

Official Observer (OO) Tutorial

This tutorial is for Official Observers for Australia for:

- Badges
- Diplomas
- Australian Distance Certificates
- Australian National Records

It does not qualify the OO to act for World or Continental record flights. This is an additional qualification.



GENERAL

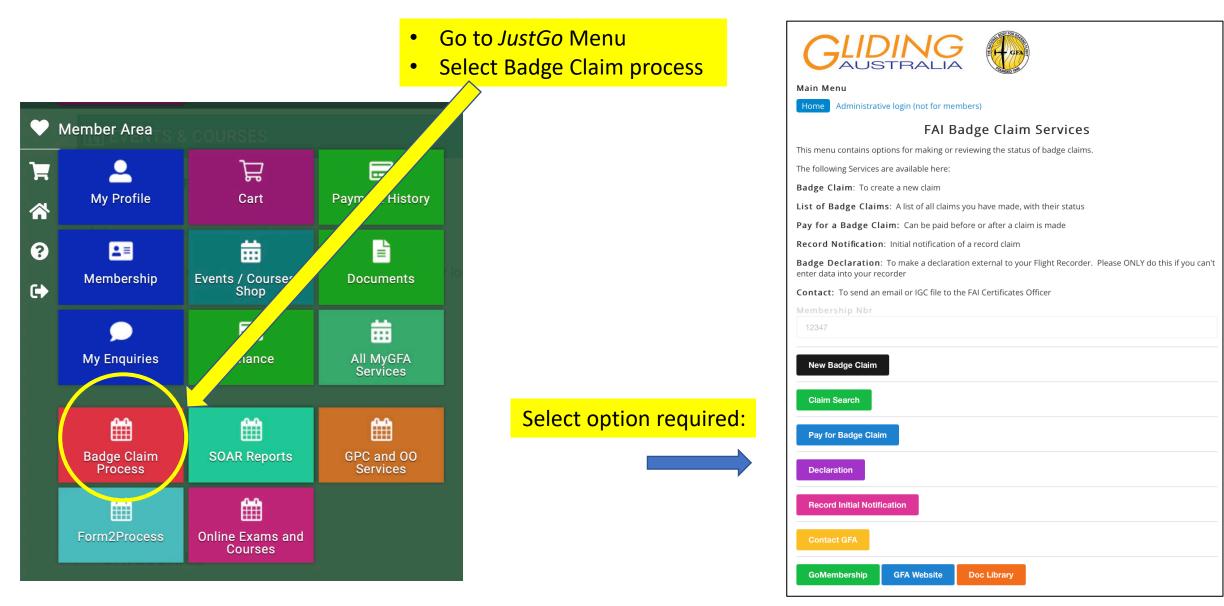
This tutorial should be read in conjunction with SC3 and SC3 Annex C. There are a number of references you need to read and refer to.

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- Electronic flight data and a DECLARATION are required unless exempt.
 - *Note*: the Pilot name must be in the logger and the logger serial numbers must be provided these are IGC requirements, not GFA being fussy.
- The pilot must specify to the OO what FRs they intend to use, and which of those contain the flight declaration.
- There are no paper forms. The badge claim process is online in Go Membership.



Online Services – Badges and Records



The Official Observer:

- Is the person authorized to control flights undertaken for an FAI badge or record attempt and to control the data gathered to prove the SOARING PERFORMANCE. An OO has the responsibility of being the FAI's "field representative".
- Must be familiar with the Sporting Code and the air regulations pertinent to the flight and have the integrity and competence necessary to control and certify that flight.
- Ensures that the flight is controlled in accordance with Code requirements, and that the required flight evidence is gathered and prepared in such a manner that later study of it by the national Claims Officer, will leave no doubt that the claimed achievement was met.
- Does not need to know what the actual task is this is the pilot's responsibility.
- Is free to have some other person skilled in .igc file analysis do analysis of the claim preparation.
- Must act independently and without favour
- Must pay careful attention to detail and have the integrity to never approve a claim unless satisfied it is correct and complete.
- Can refer a claim to higher authority if there is some question that the flight does not fulfill the rules. The Code standards are the foundation of soaring achievement, so a rejected badge or record claim is a cautionary learning experience for the pilot.
- The intent is clear to make sure that Glider X was flown by Pilot Y with logger Z.





