

# Saving the poor badge pilot

the Sporting Code comes to the aid of human (and inhumane) error

**Tony Burton**, member Sporting Code committee

*(Note: this written in May 2013, so some aspects of the Code have likely changed)*

THE MOST EFFECTIVE WAY of getting the novice pilot started on developing the skills that define soaring as a sport has been the badge hierarchy of cross-country achievement. For our common club pilot, this is the prod and the proper answer to the question, “what do I do next now that I have gone solo?” Many decades ago, the Silver and onwards badge requirements were established to prove and certify your growing skill level.

## A little history

The Sporting Code was established to set the rules of soaring flight evidence to be followed: a declaration, photos of your turn points, a barogram to establish height and continuity of flight – what could be more straightforward. Yeah, right! Nothing stopped the steady parade of mistakes made, failure to read the rules, failure to operate the camera or barograph properly or, more sadly, failure of the equipment itself.

The International Gliding Commission (IGC) delegates from each country, who set the rules, are almost exclusively old hands who have long-forgotten their Silver distance flight, and spend much more meeting time discussing the selection, time, and place of international competitions than of badges. Code changes always lean more towards accommodating records and competition. It is almost a universal law that rule-writers will make them all-encompassing and only add exceptions if needed. But occasionally, as the European Aviation Safety Authority (EASA) is now attempting, rules are drafted that are not ‘one size fits all’, but ‘the minimum necessary’, with further restrictions only added for cause.

The IGC Sporting Code committee’s job is to craft the mandated changes as clearly as possible into the Code (occasionally it will propose a rule change to the IGC for approval). As a committee member, I have the background to comment here on the Code, but the following opinions are my own.

When rule changes are made, the presumption is that the rule followers will do it correctly. Unfortunately, human nature (common stupidity, misinterpretation, brain fade) or the perversity of inanimate objects regularly interferes. As mentioned above, rules also tend to start out applying to everyone with equal force. However, the rules on evidence-gathering and its security are followed by two sets of users: the record and competition pilots for whom no slackness can be tolerated since their actions effect every other pilot, and badge flyers who are simply trying to exceed a given level of performance that effects no one but themselves. The rules ought be more effective in accommodating this difference.

When complaints against a provision in the Code become persistent, it is often modified to better reflect the world in which glider pilots actually live. It won’t change to account for stupidity, of

course, but the IGC does recognize that making things difficult for the Silver distance pilot is not effective policy in the long run because it hinders rather than advances the goals of the sport.

The Code is complex because of the many ways evidence can be gathered – it can intimidate a lot of badge hopefuls and people willing to consider being an Official Observer (OO). It is a document that has had layers of requirements added with each change of evidence-gathering methodology. For example, position evidence has moved from eyeball to camera to GPS, with the Code gathering up paragraphs along the way to accommodate every method. (The demise of camera and most eyeball evidence did shorten the Code's text about 15% a few years ago.) Now we accept only GPS evidence, with a few exceptions like the eyeball for a Silver duration.

What really should be done to the Code is to strip it of all rules and options that were tailored to the needs of past evidence acquisition methods – that's the only way to simplify it effectively. For example, the start/finish line accommodated eyeball-and-clock, the sector observation zone was devised for TP photography. "We've done it this way for years, why change?" conservatism or inertia is about the only reason they are still around. A good way to focus on Code simplification is to ask, "*if you were inventing the Code today, what would you write down on your blank sheet of paper?*"

A formal paper on the goal of reducing evidence-gathering means and other expansions of the Code that has grown over time was distributed at the recent 2013 Plenary meeting. It got a lot of approval and as a result, this paper will be given general exposure to the IGC, to international soaring magazines, etc. in order to elicit suggestions on Code simplification. This will give the Sporting Code committee a file of material towards addressing this goal.

However, while the Code (and those that use it) will certainly benefit from simplification, it's unfair to blame it entirely for badge flight woes:

*[Rant alarm ON]*

I hear moans after badge flight failures that are purely and simply due to the pilot's lack of preparation for the flight, or for not doing the least bit of planning between the pilot and his OO on the requirements for the task of the day. Pilots that are handling much more complicated tasks during their normal work day somehow think that a little effort directed towards a recreational performance goal is unwarranted. Some pilots haven't even read their national badge application form, let alone the Code requirements! Unbelievable.

*[Rant alarm OFF]*

### **In olden times**

Let's go back to the days of the turn point camera and barograph. You left the lens cap on (ouch, that was stupid!) or you opened the camera back before rewinding the film (brain fade – I did that at a contest once). The Code, and in my case the contest Scorer, will be rightly harsh with you.

