

## How to Submit Application for Badges and Awards

- **Email applications are allowed IF documents are submitted as attached PDF files.**

Applications are on the SSA web site in PDF format. Just fill out the application, Print, Sign and attach it as a PDF file to your email. We are working on electronic signatures to avoid the print and signing, but not available yet.

Include the Flight Recorder(s) .IGC file and the calibration sheets in the email. Do not send separately.

We cannot accept documents:

In JPG format

In Zip format

That we would have to access through other applications

In OLC format (except for Century Awards)

- **OR mail the application and file (on stick or disk) to:**

SSA

PO Box 2100

Hobbs, NM 88241-2100

## **APPLICATION TIME LIMITS**

**Badges and Awards** must be submitted within 6 months of the flight.

**State records** - Notify within 10 days - Application submitted must be within 45 days of flight or within 15 days of required post flight calibration.

**US National, Continental and World records** - Notify within 72 hours. Application received within 60 days of the flight or within 2 months of required post flight calibration.

# Chapter 1

# OCTOBER 29 - 2020

## GENERAL DEFINITIONS and RULES

### 1.0 INTRODUCTION

1.0.1 The General Section (GS) of the Sporting Code contains the definitions and rules applying to all air sports. Section 3 (SC3) specifies the rules that apply to FAI badge and record flights in gliders and motor gliders. A glider is a fixed wing aerodyne capable of sustained soaring flight with no Means of Propulsion (MoP). A motor glider is a fixed wing aerodyne equipped with a MoP, capable of sustained soaring flight without thrust from the MoP. SC3 includes the following annexes:

- a. Annex A Rules for world and other FAI-sanctioned gliding competitions.
- b. Annex B Requirements for equipment used for flight validation.
- c. Annex C Non-regulatory guidance, methods, and sample calculations to assist Official Observers and pilots in complying with SC3.
- d. Annex D Rules for the world ranking list of pilots in IGC sanctioned competition.

The FAI document, "*Technical Specifications for IGC-Approved GNSS Flight Recorders*" gives information for FR manufacturers.

1.0.2 Terms, rules, and requirements in SC3 are defined first in their most general sense, and a word or phrase in small capital letters in this chapter indicates that it has a distinct Code definition. Where an exception to a general rule exists, it is described in the Code where the exception occurs. Within the Code, "record" can apply to either or both World and Continental records according to the context.

1.0.3 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.

Any substantial change is effective on 1 October following the IGC meeting at which it is approved, except that if it has flight safety implications, the Bureau may approve it prior to the IGC meeting. A simple clarification to the Code becomes effective on 1 October following approval by the Bureau. In either case, the amended Code is then placed on the FAI web site at <http://www.fai.org/igc-documents> – then click on *Sporting Code – Section 3: Gliding* and on *Current Sporting Code for Gliding* to see the Code and various appendices.

### 1.1 GENERAL DEFINITIONS

#### **NATIONAL AIRSPORT CONTROL (NAC)**

1.1.1 The organization having administrative responsibility for a nation's sport aviation activities. The duties of a NAC with respect to gliding are defined in 4.1.

#### **OFFICIAL OBSERVER**

1.1.2 The person authorized by a NAC to control flights undertaken for an FAI badge or record attempt and to control the data gathered to prove the SOARING PERFORMANCE.

#### **DECLARATION**

1.1.3 The pre-flight recording of pilot name(s), glider type and its unique identification, and any WAY POINT coordinates required by a given SOARING PERFORMANCE.

#### **GNSS / GPS**

1.1.4 A Global Navigation Satellite System such as the Global Positioning System (GPS) using multiple satellites operating with receivers to record position and time data.

#### **FLIGHT RECORDER**

1.1.5 An IGC-approved device to record pressure altitude and GPS position and altitude. A given FLIGHT RECORDER may be approved for all flights, all badges, or Silver through Diamond badge claims only.

#### **POSITION RECORDER**

1.1.6 A NAC-approved device to record GPS data for Silver or Gold badge claims only.

#### **MEANS of PROPULSION (MoP) RECORDER**

1.1.7 A device that records noise level or other sensor data to indicate MoP use.

## 1.2 DEFINITION of FLIGHT TERMS

<b>SOARING PERFORMANCE</b>	1.2.1	The portion of a glider flight from the START POINT to the FINISH POINT.
<b>WAY POINT</b>	1.2.2	A point specified by a set of coordinates. A WAY POINT may be a START POINT, TURN POINT, or FINISH POINT.
<b>LEG</b>	1.2.3	The straight line between two successive WAY POINTS.
<b>COURSE</b>	1.2.4	All the LEGS of a SOARING PERFORMANCE.
<b>TURN POINT</b>	1.2.5	The WAY POINT between two successive LEGS.
<b>OBSERVATION ZONE</b>	1.2.6	The airspace a glider must enter to attain a declared TURN POINT. It is either: <ul style="list-style-type: none"> <li>a. a CYLINDER having a 500m radius and unlimited height, centered on the TURN POINT, or</li> <li>b. a SECTOR, a quadrant having unlimited radius and height, with its apex at the TURN POINT and oriented symmetrical to and remote from the bisector of the inbound and out-bound LEGS.</li> </ul>
<b>FIX</b>	1.2.7	A single line of recorded data from a FLIGHT RECORDER or POSITION RECORDER containing the time, position and altitude of the glider. The altitude data source may be air pressure or GPS height, depending on the device. A FIX does not have an OBSERVATION ZONE.
<b>RELEASE POINT</b>	1.2.8	The WAY POINT where the glider releases or ceases using a MoP.
<b>START POINT</b>	1.2.9	The WAY POINT that marks the beginning of a SOARING PERFORMANCE at either: <ul style="list-style-type: none"> <li>a. the RELEASE POINT, or</li> <li>b. declared START coordinates, or</li> <li>c. a FIX selected post-flight.</li> </ul>
<b>FINISH POINT</b>	1.2.10	The WAY POINT that marks the end of a SOARING PERFORMANCE at either: <ul style="list-style-type: none"> <li>a. where the glider comes to rest on landing, or</li> <li>b. declared FINISH coordinates, or</li> <li>c. a FIX selected post-flight, or</li> <li>d. a FIX established by the starting of a MoP.</li> </ul>
<b>CLOSED COURSE</b>	1.2.11	A COURSE requiring the FINISH POINT to be the declared START POINT.
<b>START &amp; FINISH LINES</b>	1.2.12	A 1 kilometre line centered on the START or FINISH POINT. In all cases, a START LINE is perpendicular to the first LEG and a FINISH LINE is perpendicular to the last LEG. For a free CLOSED COURSE using a START FIX, the FINISH LINE is centered on the START FIX.

## 1.3 DEFINITION of SOARING MEASUREMENT TERMS

<b>START TIME and ALTITUDE</b>	1.3.1	The time and altitude (msl) at which a SOARING PERFORMANCE begins, both determined by the type of SOARING PERFORMANCE and the type of START POINT claimed: <ul style="list-style-type: none"> <li>a. When a declared START POINT is claimed, START TIME and ALTITUDE is taken at the START LINE as the glider crosses in the direction of the first leg.</li> <li>b. When a declared START POINT is not claimed, START TIME and ALTITUDE is taken at the RELEASE POINT or alternately, for DURATION and FREE DISTANCE claims, at a FIX selected post-flight.</li> </ul>
<b>FINISH TIME and ALTITUDE</b>	1.3.2	The time and altitude (msl) at which a SOARING PERFORMANCE ends, both determined by the type of SOARING PERFORMANCE and the type of FINISH POINT claimed: <ul style="list-style-type: none"> <li>a. For a finish at landing, FINISH TIME is the time of landing and FINISH ALTITUDE is the landing site msl elevation.</li> </ul>

- b. When a declared FINISH POINT is required, and for any free CLOSED COURSE, FINISH TIME and ALTITUDE is taken at the FINISH LINE as the glider crosses in the direction of the last leg.
- c. When a declared FINISH POINT is not required, FINISH TIME and ALTITUDE may be taken at the start of a MoP, a FIX selected as the FINISH POINT, or at time of landing, whichever occurs first.

