



FAI-PERFORMANCES  
FOR BADGES AND RECORDS  
Sporting Code 3, 2021 Edition

*SSSA hereby acknowledges with gratitude the use in part or whole of the guideline as shared by Howard Mills. DAeC.*

# Contents

- FAI Performance Badges
  - > Abbreviations
  - > Sporting Code
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  - > Documents
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## Disclaimer

- Although this presentation is prepared with the best intentions, the current version of the Sporting Code takes priority over the content of this presentation.

## Definitions

- FAI: Fédération Aéronautique Internationale  
The World Air Sports Federation
- IGC: International Gliding Commission  
Responsible for FAI glider activities, especially world records and international competitions. <http://www.fai.org/gliding>
- GFAC: GNSS FR Approval Committee  
Tests FRs and issues IGC-Approval Documents.
- FR: Flight Recorder / ("Logger")
- PR: Position Recorder / limited FR capacity  
Only for Silver and Gold performances (requires NAC approval).
- NAC: National Airsport Control
  - > The National Airsport Control (NAC) has administrative responsibility for a nation's sport aviation activities, such as issuing Sporting Licences.
  - > Organising NAC: The pilot's nationality or residency determines the NAC responsible for issuing them
  - > Controlling NAC: When a record or badge flight originates in a country other than that of the organising NAC, the NAC of the host country shall control the flight.

## Definitions

- An Official Observer (OO) is 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.
- In the context of this document, a diploma is seen as a badge.

## Our Sporting Code

- The FAI Sporting Code is our regulatory framework.
- GS: FAI Sporting Code General Section
  - > The General Section (GS) of the Sporting Code contains the definitions and rules applying to all air sports.
- Sporting Code Section 3 - Gliding
  - > Standards and control for Badges, Diplomas & Records

Annex A: Rules for World and Continental gliding competitions.

Annex B Requirements for equipment used for flight validation.

Annex C Non-regulatory guidance, methods, and sample calculations to assist Official Observers and pilots in complying with SC3.

Annex D Rules for the world ranking list of pilots in IGC sanctioned competition.

- The sporting Code is found at: <http://www.fai.org/igc-documents>

SPORTING CODE - SECTION 3: GLIDING

1

Current Sporting Code for Gliding

2

15 JAN 2021 Sporting Code Section 3 - Edition 2020 update.pdf (741 KB)

3

19 NOV 2020 Annex A - Rules for World and Continental Championships (241 KB)

03 JUL 2019 Handicaps (124 KB)

10 APR 2019 Alternative Scoring System (56 KB)

01 OCT 2020 Annex B - Validation of Performances - Equipment & Procedures.pdf (347 KB)

20 JAN 2021 Annex C - Official Observer & Pilot Guide.pdf (7262 KB)

## The Sporting Code – Section 3

- We are interested in the Section 3C, which contains all the rules and control processes for badge, diploma, and record performances.
- Chapter 1: General rules and definitions
- Chapter 2: Badges and badge procedures
- Chapter 3: Records and record procedures
- Chapter 4: Official Observers and certification
- Chapter 5 Glider classes
  - > This is more relevant to competitions and records.

## Validity

- The Sporting Code applicable for a flight is the version that was valid on the day of the flight.
- This presentation is based on the current Sporting code valid from October 2021



## What badges do we all get?

- Silver Badge
- Gold Badge
- Diamonds, there are 3 badges
  - > Height, Distance and Goal
- Distance diplomas
  - > 750 km, 1000 km, 1250 km etc.



## Silver performance requirements

- The following performances must be met:
  - > Duration                      5 hrs
  - > Height gain                    1000 m
  - > Distance                        50 km
  
- There is no limit to the number of badges that can be claimed in one flight, if all the performance and declaration requirements for those badges are met in that flight

## Gold performance requirements

- The following performances must be met:
  - > Duration                      5 hrs (if Silver not achieved)
  - > Height gain                    3000 m
  - > Distance                        300 km

## Diamond performance requirements

- The following performances must be met:
  - > Diamond Goal            300 km
  - > Diamond Distance        500 km
  - > Diamond Height          5000 m

## Responsibility of the pilot

- In all performances the pilot must certify that:
  - > the flight was conducted in accordance with the Code.
  - > was flown in compliance with all the glider manufacturer's operating limitations.
  - > was in accordance with national flight regulations (airspace, night flight, etc.).
- The pilot is responsible for his declaration, and no assistance from any person will dilute his responsibility

## Official Observer “OO”

- See the OO as our Referee!
- He must ensure that the standards and regulations are met.
- He offers advice to the pilots.
- OOs must have written approval by their NAC to act for World or Continental record flights. Previous satisfactory experience as an OO for badges or national records is a prerequisite. (SC3: §4.2.3b).