And what about the old camera rule that stated that the complete negative strip had to be uncut. This type of rule, which made life difficult for the majority of pilots in order to foil a microscopically small number of potential cheaters, is often the default choice of someone trying to make a rule "foolproof".

Naturally, commercial photo processors went about their normal routine of chopping up the negative strip, regardless of the most explicit written notes not to do so. Many great badge and record flights were tossed into the garbage can along with the film over an act that the pilot had no control over. The rule was an example of “the perfect being the enemy of the good”.

Again much complaining, after which the Code requirement was relaxed a little and stipulated that it would be sufficient that just the turn points themselves be on a contiguous strip of negative film. Now it was a throw of the dice, would cuts be on either side of the TP photos or not? Still unfair. The Code finally got sensible, allowing the OO to certify that cut negatives were of the same flight by examination of the cut itself and the negative numbering along the strip edge.

Here’s another old rule; the barogram trace had to be continuous in order to prove that just one flight was taking place. But ink sometimes froze, or for some reason the needle lifted off the foil. Again, strict continuity was relaxed and was interpreted as unnecessary since a minor interruption in the trace clearly couldn’t hide a landing and relaunch, or a gain of height claim would not be disallowed provided that an interruption did not occur over the low or high points of the flight.

### **Enter the GPS**

The advent of this technology was a boon to our sport given its ability to digitally record a flight with great accuracy in all four dimensions of space and time. However, the wonderful FR has now placed a significant requirement on the pilot and OO to be digital geeks. But digits can be hacked, so the problem of using GPS evidence for badges and especially records demanded strong data security in the flight recorder. An IGC committee of digital experts (GFAC) was formed to draft tight specifications required to be followed by FR manufacturers to ensure the security and accuracy of flight data, and to draft the extensive Sporting Code text that defined their operation, what and how data was to be loaded and downloaded, and how the data was to be analyzed – all to maintain that strict security.

The security built into these devices for the relatively small glider pilot market put their price as much as ten times higher than units commonly available to the consumer market, and their operation is often quite user-unfriendly. You need a computer to input pilot/glider information accurately and easily. How many of you, strapped in the cockpit, have tried to change some of that declaration information by pushing the buttons – right! Pilots also discovered that some FRs were capable of making up their own minds as to what data they decide to keep (or even change) without the pilot’s knowledge.

### **What happened to the OO?**

With the coming of GPS evidence, the Sporting Code was rewritten for the FR around the principle that all flight evidence (with a few exclusions) must be contained in the .igc data file and that the OO’s primary responsibility was to certify the correctness and legitimacy of that file.

In the days of photo and barogram, the OO was an essential participant in verifying and certifying flight evidence. Now, I believe that a technocratic mindset has placed an excess of trust in flight recorders and the data they generate. In a perfect world with a perfect flight recorder, there seemed to an unspoken presumption that an OO should be unnecessary. Many more pages were added into the Code’s *Annex C Pilot & OO Guide* to explain the rules, and the hazards that were present in FR use and operation.

But perfect FR security for badges isn't necessary – bytes shouldn't tell the whole story. The GFAC are greatly concerned about security and electronically eliminating all possibility of cheating. For records, yes, but what is the point of trying to cheat on a badge flight? First of all, the only pilot affected is the cheater himself; second, anyone intelligent enough to hack flight evidence is likely smart enough to do the flight correctly in the first place, and probably take less time to complete it.

The Code needs to give back to the OO the responsibility of being at the front of the evidence chain, rather than the FR data itself. This would reverse the worker/boss positions of the OO and the .igc file. If the .igc file is allowed to become contributory evidence to the OO's certification (as were photos and barograms in the past), the Code can be crafted to logically differentiate between badge and record evidence needs, and support alternate means of acquiring the necessary and sufficient evidence.

In the meantime, nibbling away at the text here and there to ease the burden for the badge OO and pilot is ongoing.

### **Easing the badge burden**

Modest changes to the Code are easier to get through the system. After a few years of general flight recorder grief for badge pilots, several changes have been made to either ease their use, or warn of specific problems found.

