

# OFFICIAL OBSERVERS GUIDE

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## **1** INTRODUCTION

These notes are for the guidance of BMAA Official Observers who are responsible for observing and certifying the various aspects of flights in microlights and paramotors qualifying for badges, records and championships.

For the purposes of clarity, the phrase 'Official Observer' or 'OO' is shortened to 'Observer' in this guide but should be taken to have the same meaning.

The BMAA have taken all reasonable steps to ensure the accuracy of this guide but take no responsibility for any errors that may be contained therein.

# 2 STATUS OF REGULATIONS

The regulations regarding the Colibri Bronze, Silver and Gold badges and all national and International microlight and paramotor records are specified by the <u>Fédération Aéronautique Internationale</u> (FAI) and are the same for all countries.

The FAI delegates to National Aero Clubs (NAC's) the responsibility for controlling and registering all such claims made within each FAI member country which in the UK is the Royal Aero Club of the United Kingdom. RAeC in turn delegates this responsibility to the BMAA.

## **3 THE SPORTING CODE FOR MICROLIGHTS & PARAMOTORS**

This is a combination of the FAI General Section (GS) and FAI Section 10 (S10); and constitutes all the rules for Colibri badges and microlight and paramotor records and championships.

These two documents are essential reading for any Observer so it is suggested that before you read this guide much further you download them from the FAI website:

General section: http://www.fai.org/documents/sportingcode/GeneralSection\_download

FAI Section 10: http://www.fai.org/microlight/documents/sc10

The GS is maintained by the FAI International Sport Commission (CASI) which is primarily made up of the presidents of all FAI's International sporting commissions.

S10 is maintained by the FAI International Microlight and Paramotor Committee (CIMA) upon which UK has a delegate and alternate delegate appointed by BMAA. The commission usually meets at an annual plenary in November. Usually a substantial portion of plenary time is spent discussing and then voting on proposed amendments to S10.

Amendments usually come into force on the 1 January of every year and both the above documents are usually re-published on that date, or shortly after.

Chapter 2 of S10 tells you all about Colibri badges.

Chapter 6 of the GS (3 pages) tells you about deadlines and how records should be administered. For operational requirements you should mostly be interested in S10, Chapters 1 (Definitions), 3 (Records), 5 (control & measurement), Annex 1, (Proof of definition), Annex 5.4 (Role and responsibilities of Observers) and Annex 6 (GNSS Flight recorders).

IT IS IMPORTANT YOU HAVE THE CURRENT EDITION.

#### 3.1 THE RECORD CLAIM FORM

All record claims must be submitted on the FAI form. It also contains useful advice on the practicalities of submitting a record claim. It is available at <a href="http://www.fai.org/microlight/documents/sc10">http://www.fai.org/microlight/documents/sc10</a> A new version is usually available at the beginning of each year amended to reflect any changes which have just come into force.

IT IS IMPORTANT TO USE THE LATEST CLAIM FORM.

#### 3.2 OTHER SOURCES OF INFORMATION

BMAA maintains current UK records and much guidance at <u>http://www.flymicro.com/records</u> including a useful introduction on <u>how to do records</u> and a list of current Observers.

## 4 OFFICIAL OBSERVERS

BMAA Observers are trusted and independent witnesses authorised by BMAA to act on its behalf in observing and verifying details of flights qualifying for FAI Colibri Bronze, Silver and Gold badges, for national and international microlight and paramotor records, and in championships and competitions.

Specialist knowledge is not an essential requirement to act as an Observer; the real requirements being integrity and meticulous attention to detail. The Observer should of course be thoroughly familiar with flying operations and all the current regulations.

#### 4.1 APPOINTMENT

CAA licensed microlight instructors who are BMAA members are all BMAA Official Observers.

Otherwise, BMAA Observers are normally expected to be a BMAA member and the appointment lasts for as long as they remain a BMAA member. Non-members can be appointed in a temporary capacity which lasts for one year from appointment.

All BMAA Observer applications must be proposed by a current BMAA member.