<b>DURATION</b>	1.3.3	The elapsed time between the START TIME and the FINISH TIME.
<b>LOSS OF HEIGHT</b>	1.3.4	The START ALTITUDE minus the FINISH ALTITUDE. An excess LOSS OF HEIGHT shall be corrected as given in 2.4.4 for badges and in 3.1.5 and 3.1.6 for records.
<b>GAIN OF HEIGHT</b>	1.3.5	The recorded altitude difference between a high point and a prior low point.
<b>OZ CORRECTION</b>	1.3.6	For each TURN POINT achieved only using the CYLINDER OZ, the OFFICIAL DISTANCE shall be decreased by 1 kilometre.
<b>OFFICIAL DISTANCE</b>	1.3.7	The COURSE distance, less any OZ CORRECTION and/or LOSS OF HEIGHT correction. Distances are measured according to the WGS84 ellipsoid.

#### 1.4 BADGE and RECORD REQUIREMENTS

1.4.1 **General** Electronic flight data and a DECLARATION are required except where specifically exempt. Specific SOARING PERFORMANCES place limits on given COURSES as individually defined in 2.2 for badges and 3.1.5 and 3.1.6 for records.

##### 1.4.2 Soaring performance types

- a. **GAIN OF HEIGHT** A SOARING PERFORMANCE conducted per 1.3.5 for a given badge (see 2.2.1c, 2.2.2c and 2.2.3c) or a record (see 3.1.7a).
- b. **ABSOLUTE ALTITUDE** A SOARING PERFORMANCE for maximum altitude (see 3.1.7b).
- c. **DURATION** A SOARING PERFORMANCE required for the Silver badge (2.2.1b) or Gold badge (2.2.2b).
- d. **STRAIGHT DISTANCE** A COURSE without TURN POINTS starting from RELEASE or a declared START POINT.
- e. **GOAL DISTANCE** A COURSE without TURN POINTS, from a declared START POINT to a declared FINISH POINT.
- f. **3 TURN POINT DIST.** A COURSE from a RELEASE POINT or a declared START POINT to any type of FINISH POINT, via one, two, or all three declared TURN POINTS, which may be flown in any order.
- g. **OUT & RETURN** A CLOSED COURSE with only one declared TURN POINT.
- h. **TRIANGLE** A CLOSED COURSE via 2 or 3 declared TURN POINTS flown in the sequence declared. When 3 TURN POINTS are used, the COURSE distance is the sum of the legs between the TURN POINTS.
- i. **FREE DISTANCE** A COURSE from any START POINT to any FINISH POINT.
- j. **FREE 3TP DISTANCE** A 3 TURN POINT DISTANCE flight having FIXES for some or all WAY POINTS.
- k. **FREE OUT & RETURN** An OUT & RETURN flight having FIXES for some or all WAY POINTS.
- l. **FREE TRIANGLE** A TRIANGLE flight having FIXES for some or all WAY POINTS.

1.4.3 **Multiple use of way points** A TURN POINT can have the same coordinates as the START or FINISH POINT. If a WAY POINT is to be used twice it must be listed twice in the task declaration.

**Table of badge and record requirements**

Soaring performance	SC3	Use	Declaration	Max # of TPs		Start alternatives			Finish alternatives		
				declared	claimed	Release	Fix	Start line	Land	Fix	Finish line
Gain of Height	1.4.2a	Badge / Record	Yes see 1.1.3	n/a		OK	n/a	n/a	OK		
Absolute Altitude	1.4.2b	Record only		n/a		OK	n/a	n/a	OK		
Duration	1.4.2c	Badge only	see 2.4.1	n/a		OK			OK		
Straight Distance <sup>(1)</sup>	1.4.2d		Yes see 1.1.3  <i>with coordinates for each declared way point</i>		3	0	OK	No	OK	OK	
Goal Distance	1.4.2e	0		0	No	No	required	No	No	required	
3TP Distance	1.4.2f	3		3	OK	No	OK	OK			
O&R Distance <sup>(2)</sup>	1.4.2g	1		1	No	No	required	No	No	required	
Triangle (2TP) Dist. <sup>(2)</sup>	1.4.2h										2
Triangle (3TP) Dist. <sup>(2)</sup>			3								3
Free Distance	1.4.2i	Record only	Yes see 1.1.3  declared way points optional	n/a	0	OK			OK		
Free 3TP Distance	1.4.2j				3	OK			OK		
Free O&R Distance	1.4.2k				1	OK			No	No	required <sup>(3)</sup>
Free Triangle Distance	1.4.2l				3	OK			No	No	required <sup>(3)</sup>

**NOTES**

- *n/a* – indicates a requirement not applicable to this soaring performance.
- *Written and internet declarations are options for badge claims only; all record claims require a flight recorder.*
- *Silver distance requires a finish fix at least 50 km from release and the launch point, and may be done as part of ANY soaring performance.*

(1) *If not using a start at release, the start point and its coordinates must be listed in the declaration.*

(2) *All requirements are equally applicable to out-&-return and triangle speed records.*

(3) *When a free closed course start is claimed at a start fix, that fix becomes the center of the finish line.*

### 2.3 DECLARATION REQUIREMENTS

All badge claims recorded by FR or PR require a declaration per 1.1.3. For any distance claim other than Straight Distance from release, the declaration shall also include a list of way point coordinates. The declaration must be identical in every FR and/or PR used, with the exception stated in 2.3b.

a. A written or internet declaration is mandatory for PR-recorded flights and is an option for any Silver or Gold flight. This type of declaration supersedes any earlier FR or PR declaration. Along with the content specified in 1.1.3, it must include the pilot and OO signatures, the date and time of signing, and the FRs or PRs used. A hard copy of all written or internet declarations made for a given flight shall be submitted with claim material.

b. If the data file for a Silver or Gold flight recorded by any FR or PR omits or has the incorrect pilot name and/or glider type and unique identification, the OO correction certificate in 4.4.2c shall be submitted with claim materials.

c. Diamond Goal, Diamond Distance and Diploma Distance require an FR-generated declaration and if multiple FRs are used, the declaration in each FR must be identical for a claim to be valid.

SC3C-2.6 has general notes on declarations and SC3C-6.4 on the declaration format as it appears in an .igc file, and Appendix 4 for a sample written declaration form. Consult the FR manufacturer's user manual for the method an FR uses to record the declaration date and time.

### 2.4 FLIGHT EVIDENCE REQUIREMENTS

a. For Altitude Gain, Silver/Gold Duration, and Silver/Gold Distance claims, one .igc file from an approved device may be selected for analysis, supplemented by the file from another device if substantial recording gaps are found. If both FR and PR were used for a flight, the FR files should be used for analysis first.

b. If a declaration was required, the original of any written declaration and copy of any internet declaration made for the flight shall be attached to the claim.

c. For Diamond Goal, Diamond Distance, and Diploma claims, the .igc files from every FR used shall be submitted.

**FLIGHT RECORDER CAUTIONS** - Be sure your Flight Recorder settings for start line geometry and turn points are set correctly. Use of the default settings may lead you to fly outside of the start and finish zones or miss a turnpoint.

Example - if using a START LINE - It is a line, not a radius that is .5 km either side of your fix and a START LINE is perpendicular to the first LEG and a FINISH LINE is perpendicular to the last LEG.

Turnpoints use a SECTOR, a quadrant having unlimited radius and height, with its apex at the TURN POINT and oriented symmetrical to and remote from the bisector of the inbound and outbound LEGS.

**I. PRELIMINARIES***A dry read, but important to success!***PERSONNEL & EQUIPMENT****Online Resources****SSA.org**

*Soaring Achievement and Info & Resources* links access SSA's -

- FAQ
- Badge & Record Worksheet
- FAI Sporting Code ("SC3")
- SC3 Summary for Badges
- Rules for SSA awards

**FAI.org/gliding**

*Documents, Technology and/or Gliding Sport* links access -

- World Record applications
- Flight Recorder information & Approval Documents
- Current and historical lists of World Records

*SC3 provides for individual countries to approve off-the-shelf GPS Position Recorders for recording Silver or Gold Badge flights. In the US FlyWithCE and FlyWithCE300 are approved*

**Observer Qualifications:**

*For FAI Badges, State and US National Records, the Observer must be an SSA member and (1) hold at least an SSA "B" badge; or be (2) the airport manager at the airport of takeoff or landing; or (3) an SSA appointee.*

*For World Records, the Official Observer must meet the above requirements AND be SSA approved in writing to serve as an OO for World Records. This requires you to complete an open book test on Sporting Code*

*In all cases, the OO must be familiar with SC3, pre- and post-flight procedures for the data recording equipment used and accurate analysis of flight documentation*

**Data Recording & Basic Procedures****An approved Flight Recorder ("FR") is permitted for any badge or record flight**

An FR is an electronic instrument approved by FAI's International Gliding Commission to record time, pressure data, GPS position, and - in the case of motor gliders - engine noise level. Check the FR's IGC Approval Document to make sure it's approved at the appropriate badge or record level and running the approved "firmware" version.