Flight Recorder (FR)

- An IGC-approved device to record pressure altitude and GPS position and altitude. The approval level of a given FR specifies its use for badge and record claims.
- <u>https://www.fai.org/sites/default/files/igc-approval_table_history 2021-8-22.pdf</u>



Position Recorder (PR)

- A device approved by GFA to record GPS data for Silver or Gold badge claims only.
- Three position recorders (PRs) are approved for use in Australia to be used to validate the horizontal position of the glider for Silver or Gold badge flights. (FlyWithCE, MiniOz, OzFlarm). GFA's Position Recorder Approval document for Silver and Gold badges is <u>here</u>
- Where pressure altitude is not recorded, GPS height may be used for Silver and Gold Badge claims provided that there is a margin of 100m over the required gain of height for altitude, and 100m under the LoH for Silver and Gold distance claims.
- GPS height may be used with the added 100 metre margin included. This allows a PR to be used if it has no valid calibration.
- The OLC and IGC approved Position Recorders which can be used for silver and gold badges are listed <u>here</u>.

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**.

• See Section 6 of SC3 Annex C for more detail

OO DUTIES

PREFLIGHT PREPARATIONS

- 1. List each FR/PR being used for the flight. For each one, follow its approval document procedures for checking the device installation before take-off. The OO may be required to perform a pre-flight installation check, or seal the FR/PR to the glider, and maintain a continual watch of the aircraft until take-off.
- 2. If an internet declaration is being used for a badge claim, the OO must add their name, the date, and time they added the information.

POST FLIGHT ACTIONS

- 1. Perform a post-flight installation check of each FR/PR, as directed in its approval document. Depending on the approval document provisions, the OO may be required to be present at the landing and maintain a continual watch of the aircraft until a post-flight installation check is performed.
- 2. Transfer the FR/PR data or supervise the pilot doing it. It is recommended that the manufacturer's IGC-approved software is used.
- 3. Take charge of the data file and perform the required security check as soon as possible and retain for evaluation. Make copies of the original file for the pilot. If the data file does not pass security, perform or supervise a fresh download or transfer as applicable, following approval document procedures and making sure that the device running the download software is connected to a reliable power source.
- 4. Obtain appropriate claim form(s), including OO's evidence that any manually recorded times and locations for the flight correspond to the equivalent FR/PR data. (Evidence is required that is independent of any FR/PR to confirm the time and location of take-off, pilot name(s), and glider ID. For a Silver/Gold duration flight controlled by the continual attention of an OO, this OO must also witness and certify the times of release and landing (certificate required).
- 5. Determine if FR calibration is current and if the claim requires a current calibration. (calibrated within last 5 years or needs to be calibrated within the next 2 months)
- 6. Refer to SC3-4.3 and 4.4 as needed to verify all required OO procedures were followed.

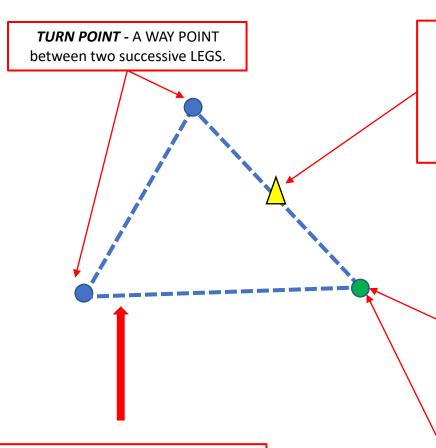


There must be unambiguous evidence that every FR or PR present in the glider for the flight concerned was correctly installed with either of two provisions described in the FR's IGC approval document. In summary, those provisions are:

- a) Sealing At any date and time before the flight, the OO may seal the FR to the glider structure in a manner acceptable to the NAC if it is possible that no OO will be present when the launch takes place. The seal must provided unambiguous proof after the flight that the seal has not been compromised, and the seal must be able to be identified afterwards.
- **b) Pre- or post-flight installation check** On the date of flight, the OO performs either:
 - a preflight check of the FR installation, noting the date and time it was performed. The glider must then be under continual observation by the OO until it takes off on the claimed flight, or
 - witnesses the landing and has the glider under continual observation until the installation of the FR is checked.



Basic Terminology



CLOSED COURSE - A COURSE requiring the coordinates of the START POINT and FINISH POINT to be identical

A **WAYPOINT** is a point specified by a set of coordinates. A WAY POINT may be a START POINT, TURN POINT, or FINISH POINT.

