FAI.

3.2 TIME LIMITS on RECORD CLAIMS

3.2.1 Notice of a claim for a world record must be submitted by either the NAC or the Official Observer controlling the attempt and must be received by the FAI within seven days of its completion as a record attempt. In exceptional circumstances, the president of the IGC may grant an extension. Telephone, fax, e-mail, and similar types of notification are acceptable. (GS 6.8.4)

3.2.2 A world record claim must be supported by a file containing all the information and certification necessary to prove that the conditions for a record have been met. The NAC shall forward this documentation to reach the FAI within 120 days of the date of the flight, after having approved it as a national record, unless an extension of time has been authorised by the IGC President (see GS 6.8.2). (AL6)

Chapter 4

VERIFICATION REQUIREMENTS and METHODS

This chapter defines the evidence, measurements and calculations required to verify soaring performances. Annex C gives examples of ways and means by which this may be done, such as the calculation of distances, and the method of GNSS flight recorder data analysis.

4.1 FLIGHT DATA REQUIREMENTS

The following is a list of all the flight data that needs to be gathered or measured to provide evidence of the completion of any soaring performance:

- | | |
|---------------------------|------------------------------|
| a. declaration (1.3.2) | g. finish time (1.2.3) |
| b. start point (1.1.8) | h. finish altitude (1.2.4) |
| c. start time (1.2.1) | i. maximum altitude (1.4.2a) |
| d. start altitude (1.2.2) | j. gain of height (1.2.8) |
| e. turn point(s) (1.1.10) | k. flight continuity (4.3.5) |
| f. finish point (1.1.12) | |

Different soaring performances will require different subsets of this list.

4.2 DECLARATION

For each flight, certain information is required to be recorded before the flight in order to ensure that proof of the soaring performance is available after the flight. This data, including waypoints (e) is known as the declaration. For some performances, some data is not required, but the Official Observer must ensure that all required data is recorded.

4.2.1 Declaration content

The information shall be written on a single sheet of paper or board, or recorded in the memory of a flight recorder prior to the flight.

- | | |
|---|-------|
| a. Date of flight | |
| b. Name of pilot in command / name of crew (if any) | (AL6) |
| c. Type and registration of glider | |
| d. Type and serial number of barograph or flight recorder | |
| e. Way points and the sequence to be flown, start, turn(s), finish/goal as applicable to the specific soaring performance * | |
| f. Date and time of declaration | |
| g. Signature of pilot in command ** | (AL6) |
| h. Signature & name of OO, with date and time. ** | |

* not required for free distance records

** not required for electronic declarations

4.2.2 Declaration validity

- The last declaration made before takeoff is the only one valid for the flight, but a concurrently flown and different competition task is allowed.
- If a declared turn point is abandoned, a closed course flight may still be claimed from the resulting shorter course provided that the turn points achieved are in the sequence specified in the declaration.

Therefore, no turn points after a missed turn point may be claimed. See Annex C for examples of soaring performances allowed following the abandonment of a pre-declared course.

4.3 FLIGHT DATA VERIFICATION

4.3.1 Flight data collection

A barograph or device incorporating a barograph must operate throughout the flight. The barogram so produced must provide indisputable verification of flight continuity (see 4.3.5) and of all altitudes critical to the soaring performance. The device may record parameters in addition to barometric pressure and time if it is suitable for the purpose (see 4.4). If data is recorded at intervals, the sampling rate setting must be no slower than once per minute.

For flight recorders, timing and pressure altitude data will be taken at the boundary of the observation zone interpolated between the times of valid fixes; or for a start or finish, this data may be taken from the fix in the observation zone that is most favourable to the pilot. See Annex C, para 9.2.

4.3.2 Start time interval

For speed performances, the OO may require proof of position inside the start observation zone within a specified time after release or between starts. A time is chosen such that the glider could not reach a turn point and return within that interval. Proof may be by observation from the ground or by using photographic evidence (4.5.3).

4.3.3 Landing

The landing location must be certified by one or more of the following:

- a. By an OO arriving soon after the event and there is no doubt about the position of landing or,
- b. By two witnesses (see 5.2.3d),
- c. By position data from a flight recorder (but see also 4.6.4a(ii)).

4.3.4 Achieving the goal

Where the soaring performance is required to end at a declared finish point, the goal will be achieved if:

- a. The landing point is within 1000 metres of the declared finish point or,
- b. If the finish point is an airfield, the landing is within the boundaries of the airfield or,
- c. Satisfactory evidence is produced showing that the glider was in the observation zone and within 1000 metres of the finish point, or
- d. A finish line at the goal is crossed.
- e. For any type of closed course goal flight where a start other than release or a start line is used, the glider must exit the start point OZ within 1000 metres of the declared start point. (AL6)

4.3.5 Flight continuity

There must be evidence that the glider did not land or a means of propulsion was not used during the claimed soaring performance. An interruption in the barogram data will not compromise proof of flight continuity provided that the OO and NAC are convinced no critical data is missing and that the evidence for flight continuity remains indisputable.

- a. The five-hour duration flight (2.1.1b and 2.1.2b) does not require a barogram to prove flight continuity where the flight is made under the continual surveillance of an OO.
- b. In the event of failure of the pressure altitude recording in a flight recorder, evidence of flight continuity may be assessed from a time plot of GNSS calculated altitudes provided the rule on the setting of sampling rates is followed (4.3.1).

4.3.6 **Altitude**

Absolute altitude, gain of height, and start altitude must normally be verified from atmospheric pressure data recorded by a barograph. External measurement (see 4.7.1) may be used only when the required accuracy can be verified.