- Before flight, the Pilot and OO complete the pre-flight portion of an SSA Badge & Record Worksheet.
- In flight, the FR records data at regular intervals; as soon as possible after landing, an OO completes the post-flight portion of the SSA Badge & Record Worksheet, performs or supervises data file download, checks data file security and evaluates flight data.
- Independent evidence is required to verify take off and landing times and locations. This may take the form of soaring site flight logs or witness statements.

## Chapter 2

### BADGES and BADGE PROCEDURES

*See SC3C for examples of ways and means by which badges may be verified, such as the calculation of distances, and FR or PR data analysis methods.*

#### 2.0 GENERAL

- a. The FAI Silver, Gold, and Diamond badge flights and the Diploma flights are a set of international soaring achievement standards that do not need to be renewed. They are awarded by each NAC, who shall maintain a register of the flights it has validated, retaining the pilot's name, nationality, and the dates and details of each soaring performance.
- b. Regardless of the number of flight recorders and/or position recorders carried in the glider, only those selected by the pilot before take-off and inspected (i.e. controlled) by an OO shall be used for flight claim evidence. All further references to FRs or PRs in Chapter 2 and 4 for badge claims apply to those so controlled.
- c. The pilot must be alone in the glider.

#### 2.1 BADGE DESIGN



**Silver Badge**



**Gold Badge**



**Three Diamonds**  
(1,2 Diamonds similar)



**750+ km Badges**  
1000 km shown,  
others similar

#### 2.2 BADGE REQUIREMENTS

##### 2.2.1 Silver Badge

The Silver badge is achieved on completing these soaring performances:

- a. SILVER DISTANCE A straight distance flight from a start at release to a finish fix located at least 50 km from release and at least 50 km from the fix recorded at the beginning of the take-off roll.  
  
*Silver distance and any longer declared task may both be claimed for the same flight, see SC3C-2.2. The Silver distance should not be flown with guidance from another pilot.*
- b. SILVER DURATION A duration flight of at least 5 hours.
- c. SILVER HEIGHT A gain of height of at least 1000 metres.

##### 2.2.2 Gold Badge

The Gold badge is achieved on completing these soaring performances:

- a. GOLD DISTANCE A distance flight of at least 300 kilometres as defined in 1.4.2d to 1.4.2h.
- b. GOLD DURATION A duration flight of at least 5 hours.
- c. GOLD HEIGHT A gain of height of at least 3000 metres.

##### 2.2.3 Diamonds

There are three Diamond tasks, with each completed Diamond mounted on the Silver or Gold badge. Each Diamond is achieved separately by completing one of the soaring performances below:

- a. DIAMOND GOAL A distance flight of at least 300 kilometres over an out-and-return (1.4.2g) or triangle (1.4.2h) course. There is no restriction on the triangle geometry.
- b. DIAMOND DISTANCE A distance flight of at least 500 kilometres as defined in 1.4.2d to 1.4.2h.
- c. DIAMOND HEIGHT A gain of height of at least 5000 metres.



- 2.2.4 **FAI Diploma flights** FAI Diploma flights begin with a minimum distance of 750 km and increase in 250 km increments. They may use any course defined in 1.4.2d through 1.4.2h. A Diploma is awarded once only for the incremental distance immediately less than the distance flown.
- 2.2.5 **Diamond and Diploma badge registration** On completion of all three Diamonds or any Diploma flight, the NAC shall provide the information held in its national register per 2.0a to the FAI at [info@fai.org](mailto:info@fai.org). In turn, the FAI will enter the name of the pilot in an international register, and award the pilot a Diploma to recognise these flights.
- 2.2.6 **Control and allowed use of FRs & PRs** The OO shall provide control (2.0b) by noting the type and serial number of each FR and PR, and inspect its installation as described in its approval document. In addition:
- Silver or Gold claims must be recorded either by a Position Recorder (“PR”) approved by the “controlling NAC” as in 2.6, or by an FR approved by the GNSS Flight Recorder Approval Committee (GFAC) to Levels 1, 2, or 3.
  - Diamond claims require an FR approved by GFAC to Levels 1, 2, or 3.
  - Diploma flights require an FR approved by GFAC to Levels 1 or 2.

### 2.3 DECLARATION REQUIREMENTS

All badge claims recorded by FR or PR require a declaration per 1.1.3. For any distance claim other than Straight Distance from release, the declaration shall also include a list of way point coordinates. The declaration must be identical in every FR and/or PR used, with the exception stated in 2.3b.

- A written or internet declaration is mandatory for PR-recorded flights and is an option for any Silver or Gold flight. This type of declaration supersedes any earlier FR or PR declaration. Along with the content specified in 1.1.3, it must include the pilot and OO signatures, the date and time of signing, and the FRs or PRs used. A hard copy of all written or internet declarations made for a given flight shall be submitted with claim material.
- If the data file for a Silver or Gold flight recorded by any FR or PR omits or has the incorrect pilot name and/or glider type and unique identification, the OO correction certificate in 4.4.2c shall be submitted with claim materials.
- Diamond Goal, Diamond Distance and Diploma Distance require an FR-generated declaration and if multiple FRs are used, the declaration in each FR must be identical for a claim to be valid.

*SC3C-2.6 has general notes on declarations and SC3C-6.4 on the declaration format as it appears in an .igc file, and Appendix 4 for a sample written declaration form. Consult the FR manufacturer’s user manual for the method an FR uses to record the declaration date and time.*

### 2.4 FLIGHT EVIDENCE REQUIREMENTS

- For Altitude Gain, Silver/Gold Duration, and Silver/Gold Distance claims, one .igc file from an approved device may be selected for analysis, supplemented by the file from another device if substantial recording gaps are found. If both FR and PR were used for a flight, the FR files should be used for analysis first.
  - If a declaration was required, the original of any written declaration and copy of any internet declaration made for the flight shall be attached to the claim.
  - For Diamond Goal, Diamond Distance, and Diploma claims, the .igc files from every FR used shall be submitted.
- 2.4.1 **Time evidence** GPS time data shall be substantiated by independent evidence of take-off time. The data sampling rate in each FR or PR used must be set to at least once per minute. The 5-hour duration task may be flown with no FR or PR if it is under the continual attention of an OO, who shall control the task as given in 4.3.2.
- 2.4.2 **Position evidence** Position data may be recorded by an FR or a PR for Silver or Gold badge flights. An FR must be used for Diamond and Diploma flights.
- RELEASE POINT** The release point (or MoP stop) shall be taken from the recorded in-flight data. As soon as possible after release, the pilot should descend or make a steep turn so the data clearly indicates the release point. The release point shall be taken at the start of this descent or turn (see SC3C-10.8b).

- b. **START/FINISH LINE** Where a start line and/or finish line is required, position data from a FR or PR must show that the glider crossed it as required by 1.3.1.
- c. **TURN POINTS ACHIEVED** Position evidence from a FR or PR must show that a fix was recorded within the OZ or a straight line between consecutive fixes passes through the OZ.
- d. **FINISH FIX** The position of a finish fix shall be taken from the GPS data.

#### 2.4.3 **Altitude evidence**

- a. The altitude at which a glider crosses a start or finish line is determined by linear interpolation between the altitude at the last fix before crossing and the first fix after crossing.
- b. If PR barometric data is not available or the FR calibration period has lapsed, GPS height data may be used for Silver and Gold tasks, provided that a 100 metre error margin is applied to all pressure height requirements of the Code (example: the gain of height is at least 1100 metres for Silver altitude). *An example is given in SC3C-3.3.*

#### 2.4.4 **Loss of height limits**

- a. For distances greater than 100 kilometres where the LoH exceeds 1000m using barometric data or 900m using GPS height data, an adjustment of 100 times the excess LoH shall be subtracted from the length of the course.
- b. For distances of 100 kilometres or less, the flight is invalid if the LoH exceeds 1% of the distance using barometric data or [1% of course distance less 100m] using GPS height data.

2.4.5 **Flight continuity** The FR or PR data must show there was no intermediate landing by the glider and a MoP was not used during the soaring performance. An interruption in altitude data will not compromise proof of flight continuity provided that the OO and NAC are convinced that no critical data is missing and the evidence remains indisputable. Evidence of flight continuity can also be assessed from a time plot of the GPS height data.

2.4.6 **Barometric calibration period** The barometric recording function of a FR, or a PR (if incorporated), shall be calibrated within 5 years prior to the flight or within 2 months after the flight.