FIX - 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.

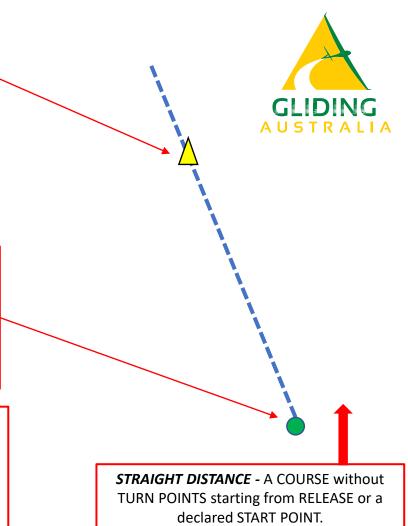
START POINT - The WAY POINT that marks the beginning of a SOARING PERFORMANCE at either:

- the RELEASE POINT, or
- declared START coordinates, or
- a FIX selected post-flight.

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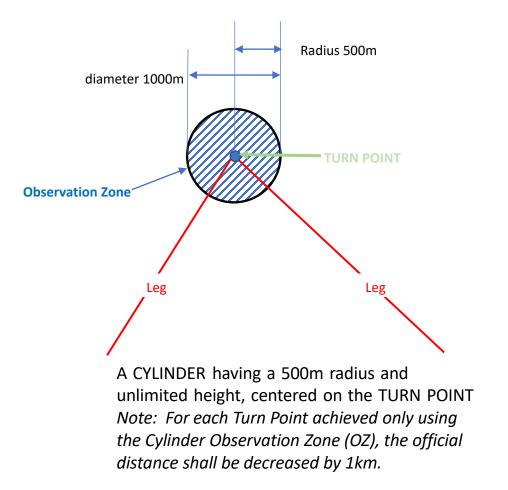
FINISH POINT - The WAY POINT that marks the end of a SOARING PERFORMANCE at either:

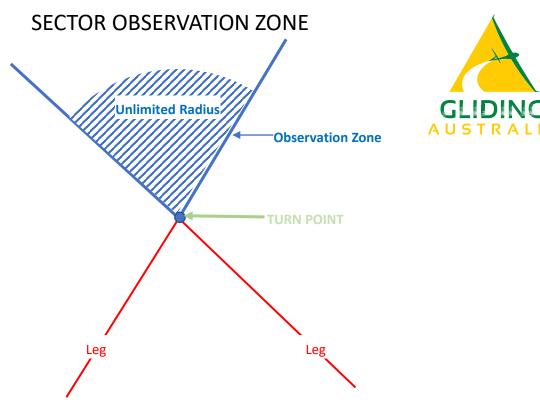
- where the glider comes to rest on landing, or
- declared FINISH coordinates, or
- a FIX selected post-flight, or
- a FIX established by the starting of a MoP.



Observation Zone (OZ)

CYLINDER OBSERVATION ZONE





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.

OZ type is not part of a flight declaration. The soaring performance is completed if the track passes within the cylinder OZ. However, for each Turn Point achieved using the **cylinder** OZ, the Official distance is decreased by 1km.

or

Loss of Height Limits

- Loss of height limits are placed to ensure fair official distance is achieved.
- 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.

See more detail on slides 21-24



The Official Distance distance is the Total distance from the Start Point through each Turnpoint in turn and then to the Finish Point (which is also the course distance for a Closed Course)

Calculated Official Distance is:

- Course Distance (declared task), less
- Any OZ Correction for each Turn Point achieved using the cylinder OZ, the Official distance is decreased by 1km and/or
- Any Loss of Height Correction



Declarations (SC3-2.3a)

A Declaration is the pre-flight recording of pilot name(s), GLIDER ID, and any WAY POINT coordinates required by a given SOARING PERFORMANCE (type of task) (1.1.4)

- A Declaration can be made any time before take-off. The last Declaration made is the one on which the claim is assessed.
- Written declarations are no longer allowed.
- All badge claims recorded by FR or PR require a declaration (EXCEPT 5-hour duration flight for Silver/Gold flights where the pilot is observed for the duration) (2.3)
- For any distance claim other than Straight Distance from release, the declaration must 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 for Silver and Gold flights only.
- Silver and Gold flights may have declarations sent via internet, either by e-mail or to an approved website.
- The OO must be satisfied the declaration is valid by inspecting its time stamp. The time stamping is performed automatically by servers and can be checked in e-mail headers or server logs. The online declaration must clearly show the declaration time stamp.