4.4 **CALCULATIONS and CALIBRATIONS**

Time, geographical position, altitude, and means of propulsion are flight performance data that must be either recorded or measured for some or all types of flights. Using this data, calculations of distance, speed, duration, gain of height, altitude difference, height penalties and start height may be done.

4.4.1 **Calculations for distance and speed**

For world records, distances between two points in excess of 1000 kilometres, and in any case of dispute over a distance, the distance flown is deemed to be the length of the geodesic line joining the start point and the finish point or, if there are turn points, the sum of the geodesic lines for each leg of the course, corrected as in 1.2.11. See Annex C, Appendices 2 and 3.

a. **EARTH MODEL TO BE USED**

For the purpose of the calculation of FAI geodesic distances, the WGS 84 earth model shall be used. See also Annex C, Appendix 2.

When calculation of the exact distance is not critical, less accurate methods may be used. See Annex C, para 1.6b.

b. **GEOGRAPHICAL COORDINATES OF WAY POINTS**

NACs are to specify procedures for recording the geographical coordinates of way points from maps of their national territory using geographical coordinates such as Latitude and Longitude, map grid, or national grid (if such a grid exists for the area concerned).

c. **MAP SCALES**

Measurement of coordinates of way points should be from a map with a scale at least as detailed as 1:250,000, and preferably 1:50,000 (if such a map exists that includes the way point concerned). For records, if a scale less detailed than 1:50,000 was used, the NAC should be able to show that coordinates were taken from the most accurate map available for the way point concerned.

4.4.2 **Loss of height and application of the height penalty**

a. For distance flights of more than 100 kilometres, where the loss of height (1.2.7) exceeds 1000 metres, a height penalty (1.2.12) must 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.

c. For speed and duration flights, a loss of height exceeding 1000 metres will invalidate the soaring performance.

4.4.3 **Flight data requirements**

The minimum flight data required for each type of soaring performance is given in Table 2.

4.4.4 **Accuracy of measurement**

The minimum accuracy of measurement and calculation required for each type of flight data is given in Table 3. Any inaccuracy in a measurement or calculation is to be interpreted to the maximum disadvantage of the pilot.

Table 2		Minimum data requirements						
Soaring Performance	Measurements				Calculations			
	<i>Time</i>	<i>Position</i>	<i>Height</i>	<i>MoP</i>	<i>Distance</i>	<i>Height</i>	<i>Speed</i>	
Distance	x	x	x	x	x	x		
Goal	x	x	x	x	x	x		
Duration	x		x	x		x		
Altitude	x		x	x		x		
Gain of Height	x		x	x		x		
Speed	x	x	x	x	x	x	x	

Table 3		Minimum accuracy requirements						
Soaring Performance	Measurements				Calculations			
	<i>Time</i>	<i>Position</i>	<i>Height</i>	<i>MoP</i>	<i>Distance</i>	<i>Height</i>	<i>Speed</i>	
Distance	1 min	500 m		active	1 km	30 m		
Goal	1 min	500 m		active	1 km	30 m		
Duration	1 min			active		30 m		
Altitude	1 min		1%	active		10 m		
Gain of Height	1 min		1%	active		10 m		
Speed	5 sec	500 m		active	1 km	30 m	0.1 km/h	

Precision of measurement Care should be taken to correctly assess the precision of measurement devices so that an invalid level of accuracy is not introduced into calculations. See Annex C for more information.

4.4.5 Combinations of measurement methods

Any combination of the measuring methods is acceptable for the various types of flights, provided the minimum requirements for accuracy of equipment in paragraphs 4.4.3 and 4.4.4 are fulfilled.

Each method used must comply with this Code as if it were the only means of proof employed.

4.4.6 Timing device calibration

When used, clocks and other time recording equipment shall be checked against official time signals both immediately before and again after the flight, covering a period of at least three hours. Any error found shall be taken into account and rounded up in the calculations. The GNSS time recording from a flight recorder may be used as an official time signal.

4.4.7 Barograph calibration period

Barograph calibrations are required to ensure that the measurement of barometric pressure and time are checked against, and corrected as necessary, to official standards. For altitude and gain of height records, both (a) AND (b) calibrations below are required, and the least favourable calibration of the two shall be used making the calculations for the record. For badges, start height verification, and altitude difference calculation, either (a) OR (b) are required.

- a. PRIOR TO THE FLIGHT
The calibration used must have been performed within 12 months prior to the flight or, for IGC-approved electronic barographs and FRs, 24 months.
- b. AFTER THE FLIGHT
The calibration used must have been performed within one month after the flight or, for IGC-approved electronic barographs and FRs, two months.)

4.4.8 Calibration correction

When absolute altitude (not altitude difference) is to be determined, the altitudes reached during a flight from the barograph evidence must be corrected for a height error arising from the actual atmospheric pressure of the day compared to the standard atmosphere. *The method of arriving at a corrected altitude is given in Annex C.*

4.5 TIME MEASUREMENT and EVIDENCE

4.5.1 Time measurement

Time data requirements may be fulfilled by any of the following measuring methods:

- a. By direct observation from the ground by an observer with direct access to approved time measuring equipment (e.g. a synchronised timepiece). If a time-piece displaying only minutes is used, 59 seconds is to be added to each duration measured to allow for the possibility that the reading was taken just before the minute changeover. Pilots and OOs should use timing devices with outputs in seconds whenever possible.
- b. With a barograph, to measure time differences (except for speed flights),
- c. With a time camera, to measure time differences (except for speed and duration flights),
- d. A recording device with correct real time input, such as a flight recorder.