2.4.7 **MoP evidence** The OO shall consult the approval document for each device recording MoP data and certify the means used to determine that a MoP was not used during the soaring performance.

### 2.5 **THE USE OF POSITION RECORDERS**

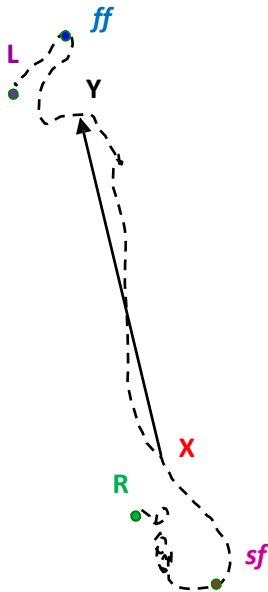
- a. Many GPS devices can record the coordinates of their position. If this data can be transferred in the format of an .igc file, NACs may allow these position recorders (PRs) to be used to validate the horizontal position of the glider for Silver or Gold badge flights. Altitude evidence may also be certified subject to the restriction given in 2.4.3b.
- b. NACs shall approve the specific types of PRs for use within their area of responsibility and to maintain a current list of them. A specimen PR-approval document is on the IGC web site and should be used as a basis, modified with the characteristics of the PR concerned. Approval documents for PRs that comply with the Sporting Code will be posted on the IGC website by GFAC.
- c. NACs should consult GFAC for advice prior to beginning the approval process for a given PR as there may be known problems with it or it may have been found to not comply with IGC rules and procedures. Guidance on PR operation and the approval process is given in SC3C-6.2 and 6.3.
- d. Flight recorders that have lost their IGC approval may, with NAC approval, be suitable to use as PRs if the requirements in 2.5e and 2.5f are met.
- e. Any PR that can produce estimated fixes by averaging or predicting based on past fixes is acceptable only if the estimation function is disabled. The OO must supervise the disabling process or verify that it was completed before flight and certify that this was done.
- f. Data transferred from the PR must be converted as closely as possible to the .igc format. Any transfer and conversion program should be approved by the NAC and include a means of identifying any change to the .igc file made after the initial transfer.

## II. TASK OPTIONS

*Who knew there were so many?!*

### DISTANCE TASKS WITHOUT TURN POINTS

- ground track in free flight
- course line as declared



**SC3 1.4.2d Straight Distance** (*Badge Distance only*)

**No Turn Points are declared or no declared Turn Point is achieved. When documented by GPS, Task Distance at left is - the longest of RY, XY, RL, XL, where...**

- R = release or MoP stop
- X = the declared Start Point, if achieved
- Y = the declared Finish Point, if achieved
- L = the earlier of landing or MoP start

**SC3 1.4.2e Straight Distance to a Goal** (*Records Only*)

**No Turn Points are declared. Task distance is XY,**

**where...**

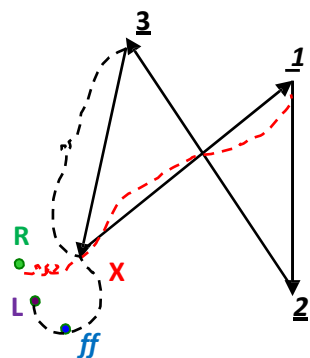
- X = declared Start Point } achieved by some combination of 1000-meter
- Y = declared Finish Point } OZ Sector(s) and Start and Finish Line(s)

**SC3 1.4.2i Free Straight Distance** (*Records Only*)

**Way Points may be selected post flight from GPS-recorded Fixes.** In this case, Task Distance is measured from release or any later Start Fix (*sf*) to any Finish type. At left, task distance would be *sf* to *ff*.

### DISTANCE TASKS WITH ONE OR MORE TURN POINTS

- first leg ground track
- .... last leg ground track
- course line



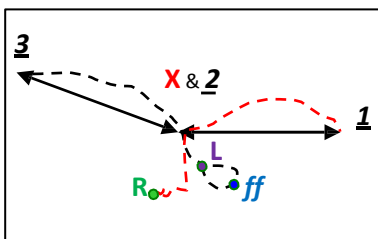
**SC3 1.4.2f Distance Using Up to 3 Turn Points** (*Badge or Record Distance*)

**Same Start & Finish options as Straight Distance, but at least 1 of up to 3 declared Turn Points must be achieved; A declared Start and/or Finish Point may be used as a Turn Point if also declared as a Turn Point. Here...**

- R = release or MoP stop
- X = the declared Start or Start/Finish Point, if achieved
- 1 2 3 = declared Turn Points, in the order achieved
- ff* = a Finish Fix recorded before "L" and selected post-flight
- L = the earlier of landing or MoP start

**With three Turn Points declared & achieved, task distance at left is R 1 2 3 *ff***

**Note:** Concurrent tasks are also possible. See **SC3 1.4.7b, 1.4.6 & 1.4.8**

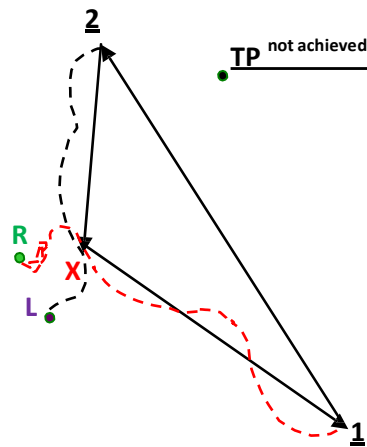


**Variant 1: Start/Finish Point declared as one of three Turn Points**

Essentially, this variant consists of back-to-back out & return legs. As shown, task **Distance Using Up to 3 Turn Points** is R 1 2 3 *ff*. A finish at X would yield the best last leg if 1 was the last Turn Point achieved.

**Note:** A concurrent record task is also possible. See **SC3 1.4.7b**

--- first leg ground track  
 ..... last leg ground track  
 — course line



**SC3 1.4.2f Distance Using Up to 3 Turn Points (Continued)**

**Variant 2: One or more Turn Points isn't properly achieved, where...**

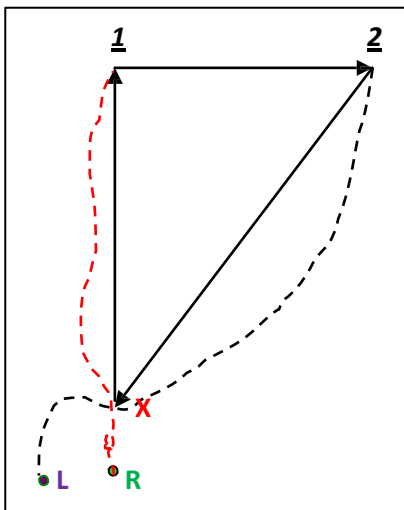
- R = release or MoP stop
- X = declared Start/Finish Point
- 1 2 = 2 of 3 declared Turn Points, in the order used
- ff = a Finish Fix recorded before "L" and selected post-flight
- L = the earlier of landing or MoP start

As shown at left, one skipped Turn Point and lack of an advantageous Finish Fix in this case mean task **Distance Using Up to 3 Turn Points** is **R 1 2 L**

**Note 1:** If only one declared Turn Point were achieved, the task **Distance Using Up to 3 Turn Points** is **R** via the Turn Point achieved to **L**

**Note 2:** Though **X** may have been declared and achieved as a goal flight Start/Finish Point, a **skipped or improperly achieved Turn Point means the flight cannot be credited as Diamond Goal or a closed course record.**

**Note 3:** Concurrent tasks are also possible; see **SC3 1.4.7b, 1.4.6 & 1.4.8**



**Variant 3: a Start/Finish Point and fewer than 3 Turn Points are declared and achieved in declared order, where...**

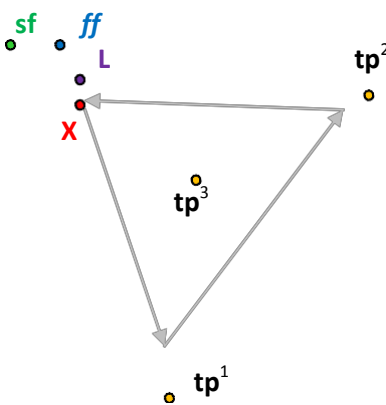
- R = release or MoP stop
- X = declared Start/Finish Point
- 1 2 = declared Turn Points, used in declared order
- ff = a Finish Fix recorded before "L" and selected post-flight
- L = the earlier of landing or MoP start

At left, given the release location and lack of a more advantageous Finish Fix, task **Distance Using Up to 3 Turn Points** is **R 1 2 L**.

