ANDS Committee Report
IGC Plenary, March 3, 2017

Dear Delegates,

The author of this year's report is Bernald Smith, who, despite claims of retiring, has been as active as ever representing our interests around the world.

NEWS
From Bernald Smith, ANDS Chairman Emeritus,
USA Delegate to FAI Environmental Commission,
FAI and SSA RTCA Representative,
SSF/SSA EGU Co-Representative,
OSTIV TSP Member,
UNOOSA's ICG FAI Representative

RTCA – Essentially no changes: Involvement continues mainly with SC-186 (ADS-B), SC-159 (GPS), SC-228 (UAS/UAVs), SC-234 (PEDs), and to a much lesser extent with other SCs. RTCA meetings conducted with WebEx/telcon continue, relieving much travel time/personal expense. I am less involved than in the past, and haven't participated at all with SC-234 (PEDs) as it became obvious it was not necessary other than to see what they were doing. Some pretty heavy doing in some of the SCs getting documents completed pending final review and comment.

I attended RTCA's June 2016 Symposium where long-time relationships were refurbished, some of which became extremely important as noted in the report on calibration of the Perlan HAFRs. Much of that meeting focused on dealing with UAVs; the popular press has no doubt kept you well informed on what's happening in Europe and the USA.

As I always remind you, many RTCA meetings include intensive EUROCAE participation. ION and CGSIC meetings (which I attended in Portland, Oregon in the fall of 2016) are extremely important, and thus on my list of meetings attended because of their pertinence to GNSS.

FLIGHT RECORDERS – See below for an account of the first calibration of an HAFR.

OSTIV – I am attending their Congress in January 2017, being held in conjunction with the WGC in Benalla, Victoria.

UNOOSA ICG – I attended the weeklong meeting last fall in Sochi, Russia accompanied for the first 2 days by Visa-Matti Leinikki, IT manager from the FAI office. Jamming, interference, spoofing were as usual high on the list of discussion matters, as indeed were UAVs. Hopefully accompanied, I plan to attend the next one this coming fall in Japan.

FAI General Conference - I attended the GC in Bali, Indonesia in the fall of 2016 and plan to attend the next one in Lausanne. Who's ready to take the RTCA rep position? It's great fun – HELP!

FIRST HAFR CALIBRATION

Also from Bernald, whose personal involvement is underemphasized here. This story reminds us of how much work takes place behind the scenes in order to comply with our rules and to preserve the integrity of our records.

When an urgent message came in early summer 2015 from the Airbus-sponsored Perlan project for help to get their HAFRs certified, IGC, a Commission of FAI which is a member of RTCA, was able to use its long-standing visibility within the RTCA community to get the job done.

Involved were FAI contacts developed over the years with people from FAA, RTCA's PMC, Garmin-Kansas/Oregon, and Stanford University as well as folks from SSA, NAA and GFAC. Necessary GPS simulators available for possible use were located at 3 sites: MIT, Garmin-Oregon and Stanford University. Perlan project Chief Pilot Jim Payne's wife and his brother were involved, since time was of the essence. They transported the FRs from place to place, in project supporter Dennis Tito's Citation, finally delivering them to Stanford in Palo Alto, California.

Although several offered aid, a decision was made to take advantage of the positive response from Todd Walter, senior research engineer in the Department of Aeronautics and Astronautics at Stanford University, to help by taking on the calibration work immediately. Todd oversaw the operation, setting up an arrangement with Stanford Professor Simone D'Amico to involve his graduate student Duncan Eddy, who was experienced in operating the GPS simulator.

Considerable effort was expended by Todd and Duncan to set up the calibration, and testing began. Readings were taken every 5000 feet in ascent/descent, at the request of GFAC. However, at 49000 feet both FRs stopped recording! Todd searched through the FR documentation and discovered that the FR had a configuration option that would enable recording above 15000 meters. It turned out that the configuration could be changed only at the factory, so both FRs were rushed back to the manufacturer in Europe. Upon their return to Stanford, calibrations runs were successfully completed to 30000 meters on both FRs.

After the calibration runs were completed, the documentation was sent to GFAC. Led by Chairman Ian Strachan, their evaluation was completed in a very short, but intensive work effort on their part, resulting in the issuance of approval for use of that model of FR for high altitude flight verification. The FRs were then shipped to

Argentina for use in the Perlan flights last September. Unfortunately, the weather (winds) did not provide the necessary conditions to produce the wave activity necessary, so the project was put on hold pending this year's hoped for conditions.

This episode marked the first time FRs were calibrated for flight above 15000 meters, and the first time that a GPS simulator was used for calibration of gliding equipment. Todd Walter and Duncan Eddy have been nominated for an SSA Award for their willingness to take their personal time and doing the work which contributed directly to the first successful certification of HAFRs.

Acronyms and Definitions (short list)

ADS-B	Automatic Dependent Surveillance – Broadcast
ANDS	Airspace, Navigation and Display Systems
CGSIC	Civil GNSS Service Interface Committee
EGU	European Gliding Union
EUROCAE	European Organization for Civil Aviation Equipment
FAI	Fédération Aéronautique Internationale
FR	Flight Recorder
GC	General Conference
GFAC	GNSS Flight Recorder Approval Committee
GNSS	Global Navigation Satellite System
GPS	Global Positioning System (USA)
HAFR	High Altitude Flight Recorder
ICG	International Committee on GNSS (United Nations)
IGC	International Gliding Commission
ION	Institute of Navigation
MIT	Massachusetts Institute of Technology
NAA	National Aeronautic Association (FAI Member from USA)
OSTIV	Organisation Scientifique et Technique Internationale du Vol à Voile
Perlan	Project to fly a sailplane to high altitude utilizing polar vortex-induced wave
PED	Personal Electronic Device
PMC	Program Management Committee
RTCA	no separate meaning, a private non-profit corporation addressing aviation requirements and technical concepts functioning as a Federal Advisory Committee to develop consensus-based

	recommendations on contemporary aviation issues
SC	Special Committee
SSA	Soaring Society of America
SSF	Soaring Safety Foundation (USA)
TSP	Training and Safety Panel (OSTIV)
UAS	Unmanned Aeronautical System
UAV	Unmanned Aerial Vehicle
UNOOSA	United Nations Office for Outer Space Affairs

OTHER NEWS

FLARM – The open source debate has ended, but the debate about the tactical use of FLARM continues, without much apparent progress. The Open Glider Network (OGN) is still expanding, worldwide, and distributed ground-based tracking seems to be here to stay. We believe that the writing of enforceable competition rules intended to mandate, prohibit, or restrict strategic glider tracking is not technically feasible.

FAI – Drones have been officially adopted by the Aeromodelling Commission (CIAM). In addition to developing sporting events and records, CIAM will coordinate efforts to advise and influence national regulatory authorities on all pertinent subjects, including airspace and navigation.

FAA – holding firm to the deadline of 1 January 2020 for the installation of ADS-B Out in aircraft to be flown where transponders are currently required. For the moment, in USA, transponders are not required in aircraft without an "engine-driven electrical system" operating in airspace Classes D through G. However, our claim that we cannot carry enough electrical energy to run a transponder is wearing thin, and this regulation is currently being reviewed.

EASA – have recently defined data quality assurance standards for data used by airborne navigation systems, and have joined FAA in prohibiting the carriage of mobile phones that may explode.

FUTURE

The standard data formats for Flight Logs, Airspace, and Turn Point Databases have served us well over the years. We are long overdue for the establishment of a standard file format for the specification of Tasks. Any volunteers? JSON? XML? Anyone?

Respectfully submitted

Rick Sheppe
Post Mills, USA