Online Declaration (only required if declaration is not made in the flight recorder)



Main Menu

Administrative login (not for members) Home

FAI Badge Declaration

This step is NOT Required if you have made a declaration by putting a task in your Flight Recorder!

This form is used to make an external declaration for a Badge Flight. The Declaration made here will supercede any declaration made in a Flight Recorder (FR) or Position Recorder (PR) ONLY if the declaration on this form is made after the declaration in the Flight Recorder.

Please note the following points carefully:

- A declaration should be placed into the FR/PR if possible. If this is done, there is no need to use this form.
- This form only overrrides a Flight Recorder declaration if it is made AFTER the task has been entered into the FR.
- Declarations (either in the FR/PR or on this form) are required for distance flights except in special circumstances. Declarations are always required if waypoints are to be claimed.
 Free waypoints (those selected after the flight) are NOT allowed.
- Enter the Latitude and Longitude of all points using Degrees, Minutes and Decimals (NOT seconds). Entering names only can lead to confusion about what exact point is meant.
- Make sure that the device you are using is eligible to record the flight you are attempting. Full details can be found at the IGC Website (Click the link).
- No IGC approved Flarm is eligible to claim anything beyond a Diamond Badge flight. A non-approved Flarm (such as OzFlarm) or Position Recorder can be used only to claim a Silver or Gold Badge.

If used, this form must be completed before takeoff in order to be valid.





- Go to GoMembership Menu
- Select Badge Claim process
- Select Online Declaration

I acknowledge that by checking this box the Pilot and Official Observer will be deemed to have signed this declaration and agree with its contents.

Cancel Send

Flight Evidence (refer to SC3 2.4 for detail)

The OO is required to check and/or provide the following evidence for the claim:

- If an internet declaration was used a copy attach a copy to the claim.
- Time evidence (FR or PR used must be set to at least once per minute)
- **Position evidence** RELEASE POINT, START/FINISH LINE, TURN POINTS ACHIEVED, and FINISH FIX
- Altitude evidence Submit a copy of the calibration certificate of each FR with the claim. (*if there is a large margin (e.g. >100ft) between actual height difference achieved and height requirements, this is not necessary).* Correct the pressure altitude evidence using the calibration chart data when the precise altitude is critical to the claim. Loss of height limits
- Flight continuity
- Barometric calibration period
- **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

SC3 1.4.4 Table of badge and record requirements (refer to SC3 for notes and references)

Soaring performance	SC3	Use	Declaration	Max # ofTPs		Start alternatives			Finish alternatives			
				declared	claimed	Release	Fix	Startline	Land	Fix	Finishline	
Gain of Height	1.4.2a	Badge or Record	Yes see 1.1.4	n/a		ОК	n/a	n/a	ОК			
Absolute Altitude	1.4.2b	Record only	Yes see 1.1.4	n/a		ОК	n/a	n/a	ОК			
Duration	1.4.2c	Badgeonly	see 2.4.1	n/a		ОК			ОК			
Straight Distance (Note 1)	1.4.2d	ваодеоту	Yes see 1.1.4	3	0	ОК	No	ОК	ОК ОК			
Goal Distance	1.4.2e	Badge or Record		0	0	No	No	required	No	No	required	
3TP Distance	1.4.2f		with coordinates for	3	3	ОК	No	ОК		ОК		
O&R Distance (Note 2)	1.4.2g		each declared way point	1	1			Required	No	No	required	
2TP Triangle Distance (Note 2)	1.4.26			2	2	No						
3TP Triangle Distance (Note 2)	- 1.4.2h			3	3		No					
Free Distance	1.4.2i	Record only	Yes see 1.1.4 Declaredway points optional		0		ОК		ОК			
Free 3TP Distance	1.4.2j			n/a	3					UK		
Free O&R Distance	1.4.2k				n/a	1				No	No	required
Free Triangle Distance	1.4.21				3		ОК			NO	(Note 3)	

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SILVER AND GOLD





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Silver Badge

○ 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. (see next slide)
- Silver distance and any longer declared distance may both be claimed for the same flight.
- The Silver distance should be flown without guidance from another pilot.