**Note 1:** If only one Turn Point were declared and achieved at left, the task **Distance Using Up to 3 Turn Points** would be **R TP L**

**Note 2:** Concurrent tasks are also possible; see **SC3 1.4.7b, 1.4.6 & 1.4.8**

--- = ground track in free flight



**SC3 1.4.2j Free Distance Using Up to 3 Turn Points (Records only)**

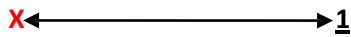
Similar to Distance Using Up to 3 Turn Points, but **Way Points may be selected post flight**. Task distance is measured from release or any later Start Fix (**sf**), via as many as 3 Turn Point Fixes in the order recorded (**tp<sup>1</sup>**, **tp<sup>2</sup>**, **tp<sup>3</sup>**) to a Finish Fix (**ff**) recorded at or before the earlier of Landing or Motorglider MoP start.

**Note 1:** as shown at left, a "Free" task may be based on a declared task – in this case, a triangle outlined in grey, with the declared Start/Finish at **X**. Claimed as **Free Distance Using Up to 3 Turn Points**, the best task distance would be **sf tp<sup>1</sup> tp<sup>2</sup> tp<sup>3</sup> ff**. When a Fix is claimed as a Turn Point, there is no Cylinder Correction penalty, so Official Distance in this example would be task distance less any applicable Loss of Height penalty.

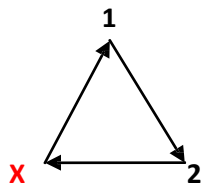
**Note 2:** Concurrent tasks are also possible; see **SC3 1.4.6 & 1.4.8**

Ground track not shown

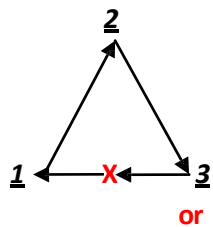
**Badge or Record Out & Return**  
(Fig 1)



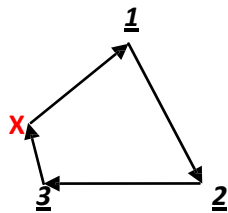
**2-TP Badge / Record Triangle**  
(Fig 2)



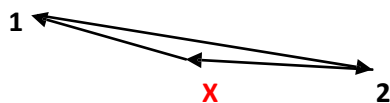
**3-TP Badge or Record Triangles**  
(Fig 3)



or



**2-TP Triangles OK for Badges**  
(Fig 4)



**3-TP Triangle OK for Badges**  
(Fig 5)



**SC3 1.4.2e, g & h Closed Courses for Diamond Goal, Distance & Speed Records**

A Start/Finish Point and 1, 2 or 3 Turn Points are declared and achieved in declared order. The Start & Finish *must* be achieved using any combination of 1000-meter radius OZ Sector(s) and Start/Finish Line(s), where **X** = declared Start/Finish Point

- 1** = one TP declared & achieved for an **Out & Return**
- 1 2** = two TPs declared & achieved for a **2-Turn Point Triangle**
- 1 2 3** = three TPs declared & achieved for a **3-Turn Point Triangle**

**1.4.2g:** **Out & Return** task distance is **X 1 X** (fig 1)

**1.4.2h:** **2-Turn Point Triangle** task distance is **X 1 2 X** (fig 2, 4)

**1.4.2h** **3-Turn Point Triangle** is flown **X 1 2 3 X** but task distance is measured **1 2 3 1**, and OFFICIAL DISTANCE must be at least 100 km. (**X must be achieved** and may be anywhere; the farther from course line, the greater the distance flown without triangle distance credit.) (fig3, 5)

**SC3 1.4.2i Free Distance Closed Courses (Distance records only)**

**Way Points may be selected post flight.** Task distance is measured from a *Start Fix* no earlier than the later of release or motorglider MoP stop to one or more subsequent *Turn Point Fixes* in the order recorded. To complete the task, the glider must cross a *Finish Line* centered on the *Start Fix*.

In the graphics at left, **X** represents the selected *Start Fix*, which also defines the *Finish OZ* and *Finish line*; numbered Way Points are *Turn Point Fixes*.

**1.4.2k Free Out & Return Distance** A *Start Fix* and one *Turn Point Fix* are selected from recorded data. Free O & R task distance is **X 1 X** (fig1)

**1.4.2i Free Triangle Distance** A *Start Fix* and *Turn Point Fixes* are selected from recorded data. Free 2-Turn Point Triangle task distance is **X 1 2 X** (fig 2); Free 3-Turn Point Triangle task distance is **1 2 3 1** (fig 3).

**Note 1:** When a *Fix* is claimed as a *Free Turn Point*, there is no *Cylinder Correction* penalty at that *Turn Point*.

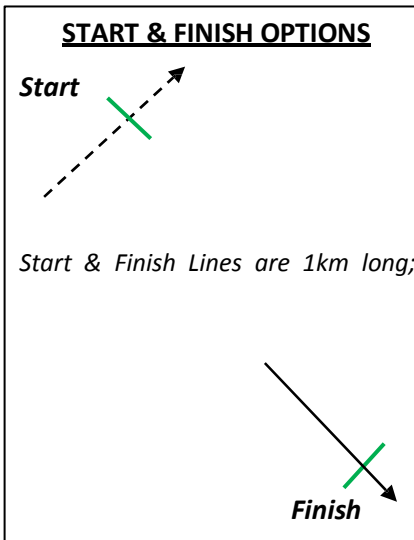
**Note 2:** *Free Triangles* are subject to the same leg length requirements as listed above for declared *Triangles*

### III. PROCEDURAL ISSUES

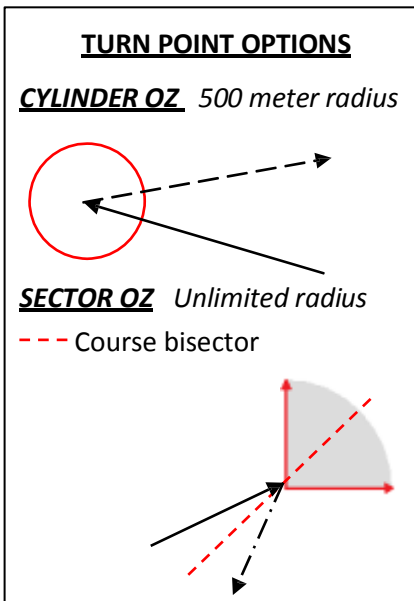
*Details that can make or break a badge or record claim!*

#### ACHIEVING WAY POINTS

- inbound course
- ← outbound course
- OZ boundary
- Start/Finish Line



**BEWARE!** The order in which Turn Points are used changes the orientation of OZ Sectors!



A WAY POINT IS a point specified by a set of coordinates. A WAY POINT may be a START POINT, TURN POINT or FINISH POINT. Except for a Goal flights where a 1km start/finish line is required, all distance flights with;

- ✓ A Start other than release and/or a Finish other than landing and may be achieved by crossing a line 1 km long, centered on the Start Point. The Start Line is perpendicular to the first leg, the Finish Line is perpendicular to the last leg for all distance flights, except Goal.

- ✓ For Free distance flights;

**(1) a Fix must be exactly on Way Point coordinates or within its Observation Zone; or**

**(2) a straight line drawn between two consecutive valid fixes must cross the Observation Zone boundary**

-----

**SC3 1.2.6 OBSERVATION ZONE (OZ): The airspace a glider must enter to attain a Turn Point. The OZ may be either a Cylinder or a Sector:**

- **SC3 1.3.6 CYLINDER OZ** (*Turn Points ONLY*) a CYLINDER having a 500m radius and unlimited height, centered on the TURN POINT

**OZ CORRECTION** For each TURN POINT achieved only using the CYLINDER OZ, the OFFICIAL DISTANCE shall be decreased by 1 kilometre.

- **OZ SECTOR** (*Any turn Point*) a SECTOR, a quadrant having unlimited radius and height, with its apex at the TURN POINT and oriented symmetrical to and remote from the bisector of the inbound and outbound LEGS.