Application forms for appointment as a BMAA Observer are available from <a href="http://www.bmaa.org">http://www.bmaa.org</a> or <a href="http://www.flymicro.com/records">http://www.flymicro.com/records</a>

Observers who can produce evidence of accreditation as an Observer by other RAeC member organizations are acceptable as Observers of microlight or paramotor record attempts by prior arrangement with BMAA.

# 5 OBSERVER RESPONSIBILITIES

An Observer is primarily responsible for:

- a) Observing, collecting and examining all evidence relating to a flight, ensuring that it is a complete and correct record of what happened and that everything complies with the rules.
- b) Inspecting the weighing of the aircraft before every intended record flight.
- c) Inspecting and sealing barographs and flight recorders before intended record flights.
- d) Opening a sealed barograph or flight recorder after a record flight and observing the download and printout of the recorded data.
- e) Completing the relevant portions of the claim form certifying the accuracy of the claim.

An Observer may only certificate a flight if he or she is present at the event for which verification is required. However a landing in a location away from the Observer may be verified by two independent witnesses. (See form 15 of the record claim form.)

An Observer may not act in such a capacity for any flight where he or she may be pilot, crew or sponsor.

Under no circumstances should Observers sign a claim form until all parts have been accurately completed.

Observers should not allow themselves to be rushed into signing something by impatient pilots.

FAI, RAeC or BMAA may suspend or cancel the authority of an Observer for negligent certification or wilful misrepresentation.

# 6 COLIBRI BADGES

The FAI Colibri badges are standards of achievement which do not require to be renewed. The qualifications are the same for every country. (In French, a 'Colibri' is a Hummingbird).

#### 6.1 QUALIFICATIONS AND REQUIREMENTS

Are laid out in chapter 2.3 of FAI Section 10.

#### 6.2 OBSERVING COLIBRI BADGE FLIGHTS

A dossier of evidence showing that all the requirements of a badge have been met shall be compiled by the applicant. The Observer shall certify that all the evidence is correct.

The dossier should be sent to BMAA for final analysis and award of the badge.

#### 6.3 FLIGHTS MADE BY A NATIONAL OF ANOTHER COUNTRY

A badge flight made by a national of another country shall be controlled by the NAC of the country where the flight was made. The documentary evidence shall then be passed to the NAC responsible for the national register of the pilot concerned.

# 7 RECORDS

Whether the pilot is making just a UK national record claim or a World record claim the rules are exactly the same. Why? Before a claim for a World record can be made it must have already been accepted as a National record, and if the rules (or the Observer) were more lenient for National records then the situation could arise where a valid World claim might subsequently be denied for the simple reason that it did not beat the current National record.

Before any record attempt the Observer and pilot both need to be need to be sure what he is trying to beat. Check out the existing <u>UK records</u>, the existing <u>World records</u> and any <u>World record claims</u> <u>pending ratification</u> on the FAI web site, noting that a valid claim has to better an existing record by a specified minimum amount. It would be daft indeed to go to all the trouble of attempting a record only to find that someone has already done better, or worse, that the record doesn't even exist.

#### 7.1 FAI LICENCES

Both pilot and co-pilot must have a valid FAI licence for all record claims, even if they are only intending to attempt a UK national record.

An FAI Licence is not a pilot qualification, but essentially an authorization by a National Aero Club (NAC) that the person can represent his nation in FAI international microlight championships and record attempts.

By signing their FAI Licence, the holder acknowledges he/she knows and understands FAI rules and agrees to abide by them.

The Observer should check each FAI licence is specifically valid for microlights and paramotors; as from 1 Jan 2009 these will all be registered on a central FAI database and will be checked by FAI to see that it is valid for the sport concerned during the record validation process; a claim for a paramotor record with a licence only valid for paragliders will fail.

BMAA issues FAI licences for microlights and paramotors to current members on behalf of RAeC. They cost £10 for both initial issue and annual renewal.

#### 7.2 OBSERVING RECORD ATTEMPTS BY FOREIGN PILOTS

Pilots can only hold one FAI License at a time, and they can only claim a national microlight or paramotor record of the country of the NAC who issued that FAI License, but records can be attempted abroad.

In this case FAI rules establish the concept of an 'Organizing NAC' which is the NAC of the pilot and a 'Controlling NAC' which is the NAC where the record will be attempted and who is responsible for observing it, which for microlights and paramotors in UK is BMAA.