○ SILVER DURATION

- A duration flight of at least 5 hours (from release to landing)
- Does not require a Declaration.
- May be flown with no FR or PR if it is under the **continual** attention of an OO, who shall control the flight. Note that continual observation essentially means a flight on a short ridge, so unlikely to be used in Australia.
- Duration will also qualify for Gold Duration.

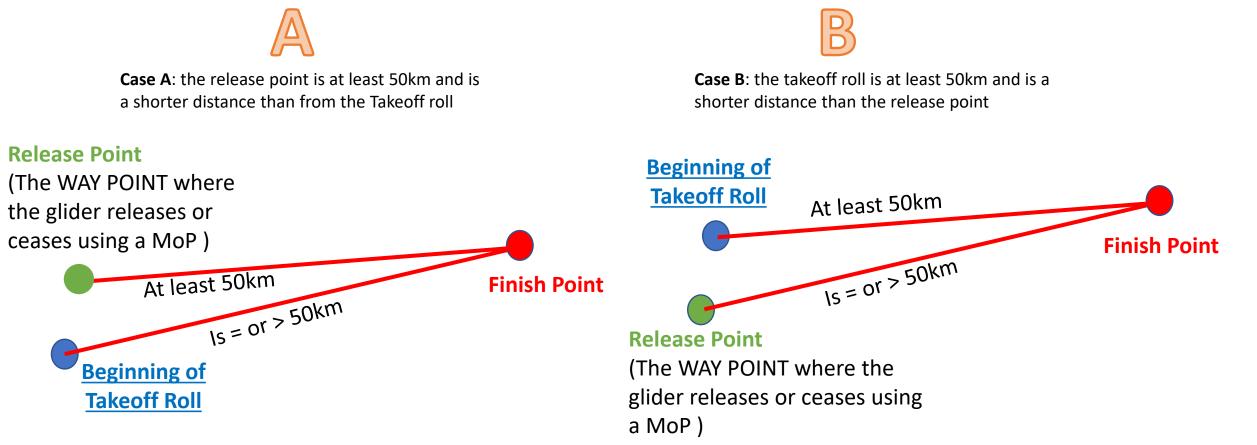
○ SILVER HEIGHT

- $\circ~$ A gain of height of at least 1000 metres.
- If the data file for a Silver or Gold flight omits or has the incorrect Pilot name or glider ID, an OO correction certificate may be submitted with the claim.

Silver Distance

Silver Distance is 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.





Height Adjustments- no Pressure Altitude – Silver and Gold

Where the PR pressure altitude is not recorded, GPS height may be used for **Silver** and **Gold Badge claims** provided:

- The height gain achieved is 100m (328 feet) or more over the required gain of height for the badge (error margin), and
- LoH is less than 100m (328 feet).
- *Note*: A FR with no valid calibration can use GPS altitude subject to the 100m rule.

Examples:

- A Gold altitude claim would require a GPS height gain of at least 3100m
- A 65 km flight would require a loss of GPS height of no more than ([65 km x 1%] 100m) or 550m (1804 ft).

Conversion for feet to metres -0.3048Conversion for metres to feet - x 3.28



Loss of Height Rule - Silver Distance/100kms or Less

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LoH is the START ALTITUDE minus the FINISH ALTITUDE

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].

- For a Silver badge where a declared START POINT is not claimed, START ALTITUDE is taken at the RELEASE POINT
- For a Silver badge, Finish Altitude may be taken as the start of MoP, a FIX selected as the FINISH POINT, or landing (whichever occurs first)
- Note: any Fix that meets the distance requirement can be used if it also meets the loss of height requirement for that Fix.

See TABLE A in SC3 Annex C next slide. Examples below.

Release Height (Start)	Finish	Actual Loss of Height	LoH Rule calculation	Valid?
3500ft QNH	Pilot lands 65kms from Release. Elevation of landing 1260ft QNH	3500-1260= 2240ft = 682m	1% of 65km= 650m	Silver distance invalid – actual loss of height exceeds 1%
2400ft QNH	Pilot selects a FIX FINISH POINT at 5000ft QN, 55kms from the Release	2400-5000= -2600ft = -792m	1% of 55km= 550m	Silver Distance LoH rule ok
3500ft QNH	Pilot lands 85kms from the Release. Elevation of landing 900ft QNH	3500-900= 2600ft= 792m	1% of 85km= 850m	Silver Distance LoH rule ok 21