4.5.2 Time evidence

- a. Evidence of timing and time recording of flights must be under the control of an OO. Time recording equipment carried on board a glider must be capable of being physically or electronically sealed and, where a human action is required, shall be sealed and unsealed only by the OO.
- b. The equipment must be positioned so that the time parameters cannot be altered by the pilot or passenger during the flight.
- c. If a means is provided for the pilot to make inputs into a device for remote recording of flight events, such inputs must be confined to functions not critical to the validation of the flight. *For example, it is permissible for a pilot to make a mark on the time base to register an event such as a particular position, or in GNSS systems to change the sampling rate in flight.*

4.5.3 Start time interval using photographic evidence

- a. STI with non-time-recording cameras:
The pilot should photograph a ground timing device that indicates that the STI has not been exceeded. If this is not done and the STI (4.3.2) is exceeded, the pilot must land and re-photograph the flight declaration with updated time or distinguishing mark on the canopy.
- b. STI with time-recording cameras:
If a time recording camera is used, sealed and controlled in accordance with these rules, the STI check consists of ensuring that the times of start, turn point photos, and finish are in the correct time sequence.

4.5.4 **Night flight**

A flight that continues beyond the hours of legal daylight in the country concerned shall not be validated, except where the glider and pilot comply with the laws of that country for night flight.

4.6 **POSITION MEASUREMENT and EVIDENCE**

4.6.1 **Position measurement**

Flight position data requirements may be fulfilled by any of the following measuring methods:

- a. By direct observation from the ground for start, turn, and finish points,
- b. Satisfactory photographic evidence from a camera in the glider;
- c. Satisfactory data from a flight recorder in the glider.

4.6.2 **Position evidence – general**

- a. POINT OF RELEASE
Evidence of point of release may be provided by the pilot of the towplane or the person supervising the ground launch of the glider.
- b. HEIGHT OF RELEASE
The height of release shall normally be obtained from a barogram. External measurement (see 4.7.1) may be used only when the required accuracy can be verified.
- c. CROSSING A START LINE
 - (i) When the start line is controlled by observation from the ground, visual observation of a crossing in the direction of the first leg at an altitude of not more than 1000 metres above the line.
 - (ii) When using flight recorder evidence, by clear proof that the start line was crossed in the direction of the first leg.
- d. CROSSING A FINISH LINE
 - (i) When the finish line is controlled by observation from the ground, the nose of the glider crosses the finish line unassisted from the direction of the last leg at a height of not more than 1000 metres above the line.
 - (ii) When using flight recorder evidence, by clear proof that the finish line was crossed from the direction of the last leg.
- e. WAY POINTS
Way points should be of such a nature that they are easily recognisable from the air. Where photography is used, way points shall be point features and should be selected to make interpretation of photographs easy, even on photographs taken in difficult light conditions such as low contrast. Where a flight recorder is being used for verification, the way point coordinates do not need to represent a point feature on the ground.
- f. OBSERVATION ZONE
Evidence is required that the glider was within the observation zone (1.1.5) of a way point used during the flight. This may be collected by using one or more of the following three methods:
 - (i) Direct observation, where the glider is positively identified as being within the observation zone by an OO on the ground at the turn point. Magnification and tracking devices may be used.
 - (ii) Photographic, where the pilot presents a satisfactory photo taken from within the observation zone in accordance with the rules for photographic evidence below.

- (iii) Flight recorders, where (in accordance with IGC rules for their use (see 4.6.4)), the data record shows incontrovertible proof that the glider was in the observation zone, with one position fix recorded either exactly on the position of the waypoint or within the observation zone, or else a straight line drawn between two consecutive valid fixes crosses the observation zone. See Annex C, para 4.6 and 7.1c.

4.6.3 **Photographic position evidence**

Cameras can be used on badge flights to provide evidence of position and generally substantiate the soaring performance by means of a sequence of photographs on a single length of film. There shall be proof that all photographs were taken from the glider on the flight concerned and that turn point(s) were photographed between the start time and finish time.

a. PHOTOGRAPHIC CONTROL METHOD

The following method shall be used:

- (i) Mounting in the cockpit The camera must be held in fixed mountings in the cockpit so that every photograph shows the wingtip. The lens housing should be positioned inside the canopy or camera window so that the random line mentioned in (iii) below will show on the film (this does not apply to open cockpit gliders). See Annex C para 3.4.
- (ii) Sealing the camera The camera must be sealed unless the same OO is controlling both the pre-flight photograph(s) and the processing of the film, in which case sealing is not necessary. When a time recording camera is used to supply time evidence, it must be sealed by an OO before the flight in such a way that the film cannot be removed and the time adjusting mechanism cannot be accessed until the seal is broken by an OO after flight.
- (iii) Before takeoff Just prior to takeoff an OO shall mark the outside of the canopy or window across the front of the lens with a random line and display the flight declaration for the pilot to photograph with the camera installed.

The random line should be dark or opaque and at least 3 mm wide if it is to show on the image.

- (iv) After flight Following landing and the completion of the photographic sequence, an OO shall take charge of the film and have it developed. Every effort is to be made to preserve the film as a continuous strip. However, if it is cut or broken while out of control of the pilot or OO, this evidence remains valid if close examination of the pieces show that they form the original continuous length of film. An OO shall describe the circumstances under which the film was broken or cut.

b. PHOTOGRAPH SEQUENCE

The film shall contain photographs in the following sequence:

- (i) the pre-flight clock synchronisation photo(s) if a time camera is used, (see 4.5.1c and 4.5.3a),
- (ii) the declaration,
- (iii) at least one photograph showing indisputable evidence of the presence of the glider in each of the observation zone(s) of the way point(s) used, in the correct sequence,
- (iv) the glider on the landing field with surrounding features and its registration markings appearing clearly on the photo, or the above declaration with landing time added.
- (v) the post flight synchronisation photo(s) if a time camera is used.