## The OO in other countries

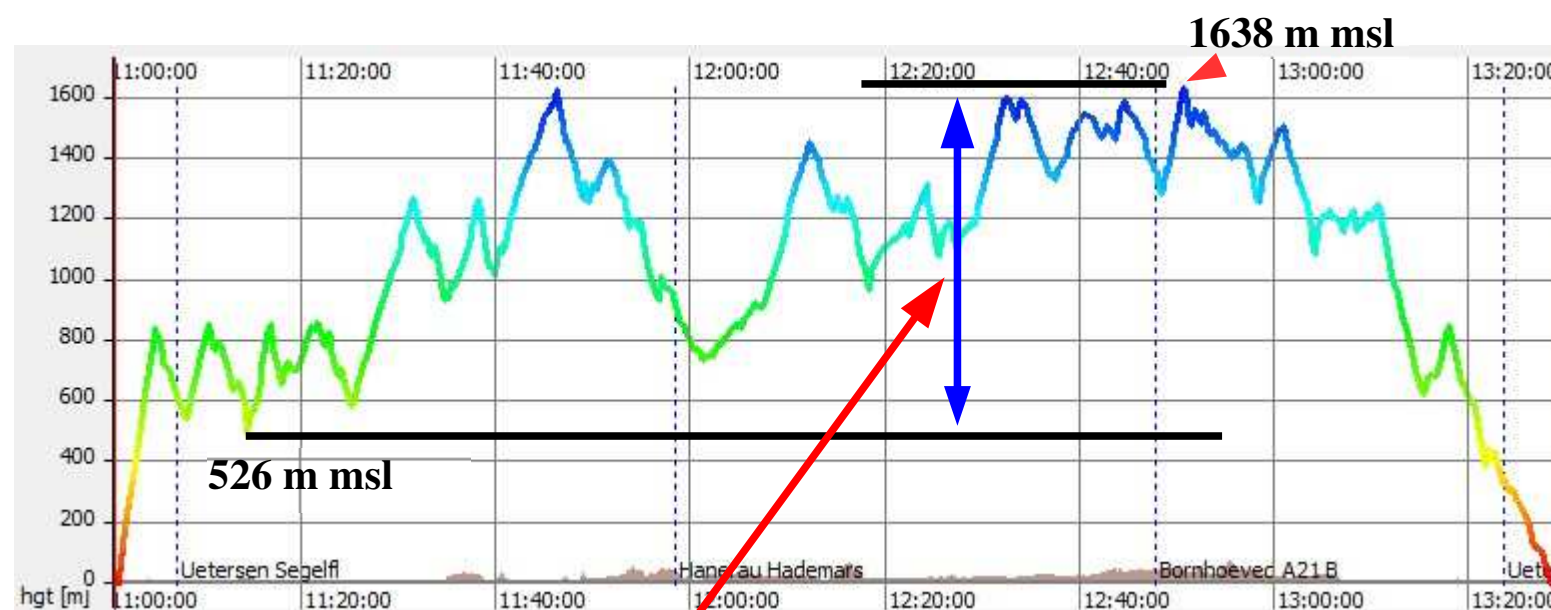
- An OO, appointed by AeroClub of South Africa is allowed to control flights in South Africa.
- When outside the country, they require approval of that country’s NAC in order to act as OO in that country.
- See SC3 §4.2.1: *Appointment and jurisdiction.*

## Basic Ground rules

- The glider pilot must be alone in the glider for all Badge flights.
- **An OO must be present:**
  - > **before take-off**, and
  - > **after landing.** §4.4.2
- The FR must have the approval level for that performance type. (badges/diplomas/records)
- All FRs must be calibrated.
  - > max 5 years before or max 2 months after flight.
  - > if the calibration certificate has expired or is not available, then the pilot must have 100m extra gain of height and has 100 less LoH. This relaxation is only valid for Silver and Gold badges. In this case the GPS altitude must be used with the 100m penalty - see SC3 §2.4.3c
- For Silver Duration The 5-hour duration task may be flown with no FR or PR if it is under the continual attention of an OO.

## Proof of height gain

- This is measured from a high point to a previous low point.
- This height is obtained from the FR pressure altitude logfile.