An agreement between the organizing and controlling NAC's must be in place before the record attempt so it is clear what the exact procedures will be. Some NAC's may have their own conditions for national records supplementary to FAI rules.

#### 7.3 OBSERVING RECORD ATTEMPTS BY UK PILOTS ABROAD

If the country is an FAI member, (see <u>http://www.fai.org/fai\_members</u>) then normally a record attempt should be managed by the local controlling NAC, however it can be done by a UK accredited Observer if so approved in advance by the controlling NAC. The claim can then be made directly through BMAA, though it is polite to keep the controlling NAC informed and copy the full claim to them when it's ready.

If the country is not an FAI member then the claim is managed as if it was done in UK, but it may be necessary to include extra information with the claim showing that the flight was legal in that country.

#### 7.4 OBSERVING RECORD ATTEMPTS ON INTERNATIONAL FLIGHTS

The controlling NAC can be the one where the pilot either takes off or lands, but in any case the NAC's of the other countries to be over flown should be informed of the attempt in advance. The claim is then managed according to one of the two options above.

## 8 PROOF

The key to any award is obtaining the proof of the performance. To succeed; all claims must be utterly and 100% convincing in every detail to someone you don't know, and who doesn't know you, whose job is to be highly sceptical, and in the case of a World record claim, is probably a foreigner.

Championships are usually structured in a fairly rigorous format and there are usually many people involved in the organization who have considerable experience of running effective competitions. There are also Stewards and the International Jury who invariably have considerable experience. The job of Observer (more usually known as 'Marshal') is therefore likely to be carefully briefed according to the task being flown.

The job of Observer in Colibris, and especially record attempts is usually a lot more difficult because the Observer is often working on his own, and may not have done anything like it before.

The FAI Claim form goes a very long way to helping the Observer up the learning curve. It is laid out in a fairly logical way with plenty of notes and cross-references to the relevant provision in GS or S10.

The key to unequivocal proof is to have lots of it; there can never be too much. The pilot would be wise to carry two GPS's instead of one, for example. The Observer should take photos and video of everything, and make notes of everything that happens, particularly of anything unusual.

#### 8.1 THE DEFINITION OF A MICROLIGHT

At all times during a record attempt the aircraft MUST satisfy the FAI definition of a microlight or paramotor as described in S10 Chapter 1. This may be different to the national definition so it is the lesser of the two which must always apply because the pilot and aircraft also has to be 'legal' in terms of licensing, registration, airworthiness and airspace in the country where the record flight is being made.

It is important to understand the FAI definition takes no account of the number of seats in an aircraft, but instead considers the number of people in the aircraft for the flight, thus it is either 'flown solo' or 'flown with two persons' and the MAUW requirements are different for each.

Although not all microlights or paramotors are close to the maximum permitted weight in FAI rules, it is nevertheless always necessary to determine the take-off-weight by weighing the entire machine including fuel, pilot, co-pilot and accessories before takeoff for all record flights as part of the proof that the aircraft genuinely was a microlight within the FAI definition at the start of the flight.

Weighing should be done to the same standards as required for a UK airworthiness weight report.

It is also necessary to prove the minimum speed characteristics of the aircraft. This is usually quite easy as the manufacturer will have done similar tests as part of the aircraft's type certification so the manufacturer will have no problems completing the form in Annex 1 of S10 which can be included with the record claim.

Alternatively, there is quite a simple test which can be observed, see Annex 1 of S10 or Form 4 of the record claim forms. For the temperature and pressure correction, use the calculator at <a href="http://www.flymicro.com/records/index.cfm?record=minspeed">http://www.flymicro.com/records/index.cfm?record=minspeed</a>

To satisfy the FAI definition, foot launched aircraft must be observed to have been launched on foot without any external assistance during the takeoff run. This means the pilot may be assisted to stand up, but no assistance is permitted in launching the canopy.

#### 8.2 FLIGHT RECORDERS AND BAROGRAPHS

These devices are the key to the proof of the performance in a flight.

A flight recorder (FR) is a device which records position against time; it can be a simple and cheap as an ordinary GPS receiver. S10 Annex 6 contains the rules for flight recorders.