Photographs in (ii) and (iii) above must show the shape of the canopy mark (see 4.6.3a(iii)) on the film image. Additional photographs, which may have been taken after the declaration and before the landing, must also show the canopy mark.

4.6.4 **Flight recorder (GNSS) position and other evidence**

All flight recorder evidence must be produced by an FAI/IGC approved system. The WGS84 Geodetic Datum shall be set for all Lat/Long data that is recorded and transferred after flight for analysis. Data must be produced from a flight recorder that has an IGC-approval for the type of soaring performance that is claimed. Any FR used on the flight must comply with the conditions of its approval. The approval documents for each type of recorder will be posted on the FAI gliding/GNSS web pages and shall specify procedures to be used, any limitations, and advice on its use. See Annex B Chapter 1.

a. FLIGHT RECORDER CONTROL METHOD

The OO shall familiarise himself with the terms of the approval for the GNSS and flight recorder equipment concerned. See Annex C, App 6 para 2.3. There must be incontrovertible evidence, independent of the FR data, that the FR from which the flight data was taken was in the glider flown by the pilot during the claimed soaring performance.

(i) Before the flight

The OO shall sign the pilot's written flight declaration, except where the declaration is stored electronically in the flight recorder (1.3.2). The OO shall enter a secret code into the FR if the IGC approval for the equipment requires this. The flight recorder system shall be placed, configured or sealed in such a way that it will be physically impossible to operate any controls other than those specifically allowed for use in flight; and to connect or disconnect any device to the flight recorder system other than in accordance with the IGC approval for the equipment. The sealing method(s), if any, shall be specified in the IGC approval for the equipment.

(ii) Takeoff and landing

An OO shall ensure that there is evidence for the times and points of takeoff and landing, pilot(s) names, glider type and registration, and the type and serial number of the FR for flight evidence. This evidence shall be independent of the data produced by the FR. See Annex C para 11.3.

(iii) After flight

After landing, the flight data shall be transferred from the FR to a diskette via a PC or other device in the manner specified in the IGC approval for the equipment. The OO shall check any seals that were applied before the flight. The diskette containing the flight data shall then be sent to a person approved by the NAC to make the analysis. This process must be performed for all FRs carried during the flight.

b. DATA ANALYSIS

Analysis of the flight data shall be performed by a qualified person approved by the NAC, whose duty is to ensure that the appropriate evidence is present to verify attainment of way points, heights, times and position, as required. Detailed guidelines for analysis are in Annex C. Where there is more than one FR, the one holding the last declaration shall normally be used for analysis. However, in the case of a failure or partial failure of this FR, another may be used provided it has the same declaration details and is approved for the type of flight performance claimed. If the soaring performance qualifies for a badge or record, the following shall be forwarded to the NAC:

(i) The original data diskette (the first copy) storing the flight data for each FR. This must include the data file in *.igc format, and the file in its original format (if different) as transferred from the flight recorder immediately method(s) of after landing.

(ii) The appropriate claim form(s), including OO's evidence that manually recorded times and exact locations correspond to the equivalent flight recorder data.

(iii) For free record flights, the achieved way points shall be determined from the flight recorder evidence and specified in the claim for the record. The flight recorder "pilot event marker", if incorporated, may be used to indicate the desired waypoint position(s).

(iv) Any other measured data and/or auxiliary material required by a NAC to support the mandatory evidence. See examples in Annex B, Appendix 1.

4.7 ALTITUDE EVIDENCE and CONTROL

4.7.1 Altitude evidence

Altitude data requirements may be fulfilled by any of the following measuring methods:

- a. A barogram,
- b. Optical measurement from the ground (e.g. a suitable height frame or theodolite),
- c. Radar measurement from the ground,
- d. For continuity of flight purposes only, the GNSS altitude output of a flight recorder.

4.7.2 Altitude control methods

For altitude recording other than by external measurement, a barograph or flight recorder must be carried in the glider. Any marking of the barogram during flight shall be done by remote control, not by direct access to the barograph itself. The barograph shall be placed in the glider in such a way that no part of the barograph is accessible to the pilot or passenger during the flight.

The pressure altitude recording system in a flight recorder is a barograph and must comply with other rules in the Code for barographs and their calibration. Altitude control methods for FRs are the same as those used for position evidence (see 4.6.4).

- a. BEFORE TAKEOFF
 - (i) Mechanical barographs
The OO shall make an identification mark on the barogram paper/foil and then seal the barograph.
 - (ii) Electronic barographs
The OO shall seal the barograph and then enter a secret multi-character code into the barograph memory before flight (a second entry of this code shall be required to retrieve the stored data). This step is not required if the barograph stores continuous date and time data that cannot be altered without the fact of such alteration being automatically reported on all data printouts from its memory after such alteration, and the OO is able to verify the date and time of the takeoff and landing of the glider on the flight concerned.
- b. DURING THE FLIGHT
As soon as possible after release, the pilot of the glider should ensure that a low point is indicated on the barogram to clearly indicate the start of the soaring performance.
- c. AFTER THE FLIGHT
 - (i) The OO shall take control of the barograph, and ensure that its seal is secure and that the barogram has the identification mark placed on it prior to takeoff. The information required in paragraph 6.1 may then be added to the chart.
 - (ii) For electronic barographs, an OO must either supervise the transfer or printing of data from the barograph while it is in the glider, or supervise the removal of the electronic barograph from the glider and shall then take charge of it until the flight data is printed out. The OO then confirms that the date and time on the printout is correct and that the date and times of the altitudes and other flight data recorded and printed out correspond to the date and times of the flight concerned, and correspond with other relevant aspects of the claimed performance.