- **At a Turn Point**, the OZ Sector is symmetrical to and remote from the bisector of the inbound & outbound LEGS at the TURN POINT. **OZ Sector radius is unlimited**

**LOSS OF HEIGHT LIMITS & PENALTIES**

**SC3 1.3.4 Loss of Height (LoH): Start Altitude minus Finish Altitude, where...**

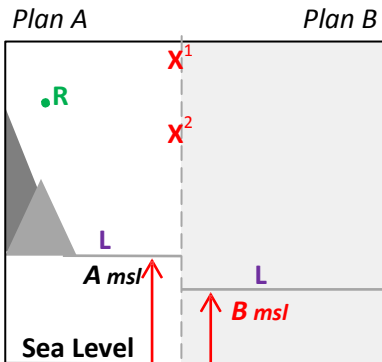
**Start & Start Altitude MSL may be at**

- Release or MoP stop, if claimed as the Start; or
- the lowest Fix in the Start OZ; or
- Start OZ exit; or
- the lowest Start Line crossing; or
- for a 'Free' record, a Start Fix

**Finish & Finish Altitude MSL may be at**

- the highest Finish Line Crossing; or
- Finish OZ entry; or
- the highest Fix in the Finish OZ; or
- a Finish Fix selected post-flight as the Finish; or
- pre-landing motorglider MoP Start; or
- landing site elevation, if landing is claimed as the Finish

**Concurrent Badge and/or Record claims for a single flight may each use different Start & Finish options**



As shown in side view at left, Plan A assumes a closed course using a Start/Finish Point at the home airport; in contingency Plan B, the glider lands out after achieving the Start and one or more Turn Points in the shaded area. In this case...

- R** = release or motorglider MoP stop in both plans
- X<sup>1</sup>** = Start/Finish Point achieved as a Start in both plans
- X<sup>2</sup>** = Start/Finish Point achieved as a Finish in Plan A
- L** = separate landing locations for each Plan

*Finish Fixes for each plan can only be determined post-flight*

**NOTE 1:** Plan B's Finish by landing at **L** **increases** LoH relative to both release and the Start at **X<sup>1</sup>**. A Finish Fix might come in handy...

**NOTE 2:** To avoid or minimize an LoH penalty...

... use **Maximum LoH** in the next section to plan Start Altitude, ideally -  
**(Max LoH) + MSL elevation of the lowest landing site in the task area**

... for Straight Distance or Distance Using Up to 3 Turn Points, increase task distance **and** **Max LoH** with a Release on the "non-task" side of the Start Point, at or below maximum Start Altitude.

**Duration:**

**Maximum LoH = 1000 meters  
= 3280.8399'**

Release to landing yields longest **duration**, but given instrument and lag errors in altimeters, **R** should be planned no higher than 3000 feet *above* landing site elevation.

**NOTE:** Tow a bit too high? Using GPS documentation, Silver Duration can be credited from Release to a Finish Fix recorded at least 5 hours later.

**Speed:** (Closed Course required)

**Maximum LoH = 1000 meters  
= 3280.8399'**

Last Start Line crossing to first Finish Line crossing yields best **speed**, but if this exceeds Max LoH, calculate *all* LoH possibilities using closed course Start & Finish OZ Sectors. Use the same pair of Start & Finish alternatives to calculate both Loss of Height and time on course.

**Distance <= 100 km (62.14 sm)**  
**Max LoH = 1% of task distance**  
**= 52.80 x task distance in sm**

For planning purposes, base task distance on declared Start, Turn and Finish Points; then, plan a Start altitude no more than:

**(52.8 x task distance in sm) + lowest landing site elevation in the task area**

**NOTE 1:** To avoid an LoH penalty for Straight Distance or Distance Using Up to 3 Turn Points, release no higher than the planned Start Altitude while within the unlimited radius Start OZ Sector.

**NOTE 2:** If all else fails: during post-flight evaluation, check for a Finish Fix advantageous in terms of location and/or altitude – either one can remedy LoH woes for Straight Distance and Distance Using Up to 3 Turn Points.

**Distance > 100 km :**  
**A distance penalty applies if LoH is greater than 1000 meters (3280.8399 feet)**

On 100+ km flights where LoH exceeds 1000 meters, a penalty is deducted from task distance, and it's painful:

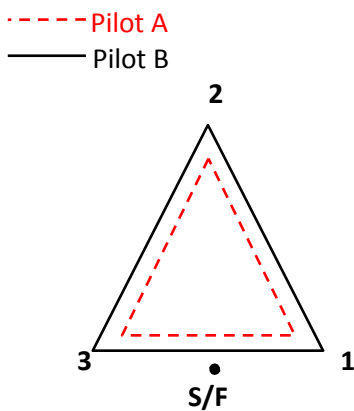
$$[(\text{LoH} - 3280.8) * 100] / 5280$$

***This amounts to 1.8939 sm for every 100' the LoH exceeds 1000 meters!***

The strategies in Notes 1 and 2 above apply to Straight Distance and Distance Using Up to 3 Turn Points. For Goal and Closed Course tasks, the 1000-meter Start OZ radius means the best Start Point is a local landmark near a reliable lift area – easy to find and a safe place to record a low Start and, for a Closed Course, establish a high point if needed in the Finish OZ.

**NOTE 1:** For Diamond Goal and other declared closed courses: If the Start or Finish wasn't properly achieved or an LoH penalty invalidates the closed course claim, distance may be credited as Distance Using Up to 3 Turn Points and/or a 'Free' Record.

**CYLINDER CORRECTIONS**



**Cylinder Corrections apply when a declared Turn Point is achieved by Cylinder OZ only, without entry into the Turn Point's OZ Sector.**

In the 3-Turn Point triangle at left, Task Distance for both pilots would be **1-2-3-1**, but **Pilot A** - using Cylinders at all Turn Points - doesn't fly quite as far as Pilot B, who's used OZ Sectors. To level the playing field, a Cylinder Correction of 3 km (1.86 sm) would be deducted from **Pilot A's** Task Distance.

This is the worst case scenario for **Pilot A**, whose penalty is .5 km for every time the course line crosses a Cylinder boundary. **The whole course Cylinder Correction penalty subtracted from Task Distance amounts to 1 km for each declared Turn Point achieved only by Cylinder OZ.**

For Triangle distance and/or speed Records, Cylinder Corrections are more complicated due to the leg length requirements at SC3 1.4.6, which apply equally to declared and 'Free' Triangle courses.



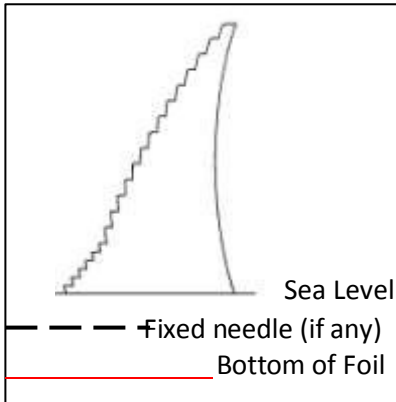
## IV. POST-FLIGHT EVALUATION

*A calculator may come in handy, especially for FR claims...*

### ALTITUDE CALCULATIONS – STEP 1: Correct for instrument error

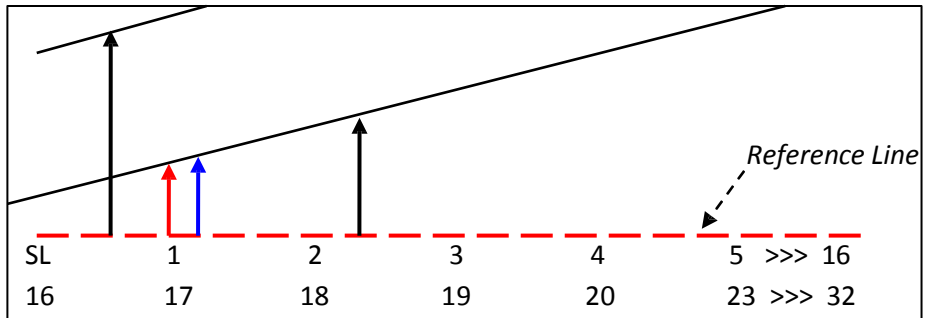
#### Mechanical Barographs Use Graphic Analysis

A calibration **barogram** shows needle deflection at lab-induced pressure altitudes MSL:



The “steps” are plotted on a graph, above a reference line shown on EVERY barogram. See SC3 Annex C, Appendix 5 for details.

Use calipers to measure from the reference line on the flight barogram to its **pre-flight baseline**. Transfer this measurement to the calibration graph, and read calibrated altitude from the numbers below the graph’s reference line. Repeat for key in-flight events and the **post-flight baseline**.