A Barograph is a device which records atmospheric altitude against time. The rules for these are in S10 Chapter 5. Originally they were a stylus connected to an aneroid barometer which marked a trace on paper or soot covered clockwork driven drum. The modern types are a digital recording device, typically integral to a variometer, which can be downloaded to a computer and are much smaller and easier to manage.

The key difference between the two devices is that while an ordinary GPS will reliably record accurate horizontal position information, they usually only record GPS altitude which is not considered accurate enough for anything but 'proof of no intermediate landing' so a barograph must be used in any record attempt involving altitude or time to climb to height.

Ideally, all record attempts should be done with a flight recorder which is a combined GPS and barograph, they make the whole business of a record claim much simpler; and some records can only be claimed with these specialist devices.

Second best is to carry both, but it is entirely possible to present a valid claim in some records with only a GPS trace, and some with only a barograph trace, but in practice it is not difficult to collect a GPS trace in these as well.

The table below shows the different kinds of devices in order of preference of use in each different type of record: 1 is the best option, reducing in order for each record type, X is unviable on its own. Combinations, or more than one device are better.

| Record type                   | Type 1 FR | Type 2 FR      | Type 3 FR | Barograph only |
|-------------------------------|-----------|----------------|-----------|----------------|
| Distance                      | 2         | 1              | 2         | 3 <sup>2</sup> |
| Distance without engine power | Х         | 1 <sup>1</sup> | Х         | Х              |
| Altitude                      | Х         | 1 <sup>3</sup> | Х         | 2 <sup>3</sup> |
| Time to climb to a height     | Х         | 1 <sup>3</sup> | Х         | 2 <sup>3</sup> |
| Speed                         | 2         | 1              | 2         | 3 <sup>2</sup> |

<sup>1</sup> Only if the FR records engine status.

<sup>2</sup> If used without any GPS evidence then photographic evidence must be included in the claim.

<sup>3</sup> Calibration sheet required.

The Observer must be able to certify the FR and/or barograph was in the aircraft for the flight in question. If the intended flight involves a remote landing it may be wise to seal barographs to the aircraft for recovery once the aircraft has returned.

#### 8.3 FLIGHT RECORDERS

S10 Annex 6 defines three types of flight recorder:

**Type 1** FR's are devices which have specifically been approved by CIMA for use in championships. Currently all of them only record GPS altitude. They may be used in record claims according to the procedure described in their approval document found at <a href="http://www.fai.org/microlight/flight\_recorders">http://www.fai.org/microlight/flight\_recorders</a>

**Type 2** FR's are specialist combined GPS and barographs. They are approved by the FAI Gliding Commission (IGC) for use in gliding World records. They are relatively expensive, but offer several distinct advantages to making a successful microlight or paramotor record claim, the primary one being that the data can be downloaded from them in an encrypted form which is acceptable to FAI without any further verification other than confirmation it was in the aircraft for the record flight in question. Some of these FR's record Engine Noise Level (ENL) or have other means of proving when the engine is on or off which is the only way viable proof can be presented for the 'without engine power' records. A Type 2 must always be used in according to its IGC approval document, see <a href="http://www.fai.org/gliding/gnss">http://www.fai.org/gliding/gnss</a>

**Type 3** FR's are any other kind of GPS which records position and GPS altitude. There is more work for the Observer when completing a record claim with one, the rules are described in S10 Annex 6 2.3

There are no limitations on the use of GPS information by the crew whilst flying a record attempt.

Whilst the pilot is responsible for the FR's settings, the Observer would be wise to check that it has been set to record fixes to the WGS84 datum at the maximum frequency compatible with the expected length of the record attempt and the available memory of the device, that it is recording fixes at regular time intervals rather than distance intervals, and the memory is empty before the start of the flight.

Even if a FR is not strictly needed for a record flight, e.g. an altitude attempt, it is always wise for the pilot to carry one and include the track in the claim as it is still good evidence which generally helps to substantiate the flight.