4.8 MEANS of PROPULSION EVIDENCE and CONTROL

4.8.1 Means of propulsion evidence

The requirement to record data on the use of any MoP may be fulfilled by any of the following methods:

- a. The data is recorded by a MoP recorder, or

- b. By direct observation from the ground that the MoP has stopped, provided that there is no means of restarting it, or
- c. By a seal applied to the MoP in such a way that the generation of forward thrust by the MoP always results in breaking the seal.

4.8.2 **MoP control methods**

- a. With the use of an MoP recorder:
The MoP recorder must be sealed and opened only by an OO, and must not be accessible to pilot or crew during flight, except where it is an IGC approved flight recorder operated in accordance with the IGC approval.
- b. Without the use of an MoP recorder:
 - (i) Before takeoff, the MoP may be sealed by an OO as in 4.8.1c (and the OO shall certify that the seal was intact after landing), or
 - (ii) The MoP may be rendered unusable by removing an essential part of the engine or the propeller (and the OO must certify that this was done), or
 - (iii) The MoP may have a mechanical lock applied to the retraction system that cannot be unlocked until after landing.

Chapter 5

OFFICIAL OBSERVERS

5.1 AUTHORITY

5.1.1 Official Observer appointment

OOs are appointed by a National Airsport Control (NAC) on behalf of the FAI and IGC. Directors of contests sanctioned by FAI or a NAC are automatically also OOs for badge or record flights undertaken during a contest.

5.1.2 Official Observer duties

The OO shall, as the FAI and IGC representative, control and certificate the following soaring performances:

- a. Record flights and FAI badge flights,
- b. Flights in international championships and competitions sanctioned by the FAI,
- c. Other soaring performances that NACs may specify and define within their sphere of influence.

5.1.3 Control and certification

- a. CONTROL is the observing of takeoff, start, finish and landing and, where applicable, timing of individual events such as declarations, sealing, installation, removal and unsealing of barographs, flight recorders and cameras, motor glider means of propulsion and other devices.
- b. CERTIFICATION is the checking of evidence and signing of appropriate certificates covering the evidence concerned.

5.1.4 Competence

OOs must be knowledgeable in the Code and have the integrity, skill and competence necessary to control and certificate glider and motor glider flights without favour. Before being approved by the NAC, the OO should be given briefing or training appropriate to the duties of an OO.

5.1.5 Geographical area of authority

OOs are entitled to control and certificate flights of gliders and motor gliders in:

- a. The country of their own NAC, and
- b. In any country and for glider pilots of any nationality, if the country's NAC so permits.

5.1.6 Conflict of interest

OOs may not act in such capacity for any record or badge attempt:

- a. In which they are pilot or passenger, or
- b. In which they have any financial interest.
Ownership of the glider or motor glider shall not be considered "financial interest". The essence is that monetary or other substantial gain shall not depend on the successful certification of the claim by the OO or other individuals concerned.

5.1.7 Violation of duty

In case of violation of duty, the appointment of the OO shall be withdrawn. In addition, negligent certifications or wilful misrepresentations are grounds for disciplinary action by the NAC concerned.

5.2 CERTIFICATION of EVENTS

5.2.1 General

- a. The date, times and points of takeoff and landing on the flight concerned must be verified, and there must be evidence that recording devices used for flight evidence were in the glider concerned during the flight.
- b. Record and badge flights shall be certificated by the OO by completing and verifying the information in the official FAI record claim forms or, for national records or badge performances, claim forms containing similar information (see 6.4).

5.2.2 Official Observer presence at the event

OOs may certificate individual events (such as sealing and breaking seals, installation and removal of equipment, takeoff, timing at start and finish, landing, etc.) if they were present at the event for which certification is required, or are able to satisfy themselves either through evidence from persons who witnessed the event or from other reliable sources. Evidence from air traffic control or club flying logs may be used. Barometric pressure may be obtained from the log of a nearby meteorological office.

5.2.3 Certification by non-OOs

- a. Certification of events by people other than OOs must be countersigned by an OO after verifying the statements.
- b. Air traffic controllers on duty may certificate observations of takeoffs, start and finish lines, turn and control points and landings.
- c. Tow pilots or, for launches other than by towplane, the person supervising the launch may certify the point of release from launch.
- d. Outlandings may be certified by two independent witnesses who give their names, addresses, and preferably telephone numbers, if any (see 6.2).

Chapter 6

CERTIFICATES and PROOFS

6.0 GENERAL

All certifications and calibrations must clearly relate to the flight, event, or equipment being certified or calibrated, and include the date of the certification/calibration, the signature of the person doing the certification/calibration and, where applicable, the OO's signature. Each separate sheet of paper must have this identification. Diskettes or other electronic memory devices storing flight or calibration data must be labeled clearly.

6.1 BAROGRAM

Except as permitted for flight recorders and electronic barographs (see 4.6.4 and 4.7.2), a barogram shall have the following information clearly registered on it:

- a. Identification mark of OO before takeoff,
- b. For altitude and gain of height records, the pressure at ground level (QFE) at time of takeoff,
- c. Date of flight,
- d. Name of pilot,
- e. Type, serial number and altitude range of barograph,
- f. Type and registration of glider,
- g. Altitude of release (or of stopping the means of propulsion for motor gliders),
- h. Proof of no intermediate landing,
- i. Date and signature of OO after landing.