In the example above, Take off & Landing site elevation is **1000’ MSL** and:

**Pre-flight baseline: 900’ MSL    Post-flight baseline: 1,100’ MSL**  
**Release & low    2,200’ MSL    High Point:    16,500’ MSL**

#### Electronic Barographs & FRs Use Numeric Analysis

Numeric calibration compares true and indicated altitudes MSL, typically at intervals of 2 to 3 thousand feet:

<u>True</u>	<u>Indicated</u>
0	98
2000	2100
4000	4133
6000	6102

Use linear interpolation to correct for instrument error between known values. Shown below: at a landing site elevation of 798’ MSL, **492’** is the FR-recorded post-flight pressure altitude and **X** is the equivalent calibrated altitude to be determined. *This is a real example from SSA files:*

<u>True</u>	<u>Indicated</u>
0	98
<b>X</b>	<b>492</b>
2000	2100

$$X = 2000 - ((2100 - 492) * ((2000 - 0) / (2100 - 98))) = 393.6 \text{ feet}$$

### ALL ALTITUDE CALCULATIONS Step 2: Correct for Non-standard Pressure

*Why? Because the FR or barograph does **exactly** what your altimeter does, but it can’t be reset before or in flight*

**A** = Takeoff site elevation minus *calibrated* altitude at the pre-flight baseline  
*(A negative number may result)*

**For each event near take off time, ADD “A” to its calibrated altitude.**

*In the barograph example above, calculated altitude at the release/low point would be 2200 + (-100) = 2100’ MSL*

**B** = Landing site elevation minus *calibrated* altitude at the post-flight baseline  
*(A negative number may result)*

**For each event near landing time, ADD “B” to its calibrated altitude.**

*In the barograph example above, calculated altitude at the high point would be 16,500 + (100) = 17,500’ MSL*

*In the FR example above, calculated altitude MSL at any event recorded near landing time would be its calibrated altitude **plus** 404.4 feet.*

**DETERMINING OFFICIAL DISTANCE & TRIANGLE ELIGIBILITY**

**STEP 1.**

**Calculate Official Distance**

This is both...

- the Badge or Record distance credited for the task(s) claimed
- the distance used to calculate Record speed

Check first for completion of the task declared, then check for task variants that may yield concurrent claims. (Common: a Closed Course Badge or record distance or speed task also yields a longer Distance Using Up to 3 Turn Points and/or a still longer 'Free' record.)

For each task variant, determine whether LoH and/or Cylinder Correction penalties apply. If so...

**Official Distance = Task Distance – (LoH penalty + Cylinder Corrections)**

**STEP 2.**

**Verify eligibility for Triangle distance and/or speed records**

**Step 1:** if Official Distance includes any Cylinder Correction penalty, use the table at right to deduct the proper Correction from each triangle leg

**Step 2:** compare leg lengths (corrected as needed) to the following limits:

- **Official Distance ≤ 750 km:**  
Each leg is at least 28% of Official Distance
- **Official Distance > 750 km:**  
No leg is less than 25% or more than 45% of Official Distance

		Turn Point(s) using Cylinder OZs						
1 TP Task	Leg 1	1 of 1					TP achieved by Cylinder	
	Leg 2	0.5					leg corrections (km)	
	Course	0.5					Course Correction (km)	
	Course	1						
2 TP Task	Leg 1	1st only	2nd only	Both				.5 km = .3107 sm    2 km = 1.2428 sm 1 km = .6214 sm    3 km = 1.8642 sm
	Leg 2	0.5	0	0.5				
	Leg 3	0.5	0.5	1				
	Leg 4	0	0.5	0.5				
	Course	1	1	2				
Distance Using Up to 3 TP	Leg 1	1st only	2nd only	3rd only	1st & 2nd	2nd & 3rd	1st & 3rd	All 3
	Leg 2	0.5	0	0	0.5	0	0.5	0.5
	Leg 3	0.5	0.5	0	1	0.5	0.5	1
	Leg 4	0	0.5	0.5	0.5	1	0.5	1
	Course	1	1	1	2	2	2	3
3 TP Triangle	Leg 1	1st only	2nd only	3rd only	1st & 2nd	2nd & 3rd	1st & 3rd	All 3
	Leg 2	0.5	0	0.5	1	0.5	0.5	1
	Leg 3	0.5	0.5	0	0.5	1	0.5	1
	Leg 4	0	0.5	0.5	0.5	0.5	1	1
	Course	1	1	1	2	2	2	3



## APPENDIX II: Sample Evaluation Guide

### I. ALL CLAIMS *timely submission of the application and -*

- \_\_\_\_\_ On the application or separately, the pilot certifies the flight was conducted in compliance with the FAI Sporting Code, glider operating limitations and flight regulations respecting airspace use, night flight, etc. per SC3 5.3.2a
- \_\_\_\_\_ Any GPS recorder: the instrument is properly approved, running current "firmware" and the data file passes Security
- \_\_\_\_\_ Any Mechanical Barograph: ALL items required by SC3 5.3.3 are written on the barogram
- \_\_\_\_\_ Release (and motorglider MoP status, if applicable) is/are clearly evident in recorded data
- \_\_\_\_\_ FR or barograph calibration is current per SC3 4.4.4
- \_\_\_\_\_ Key altitudes have been corrected for both instrument error and non-standard pressure.
- \_\_\_\_\_ A pre-flight declaration was made as required by SC3 4.2 and, if distance is claimed on the basis of declared Way Points, the declaration lists a total of no more than 5: Start, Finish and a maximum of 3 Turn Points
- \_\_\_\_\_ Task distance is based on the WGS 84 ellipsoid, using the FAI World Distance Calculator or equivalent.

**II. ALTITUDE CLAIMS** The pressure correction outlined at page 9 is adequate for most claims. If a key altitude was achieved remote from takeoff and landing locations in terms of time and/or distance, SSA bases pressure correction on the best available METAR, adjusted per ICAO tables. Contact [badgeandrecords@ssa.org](mailto:badgeandrecords@ssa.org) for help in making such an analysis if needed.

**III. DURATION CLAIMS** Duration from any Start to any Finish is at least 5 hours, with a Loss of Height of less than 3280.8 feet.

### **IV. DISTANCE AND SPEED CLAIMS**

**A. CLAIM TYPES.** *Given SC3 1.4.1a and 1.4.3 through 1.4.8, one flight may yield as many as six distance record claims (one in each whole numbered section below) and a declared closed course may yield multiple speed record claims.*

\_\_\_\_\_ **1. Straight Distance (Badge) or Distance Using Up to 3 Turn Points (Badge or Record)** Check Start & Finish options and LoH alternatives to find the best Task Distance with minimal LoH penalty. For *this* combination:

1.1 TASK DISTANCE: Straight Distance or Distance Using Up to 3 Turn Points: \_\_\_\_\_ km

1.2 Loss of Height (Start Altitude minus Finish Altitude) = \_\_\_\_\_ feet

1.3 Distance Using Up to 3 Turn Points: Number of Turn Points achieved only by OZ Cylinder: \_\_\_\_\_

\_\_\_\_\_ **2. Free Straight Distance (Record).** *Select Start & Finish Fixes to minimize any Loss of Height penalty.*

2.1 TASK DISTANCE: Free Straight Distance: \_\_\_\_\_ km

2.2 Loss of Height (Altitude at the Start Fix minus Altitude at the Finish Fix) = \_\_\_\_\_ feet

\_\_\_\_\_ **3. Free Distance Using Up to 3 Turn Points (Record).** *Selection of Start & Finish Fixes can minimize any Loss of Height penalty; selection of Turn Point Fixes eliminates Cylinder Correction.*

3.1 BEST TASK DISTANCE: Free Distance Using Up to 3 Turn Points: \_\_\_\_\_ km

3.2 Loss of Height (Altitude at the Start Fix minus Altitude at the Finish Fix) = \_\_\_\_\_ feet

\_\_\_\_\_ **4. Straight Distance to a Goal (Record) or Declared Closed Course Distance (Badge or Record) and/or Closed Course Speed (Record).** Bearing in mind that Start & Finish Sector OZ radius is 1 km (.6214 sm) for these tasks, determine which Loss of Height alternative below minimizes Loss of Height. *These are listed in typical order of significance to a speed claim*

- |  |   |   |
|--|---|---|
| _____ a. Start Line to Finish Line     | _____ d. Start OZ exit to Finish OZ entry   | _____ g. Low in Start OZ to Finish Line       |
| _____ b. Start Line to Finish OZ entry | _____ e. Start Line to high in Finish OZ    | _____ h. Low in Start OZ to Finish OZ entry   |
| _____ c. Start OZ exit to Finish Line  | _____ f. Start OZ exit to high in Finish OZ | _____ i. Low in Start OZ to high in Finish OZ |

