INTERNATIONAL GLIDING COMMISSION (IGC) - PROPOSAL FORM

Submit the proposal via email to IGC Secretary.

Date: 20 February 2019

Proposal submitted by: ANDS & GFA Committees

This proposal is a:

Year-1		Year-2		Other	X

mark the boxes with ✗ as appropriate

Type the text changes in the space below*:*

No changes to current Sporting Code or FR Specification document. This is a proposal to start to develop a future system that could apply to all FAI Air Sports that use GNSS Flight Recording..

Type the reasons in the space below:

To take advantage of modern Information Technology in a future FAI system for GNSS Flight Recorders and their flight data files, without disturbing the current IGC-approved FR system.

Earlier in 2019, Dr Casado was asked by FAI for advice about Flight Recording in other areas of FAI, and this developed into the present proposal. FAI VP Alvaro de Orleans-Borbon and Secretary General Susanne Schödel are aware that a proposal is being prepared, and FAI Information Technology manager Visa-Matti Leinikki has been copied during the drafting process has made inputs to the attached paper.

The reason that IGC has taken the lead is that we formulated our IGC-approval system many years ago, have maintained and improved it over the years, and it is now also used by several other FAI Air Sports. IGC therefore has the background and experience to put forward people to FAI who are experienced in the field and to serve on a Future GNSS Flight Recording Working Group (FGFR-WG) of FAI. This includes Dr Casado, the Chairmen of the ANDS and GFA Committees, and other IGC experts in the field, see the attached paper for more details.

Provide supporting data or reference to external documents for the proposed technical amendments in the space below:

See the paper from the IGC ANDS and GFA Committees

The proposal should be applicable from: It is intended to present a proposal for a new system of FAI flight data recording at a future FAI General Conference, the current aim being the conference in 2021

Sporting Code: If, after work on the detail of a future secure system, the final proposal succeeds at FAI level, changes to SC3 would be needed from 2021-2 to document the new system. Meanwhile the current system of IGC-approved FRs and their flight data files, would continue until eventually superseded at a time to be agreed in the future

Final Wording of Proposal: The final wording about an updated FAI Flight Recorder system depends on the work of the proposed new FAI Working Group.

Continue on the next page(s) if necessary

Overall Votes Cast: ☐ For: ☐ Against: ☐ Abstain: ☐

ADOPTED: Yes: ☐ No: ☐

To: IGC Bureau and Plenary

Copy: FAI IT Manager

From: Ian Strachan, Chairman IGC GNSS Flight Recorder Approval Committee (GFAC)

20 February 2019

Flight data recording in IGC and FAI - the future

The following paper has been prepared by the IGC ANDS and GFA Committees. The main proposal is set out in Para 1 and amplified in para 3. The rest is background and about management in IGC and in FAI.

1. Future Flight Recording. In the future, Flight Recorders and their flight data files should exploit the latest technology so that they can be used in all FAI Air Sports in which GNSS Flight Recording could be a requirement.

Background and Future Management

2. IGC Flight Recorders. The 1995 edition of the Sporting Code for Gliding (FAI SC3) introduced a system of IGC-approved GNSS Flight Recorders (FRs). These had an ASCII-based file structure for downloaded flight data using plain text so that the details can be seen directly in the file. IGC flight data files include 4D positions at frequent intervals, plus accurately-defined waypoints for pre-flight declarations of start, turn and finish points, and other information. Many commercial programs followed that use the IGC file data to show glider tracks and add on-screen map information. In addition, the IGC file security system can detect whether any changes have been made to the file after initial downloading from the FR, or whether the FR has been interfered with or has become insecure. The overall system is defined in Annexes B and C to the IGC Sporting Code, and more detail is in the IGC FR Specification document, available on the IGC and GFAC web pages.

See in: www.fai.org/igc-documents
and www.ukiws.demon.co.uk/GFAC/documents/tech_spec_gnss.pdf

2.1 Current IGC FRs. Today, there are 72 different types of IGC-approved FRs from 20 different manufacturers.

See in: www.fai.org/igc-documents
and www.ukiws.demon.co.uk/GFAC/igc_approved_frs.pdf

In addition, the FAI IT Manager has pointed out that a considerable number of third party software providers outside the gliding world rely on the IGC file format, and most FAI commissions accept IGC flight recorders. Therefore, many thousands of FRs that conform to the IGC standard are in service worldwide in FAI air sports.