Additionally, if the barograph is also the MoP recorder:

- j. Means of propulsion was stopped prior to leaving the start point,
- k. Means of propulsion was not used between the start point and the finish point.

6.2 LANDING CERTIFICATE

The landing certificate shall state precisely the location of the landing place and the time of landing.

6.3 BAROGRAPH CALIBRATION CERTIFICATE

The barograph calibration certificate shall include:

- a. Type, serial number and altitude range of barograph,
- b. Date of calibration,
- c. Calibration trace, graph or table,
- d. Date, name and signature of calibration laboratory official.

6.4 TIMING DEVICE CALIBRATION STATEMENT

The timing device calibration statement shall include:

- a. Type and serial number of timing device used,
- b. Description of method for (and result of) calibration of the timing device (4.4.6),
- c. Date and signature of OO or calibration laboratory official doing the calibration.

6.5 FAI RECORD CLAIM FORMS

For claims submitted to the FAI, the current FAI Official Claim Forms approved by IGC must be used. For national claims, the NAC may issue its own forms similar to the FAI versions. When submitted to the FAI, the pages of each form should be printed on one sheet of paper such as by using back-to-back printing on A3 size paper (or 11" x 17" paper in North America).

Designation	Record type	Remarks
Form A	Absolute Altitude or Gain of Height	
Form B	Distance	
Form C	Speed	
Form D	Motor Gliders	Form D is additional to other forms if appropriate to the claim.
Form E	Completed by all NACs involved.	Must be included with claim file.

The FAI forms are available from the IGC web site <<http://www.fai.org/gliding>>, and in hard copy from the FAI office and NACs.

Chapter 7

GLIDER CLASSES and INTERNATIONAL COMPETITIONS

7.0 GENERAL

This chapter gives the class structure and some general rules for FAI World Soaring Championships and other international competitions. Class rules also apply to world records (see Chap. 1).

More detailed rules for World Championships and International Competitions are given in Annex A to this code (SC3A) and also in the General Section of the FAI Sporting Code. For convenience, where "competition" shows in any of these rules, the rule applies to both World Championships and international competitions. If claims are made for badges and records, the provisions of the Code have to be fulfilled regardless of the regulations of the competition concerned.

7.1 CONFORMITY with CLASS RULES

7.1.1 Record flights

An OO shall certify that the glider used for a record flight complies with the requirements for the class rules of the record classification involved and shall certify any measurement and checking required.

7.1.2 Competitions

Glidern shall be presented to the competition organiser as prescribed in the local regulations in order to be checked and measured for compliance with class rules.

7.1.3 Measurement of wing span

Wing span, for the purpose of measurement for conformity with class rules, is the maximum distance between the two planes tangent to the wing tips and parallel to the glider plane of symmetry and the weight of each wing supported to allow the wing to match its unloaded shape.

The unloaded shape depends on the design of the glider, but will generally mean that the trailing edge is straight along the length of the wing.

7.2 ELIGIBILITY of GLIDERS

7.2.1 Airworthiness certificates

A glider may be flown in a competition only if it holds a valid Certificate of Airworthiness or Permit to Fly not excluding competition flying and complies with the conditions of its airworthiness document and the rules of the class in which it is entered.

7.2.2 Change of components

A glider shall fly throughout a competition as a single structural entity using the same set of wings or wing components, fuselage and tail unit. Changes to the glider may be made only in accordance with the competition rules regarding damage to a glider (see Annex A).

7.3 MASS LIMITS

The organisers of competitions may limit the maximum mass of a glider in any class. Any such limitations must be stated in the official bid and must be approved by the IGC.

7.4 HANDICAPPING

If handicapping is to be used, its purpose shall be to equalise the performance of gliders as far as possible. The handicap figures used shall be directly proportional to the expected cross-country

speeds of gliders in typical soaring conditions for the competition concerned. The handicap shall be applied directly to the speed or distance achieved, for finishers to the speed only, for non-finishers to the distance only. Competitors completing the task shall not be given less than full distance points, and competitors not completing the task shall not be given more than full distance points.

7.5 TIME SCALE for CLASS CHANGES

The minimum period between the announcement and implementation of a new class or major alteration to the rules of an existing class shall not normally be less than four years. Minor alterations not requiring design changes shall normally have two years notice. The IGC may reduce the period of notice for special reasons.

7.6 WORLD CHAMPIONSHIPS

7.6.1 World Soaring Championships classes

World Soaring Championships are organised in the classes defined in 7.7, Women's Championships (7.8.2a) and Junior Championships (7.8.2b) may also be organised at the World Championship level.

7.6.2 Motor gliders

Motor gliders are integrated into the other championship classes (except the World Class which is a one-design class) under championship rules for motor gliders (see Annex A).

7.7 COMPETITION CLASSES *(See also 7.3)*

7.7.1 Open Class No special rules.

7.7.2 18 Metre Class The only limitation is a maximum span of 18,000 mm (7.1.3).

7.7.3 15 Metre Class The only limitation is a maximum span of 15,000 mm (7.1.3).

7.7.4 Standard Class

a. WINGS

The span (7.1.3) must not exceed 15,000 mm. Any method of changing the wing profile other than by normal use of the ailerons is prohibited. Lift increasing devices are prohibited, even if unusable.

b. AIRBRAKES

The glider must be fitted with airbrakes that cannot be used to increase performance. Drag parachutes are prohibited.

c. UNDERCARRIAGE

The undercarriage may be fixed or retractable. The main landing wheel shall be at least 300 mm in diameter and 100 mm in width.

d. BALLAST

Water ballast that may be discharged in flight is permitted.

