TO: IGC Delegates 08Jan08
SUBJ: Feb/Mar08 IGC Meeting ANDS & EnvCom report
FROM: Bernald S. Smith
IGC ANDS Committee Chairman
IGC and NAA EnvCom delegate, EnvCom VP
SSA & FAI RTCA representative
OSTIV Technical Soaring Coordinator
SSF/SSA EGU co-representative with Gene Hammond
NAA's FAI Airspace/Navigation Commission delegate

Report in Appendix I
Acronym List in Appendix II

ACTION ITEM- We will present nominations at the meeting for your consideration for election to fill the expiring terms of GFAC members. Current members are Ian Strachan (UK), Hans Trautenberg (Germany), Angel Casado (Spain), Tim Shirley (Australia) and Marc Ramsey (USA).

ANDS Executive Summary:
With the approval at the Oct07 FAI General Conference in Rhodes of a Commission on airspace and navigation, FAI countries will now be able to communicate worldwide in an organized manner regarding airspace use, changes therein, the administration thereof and methods for getting around in that airspace. Initial country nominees are from Australia, Croatia, Finland, Germany, Italy, Korea, Luxembourg, Norway, New Zealand, Poland, Russia, Slovakia, Sweden, Turkey, UK, USA (16), and from Commissions: IGC and IPC (2). There are some notable absences! But, it 's a good start; hopefully many others will join in. The first meeting to organize the group is being set for sometime in February or March in Europe. We note some familiar names in the list of nominations: Flotin, Strachan and this writer.

For quite some years now, I have been acting as the self-appointed RTCA representative for FAI, which is still a full International Member of RTCA, a body of aviation people which writes documents used by government to show how to conform with regulations which are issued by those governments. In that capacity, I have been reporting to you on what I'm involved with therein, which includes, among other things, dealing with airspace and navigation. Furthermore, I have also been involved with EUROCAE, the RTCA counterpart in Europe, because RTCA and EUROCAE work jointly on many matters, including GPS and ADS-B, producing joint documents many times.

Reports to you on the many matters we've been addressing in RTCA, include, in particular, GPS and for 10 years now, ADS-B, as many delegates will recall. It is interesting to note that others have been jumping on the ADS-B bandwagon that I have been promoting for all those years! In that arena, these are just a few of the things occurring today that will affect airspace and its use:

Australia - ADS-B to be implemented with two power levels; they are well along to save millions by not having to install radar in the extensive inner area where normal non-radar separation must be used which costs the airlines big money, so ADS-B will, at a much, much lower installation cost, provide that airliner savings. ADS-B will be extant from Singapore to Auckland, NZ! To keep track of all traffic, they are discussing a plan to provide up to A$15,000 for aircraft under 5700Kg gross weight to encourage installation. Even more encouragement would be extant because the funding would be offered on a reducing scale, such that the longer one waits to install, the less financial assistance one would receive. To save money, and because they think LAAS is too slow in coming, they will use GRAS as a regional ground-based augmentation system to make ionospheric corrections, vs the space-based geostationary systems discussed below, planned operable 2009. Altho it was stated by the presenter at the CGSIC meeting, from which much of this info comes, that GFA might mandate carriage of ADS-B by gliders, I will be interested to hear what GFA says! In response to a concern expressed by Australia about planned GPS outages which might impact adversely in some areas if not known well beforehand, the US Coast Guard's NAVCEN is posting daily PDOPs.

Kenya - The airsports people needed help to respond to what were perceived to be unnecessary, onerous airspace restrictions to be imposed by their governmental airspace authority. We responded to them.

USA - WAAS is operating utilizing geostationary satellites to provide ionospheric corrections for GPS for more accuracy of GPS-derived positions. Without WAAS, the lateral error bound required is 36m but 2.74m is being achieved. With WAAS, the required lateral error bound is 16m but 1.00m is being achieved. Similar achievement is being seen in vertical error. Full LPV is expected in Sep08, but not to 200'. It was reported that 40% of a polled fleet of 140,000 GA aircraft had GARMIN GPS installed, w/15K of them having WAAS units. An NPRM was issued in October07, planning for ADS-B implementation nationwide with final compliance required in

certain (A, B, C and E above 10,000') airspace by 2020 altho equipage is expected to begin in 2009. Altho initially normal radar separation of 3-5 miles will be used, rapid movement to change the 5 mile enroute separation to 3 miles is expected, based upon experience already gleaned from Alaska operations and other interim operations in the lower 48 taking place as we write. An AC was issued in December07 for ADS-B installation. An ADS-R system contract was awarded at the end of August to ITT for installation of hundreds of GBTs which will relay ADS-B to aircraft w/different ADS-B types as well as to ATC for traffic control. The contract is 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. That Contractor is to be made available to other interested countries who want to install such a system.

Europe - EGNOS is up and running, with extensive ground segment thruout its Europe service area, providing corrections for its area similar to what WAAS does for North America. I'm not positive on this, but I think the operational qualification review for EGNOS is set for 2009. GALILEO is further delayed, looking for funding solutions, but will provide a multi-satellite system similar to GPS, if they get the money thing straightened out, which everyone thinks they will. Lots of talk so far with lots of plans!