3. Future policy. ***A key principle is that the technology of the past should not hold up our exploitation of the technology of the future***. Rather than trying to fit the past and the future together, they should be dealt with separately so that future technology can be applied without being retarded by a need to allow for past systems. The following methodology is proposed:

3.1 FAI level. An FAI Working Group (WG) should be formed to develop proposals for a new secure system for flight recording across FAI air sports, learning from the past and exploiting the technology of the 2020s.

3.2 IGC level. Current designs of IGC-approved Flight Recorders are working adequately, and many of the 72 different designs would be difficult to update to the technology of the future. Therefore, the existing IGC FR system and its flight data file and security structure, should continue in IGC and in other FAI Air Sports where it is being used. After a new FAI system is in place and has been well proven in service, the position of IGC FRs in future flight validation, could be re-assessed. See also paras 4.4 and 4.5 below.

4. New FAI Flight Recording System. The task under 3.1 above is complex and needs time to discuss across other air sports. A suggested target is to develop and propose such a system to the FAI General Conference of 2021. This gives two years to formulate a radically new system of flight data recording, after which it must be shown to be able to work efficiently and securely in the various air sports for which it has been designed.

4.1 Specification. A Specification document for the new FAI system will be required, and the existing IGC FR Specification could be used as a starting point. This is not a simple task, shown by the fact that the main body of the current IGC FR Specification has been developed over many years and now consists of 52 pages, preceded by 12 pages of introduction and definitions.

4.2 Manufacturer Involvement. Potential FR manufacturers must be involved, to ensure that the new system is practical and that Flight Recorders using the new technology will be produced at reasonable cost.

4.3 File Validation. Secure remote flight data file validation using a server at FAI in Lausanne should be investigated. This was considered many years ago for the current IGC system, but failed because it needed a dedicated server at FAI, which in those days could not be provided. If such a system is used in the future, security must be ensured so that hacking, malpractice or error does not disable the system for others. There is also the question of what to do if remote FAI-based file validation fails or is delayed, for instance at the end of a competition when it is urgent to get the results out, so a backup on-site validation system is needed as well as a server-based system.

4.4 File Compatibility - IGC and future FAI formats. Although the development of the new FAI format must follow the principles in paras 4.1 to 4.3 as a first priority, when the new FAI format is finalised it may be possible to automatically convert IGC-format files to a format that could be recognised and validated by the new FAI system. If this proves feasible, it may be possible to phase out the current IGC system at some date in the future. Until this can be demonstrated, para 5 applies to FRs designed under the IGC system.

4.5 FAI system - Required for New types of FR. Once a new FAI system is agreed, published, and has been demonstrated as successful in service, new models of Flight Recorder across FAI air sports could be required to comply with the FAI system. Until this can be demonstrated, para 5 applies to FRs designed under the IGC system.

5. Current IGC Flight Recorder System. The IGC ANDS and GFA Committees should continue to administer and update the existing IGC FR system in the normal way, for the many thousands of FRs in IGC and other FAI air sports. This should apply until the new FAI system is available and agreed to be working in accordance with para 4 above.

6. IGC proposal for an FAI FGFR Working Group. IGC should propose the option described in paras 1 and 4 to FAI, and put forward people to serve on a Future GNSS Flight Recording Working Group (FGFR-WG) of FAI.

6.1 People to be Involved. Dr Casado has already started the process towards an FAI system, and should be put forward by IGC to FAI to chair the new FGFR-WG. The IGC ANDS and GFAC Chairmen should be ex-officio WG members so that they can keep their committees and the IGC Bureau informed of progress, and make reports on progress to IGC Plenaries in the normal way. Other ANDS and GFAC members with particular technical expertise who could join the FGFR-WG include GFAC members Dr Hans Trautenberg (Germany) and ex GFAC member Marc Ramsey (USA), and Tim Shirley (Australia) has experience as an NAC official overseeing flight claims. In any case, all current members of ANDS and GFAC should be copied with WG correspondence and be able to make comments to the WG because of their expertise at committee level in the management of flight recording systems and validation of flight performances over many years.