#### 8.4 ENGINE STATUS EVIDENCE

Records 'without engine power' require that a FR is carried which will clearly show the engine was not used between the start and finish lines. The most common method is ENL where the device has a microphone and it includes the ambient noise level with every fix. It is essential that there is a distinct difference in the recording between engine off and engine at flight idle so the positioning of the device is quite critical, especially in aircraft without a cabin.

Before the pilot embarks on the actual record attempt at least one test in the same configuration should be done in the presence of the Observer to establish a witnessed 'baseline' which clearly shows a difference between engine off and engine at flight idle which can later be compared to the evidence from the record flight.

Observers should refer to the BMAA Chief Observer in cases where the FR uses some other method to measure engine status.

#### 8.5 ELECTRONIC FLIGHT DATA

Flight recorder data in any record claim must be supplied in .igc data format. This is inherent with Types 1 and 2 flight recorders, Type 3 data must be converted from its native format to quasi-igc format in the presence of the Observer. <u>http://www.gpsvisualizer.com/gpsbabel/</u> is very convenient.

It is very important that the recorded data is with reference to the WGS84 datum and not some other one like OSGB1936 which is commonly used in UK. WGS84 is inherent with Types 1 and 2 FR's but Type 3's can often be set to a variety of datums and this should be checked before the flight. If a track is inadvertently recorded against the wrong datum the data can be converted to WGS84 but it's not a simple job; Observers should refer to the BMAA Chief Observer in this case.

Observers should be aware that it is often possible to download data from Type 2 FR's in 'short' and in 'full' form. 'Full' form should always be used; 'short' form does NOT contain the necessary encryption and the data will be treated as equivalent to data from a Type 3 which could cause the record claim to fail. The FR's manual and its IGC approval document will explain the correct procedure for checking the validity of an encrypted file which should be done BEFORE the track is deleted from the FR as the encryption cannot be re-generated at a later date. A Type 2 FR with a broken electronic seal will not output the data in 'full' form though it may still produce 'short' data. For a full explanation of the IGC system see their specification at <a href="http://www.fai.org/gliding/system/files/tech\_spec\_gnss.pdf">http://www.fai.org/gliding/system/files/tech\_spec\_gnss.pdf</a>

#### 8.6 ELECTRONIC FLIGHT ANALYSIS

Analyzing the FR data is key to finding the exact times start and finish lines were crossed, that turnpoints were rounded correctly Etc. In the case of Type 2 FR's the atmospheric altitude and ENL profiles can also be used to verify the performance. Otherwise the GPS altitude profile is adequate for proof of 'no intermediate landing'.

A power loss or some other unexpected event can cause a break in the recorded track. This is not necessarily of critical consequence provided the break is not so long that 'proof of no intermediate landing' or, if relevant, no use of engine becomes doubtful and the break doesn't occur at a critical moment such as when rounding a turnpoint. The same applies to poor GPS reception where 'spikes' may occur in the recorded track. This latter is usually caused by poor positioning of the GPS antenna and can be completely avoided.

No specific flight analysis software is specified for record claims, but one should be used which makes it relatively easy to capture all the required information for the type of record being claimed.

Suggestions include: SeeYou, Oziexplorer, Coutraci, Strepla and Memory Map.

The Observer should check every individual parameter derived from flight analysis and not rely on the claimant to have done it all correctly.

#### 8.7 START & FINISH LINES AND TURNPOINTS

Whilst it is important for the pilot to precisely plan the record flight, CIMA has determined that the key element of any record flight is the performance and not the planning so it is not necessary to declare the positions of start lines, finish lines and turn points before the flight.

This means that the exact locations of start lines, finish lines and turn points in the claim can be optimized after the flight to fit all the rules of the record with the actual recorded flight to obtain the best possible performance.

A typical example is in a distance record where the finish line must at the same height or higher than the takeoff point. If the pilot lands in a lower place, then the finish line can be moved back along the recorded track until it is at the same height or higher than the takeoff point.

Times should be taken from the fix immediately before crossing a start line, and the fix immediately after crossing a finish line. They cannot be extrapolated to the line itself, which is why the FR should be set to record at the highest possible frequency.