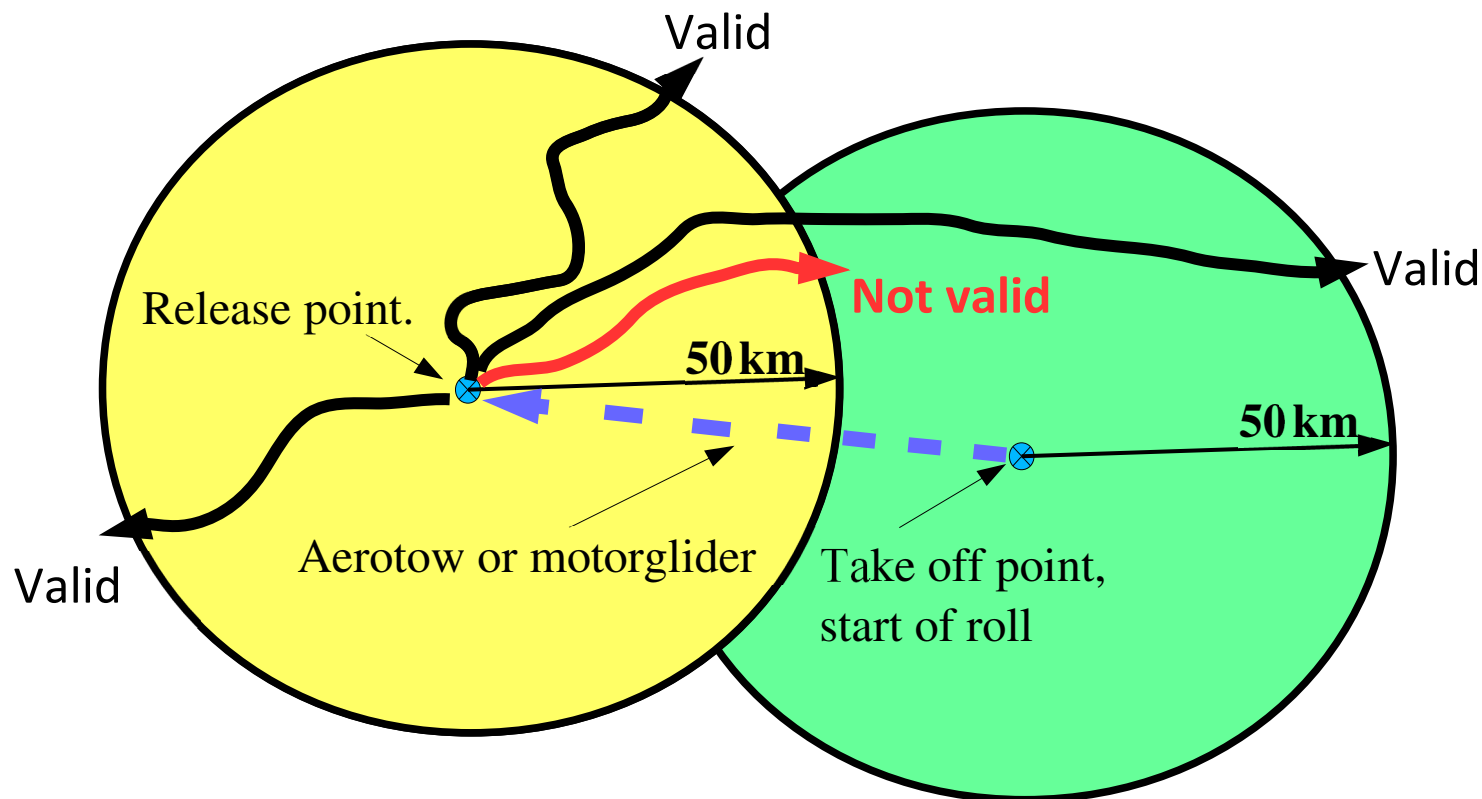


**Gain of height = 1112 meters**



## Silver distance explained

- Definition of the 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**
  - > The figure on the next page is an exaggeration, but it clearly demonstrates that you must be outside both 50 km circles in order to meet the requirement.
  - > The silver distance is achieved once the pilot has reached the area outside both circles.



## Silver distance LoH.

- Loss of Height (LoH):
  - > The loss of height is the height at the start (release) minus the height at the end of the performance.
  - > For Silver distance, the LoH may not be more than 1% of the distance.
  - > So, for 50 km, the maximum LoH is 500m.
- The Silver distance can be part of a longer flight.
- The Silver distance can be claimed at any distance (>50km). If the pilot reaches 50 km and is too low (LoH) he can climb up and continue till he satisfies the LoH rule.

## Flight evidence for Silver distance

- IGC-Approved FR
- This performance must be achieved.
  - > without navigational or other assistance by radio/cell phone.
  - > without help from other aircraft.

## Flight Recorder

- GNSS-Flight recorder (FR) – IGC approved
  - > GNSS = **G**lobal **N**avigation **S**atellite **S**ystem > GPS,
- Calibration of the FR.
  - > Must be calibrated within 5 years prior to the flight or within 2 months after the flight.
- Position Recorder (PR). NAC can follow a process to get some PRs approved for use for Silver or Gold badges.
- A list of IGC approved FRs can be found at <http://www.fai.org/igc-documents>

# GNSS Flight recorders – IGC approval documents

SAILPLANE RACING NEWS

FLIGHT RECORDERS 1

IGC Shell program for Validation of IGC files, plus FR Manufacturer DLL files for use with the Shell program (IGC Shell is also for downloading IGC files from some types of FR) ↓

IGC-approved Flight Recorders - Approval Documents 2

IGC-approval Documents for all IGC-approved Flight Recorders 3 ↓

01 FEB 2020 IGC-approval table, History of IGC-approvals 2020-2-1.pdf (291 KB) ← List of FRs with Approval-Level ↓

31 DEC 2019 Aircotec XC Profi - 2020-1-1.pdf (65 KB) ↓ The individual approval documents

31 DEC 2019 Cambridge 10-20-25 - 2020-1-1.pdf (189 KB) ↓

## GNSS-Flight recorder – IGC Approval

- GNSS FRs are approved in 3 different "Levels of Approval":
  - > Level 1: All Flights including Records
  - > Level 2: All IGC badges and diploma
  - > Level 3: FAI-Silver, Gold and Diamond badges
- Typically:
  - > Level 1: LX NAV 80x0, 90x0, Nano, Oudie-IGC
  - > Level 3: FLARM-IGC, LX 20-2000
- Make sure the FR in your glider is suitable for your flight performance.

