TO: FAI Delegates 10Oct07
SUBJ: Oct07 FAI General Conference GNSS/RTCA report
FROM: Bernald S. Smith, SSA & FAI RTCA representative
IGC ANDS Committee Chairman
NAA FAI EnvCom delegate, EnvCom VP
OSTIV Technical Soaring Coordinator

This report contains material updating my 2006 report to you as well as lots of newly developed activity reporting. It includes some detail about what's going on with EGU.

Acronym List in Appendix I

A - GALILEO - (European GNSS system of the future)

They are really having money problems, with an unknown effect on meeting their planning dates. It is said that all the wrangling up to now has put them 4 years behind where they originally planned to be. The PPP Public/Private/Partnership concept has fallen through because no private companies came forward with the money to make it work. Now they're trying to get all the countries to agree to each one coming up with the necessary public
funding to move forward. They still plan on using private companies to operate the system, but that's being argued, too. Even EGNOS seems to be having its management troubles. It is clear at this time that it is unclear where the money is to come from, but some meetings in October/November may decide that point.

B - GLONASS - (Russian GNSS system)

As of this report's preparation date, 13 satellites are claimed healthym byt we were advised that only 9 are healthy + 1 being readied for commissioning and 1 in maintenance status. They predict 24 healthy satellites by 2011, and report having an extensive ground control segment across Russia to the east coast. It was reported they're having some synchronization problems with their latest re differences and stability, altho they claim PZ-90-02 to be only 6-7m difference compared to previous 50m with orbit accuracy improved to 8m from 60m. There's no question they want to compete on an equal footing by providing compatibiity
and interoperability! They seem to be moving towards more compatibility wrt GPS and GALILEO re ITRF and UTC. As previously reported, the last triple GLONASS launch was on December 25, 2006. The next launch is expected this month and again in December.

C - BEIDOU/COMPASS - (Chinese GNSS system)

The fifth Beidou/Compass satellite was launched last April. It is the first of a planned 30-satellite MEO GNSS system. The previous four satellites were geostationary satellites, forerunners of a planned 5 GEO satellites to provide WAAS-like provisions for COMPASS. Its CDMA signals will be in the GPS and GALILEO frequency bands, utilizing BPSK or QPSK. Some may view BEIDOU as being closer to IOC than GALILEO is.

D - RTCA +

Again, no listing of RTCA Special Committees and Task Forces and other activities, on which I serve for FAI and SSA, all of which are deemed of some potential import to the sport aviation community. In the three weeks just prior to your Delegates' meeting, I have been in Washington, DC for RTCA SC159 (GPS) meetings, Fort Worth, TX for CGSIC and ION meetings, and DC again for RTCA's GPS SC-186 meeting.

SC186 is working overtime to fulfill its mandate. Note this recent report sent to others:

This is a very brief summary of some points from my SC186 (ADS-B) meeting at RTCA in DC last month. Much of it is in the papers, as some have noted.

The meeting was very heavily populated with FAA folks as well as a broad spectrum of the industry, including 4 end users (me for gliding and airsports and 3 from ALPA). Among other things, we heard and viewed an encompassing report by Vincent Capezzuto (FAA cochair of SC186) on FAA Surveillance and Broadcast Services. In that was the plans for implementing USA-wide ADS-B which includes an FAA NPRM that will be forthcoming this month with a comment
period of 90 days. The soaring and other airsport communities may want to respond!

It will likely mandate ADS-B in A, B and C airspace, beginning in a few years. There will likely be a long equipage timescale. A contract was awarded at the end of August to ITT for installation of certain ground equipment for ADS-B management which entails receipt and retransmission of ADS-B at both 1090 and 978MHz (the transponder and UAT ADS-B frequencies), and other ATC-derived
aircraft position messages.

Separation standards (current radar* standards to be used) approval is to be by Sep09, followed by ground infrastructure IOC planned for Oct09-Apr10 and ISD in Sep10. The final rule for avionics equipage is to come in Nov09 and begin in Dec09, continuing thru 2020.

*3/5 miles, depending on range, notwithstanding the extremely more accurate data of ADS-B, but they want to get some more experience before reducing the standards for ADS-B surveillance of ATC.

I've copied some outside the USA because what happens here happens there and vice versa!

More than 9000 FLARM devices have been delivered. For more info on this ADS-B type device, see www.flarm.org.

E - TRANSPONDERS

UK wants everything in the air to have Mode S. So do some other countries, in Europe. Australia is moving to ADS-B instead, the
surveillance mode of the future.

F - MISCELLANEOUS

The current GPS constellation consists of 15 usable Block II/IIA satellites, 12 Block IIRs, and 3 Block IIR-Ms for a total of 30 satellites at FOC (Full Operational Capability). It was announced to the ICAO General Assembly on 18Sep07 by the US Secretary of Transportation that satellites to be launched in the future (GPS III) will not have SA capability, so that besides the Presidential Directive that ordered SA to be turned off, it will be impossible in the future to turn it on because there will be no satellite capability to do so! For anyone who might be interested, altho I haven't checked them out, I'm told there are web sites at GPS.gov and PNT.gov in French, Spanish, Arabic and Chinese with GPS info.