A Canadian proposal to allow “position recorders” to be used strictly for lat/long data (acting as an electronic camera) did get approved in 2009 for Silver and Gold badge flights. There had been a lot of grumbling about the expense of IGC-approved FRs. Although GPS position was just as accurate for off-the-shelf models, massive on-line discussions took place about the technicalities of GPS height measurement versus pressure altitude recording, lack of security, etc. Clubs and OOs pressed for relief for badge pilots, while the GFAC presented ‘thin-edge-of-the-wedge’ arguments, unfairness to FR manufacturers who spent lots of development money but will lose market share to cheap units, unacceptable variables in GPS height measurement, etc. And then there are those cheaters.

Position recorder use did get approved, although with a full page of provisos appended to Chapter 4 of the Code. As a practical solution however, it hasn't been that great because these PRs still have to be approved by each country's NAC, so the list is short. Pilots had to search their closets to find those barographs they thought had become obsolete – there was no backing down on accepting GPS height; and pilots were also back to completing a written declaration when using them. This easement on FR use was actually driving the badge pilot back into the analog past.

The biggest trap in the club use of FRs was getting correct pilot and glider data loaded. Shared FRs need careful data input since pilot/glider data change with each badge flight. It is very easy to get it wrong, and often a lot of time pressure to do it, especially if more than one badge attempt was being made on a day by different pilots in different ships. The Code language had the data in the electronic declaration being the Word of God. There was not much the OO could do to explain away a difference in the pilot/glider data and what actually occurred. Not only that, the Chapter 5 direction on OO certification was fairly brief and always capable of misinterpretation. (This problem did get addressed in the 2011 Code by expanding the Chapter 5 text to be much more specific on the control, verification, and certification of FR evidence by OOs.)

In 1999 when I joined the committee to take part in what we called the *Grand Rewrite*, a “spirit of fair play” clause was added to the preamble of the Code, which could admit some margin of error in badge claims. And as of the 2000 Code, the OO was required to have other evidence of the pilot/glider in addition to what was in the FR (SC3-4.2.1a,b and Annex C 6.5), but no direction was given on what to do if it differed. Therefore, getting a data error waived by a badge chairman was possible only by “throwing oneself on the mercy of the court”, so to speak. This usually gave our Silver distance pilot his leg if the FR said someone else was flying, but it has been capable of too wide a range of interpretation between different Badge Chairmen.

To take the human factor out of correcting this physical data, a USA proposal was accepted in 2012 which specified that for Silver and Gold badge pilots only, if the FR and OO data differ, the OO data shall take precedence. But Diamond, Diploma and record claim pilots are high enough up the achievements ladder that no quarter will be given if their flight evidence is not strictly by the book.

Another Canadian proposal allowed the use of GPS height for Silver and Gold badge. The practical advantage is that it solves the problem of having to carry a barograph with the position recorder. The trade-off is that a 100m error margin must be applied to any calculation of loss of height for a distance flight or gain of height for an altitude badge. (This margin evolved from discussion with GFAC in the intervening year on the relative accuracy of GPS and pressure height and common failure modes between the two within electronic devices.)

Another badge flight relaxation to exclusive use of electronic height evidence was introduced last year. SC3-5.2.3 now allows OOs to certify release height and/or position for duration flights. After all, if tows routinely go to 2000 ft agl or the winch cable is much shorter than 3200 feet, it is clear that an FR is not required to prove that the flight met the 1000m loss of height limit. The positive result here is that an “accidental” 5-hour duration flight could be claimed when an FR had not been carried on the flight; but the take-off and landing must still have been logged by someone.

So, life has become a little less bureaucratic for the aspiring badge pilot – that is good, and addresses some of the hassles facing club pilots and OOs. But all of these Code changes is no license to be complacent in learning what one requires for a trouble-free cross-country flight. Most of these current “improvements” for the new badge pilot only apply to Silver and Gold badge tasks. Do you really want to complete a 300 km triangle flight and not be able to claim your Diamond Goal leg? Study. Ask a lot of questions.

Keeping unnecessary complication out of the Code is not easy; however, the spring IGC meeting agreed with the Sporting Committee’s proposal to simplify the Code, and work is now very actively underway to do so. You are invited to read new papers that are now on the IGC website in its Documents section. One is the proposal to simplify the Sporting Code (this outlines the general problem), one is a proposal to have a new and shorter list of available record courses (eliminating declared courses), one is a proposal to have only a single observation zone (the cylinder), and another (which may be on-line as you read this) is a draft text of the Code that separates all badge requirements into its own chapter.

Steady feedback to the Sporting Code committee on the Code difficulties you may experience, directed through your IGC delegate, does work. All comment on the possible content of a new Code is welcome – it has already resulted in improvements to the papers presented.