## Position recorders (PR)

- Only used for Silver and Gold Badges
  - > SeeSC3 §2.5
- GNSS-height is used so 100 m reserve required.
  - > Height gain for Silver >1100 m
  - > LoH; Loss of height for 50 km must be less than 400 m.
- Declaration required
- The NAC must apply for approval from the IGC/GFAC.

## Data Sampling Rate

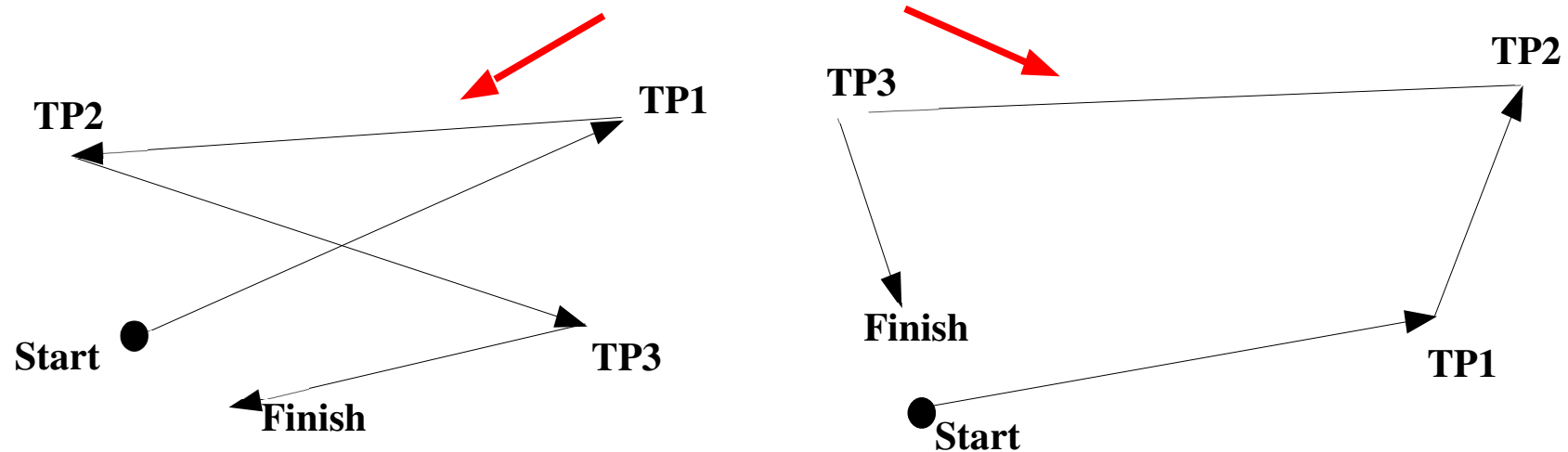
- The code requires minimum 1 min intervals for the flight recorder. §2.4.1.
- We recommend 4 second interval or less.
- Why?
  - > The automatic start detection of software (WeGlide, SeeYou, Claim Check...) are negatively influenced by long intervals, and could lead to faulty results.
  - > The same is true for getting efficient start/finish and turn-point fixes.

## Gold duration

- Duration is 5 hrs, same as Silver, so if you have achieved Silver duration, you do not need to redo this performance requirement.

## Gold distance

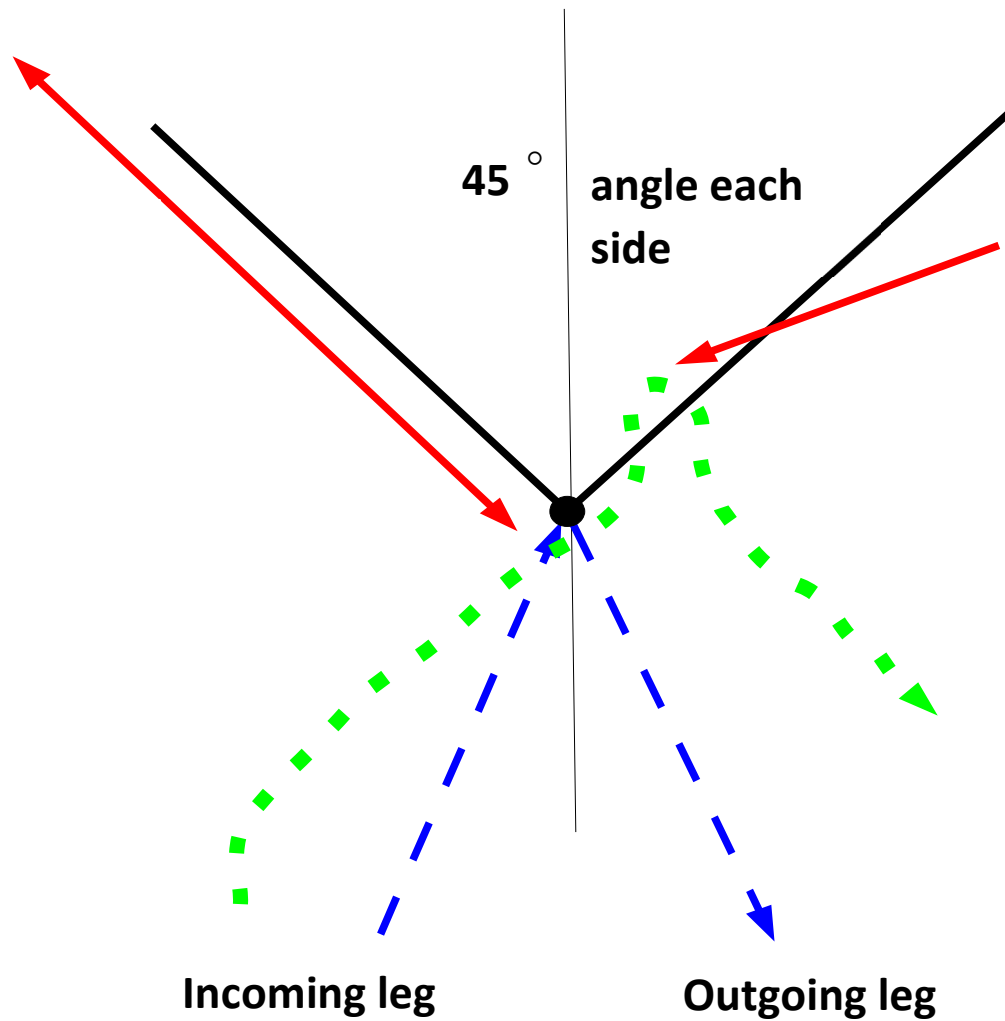
- Straight distance:
  - > flight with finish  $\geq 300$  km from Start.
- As a flight with 1 to 3 declared turnpoints:
  - > Flight over 1 to 3 turnpoints with finish  $\geq 300$  km from Start.
  - > Out and return flight,  $\geq 150$  km out and  $\geq 150$  km back.
  - > Distance flight with 2 or 3 legs, maximum 3 turnpoints.