The ICG, made up of Russia, China, Japan, EU, India and USA, meet regularly, just last month in India and their 3rd meeting will be in Pasadena, CA - USA on 8-12Dec07.

The space weather people in the USA are hoping to be able to predict ionosphere action 6 hours in advance, based on the continuing study of sun eruption cycles.

The turnout at the CGSIC ISC was the biggest ever with about 150 folks.

Since Dec93, the US has met or exceeded its GPS performance guarantees, which in Jun07 for the SIS, the URE was 0.95m! GPS planned future launches: 17Oct07, Dec07, Mar08 and Jun08, and GPS III is going to have big improvements.

I note that GPS backups are alive and well with LORAN (decision by early 08??)not being the only one under discussion. Multilateraion could be a biggie. Of course Radar is always there. How about RAIM, rather common these days. INS is very alive and well. Does anyone have LADAR installed? See acronyms.

USAF is working very hard to be more responsive to civil needs, e.g. early detection/elimination of interference. Usually the first interference detection is cellphone towers! In Jun07, the USNavy caused a problme in LA that was detected by 150 cell phone towers that went out of service! The main problem was a 10 mile radius, lasting for 2 hours. There were no commercial airline reports of problems, but GA made some reports.

There is a move in timing circles to do away with leap seconds; it has been approved by a preliminary executive vote which now must go to all the timing nations. The earliest possible date for that change is 2013, if they receive 70% approval. Just a little insight into what dedicated folks our timing folks are is seen in that USNO has 73 cesium clocks and 24 hydrogen masers in order
to keep accurate time for the world - USNO is a major source of time accuracy for the world.

G - FLIGHT RECORDERS (FR)

Ian Strachan, IGC's GFAC Chairman, may well have something to say about this subject. A major concern still is determining how
to have FRs work with electric-powered MGs. Up to now, engine noise has provided a means to determine engine operation, but that doesn't work when the engine noise is less than just opening a vent window!

H - EGU

We attended the EGU meeting in Prague on 24/25Feb07. There were 35 in attendance from 17 of the 21 EGU countries, as well as both of the affiliate countries (USA & NZ) and others.

The political and administrative European institutions involved in regulatory matters are delivering a constant output so EGU representatives have to ensure that the interests of gliding are taken into account. ESA does the same for all airsports. Following are summaries of some of the recent EGU activity:

EASA published NPA 2007-08 which is a combined NPA on Part M and Pilot Owner Maintenance. In response, EGU made these proposals for licenses and instructor ratings. Recall there'll be two licenses:

- a recreational license now called Light Aircraft Pilot License (LAPL) described in FCL Subpart B
- a ICAO compliant license (sometimes called Non JAR Licenses), GPL, described in FCL Subpart C

Both are the same except for the medical part which will be an ICAO Class 2 for the ICAO compliant system and a simpler system based on a questionnaire with endorsement by a GP for the recreational license, and large intervals between the checks (the medical part has not yet been finalized)

The license is designed as a modular license with an easily obtainable "basic license" with extensions for flying with passengers, cross country, aerobatics etc. Since these are Implementing Rules they had to put figures (hours and launches) but have set them to minimas which should make it possible to set up a competence-based

system. Some requirements such as the requirements for regular checks of the pilots and of the instructors are set by the Essential Requirements on Licensing

In both system there will be instructors and examiners:
- The requirements for becoming instructor either in the recreational system (LAFI (G)) or in the ICAO system (FI(G) are described in FCL Subpart J;
- The requirements for becoming examiner are described in FCL Subpart K.

They made changes in the original proposal, with reduced number of
- hours required for night flying from 10 to 5 hours
- training flights required for the aerobatics qualification from 20 to 10
- launches required for carrying passengers from 60 to 50 and increased number of hours
- required for carrying passengers from 10 to 20
- modified the validity criteria (FCL.B.170 and FCL C1.0.165) so that the privileges can be exercised even if all launch types are not valid .
The EGU proposal for the gliding part of the Light Aircraft Pilot License was approved by the subgroup with only minor modifications (for consistency: always have the same ratio between hours and launches when the alternative between both was proposed in a requirement).

The Subgroup Non JAR (ICAO compliant) License is less advanced in their work. A joint meeting with them brought agreement to have a Subpart C similar to the Subpart B for gliding and ballooning. Hence the objective to have the same requirements for the LPL and the ICAO compliant glider license (except on the medical part) has been achieved.

One important issue left is the drafting of the regulation about training organization which will require an approval and not only a simple registration. They will have to make sure that this will not generate too much bureaucracy and costs.