Turnpoints in record attempts are always the standard FAI 'classic' type and not the 'cylinder' as used in microlight and paramotor championships, i.e. a 90° sector on the ground with its apex at the turn point and orientated symmetrically to and remote from the two legs of the course which meet at the turnpoint. To round a turnpoint correctly, a fix, or the line between two sequential fixes must be in the sector.

If a 'task' is loaded into to some Type 2 FR's in advance of the flight then they will often temporarily record at a higher than normal frequency when close to start lines, finish lines and turnpoints which is likely to be to the advantage of the pilot. They may also do this when the 'mark' button is pressed; see the FR's manual.

#### 8.8 ELECTRONIC BAROGRAPHS

Any barograph approved by a FAI commission may be used in a Microlight or Paramotor record claim.

It should be used according to the procedures detailed by that commission; they will probably also be outlined in the barograph's manual. Usually this means that before takeoff the device must be put into a mode which locks certain settings such as date, time and QNH. The Observer should check these settings correspond with the reality.

Upon landing the data must be downloaded from the barograph. Usually this means the trace must be printed directly from the device in the presence of the Observer, who must also be satisfied the device was in the aircraft for the flight which is subject of the claim.

An electronic trace should also be saved and included with the claim as this is far more useful for further detailed analysis than a printout.

#### 8.9 MECHANICAL BAROGRAPHS

Before sealing a barograph the Observer must open and inspect it to satisfy him/herself that:

- a) The barograph is correctly loaded. In the case of a barograph having a revolving drum this check must ensure that the drum is firmly attached to its mounting and that the chart is loaded so that it fits snugly to the drum and has a machine cut edge in contact with the drum's flange all the way round.
- b) There is no trace on the chart. He/she should then mark the chart with their Observer number and seal the barograph. Although it is not part of the duty of an Observer to check that the barograph is on its correct speed setting or that it is wound up or that the drum is adjusted and the needle is at the correct start position, it is helpful to remind inexperienced pilots about these points before sealing the barograph.

#### 8.9.1 SEALING MECHANICAL BAROGRAPHS

Sealing of the barograph is acceptable in one of four ways.

- a) Locking wire and lead seal; in which case the sealing tool must be kept under the control of an Observer, and the Observer who opens the barograph must be able to identify the mark.
- b) Locking wire and sealing wax with similar provisions to the above regarding the seal and mark.
- c) Locking wire with the join sealed with gummed paper in such a way that it is impossible to undo the joint without tearing the paper and the Observer's signature, number and date written thereon.
- d) A complete wrap of gummed paper around the closed case, so that the case cannot be opened without tearing the paper, and the Observers signature, number and date written thereon across the join.

#### 8.9.2 OPENING MECHANICAL BAROGRAPHS

Before opening the barograph the Observer must satisfy himself that the seal is in order and that it relates to the flight claimed.

He/she will not necessarily be the Observer who sealed the barograph.

The Observer opening the barograph is responsible for ensuring that the trace is marked AT THE TIME OF OPENING, with the following mandatory information:

Pilot's name, Date of flight, Aircraft type and identification, Make of barograph, Serial Number of barograph, Signature of Observer, Observers number.

It is essential that a clear base line is included on the barograph trace of any flight for which height measurements may be needed. The base line is made by switching the barograph on and rotating the drum through one complete revolution. It may be marked before or after the flight but it must be done before the trace is removed from the drum.

When a barograph trace is required as evidence of a claim, the complete chart from a drum type barograph is to be submitted.

Note that analysing Altitude and Time to Height records from a drum type barograph is not a simple job, analysing the trace from a digital barograph is far easier.

#### 8.10 BAROGRAPH CALIBRATION SHEETS

For any valid claim involving altitude, a barograph must be calibrated by a competent person who is acceptable to the BMAA and who has access to the necessary equipment.

The calibration sheet must be marked with the barograph type, range and serial number, the date and place of calibration and the name of the calibrator. It must be dated within the period 24 months prior to the flight to 2 months after the flight.

Before using a calibration sheet, the Observer must be satisfied it corresponds to the barograph used on the flight.

The claim forms describe how calibration sheet corrections should be applied to the recorded performance.