Maximum barometric height losses for Distances <100km

TABLE A (SC3 Annex C) Maximum barometric height losses for Distances <100km</th>



КМ	FT	КМ	FT	KM	FT	КМ	FT	КМ	FT
50	1640	60	1968	70	2296	80	2624	90	2952
52	1706	62	2034	72	2362	82	2690	92	3018
54	1771	64	2099	74	2427	84	2755	94	3083
56	1837	66	2165	76	2493	86	2821	96	3149
58	1902	68	2230	78	2559	88	2887	98	3215

Loss of Height Rule – All Soaring Distance >100 kms



LoH is the START ALTITUDE minus the FINISH ALTITUDE

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.

See next slide for calculations.

How to Calculate Loss of Height Distance Reduction

<u>LoH</u>

Start Height – Finish Height= $\underline{\alpha}$ feet $\underline{\alpha}$ feet x 0.3048= $\underline{\omega}$ metres



Does $\underline{\omega}$ exceed 1000 metres using barometric data (or 900m using GPS height data)? If no, Official Distance is ok.

If yes:

Official Distance (km)

- = Length of the Declared Course (km) x 1000 [100 \times (ω –1000)] for Barometric, or
- = Length of the Declared Course (km) x 1000 [100 × (ω 900)] ÷ 1000) for GPS

Divide by 1000 to get the official distance in kilometres.

Gold Badge

✤ GOLD DISTANCE

- \circ A distance flight of at least 300 kilometres over:
 - □ Straight distance
 - Goal Distance
 - □ 3 turnpoint distance
 - Out and return
 - Triangle.
- A closed course is not required (as long as the distance after any loss of height adjustment is sufficient, any Fix can be used as the finish point, including an outlanding)

✤ GOLD DURATION

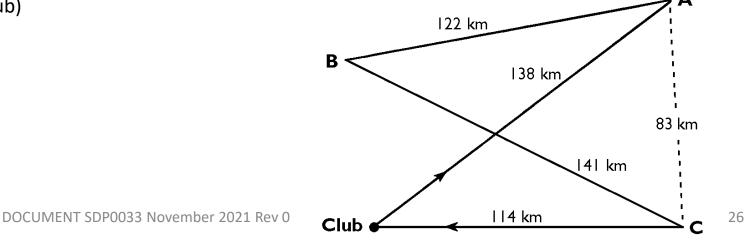
- A duration flight of at least 5 hours (from release to landing)
- Does not require a Declaration
- May be flown with no FR or PR if it is under the continual attention of an OO, who shall control the flight

✤ GOLD HEIGHT

 $\circ~$ A gain of height of at least 3000 metres.

Claiming more than one soaring performance

- A flight may satisfy the requirements for more than one badge leg or record, and claiming a declared task does not prevent the pilot from also claiming straight distance from release to a finish fix.
- Planning a task begins with the selection of turn points that accomplish your chief objective but may also provide for an alternate or additional claim. This may also allow you to make useful inflight decisions on course selection.
- Examine the course shown here (club/A/B/C/club). If this declared flight is completed, all the following badge tasks can be claimed:
 - Silver distance 138 km (club/A) If the pilot abandoned this flight more than 50 km from the club, Silver distance is achieved by claiming straight distance from the shorter of the release and the take-off points to the finish fix.
 - 2. Gold Distance and Diamond Goal distance 346 km (A/B/C/A) (*Note that the A-club-C legs indirectly complete the A-C leg of the ABC triangle.*)
 - 3. Diamond distance 515 km (club/A/B/C/club)





Common Badge Flight Errors

OOs reject many claims as a result of common errors on badge flights. Here are some flight preparation or execution factors that can result in claims failing:

- A. Pilot flew it with no planning, and then expected that the OO would find a way after the flight to make it fit the badge requirements.
- B. Pilot did not ask for a briefing on the usual task pitfalls before they attempted a specific task.
- C. Pilot did not know the maximum height permissible to be towed to on an under-100 km distance task. This is particularly important if the landing elevation becomes the finish fix and it is at a lower elevation than the take-off point. Conversely, if pilot chooses a high tow, then they must know the minimum height allowed at the finish point.
- D. Pilot did not confirm that the FR(s) being used on their flight had their name and the correct glider information stored.
- E. Pilot is a beginner in the use of the FR and did not practice using it to make sure they entered the OZ of the intended TP, or the FR was configured to sound a TP entry alert for a cylinder OZ, so they turned away on course before they entered the sector OZ that was needed for the task distance.
- F. Pilot took the FR out of the glider, or downloaded the .igc file, or removed an SD card and gave it to the OO later that day the OO must control the FR after landing until the .igc file is downloaded. This mistake is easy to make if the pilot flew a club glider that will then be used for another task.
- G. Pilot OO did not keep a copy of the flight file and the original was or became contaminated. A link to a file on the OLC is not sufficient as it will not validate.