## Evidence for turnpoints (OZ observation sectors)

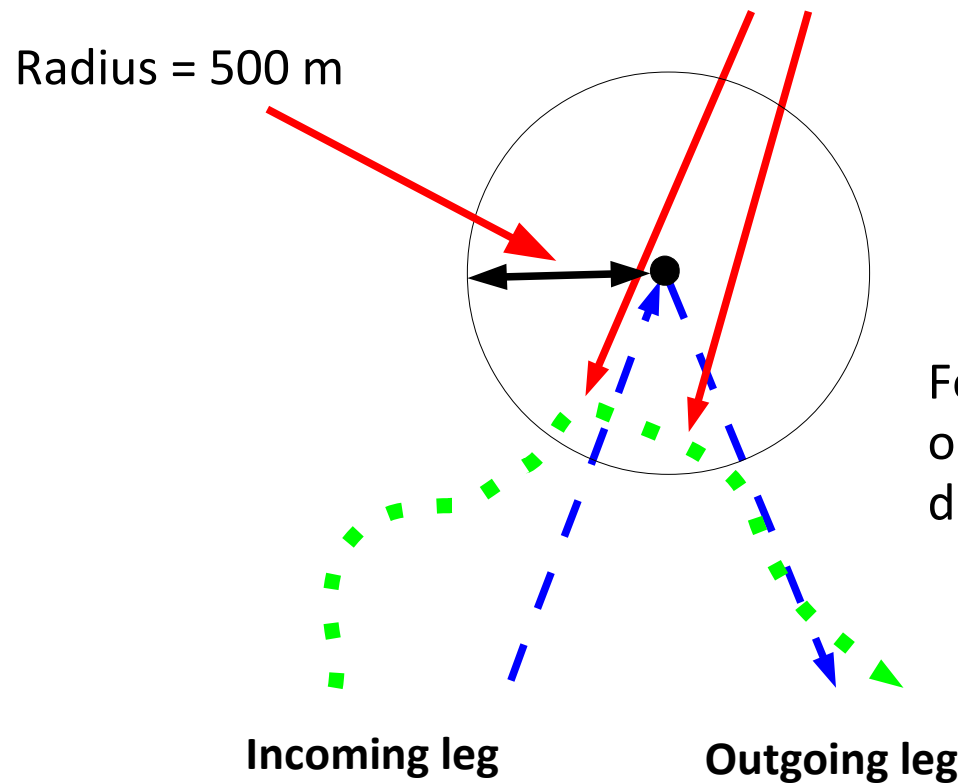
- A sector, a quadrant having unlimited radius and height, with its apex at the Turnpoint and oriented symmetrical to and remote from the bisector of the inbound and outbound legs.



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. §2.4.2.c

## Evidence for turnpoints (OZ observation sectors)

- A cylinder having a 500m radius and unlimited height, centered on the turn point.



For each turn point achieved only by using the cylinder observation zone (oz), the official distance shall be decreased by 1 kilometre. (OZ correction)

## Waypoints.

- Waypoints must be declared pre-flight in the FR
- Unless you declare a Turnpoint 2 times, it can only be used once.
- Waypoints must be declared with coordinates.