7.7.5 World Class

The World Class glider is the PW-5 design that was the winner of the 1994 World Class design competition. All gliders must be built to the IGC specifications for the World Class and must conform to all applicable IGC rules. No modifications are permitted except as approved and circulated in writing by the FAI to all NACs on behalf of the IGC.

a. ALTERATION TO AIRFLOW

Any alteration affecting airflow around the glider is prohibited. This includes, but is not limited to, the use of turbulation devices, fairings, and special surface treatment. The only exceptions are:

- (i) a yaw string,
- (ii) a total energy probe,
- (iii) adhesive tape to seal gaps between wings, fuselage and tail. Sealing between moveable control surfaces and the airframe is not permitted.

b. ELECTRICAL DEVICES

Electrical and electronic devices are allowed, including instruments and navigational aids.

c. BALLAST

Ballast that can be jettisoned in flight is prohibited. In a World Class competition, a mass shall be specified by the Competition Director between the maximum gross mass and the lowest takeoff mass attainable by the heaviest entrant. To attain the specified mass each glider shall incorporate a fixed ballast system approved by the IGC, which may include tail ballast.

d. CENTRE OF GRAVITY CONTROL

Any device capable of altering the centre of gravity location of the glider during flight is prohibited.

7.7.6 **Club Class**

The purpose of the Club Class is to preserve the value of older high performance gliders, to provide inexpensive but high quality international championships, and to enable pilots who do not have access to gliders of the highest standard of performance to take part in contests at the highest levels.

a. ENTRY

The only limitation on entry of a glider into a Club Class competition is that it is within the range of handicap factors agreed for the competition. Any list of handicaps proposed for a World Club Class championship must be approved by the IGC.

b. BALLAST

Water ballast is not permitted.

c. SCORING

A Club Class championship shall be scored using formulas that include handicap factors (7.4).

7.8 INTERNATIONAL COMPETITIONS

7.8.1 International competitions may be held in the World Championship classes (7.7) and in other classes specifically approved by the IGC.

7.8.2 **Restricted entry championships**

a. Women's championships

Championships in one or more of the approved classes, which are open to female flight crew members only.

b. Juniors' championships

Championships in one or more of the approved classes, which are open to pilots whose 25th birthday occurs in the calendar year (1 January to 31 December) that includes the date of the start of the championships, or occurs later.

INDEX

A

accuracy of measurement	4.4.4
achieving goal.....	4.3.4
air traffic controllers	
certification.....	5.2.3b
airworthiness certificate	7.2.1
altitude	
absolute	1.4.2a
control methods	4.7.2
correction	4.4.8
evidence	4.7.1
records	3.1.2b
verification.....	4.3.6
Annex A.....	1.0.3a, 7.0
Annex B.....	1.0.3b
Annex C.....	1.0.3c

B

badges	
750 km or greater diplomas	2.2.3
design	2.2
Diamond leg requirements.....	2.1.3
distance tasks for badges only.....	1.4.5
Gold requirements	2.1.2
performance.....	2.0.1
register of.....	2.0.2
requirements for.....	2.1
Silver requirements	2.1.1
barogram, definition.....	1.3.4
information required.....	6.1
barograph	
declaration data	4.2.1d
definition	1.3.3
calibration period	4.4.7
calibration certificate	6.3
operational requirement.....	4.3.1, 4.7.2

C

calculations, general.....	4.4
calibration	
barograph	4.4.7
correction	4.4.8
period.....	4.4.7
timing device.....	4.4.6
camera, mounting and sealing.....	4.6.3a
categories	
records.....	3.1
certificate of airworthiness	7.2.1
certificates and proofs	5.1.3, 6.0
certification of events	
by OOs.....	5.2.2
by non-OOs	5.2.3
championships	
restricted entry	7.7.6a
change of components	7.2.2
claim forms for FAI records.....	6.5
class	
competition	7.1.2
records.....	7.1.1

class changes, time scale.....	7.5
classes, FAI, glider	
Class D, DM definitions.....	1.0.4
competition class definitions	7.7
conformity, records	7.1
motor gliders integrated	7.6.2
records.....	3.1.2
World championships.....	7.6
closed course, definition	1.1.15
Club Class	
handicap range	7.7.6a
specification	7.7.6
C of A.....	7.2.1
competition	
class definitions	7.7
handicapping	7.4
international	7.8
components, change of	7.2.2
continuity of flight.....	4.3.5
coordinates	
map scales.....	4.4.1c
of way points.....	4.4.1b
correction, leg length, cylinder OZ	1.2.11
course, definition	1.1.4
cylinder OZ	1.1.5b

D

data analysis, flight recorder	4.6.4b
declaration	
content	4.2.1
definition	1.3.2
OO actions.....	4.6.4a(i)
requirement for	1.4.1c, 1.4.2, 1.4.5, 4.1a
validity.....	4.2.2
Diamonds, requirements for	2.1.3
diploma, 750 km or greater.....	2.1.4
distance	
calculation methods	4.4.1
Diamond	2.1.3a
free.....	1.4.3a
Gold	2.1.2a
out and return	1.4.3b, 1.4.6a
Silver.....	2.1.1a
straight	51.4.3a, 1.4.5
three turn point.....	1.4.3c, 1.4.4b
to goal	1.4.4a
triangle	1.4.3d, 1.4.6b
up to 3 turn points	1.4.3c, 1.4.6b
duration	
measurement accuracy.....	Table 3 of 4.4.4
barogram not required	4.3.5a
definition of	1.2.5
Gold	2.1.2b
performance.....	1.4.2c
Silver.....	2.1.1b