#### 8.11 PHOTOGRAPHIC EVIDENCE

Although it's far easier to use a FR, It is entirely possible to make a valid record claim for most types of record claim the 'old fashioned' way using barograph and photographic evidence alone, but it must be done to the procedure laid out in S10 Chapter 5.8

The correct sequence of pre-flight and post-flight images must be on the film and it is crucial that the film remains uncut after processing. A cut film is useless.

The Observer must be satisfied that the photographs were taken by the pilot or co-pilot of the aircraft on the flight in question and that the turnpoint photographs were taken between the time of start and finish of the flight in question.

#### 8.12 TAKEOFF SLOPE

All records in foot launched aircraft must "be foot launched from a surface which has no slope greater than 1% over a radius of 100 m from the take off point". To meet this, the Observer does not have to do some complicated survey of the takeoff site, but must be able to verify it is a flat and level place.

## 9 MEASUREMENTS

The units of measure as specified in S10 5.2 should be used in all record claims.

#### 9.1 DISTANCE MEASUREMENT

S10 speaks of distances being measured as the 'Geodesic' between two points. A Geodesic is to an ellipsoid what a Great Circle is to a sphere; the WGS84 ellipsoid has an equatorial radius of 6378.1370 Km and a polar radius of 6356.7523 Km. It is centered on the Earth's centre and oriented on its spin axis. The shortest distance between two points on the surface of an ellipsoidal World model is known as a Geodesic.

To obtain correct Geodesics, any distances which constitute part of a record claim cannot be simply measured off a map, or read off a GPS; they must be calculated by entering the exact latitude and longitude of every significant point on the route (start, turnpoints, finish) into the official distance calculator to find the total distance <u>http://www.flymicro.com/records/index.cfm?record=distcalcWGS84</u> A printout of the calculation should be included with the claim.

#### 9.2 TIME MEASUREMENT

Normally times will be taken from the FR trace rounded down to the nearest second, otherwise a stopwatch or a pair of synchronized stopwatches to the same accuracy. As some FR's only record in UTC It is best to keep to UTC for all times in a record claim rather than confuse the issue by converting to local time.

#### 9.3 FUEL MEASUREMENT

Records 'with limited fuel' require that the aircraft takes off with not more than 7.5 Kg of fuel on board. This should be measured in the presence of the Observer on a reasonably accurate scales e.g. one with 10Kg capacity. It can be calibrated by measuring 7.5 litres of water into a container on the scales.

Before loading the measured quantity of fuel the Observer must check the fuel system of the aircraft is empty. Once loaded, the fuel system must be sealed by the Observer. The integrity of the seals must be checked by the Observer after the record attempt is complete.

## **10 SUBMITTING RECORD CLAIMS**

#### 10.1 GENERAL

All claims, even if they are only for a UK record must be submitted on the current FAI claim form.

Observers, as well as pilots, should ensure that claim forms are correctly completed and all relevant evidence attached before submission to the BMAA. Proper pre flight and post flight documentation is essential for a valid claim.

A claim can never include too much information, if two GPS's were used, include both traces. Include photos, video and anything else which helps to substantiate the claim.

If there are any doubtful points, a note of explanation from the Observer should be included.

#### 10.2 DEADLINES

The BMAA Chief Observer should be informed of all potential record claims as soon as possible after the flight.

If the flight is potentially a World record, a preliminary notification from BMAA must be received by FAI HQ in Switzerland within 7 days of the attempt. Thereafter the record must be accepted as a National record by BMAA and the full dossier received by FAI within 120 days.

If the flight is potentially just a National record, the full claim must still be received by BMAA within 120 days of the attempt.

#### 10.3 COST OF A RECORD CLAIM

The pilot should be aware that within reasonable limits, administration and assistance by BMAA in establishing UK National records for BMAA members is free. For non-members the charge is £50 per claim, regardless of eventual outcome. (Almost the same cost as the annual membership fee, and you get a nice magazine too.)

In the case of World record claims, the pilot should be aware FAI charges CHF 100 per World record claim regardless of whether the claim is eventually ratified or not. The bill is sent to the RAeC who pass it to BMAA and it is the claimant's responsibility to repay BMAA. Including bank transfer fees, vat Etc. this means the cost of eternal glory is about £55 per World record claim.