India - Planning GAGAN to provide India with the same kind of system that WAAS does.

UK - Being told all airspace users must have Mode S transponders at some future date.

Russia - GLONASS system planned for updating as well as completion of full satellite constellation to be compatible and/or interchangeable with other GNSS systems by utilizing some new signals in the GPS L1 and L5 bands.

Canada - will install ground stations similar to US for ADS-B coverage, especially in the northern non-radar areas, providing accurate position data to permit better handling of traffic.

Japan - QZSS being developed to provide more integrity/accuracy mostly for ground use in Japan, utilizing GPS frequencies for interoperable compatibility with GPS. MSAS IOC 27Sep07 for enroute and NPA, altho I'm a little

shaky on that info. QZSS signals at L1-C/A, L1c, L2c, L5, L1-JA and L1-Ex.

China - BEIDOU (big dipper constellataion) is their COMPASS GNSS system, part of which consists of 5 geostationary satellites (4 up already) to provide corrections of ionospheric error. They already have one operable MEO satellite up, with signals on top of GPS/GALILEO, but so far no ICD has been issued so we don't know whether it will be compatible with other GNSS systems.

====+++++++++++++++see appendices for more++++++++++++====

_____end of ExSum_____

ENVCOM REPORT

As usual, this report states that the next FAI EnvCom meeting is too late for a written report to meet the early deadline required for written reports for your meeting. I do plan to attend; it's scheduled for 12Jan08 in Frankfurt, Germany. I will distribute directly to you, either via email, or at your meeting, a report about it and may ask for a few minutes at your meeting for some further comments. One important item on the agenda will be drafting an Environmental Management System for FAI Organized Flying Sites. Don't panic, there's much work to be done on it and many already have such in place.

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APPENDIX I

Folks, this report covers what I glean from RTCA, ION, CGSIC, EGU etc. There is so much going on now re airspace that it is urgent that we communicate well with each country with people who are involved and in contact with officialdom regarding airspace matters. I already receive contacts worldwide from folks wondering what's going on.

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. Initial agreements seem to have been reached by the involved countries approving a budget so they can 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.

B - GLONASS - (Russian GNSS system)
As of 5Jan08, of the 18 satellites in orbit, 2 are in decommissioning phase, 4 are switched off, and 12 are claimed healthy, 3 of which were the most recent launch of Christmas day 2007. 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 a previous 50m with orbit accuracy improved to 8m from 60m. There's no question they want to compete on an equal footing by providing compatibility and interoperability! They seem to be moving towards more compatibility wrt GPS and GALILEO re ITRF and UTC.

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 six weeks just prior to your Delegates' meeting, I will have been in Washington, DC; Melbourne, FL and San Diego, CA for RTCA and ION meetings of 3-5 days length, and DC again immediately after your meeting for two more weeks of RTCA meetings.

One important reason for such participation is the opportunity to maybe have a voice in, and know about ahead of time, FAA documents such as the NPRM outlining implementation USA-wide of ADS-B and the AC regarding its installation, as discussed above in the ExSum.

Separation standards 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.

More than 9000 FLARM devices have been delivered. For more info on this ADS-B type device, see <www.flarm.org>. There is a growing interest in the USA to have FLARM but it's not available. However, there are two likely low cost ADS-B units of great interest as they will be low cost, within our price range at least for one, it is expected. One is being proposed by FAA for ground vehicle use, as I understand it, but suitable for flight use, and the other is already in flight test phase. I'll have more to say and hopefully show at your meeting.

Finally, I want to mention that wake turbulence detection is under study, utilizing ADS-B! Maybe I can find a way to show a picture I have of what wake turbulence actually looks like.

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 31 Block II/IIA/IIR/IIR-M satellites at FOC (Full Operational Capability). The first operational, Block II, satellite was launched 14Feb89. The oldest GPS satellite in current use was launched 26Nov90. The newest one was launched 20Dec07.

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, meeting regularly, were scheduled for their 3rd meeting to be in Pasadena, CA - USA on 8-12Dec07.

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.

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.

I note that GPS backups are alive and well with LORAN (decision by early 08??)not being the only one under discussion. Multilateration 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 problem in LA that was detected by 150 cell phone towers that went out of service! The main problem was in 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, will report on 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! Some FRs under study have FLARM embedded, but only the FR function is undergoing approval consideration. The FLARM feature is only looked at to assure it does not interfere with the FR.

H - EGU As we attended the EGU meeting in Prague on 24/25Feb07, we reported extensively on it to FAI at their Rhodes General Conference. We will be attending their

Firenze08 meeting the weekend prior to your Rome08 meeting. Lots going on w/EASA for them to deal with. It should be noted that OSTIV was requested by EGU to not provide input to EASA from the OSTIV committee developing operational standards. As I understand it, the EGU effort is to remove operational standards from EASA 'rulemaking' as a mandate for gliding.

I - COTS I understand there will be a proposal put forth for accepting COTS for certain levels of flight verification. I hear some very strong opposition thereto from some folks.

-end of report-

Appendix II
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 (United Nations)
IGC - International Gliding Commission
INS - Inertial Navigation System
IOC - Initial Operational Capability
ION - Institute of Navigation
IPC - International Parachute Commission
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