E

earth model.....	4.4.1a
electronic barographs	4.7.2a(ii)
evidence	
altitude, general	4.7.1

means of propulsion	4.8
position, general	4.6
time, general	4.5

F

FAI

badge requirements	2.1
registers to be kept	2.0.2
finish, definitions of	1.1.11
altitude	1.2.4
line	1.1.13, 4.6.2d
point	1.1.12
time	1.2.3
finish, evidence for	4.6.2d
flight continuity	4.3.5
flight data	
requirements, general	4.1
requirements, minimum, Table 2	4.4.3
flight recorder	
control of, approval document	4.6.4a
data analysis	4.6.4b
definition	1.3.5
position evidence	4.6.4
world record verification	3.0.3
free distance records	1.4.3

G

gain of height, definition	1.2.8
General Section of Sporting Code	1.0.1
geodesic datum, WGS84	4.6.4
geodesic, definition	1.3.7
glider, classes	1.0.4
Gold badge requirements	2.1.2
goal	
achieving	4.3.4
definition of	1.1.14
Diamond	2.1.3b
distance to	1.4.4a

H

handicapping, list	7.7.6a
handicapping, use of	7.4
height	
Diamond	2.1.3c
gain, definition	1.2.8
Gold	2.1.2c
loss, calculation	1.4.7, 4.4.2
loss, definition	1.2.7
penalty, definition	1.2.12
Silver	2.1.1c

I

identification marks/codes by OO

barograph	6.7.2a
camera	4.6.3a(iii)
flight recorder	4.6.4a(i)

J

Junior championships	7.6.1, 7.8.2b
----------------------------	---------------

L

landing

certificate	6.2
verification	4.3.3
leg, definition	1.13
leg length correction	1.2.11
loss of height	
1% rule	4.4.2b
alternate calculation	1.4.7
definition	1.2.7
penalty	4.4.2

M

map scales	4.4.1c
mass limits in competition	7.3
means of propulsion	
control, with MoP recorder	4.8.2a
control, without MoP recorder	4.8.2b
evidence of	4.8.1
means of propulsion	1.0.5
measurement	
accuracy of	4.4.4
combination of methods	4.4.5
definition of terms	1.2
precision of	4.4.4
minimum accuracy, Table 3	4.4.4
time	4.5.1
wing span	7.1.3
MoP (see means of propulsion)	1.0.5
MoP recorder	1.3.6
if also a barograph	6.1j, 6.1k
Microlift glider, definition	1.0.4d
motor glider, definition	1.0.5
motor gliders, championship classes	7.6.2
multi-place, records	3.1.2a

N

National Aerosport Control (NAC)	5.1.1
night flight - restriction	4.5.4

O

observation zone

definition	1.1.5
correction	1.2.11
cylinder	1.1.5b
proof of entry	4.6.2f
sector	1.1.5a
official distance, definition	1.2.13
Official Observer (OO)	
authority, geographical	5.1.5
competence	5.1.4
conflict of interest	5.1.6
definition	1.3.1
duties	5.1.2, 5.1.7
financial interest	5.1.6
Open Class	1.0.4a, 7.7.1
out & return distance	1.4.3b, 1.4.6a
outlandings, certification of	5.2.3

P

penalty, height 1.2.12, 4.4.2

position measurement 4.6.1

position evidence

 flight recorder data analysis 4.6.4b

 general 4.6.2

 photographic position evidence 4.6.3

 photograph sequence 4.6.3b

R

record

 altitude, class restriction on 3.1.2b

 categories, classes, types 3.1

 claim forms 6.5

 designation 13.1.3

 in one flight 3.0.2

 margins 3.0.4

 minimum performance for 3.1.5

 multi-place 3.1.2a

 time limits on submission 13.2

 types, table 3.1.4

registers, badge flights 2.0.2

release point, definition 1.1.6

S

sealing camera 4.6.3a(ii)

sector OZ 1.1.5a

Silver badge requirements 2.1.1

soaring performances, types of

 altitude and duration 1.4.2

 distance (badges only) 1.4.5

 distance & speed (badges & records) 1.4.6

 free distances (records only) 1.4.3

 general requirements 1.4.1

speed

 definition of 1.2.6

 no height penalty allowed 4.4.2c

 out and return flight 1.4.6a

 triangle flight 1.4.6b

sporting licence 3.0.1

Standard Class, specifications 7.7.4

start, definitions of 1.1.7

 altitude 1.2.2, 4.6.2b

 line 1.1.9, 4.6.2c

 point 1.1.8

 time 1.2.1

start, evidence for 4.6.2

start time interval (STI) 4.3.2

 photographic evidence 4.5.3

straight distance (badges only) 1.4.5

T

three turn point distance 1.4.3c, 1.4.4b

time

 evidence 4.5.2

 reporting limits 3.2

 measurement 4.5.1

time scale, class definition changes 7.5

timing

 calibration statement 6.4

 device calibration 4.4.6

tow pilot certification 5.2.3c

triangle flight

 definition 1.4.3d, 1.4.6b

 geometry, records 1.4.3d(iii)

turn point

 definition 1.1.10

 minimum spacing 1.4.3c, 1.4.4b

types of records, table 3.1.4

U

Ultralight glider, definition 1.0.4d

W

way point

 coordinates of 4.4.1b

 declaration required 1.3.2

 definition 1.1.2

 position requirements 4.6.2e

wing span, measurement of 7.1.3

Women's championships 7.8.2a

World championships, classes 7.7

World Class

 definition 1.0.4c

 specification 7.7.5

world records 3.0