

## **IBAC Technical Report Summary**

**Subject:** Global Navigation Satellite System

**Meeting:** GNSS Panel WG “A”, Philadelphia, U.S.A. 23-27 April, 2001

**IBAC File:** Navigation

**Reported by:** Capt. Heinz Lichius

### **Summary:**

WG A agreed that the intent of proposed changes to ICAO Doc 9750 “*Global Plan for CNS/ATM Systems*” should be as follows:

- to retain the goal of a transition to GNSS, with the possibility of eliminating all conventional aids;
- to emphasise the need for maintaining conventional ground-based navaids during transition; and
- to clarify that the recognition of the need to retain ground navaids during the transition does not imply a requirement for adding conventional aids in less developed regions with the introduction of GNSS-based operations.

Please refer to the detailed report attached regarding other matters of lesser significance considered by the WG

### **Implication for Business Aviation:**

Present impact to our industry lies in the fact that we must be aware of and be prepared to contribute and participate in this emerging detail of navigation. The new concept in air navigation will influence the future development in the whole aviation field and bring substantial changes in managing the skies.

### **Decisions Required:**

IBAC has been active since the initiation of FANS and lately GNSS in assisting this process. We should maintain this vigilance .

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## GLOBAL NAVIGATION SATELLITE SYSTEM PANEL (GNSSP)

Report of Working Group A Meeting

PHILADELPHIA, UNITED STATES

23rd - 27<sup>th</sup> April 2001

A meeting of GNSS Working Group A was held at the DoubleTree Hotel, in Philadelphia, USA, from the 23rd to 27th April 2001. 29 Experts attended the meeting from 9 States and 2 International Organizations.

Mr Ross Bowie of NAV CANADA, the Rapporteur of the GNSSP WG-A chaired the meeting. Mr Victor Iatsouk, GNSS Panel Secretary and Pierre Duchaine of NAV CANADA provided the Secretariat support.

Mr Ross Bowie welcomed the attendees to the meeting, thanked the host country for the excellent hospitality and support provided to the group. Mr J. Dargue and Ms T. Cantz covered the administrative details.

The Rapporteur remarked on the considerable progress in the GNSS field since the last meeting, and highlighted the ICAO Council approval of the GNSS SARPS, which will be published in Annex 10, Volume 1 and become applicable on November 1st, 2001. He recognized the excellent work done by the Working Group B.

The Panel Secretary discussed the possible future meetings schedule. He indicated that GNSSP/4, currently scheduled for the second half of 2002, may be timed to precede a possible worldwide ICAO meeting on CNS/ATM currently envisaged for late 2003 or the first half of 2004. A scope of the meeting and its timing are yet to be discussed by the Air Navigation Commission.

Mr Bowie introduced a working paper regarding the options for the completion of the GNSS Manual at this meeting of Working Group A or the next meeting in Rio de Janeiro, which will be a joint meeting of both working groups of GNSSP. Mr Iatsouk indicated that the very latest, the manual must be ready for GNSSP/4 whenever this meeting is finally scheduled. WG A generally agreed that it would be best to complete work on the Manual at the Rio de Janeiro meeting, except for certain specific sections that depended on the WG B program (e.g. GALILEO)

The Group then was briefed on the Status and future prospects of the GLONASS orbital constellation, which initially consisted of 24 satellites and substantially diminished during the recent years. In 1999-2000 the system was upgraded with 6 satellites and now consists of 10 satellites; the next 3-satellite block is scheduled to be placed into orbit in 2001. It is expected that by 2002 GLONASS will function at the minimum level of 10-12 satellites. The launch of the first GLONASS-M satellite is scheduled for 2002; the active lifetime will be increased up to 7 years (in comparison with the current figure of 3 years) and the technical specifications will be improved. The next upgrade envisages the development of GLONASS-K satellite with better accuracy, a lifetime of more than 10 years that will transmit the standard accuracy signal for civilian users in three bands: L1, L2, L3. Material for GLONASS L 3 SARPS will be presented at GNSSP/5. -

Prior to reviewing the Manual the Rapporteur presented a working paper "Review of Navigation Part of ICAO Doc 9750" since this might affect some sections of the manual, noting in particular that harmonization between Doc 9750 and the GNSS Manual is essential.

The meeting agreed to review the navigation sections of the document to ensure that it reflects present and expected GNSS developments, then review the Manual to ensure it is consistent with Doc 9750. After much discussion, WG A agreed that the intent of proposed changes to Doc 9750 should be as follows:

- to retain the goal of a transition to GNSS, with the possibility of eliminating all conventional aids;
- to emphasise the need for maintaining conventional ground-based navaids during transition; and
- to clarify that the recognition of the need to retain ground navaids during the transition does not imply a requirement for adding conventional aids in less developed regions with the introduction of GNSS-based operations.

Then several papers were presented and discussed by the group on the subject of ABAS and GBAS.

Mr Coarmeur presented a paper proposing a new specific single serial code(G) for all GNSS NOTAM. Mr J. Roper however indicated that Germany had found this to be unworkable in the light of the number of GNDD NOTAMS expected.

Mr J Formosa from MITRE Corporation presented a paper on FMS/RNAV terminal routing development in the US. The most obvious benefits of RNAV arrivals are reduction of workload for controller and pilots, reduction of radio communication, saving on fuel and better sequencing of aircraft.

Ms Karen van Dyke from DOT/VOLPE centre enlightened the group on 'scheduled outages'. An outage reporting system for GPS-based augmentation systems in the US was presented. Present ABAS prediction will be expanded for FDE and SA-off. VOLPE centre has developed under contract the RGIS prediction system for Germany's DFS. Deutsche Flugsicherung has offered the software to any country. The program is windows-based software and very user friendly.

The next meeting will be held in Rio de Janeiro in conjunction with Working Group B from October 22 to November 1, 2001.

Present impact to our industry lies in the fact that we must be aware of and be prepared to contribute and participate in this emerging detail of navigation. The new concept in air navigation will influence the future development in the whole aviation field and bring substantial changes in managing the skies. IBAC has been active since the initiation of FANS and lately GNSS in assisting this process. We should maintain this vigilance.

Respectfully compiled and submitted on April 29th, 2001

Capt. Heinz Lichius, IBAC-GNSS Representative.