# Diamond Badges

## Diamond Goal 300km

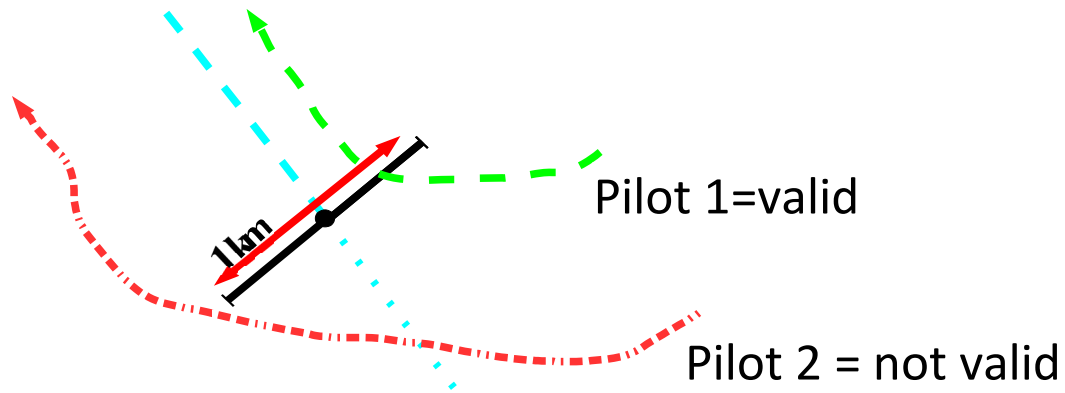
- A **Closed-Course** flight with 1-3 Turnpoints.
- The Start-point and Finish-point must be identical
- There are no restrictions on triangle geometry
  
- You have the following options
  - > Out and return flight, >150 km out and >150 km back. Declared with start-point, 1 turn-point, and a finish-point = start-point.
  - > A triangle flight with total distance >300 km, using 2 or 3 turnpoints. When 3 turn points are used, the course distance is the sum of the legs between the turn points. (Used when you start in the middle of a leg)

## Evidence required at the Start-point and Finish-point

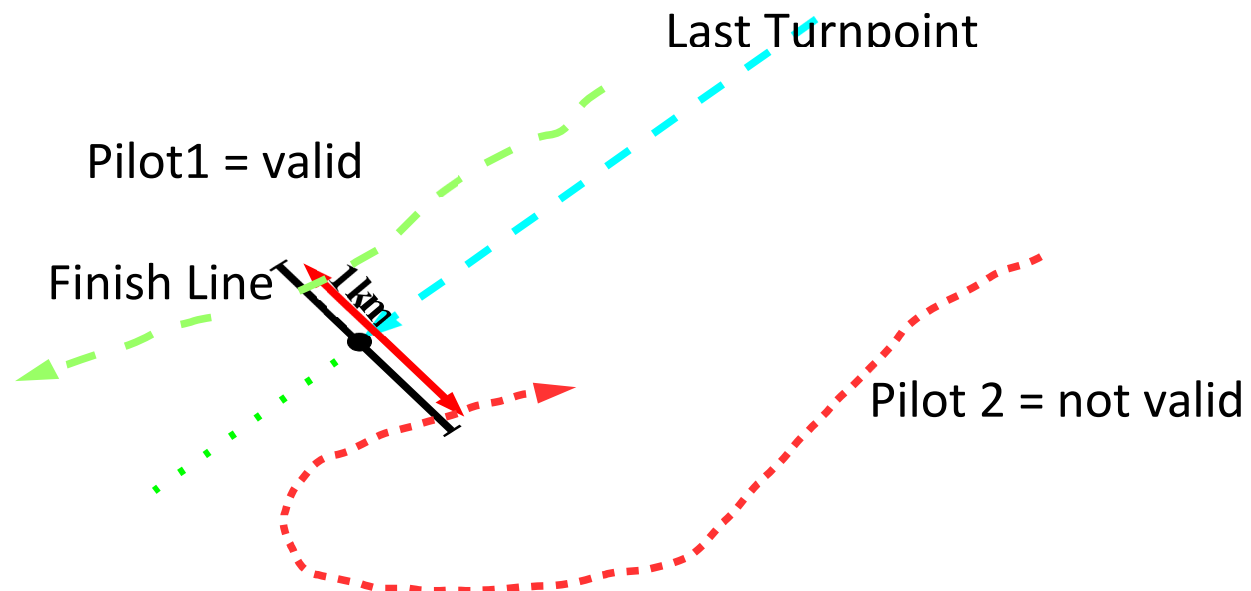
- Start and Finish lines are a 1km lines centered on the start or finish point. (radius = 500m)
- A start line is perpendicular to the first leg and a finish line is perpendicular to the last leg.
- **For GOAL and Record flights, the Start and Finish points must be identical**
  - > Start-line must be crossed in the outbound direction
  - > Finish line must be crossed from inbound direction.
  - > Crossing the line in aerotow, on winch launch or with MOP working is not valid. You need to be in gliding mode.