4.1 TASK DISTANCE via declared Way Points: \_\_\_\_\_ km **(TP1-TP2-TP3-TP1 for a 3-TP triangle)**

4.2 Loss of Height for the Start/Finish alternative selected above : \_\_\_\_\_ feet

4.3 Number of declared Turn Points achieved by Cylinder OZ only: \_\_\_\_\_

4.4 SPEED CLAIMS: Duration, using the selected Start & Finish alternatives: \_\_\_\_\_ HH:mm:ss

*Duration in seconds: [(hours\* 3600) + (minutes\*60) + (seconds)] = \_\_\_\_\_*

**5. Free Out & Return Distance (Record).** Selection of the Turn Point Fix eliminates any Cylinder correction.

Select one:

\_\_\_\_\_ a declared Start/Finish Point is claimed; the best alternative listed in 4a through 4i is: \_\_\_\_\_

\_\_\_\_\_ a Start Fix is claimed and marks the center of the Finish Line and the apex of the Finish OZ Sector, which has a radius of 1 km (.6214 sm); the best alternative to minimize Loss of Height is:

\_\_\_\_\_ a. Start Fix to Finish Line Crossing    \_\_\_\_\_ b. Start Fix to Finish OZ entry    \_\_\_\_\_ c. Start Fix to high in Finish OZ

**5.1 TASK DISTANCE: Free Out & Return:** \_\_\_\_\_ km

**5.2 Loss of Height for the Start/Finish alternative selected above:** \_\_\_\_\_ feet

**6. Free Triangle Distance (Record).** Selection of Way Point Fixes eliminates any OZ Cylinder Corrections, but may not provide compliance with the leg length minima of SC3 1.4.6.

Select one:

\_\_\_\_\_ a declared Start/Finish Point is claimed; the best alternative listed in 4a through 4i is: \_\_\_\_\_

\_\_\_\_\_ a Start Fix is claimed and marks the center of the Finish Line and the apex of the Finish OZ Sector, which has a radius of 1 km (.6214 sm); the best alternative to minimize Loss of Height is:

\_\_\_\_\_ a. Start Fix to Finish Line Crossing    \_\_\_\_\_ b. Start Fix to Finish OZ entry    \_\_\_\_\_ c. Start Fix to high in Finish OZ

Select one:

\_\_\_\_\_ All Turn Points claimed are Fixes selected post-flight

\_\_\_\_\_ One or more Turn Points are claimed on the basis of a pre-flight declaration

**6.1 TASK DISTANCE using the Way Points claimed: Free Triangle:** \_\_\_\_\_ km

**6.2 Loss of Height for the Start/Finish alternative selected:** \_\_\_\_\_ feet

**6.3 Number of declared Turn Points claimed and achieved by Cylinder OZ only:** \_\_\_\_\_

**B. CALCULATIONS FOR EACH DISTANCE OR SPEED CLAIM**

✓ **1. Loss of Height Penalties**

a. Claim invalidation where either (1) Duration or Speed claim LoH exceeds 1000 meters (3280.8399 feet); or (2) Distance claim Task Distance is 100 km or less and LoH exceeds 1% of the task distance

b. The following penalty applies where Task Distance exceeds 100 km and LoH exceeds 3280.8399 feet:

$$(\text{LoH} - 3280.8399) * 100, \text{ divided by } 3280.8399 = \boxed{\phantom{000}} = \text{LoH penalty in km}$$

✓ **2. Cylinder Correction(s)** Applies to 'Free' tasks only at a declared Turn Point claimed in lieu of a Turn Point Fix

$$\text{Number of Turn Points achieved by Cylinder only} = \boxed{\phantom{000}} \text{ Total Cylinder Correction in km}$$

✓ **3. Official Distance & Speed**

a. **Badge or World Record Distance** = (Task Distance) – (sum of boxes above) = \_\_\_\_\_ km

b. **State or US National Record Distance** = the number in 3a \* 3280.8399, divided by 5280 = \_\_\_\_\_ sm

c. **World Record Speed** = (3a, divided by duration in seconds) \* 3600 = \_\_\_\_\_ km/hr

d. **State or US National Speed** = (3b, divided by duration in seconds) \* 3600 = \_\_\_\_\_ mph

✓ **4. Triangle Record Eligibility:** Applies to Distance and Speed records only, not Diamond Goal or any other Badge claim  
Refer to the table at page 10, apply Cylinder Correction (if any) to each task leg and confirm:

**If Official Distance is <= 750 km, each corrected leg is at least 28% of Official Distance.**

**If Official Distance is > 750 km, no corrected leg is less than 25% or more than 45% of Official Distance**

## **APPENDIX III: Appeal Procedures**

### **1.0 General procedures**

1.1 When a claim for FAI Badges, National or World Record or SSA flight Award is denied, the SSA's FAI Awards Secretary will notify the pilot by letter *or e-mail*. If the pilot chooses to contest the denial, the pilot's written *or e-mailed* appeal must be postmarked to the SSA *or e-mailed* to [badgeandrecords@ssa.org](mailto:badgeandrecords@ssa.org) within 30 days of the postmark *or email send* date of the FAI Awards Secretary's denial. When the appeal involves the denial of a National or World Record, the SSA FAI Awards Secretary shall immediately advise the NAA and the FAI if applicable to request an extension of the filing deadline.

1.2 The pilot's Appeal must include the reason(s) for seeking review. The pilot may also provide supporting documents and statements signed by one or more Official Observers or other witnesses familiar with the circumstances of the flight in question. *For appeals submitted by e-mail, such documents must be scanned and sent as attachments.* After this submission, no further evidence will be accepted or considered. *If not submitted by e-mail*, the pilot's appeal must be sent to the SSA either by U.S. mail or commercial delivery in a mailer that must indicate ATTN: FLIGHT CLAIM APPEAL.

1.3 The pilot's appeal will be "de-identified," with all names of people and places changed to generic equivalents (eg: the pilot's name is replaced by "Pilot," the Official Observer is "OO", and place names are replaced by "Take-off Site, Turnpoint, Landing Site")

1.4 De-identified appeals are forwarded to the SSA FAI Badge and Record Committee. The committee will render a decision within (a) 60 days of the of the postmark date of the FAI Awards Secretary's letter of denial; *or (2) 60 days of the send date on the FAI Awards Secretary's e-mail of denial, as applicable.*

### **2.0 Procedures for State Records**

2.1 When a State Record claim is filed independent of an FAI Badge, National or World Record or SSA Flight Award Claim, documentation is submitted to and reviewed by the State Record Keeper. In the event of denial, the Record Keeper will notify the pilot by letter *or e-mail*.

2.2 If the pilot chooses to contest the State Record Keeper's denial, the pilot's written *or e-mailed* appeal must be postmarked to the SSA Badge and Record Committee Chair *or e-mailed to the SSA Badge and Record Committee Chair* within 30 days of the postmarked date *or e-mail send date* of the State Record Keeper's denial. The pilot's appeal then proceeds as in 1.2 through 1.4 above with the exception that the appeal is sent to the FAI Badge and Record Committee Chair.

### **3.0 Further Review of Committee Findings (All flights)**

3.1 Consistent with the FAI Sporting Code, General Section, Chapter 9, the Committee decision rendered in 1.4 above is the "announcement" of claim denial.

*NOTE: From this point onward, the SSA Board or its Executive Committee may prefer original hard copy appeal documents rather than e-mail. Please inquire by contacting [chairman@ssa.org](mailto:chairman@ssa.org).*

3.2 If the pilot wishes to contest the Committee decision, the pilot must notify the SSA by letter postmarked within 15 days of the postmark date on the letter *or the send date on the e-mail* announcing the SSA FAI Badge and Record Committee's decision.

This appeal should be addressed to the SSA Board of Directors. The SSA Board of Directors (or appointees acting on their behalf) will review the issue within 60 days of the postmark date of the pilot's appeal to the Board. If no decision is forthcoming after 60 days, the decision of the Badge and Record Committee shall be considered final.

3.2.1 For SSA Flight Awards, State and National Record claims, the Board's ruling is final

3.2.2 For FAI Badge or World Record claims, the Board will decide whether to pursue the FAI appeal process outlined in the FAI Sporting Code, General Section, Chapter 9, and:

- if the Board decides not to pursue an appeal to FAI, that decision is final.

- If the Board decides to pursue an appeal to FAI, coordination with the NAA is required (9.1); a monetary deposit is required (9.2) and FAI-calculated Tribunal fees may be assessed (9.4.2). The Board may hold the pilot responsible to pay some or all of the FAI-levied appeal costs and fees.

The Committee was not developed to become involved in the day to day operations of the SSA Staff but can be consulted on matters requiring clarification by Staff.