A proposal for the assessment of medical fitness based on a questionnaire with Yes/No answers to be filled out either by a General Practitioner or by an AME was accepted, with intervals between examinations much larger than for ICAO Class 2 (only one examination below age 45!).

EASA will now have to approve and finalize all these proposals and issue an NPA before end of the year. They still have a long way to go but EGU President Roland Stuck has the feeling they have made major progress.

A reminder from my last report about operational standards required by EASA being developed under the aegis of OSTIV TSP: We look forward to hearing more about that at an upcoming OSTIV TSP/SDP meeting in Delft, The Netherlands.

The next EGU Congress will be held on 23/24 February 2008 in Florence, Italy, the weekend prior to the IGC meeting in Rome, both of which I plan to attend.

Altho EGU membership fees were increased, that did not include associate fees, so SSF will pay the same amount for SSA’s continuation association, which we in SSF feel is very useful.

-end of report-

Appendix I

ACRONYMS & DEFINITIONS

(a relatively medium-length list, compared to the long one we use)

```
AC       - Advisory Circular
ACAS     - Aircraft Collision Avoidance System
ADS-B    - Automatic Dependent Surveillance - Broadcast
ALPA     - Air Line Pilots Association (pilot union)
AME      - Aviation Medical Examiner
ANDS     - Air Traffic, Navigation and Display Systems
ATC      - Air Traffic Control
BEIDOU   - Big Dipper (constellation) in Chinese, for Compass,
              their GNSS
BPSK     - Binary phase shift keying
CDMA     - Code Division Multiple Access
CGSIC    - Civil GPS Service Interface Committee
DC       - District of Columbia (Washington, DC)
EAS      - Europe Air Sports
EASA     - European Aviation Safety Agency
EC       - European Commission
EGNOS    - European Geostationary Navigation Overlay Service
EGU      - European Gliding Union
EnvCom   - FAI's Environmental Commission
FAI      - Federation Aeronautique Internationale
FCL      - Flight Crew License
FI       - Flight Instructor
FL       - Flight Level
FLARM    - no acronym could be determined
FOC      - Final Operational Capability
FR       - Flight Recorder
G        - Glider
GAGAN    - GPS Aided Geo Augmentation System
GALILEO  - no acronym meaning could be found anywhere
GBT      - Ground Based Transceiver
GEO      - Geostationary orbit
GLONASS  - Global Orbiting Navigation Satellite System
              (Russian)
GNSS     - Global Navigation Satellite System (generic)
GP       - General Practitioner
GPS      - Global Positioning System (USA)
ICAO     - International Civil Aviation Organization
ICD      - Interface Control Document
ICG      - International Committee on GNSS
IGC      - International Gliding Commission
INS      - Inertial Navigation System
IOC      - Initial Operational Capability
```

```
ION      - Institute of Navigation
ITRF     - International Terrain Reference Frame
ITT      - name of large USA corporation no longer an acronym
JAR      - Joint Airworthiness Regulations
LADAR    - Laser radar
LAFI     - Light Aircraft Flight Instructor
LPL      - Light Aircraft Pilot License
LPV      - Lateral Precision Approach with Vertical Guidance
LORAN    - Long Range Navigation
MG       - Motorglider
MEO      - Middle Earth Orbit
Mode A/C - Transponder: 'A' transmits one of 4096 codes set by
             pilot, as assigned by ATC; 'C' includes altitude
Mode S   - Transponder; Selective, by aircraft's assigned
             address
NAA      - National Aeronautic Association
NPA      - Notice of Proposed Amendment (see NPRM)
NPRM     - Notice of Proposed Rule-Making
NZ       - New Zealand
OSTIV    - Organization Scientifique et Technique Internationale
             du Vol a Voile
QPSK     - Quadrature phase shift keying
PDOP     - Position Dilution of Precision
PPP      - Public/Private Partnership
RAIM     - Receiver Autonomous Integrity Monitoring
RTCA     - no separate meaning, a private non-profit
           corporation  addressing aviation requirements and
           technical concepts to advance the art and science
           of aviation and aviation electronic systems for
           the benefit of the public, with nearly 300
           volunteer organizations, more than 25% of which
           are non-US, from the entire worldwide aviation
           community, functioning as a Federal Advisory
           Committee, to develop consensus-based recommendations
           on contemporary aviation issues, whose documents are
           most often used as the basis of government-issued TSOs
SC       - Special Committee
SDP      - OSTIV's Sailplane Development Panel
SIS      - Signal In Space
SSA      - Soaring Society of America
SSF      - Soaring Safety Foundation
TCAS     - Traffic Alert/Collision Avoidance System
TMA      - Terminal Maneuvering Area
TS       - Technical Soaring
TSP      - OSTIV's Training and Safety Panel
```

```
UAT      - Universal Access Transceiver
UK       - United Kingdom
URE      - User Range Error
USNO     - United States Naval Observatory
UTC      - Universal Coordinated Time
WAAS     - Wide Area Augmentation System
```