DIAMOND and **DIPLOMA**



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Diamond Badge

DIAMOND DISTANCE

- A distance flight of at least 500 kilometres over:
 - □ A Straight distance
 - □ A Goal Distance
 - □ A 3 turnpoint distance
 - An Out and return
 - □ A Triangle.
- $\circ~$ A closed course is not required.

DIAMOND GOAL

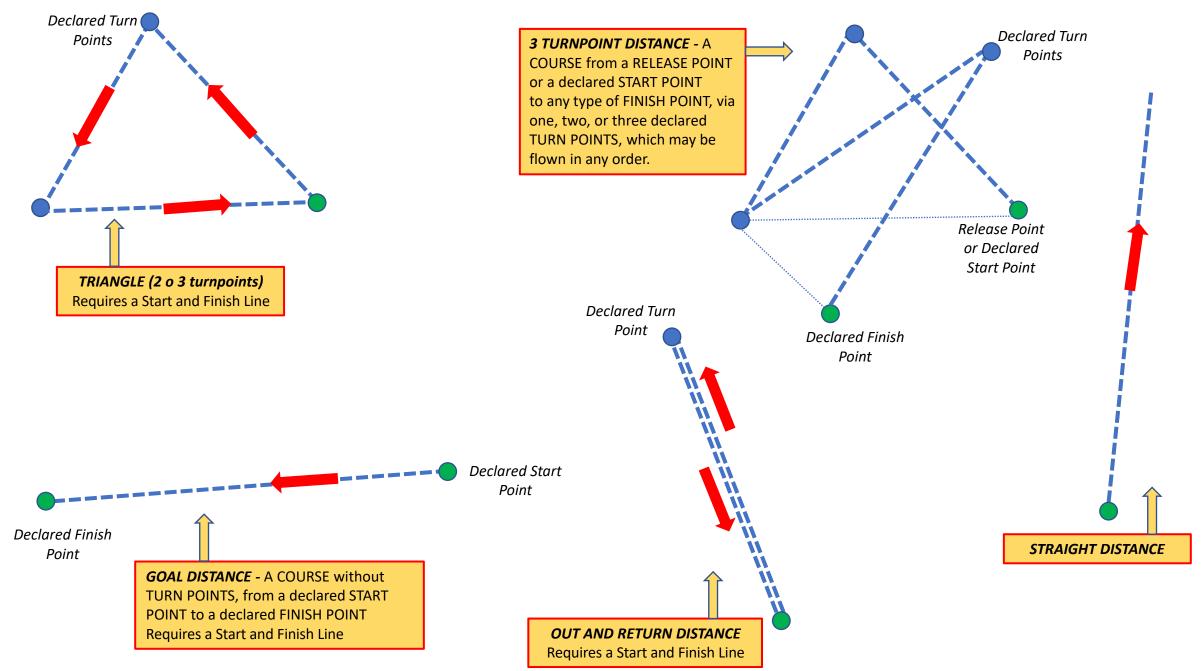
- A distance flight of at least 300 kilometres over:
 - An out-and-return, OR
 - □ A triangle i.e. must be closed course. (There is no restriction on the triangle geometry)
- Requires a Start line and a finish line. (Slide #30)



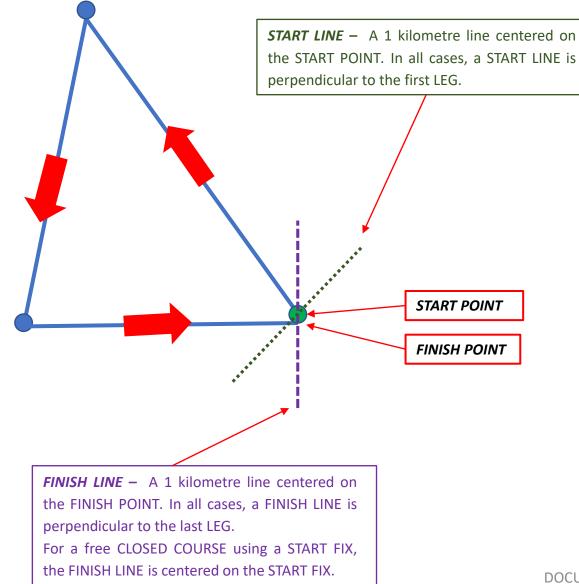
DIAMOND HEIGHT

- DIAMOND DURATION
 - A duration flight of at least 5 hours.