## Start point

Direction

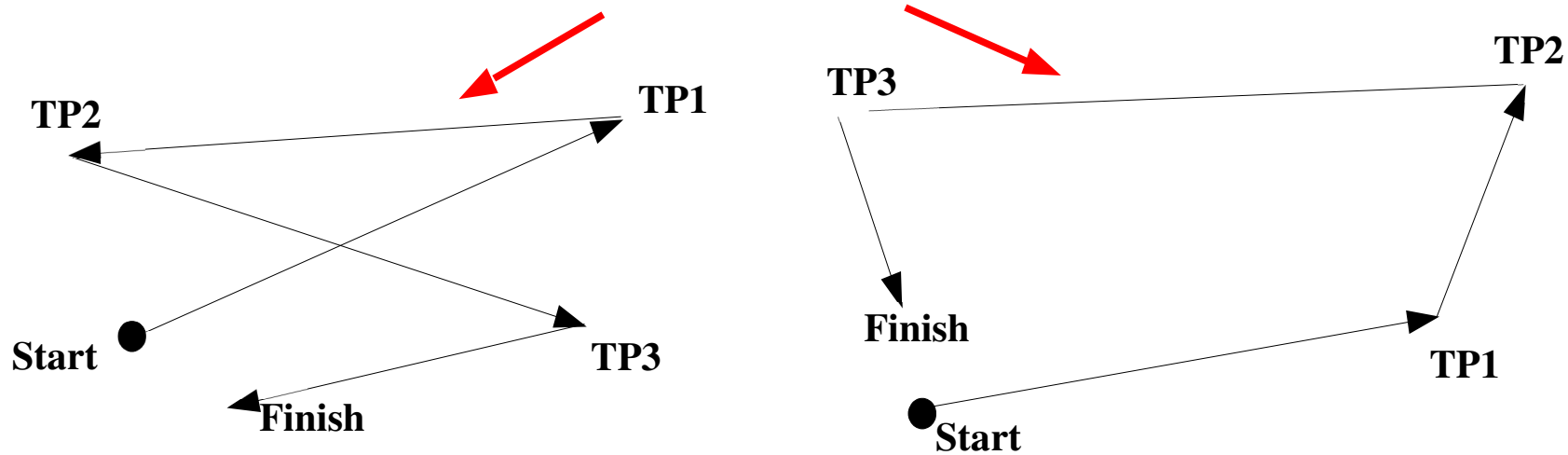


## Finish point



## Diamond Distance 500km (In similar fashion as Gold Distance)

- Straight distance:
  - > flight with finish  $\geq 500$  km from Start.
- As a flight with 1 to 3 declared turnpoints:
  - > Flight over 1 to 3 turnpoints with finish  $\geq 500$  km from Start.
  - > Out and return flight,  $\geq 250$  km out and  $\geq 250$  km back.
  - > Distance flight with 2 or 3 legs, maximum 3 turnpoints.



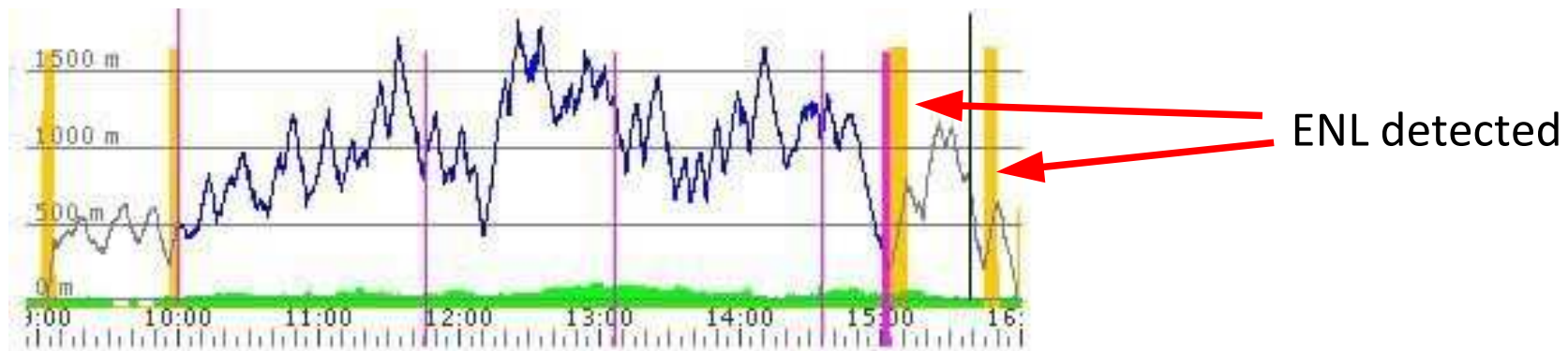
## Diploma flights $\geq 750$ km

- Diploma distance flights:
  - > 750 km
  - > 1000 km
  - > 1250 km
  - > 1500 km
  - > 1750 km
  - > 2000 km
- Flown in similar fashion as the Diamond distance.



# General

- Loss of height **Badges and Diplomas**
  - 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.
  - 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.
- Gliders with propulsion systems
  - MOP is not allowed to be used during the flight performance. The flight will terminate when the MOP is started. This is measured with the MOP device in the approved Flight recorder.
  - It is not required to start the MOP before departure.



## FR Control by OO

- Before the start the pilot must select the FR(s) he intends to use as evidence.
- The OO will control the FR(s):
  - > He will certify that the FR(s) are installed according to the Approval documents.
  - > He will note the type, serial number of each nominated FR.
  - > For this purpose, the “**Flight Certificate**” is completed by the pilot and the OO before and after the flight. This is performed on the **myGC App**
- If more than 1 FR is used, all the declarations must be identical.

## Declaration

- All performances require a declaration before take-off.
  - > Exception is the 5-hour endurance if under constant attention of there OO.
- The FR declaration consists of: (SC3-2021 §1.1.4):
  - > Name and Surname of pilot
  - > Glider type and Glider ID (callsign or registration).
  - > Waypoints (coordinates) as required by the flight performance.
  - > Exception is the Silver and Gold which can use the Internet Declaration on **myGC** App
- For Diamond, Diploma and Record flights any error in the declaration will invalidate the flight.
  - > Pilot names must be complete and correct (and co-pilot/passenger with record attempts)
  - > Declaration must be in the FR
- The OO is not obliged to ensure correctness of the declaration. Responsibility is that of the pilot

# Flight Certificate before take-off

- All information will be captured by OO on myGC App. (will be e-mailed to OO)

## Flight Certificate for FAI Badge, Diploma and Record Flights

<b>Pilot</b> (Surname, Forenames) <i>All FAI Badge attempts must be flown solo</i>		<b>Date of Flight:</b>	
<b>Co-Pilot<sup>1</sup></b> (Surname, Forenames) <i>Only permitted for record attempts in the appropriate class(es)</i>		<b>Wingspan:</b> <i>Only relevant for record attempts</i>	
<b>Aircraft Type:</b>		<b>Registration:</b>	
<b>Flight Recorder Type<sup>2</sup>:</b>		<b>Sr. Nr.:</b>	
<b>2<sup>nd</sup> Flight Recorder, if selected<sup>3</sup>:</b>		<b>Sr. Nr.:</b>	
<b>Take-Off Location:</b>		<b>Airfield Altitude:</b>	
<b>Certification by the OO prior to Take-Off:</b> <input type="checkbox"/> I hereby confirm that the Flight Recorder(s) shown above will be used by the named pilot for the flight on this day. I will observe all activities until take-off <b>OR</b> <input type="checkbox"/> I have sealed the Flight Recorder(s) within the glider.		<b>For Motor Gliders Only:</b> Tick the applicable variant: <input type="checkbox"/> The FR(s) is/are equipped with ENL. <input type="checkbox"/> The FR(s) is/are equipped with a MoP Sensor (e.g., for electric propulsion).	
Date & Time (UTC)	Official Observer's Signature	Name of the OO (printed) with the OO's Number	Pilot's Signature
<i>No changes may be made to the above content once the signatures have been added.</i>			
<b>▲ To be Completed Before Take-Off ▲</b>		<b>▼ To be Completed After Landing ▼</b>	

## Flight evidence handling after the flight

- Do not remove or undo any seal that an OO has made on any FR.
- An OO must personally transfer or be present when the .igc files are transferred from all nominated FR(s)
  - > For Silver, and Gold and diamond Height, the .igc file from one FR is sufficient.
  - > The original data from the FR is used for evaluation.
  - > A reference to a flight (such as OLC) and download on the internet is not sufficient

# Flight Certificate at landing

- All information will be captured by OO on myGC App. (will be e-mailed to OO)

## for FAI Badge, Diploma and Record Flights

▲ To be Completed Before Take-Off ▲		▼ To be Completed After Landing ▼	
Take-Off Time (UTC):		Take-Off Method:	
FR1 Sr No:	Filename(s) <sup>4</sup> :		
FR2 Sr No:	Filename(s) if selected.		
<p><b><u>Certification by the OO After Landing:</u></b>            I hereby certify that the Flight recorders entered above were used by the named pilot on this day for the certified flight. I have observed all actions from the landing until the data was transferred and confirm that any seal applied by the OO prior to take-off has not been tampered with.</p> <p><b><u>I was present during the transfer of the IGC File(s)</u></b><sup>5</sup>.</p> <p>For each and every FR/PR that was entered into this document and controlled by the Official Observer prior to take-off, an OO must either perform or supervise the data transfer. This OO must also either enter the filenames into this flight certificate or confirm that they have been correctly entered.</p> <p>The OO is required to send the original data (.igc file(s)) to the responsible Data Analyst. For record attempts in the original data original files are to be sent to the pilot's Organising NAC once a local OO has confirmed compliance with local regulations.</p> <p>For attempts on FAI-World &amp; Continental records additional actions are required by the OO (see Sporting Code).</p>			
Date & Time (UTC)	Official Observer's Signature	Name of the OO (printed) with the OO's Number	

## Claims process.

- Badge and Diploma claims are performed by the pilot on the **myGC App**
  - The claim will be automatically sent to the OO
  - The OO will check if the performance is valid.
  - The OO will certify the claim, and mail to the Claims officer
  - The Claims Officer (CO) will verify and award the badge/diploma if all is correct.
  - The pilot can thereafter view his badge portfolio on the MyGC portal and print his badge.
- **Only documents submitted by the OO will be used for the claim.**
- Record flights claims are not facilitated on the myGC App as they use FAI application forms

## What can go wrong!

- Not using IGS approved logger.
- FR calibration is not valid
- FR approval level not valid for the performance claimed
- Declaration incomplete or error
- Different declarations in different FRs
- Declaring more TPs than your performance allows
- Not entering or exiting the Start and Finish points correctly
- Missing an observation zone
- Flight too short a task to validate the performance
- OO not at take-off and at landing
- Pilot downloads .igc file without OO
- Airspace or regulation infringement