 $\,\circ\,\,$ A gain of height of at least 5000 metres.



Start and Finish Lines





A Start line is **REQUIRED** for

- Goal Distance
- O&R Distance
- 2TP Triangle Distance
- 3TP Triangle Distance

A Finish line is **REQUIRED** for

- Goal Distance
- O&R Distance
- 2TP Triangle Distance
- 3TP Triangle Distance
- Free O&R Record Distance
- Free Triangle Record Distance

Diplomas and Certificates

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:
 - □ Straight distance
 - Goal Distance
 - □ 3 turnpoint distance
 - Out and return
 - □ Triangle
- A Diploma is awarded once only for the incremental distance immediately less than the distance flown.

Distance Certificates

• In Australia, we also issue certificates for 600, 700, 800 and 900 km achievements



Flight Evidence Requirements - Diamond and Diploma (sc3 2.4)

- For Diamond Goal, Diamond Distance, and Diploma claims, submit every .igc file from the FRs.
- Diamond and Diploma flights 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.
- Any error in the declaration will invalidate a Diamond or Diploma claim.
- 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.

Pre-flight control actions

If present at takeoff, an OO shall confirm pilot name(s) and the glider flown. If this is not possible, an OO shall seal each FR (or PR) to the glider. In either case, and for each FR or PR, an OO must perform the control actions required and, for motor gliders, verify the means used to detect MoP use.

Independent evidence

Evidence is required that is independent of any FR/PR to confirm the time and location of take-off, pilot name(s), and glider ID. e.g. Launch point log sheet, Tug log sheet, witness statement. OGN is not acceptable as it does not know who the pilot is.

Post-flight control actions

For each FR (or PR), an OO shall inspect any seals applied before take-off and perform or supervise data transfer. Claim submission shall be performed by that OO or another qualified person who shall submit:

- The original data on the memory device as soon as possible after landing. This must include the .igc file and the device file in its original format (if different). The claim shall include a copy of the calibration certificate for each .igc file submitted for analysis.
- The appropriate claim form(s), including OO's evidence that any manually recorded times and locations for the flight correspond to the equivalent FR/PR data.



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Records

Being the official observer for a Record Claim is a very important task. Remember that a person who flies a mostly takes a record off a previous record holder. It is important to ensure all protocols and rules are followed.

Chapter 3 of SC3 should be read and understood before being an official observer for Records.

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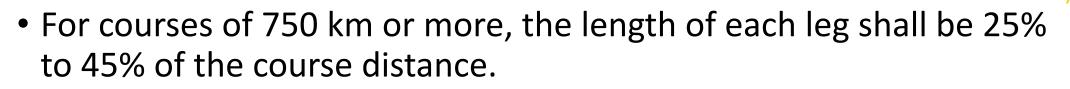
Declaration Requirements

• Record flights require a declaration recorded in a Level 1 "all flights" FR per 1.1.4, and any error in the declaration will invalidate the claim.



- A multi-place glider declaration shall include the name of the copilot. When multiple FRs are used, the declarations in each must be identical for a claim to be valid.
- Note: SC3C-2.6 has general notes on declarations and 6.4 on the declaration format as it appears in an .igc file. Consult the FR user manual for the method an FR uses to record the declaration date and time.

• For triangle and free triangle courses shorter than 750 km, no leg may have a length of less than 28% of the course distance.



• When absolute altitude is to be determined for a record claim, pressure altitudes must also be corrected for non-standard atmospheric pressure. Guidance is given in SC3C 3.5 and 3.6.



Conclusion

This tutorial gives you enough information to have the basics of being an Official Observer. There will be times when you will have to look for more information and review the Sporting Code and especially the OO and Pilot Guide (SC3 Annex C).