



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
FOURTEENTH MEETING (APIRG/14)**
(Yaounde, Cameroon, 23-27 June 2003)

Agenda Item 4: Air Navigation issues

4.5: REVIEW OF THE REPORT OF THE GNSSP/4 MEETING

(Presented by the Secretariat)

SUMMARY

The report of the fourth meeting of the Global Navigation Satellite System Panel (GNSSP) is presented for information to APIRG

1. INTRODUCTION

1.1 The fourth meeting of the Global Navigation Satellite System Panel (GNSSP) was held in Montreal from 23 April to 2 May 2003. Seventeen panel members or their temporary replacement participated in the meeting, accompanied by fifty five advisors. Six observers from four States and two international organizations, and other participants from six States and three international organizations also attended the meeting.

1.2 The meeting considered all of the six agenda items, and formulated sixteen recommendations, including eleven recommendations for amendments to Annexes and Procedures for Air Navigation Services (PANS). Proposed action by the Commission on these recommendations is contained in the appendix to this paper in the form of supplement to the report.

2. SUMMARY OF THE WORK OF THE MEETING AND SECRETARIAT COMMENTS

2.1 Agenda Item 1: Development of basic documentation on navigation issues for the Eleventh Air Navigation Conference

2.1.1 The meeting reviewed a number of candidate basic papers for Agenda Item 6 of the Eleventh Air Navigation Conference and agreed that the following six documents be submitted to the Air Navigation Commission as the proposed working papers for the conference:

- feasibility assessment of GNSS-based Category II/III approach and landing operations and aerodrome surface operations;

- GNSS vulnerability and mitigation methods including terrestrial, airborne and procedural solutions;
- concept of using combinations of independent satellite navigation systems and their augmentation;
- review of Annex 10 SARPs for ground-based radio navigation aids in the light of present and planned GNSS services;
- proposed updates to the ICAO strategy for introduction and application of non-visual aids to approach and landing in Annex 10, Volume I, Attachment B; and
- proposed amendments to Doc 9750, Global Air Navigation Plan for CNS/ATM systems including transition consideration.

2.1.2 The meeting also discussed issues surrounding different definitions and concepts related to required navigation performance (RNP) and area navigation (RNAV). It summarized these issues and agreed to Recommendation 1/1 requesting ICAO to designate a suitable body to act as the focal point for further development of RNAV and RNP.

2.1.3 Also considered under this agenda item were the results of a review of ICAO and industry requirements for navigation data bases versus the requirement for GNSS-based operations. The subject was not considered to be appropriate for discussion at the conference, and it was referred for further discussion under Agenda Item 3.

Secretariat's comments

2.1.4 Draft working papers for the conference as developed by GNSSP/4 were submitted to the ANC with a C19 memorandum dated 15 May 2003, and the review of these papers has not been included in this AN-WP.

2.1.5 In regard to Recommendation 1/1, the Secretariat supports the intent of the recommendation considering the multi-disciplinary nature and complexity of the issues involved. The Secretariat has concluded that, considering the urgency of the issues to be addressed, the most desirable way to proceed is to establish an air navigation study group. Study groups are easily established and are normally comprised of the most suitably qualified experts. Additionally, any meetings of the group would be held at ICAO Headquarters allowing for Organization-wide Secretariat involvement, which would likely include, inter alia, AIS, ATM, CNS, OPS/AIR. As the issues to be addressed are primarily operational in nature, or are related to operational and functional requirements, the study group would be placed under the direction of the ATM section.

2.2 Agenda Item 2: Development of recommendations for draft amendments to GNSS SARPs in Annex 10

2.2.1 Under this agenda, the meeting developed eight recommendations for various amendments to GNSS SARPs in Annex 10 — *Aeronautical Telecommunications, Volume I — Radio Navigation Aids*, most important being the changes for a revision of APV performance requirements (Recommendation 2/1),

discontinuation of the Global Positioning System (GPS) Selective Availability (SA) (Recommendation 2/2) and GLObal NAVigation Satellite System (GLONASS-M) characteristics (Recommendation 2/3).

2.2.2 The meeting also considered draft documents developed towards the standardization of the ground-based regional augmentation system (GRAS) and agreed to an action plan for completion of SARPs and their validation. The target dated envisaged for presentation of this material to the ANC is the 3rd quarter 2004.

Secretariat's comments

2.2.3 The meeting recommendations for amendments to Annex 10, Volume I referred to in 2.2.1 above are supported. It is planned to process these amendments as a part of Amendment 79 to the annex for applicability on 25 November 2004.

2.2.4 As regards draft SARPs and guidance material for GRAS, the panel's plan to complete this task through the meetings of a sub-group, Working group and Working group of the Whole with the subsequent panel's endorsement by correspondence is feasible although the completion date established by the panel is ambitious. The Secretariat will inform the Commission about the progress of this work as required.

2.3 Agenda Item 3: Development of recommendations for draft amendments to other ICAO documents

2.3.1 The meeting reviewed proposed amendments to Annex 15 — *Aeronautical Information Services*, the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and the *Aeronautical Information Services Manual* (Doc 8126) introducing material on GNSS NOTAMs. It made Recommendations 3/1 and 3/2 for amendments to Annex 15 and Doc 8400 and also suggested related guidance material for incorporation in the AIS Manual as the amendments under Recommendations 3/1 and 3/2 are adopted/approved.

2.3.2 The meeting also agreed to Recommendations 3/3 for amendment to the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) to introduce GNSS-related phraseologies.

2.3.3 In conclusion of this agenda item, the meeting discussed (paragraph 2.1.3 above refers) inconsistencies identified in the review of ICAO and industry requirements for high levels of integrity aeronautical data that would be used in support of GNSS-based operations. It recognized that further work is required to address the areas of concern and made Recommendation 3/4 to this effect.

Secretariat's comments

2.3.4 It is recalled that the work on GNSS NOTAMS had been initiated prior to GNSSP/3 (12-23 April 1999), however the panel was not in a position at that time to recommend amendments to Annex 15 and the PANS-ABC. The draft amendments recommended by GNSSP/4 are now considered to

be sufficiently mature. It is highly desirable to process these amendments for applicability in late 2004¹ in view of SBAS operations that will start in three large areas of the world in the 2003-2005 time frame.

2.3.5 During the meeting, proposed GNSS phraseologies under-went some significant changes compared to the draft proposed by GNSSP Working group A and the Multi-Agency ATS Procedures Co-Ordination Group (MAPCOG). The phraseology is consistent with the proposed GNSS NOTAM concept, and the Secretariat submits that draft amendments proposed under Recommendations 3/1, 3/2 and 3/3 should be circulated for comment as one package. It is noted however that the next applicability date for amendments to the PANS-ATM is scheduled for 2006, and a special applicability date will be required to introduce this GNSS-related phraseologies in conjunction with the amendments to Annex 15 and the PANS-ABC.

2.3.6 As regards Recommendation 3/4, it is suggested that the recommendation should be referred back to the panel and the panel be requested to identify specific changes to either ICAO or industry documents that would be necessary to harmonize the data quality requirements for GNSS operations.

2.4 **Agenda Item 4: Review of progress in the development of new GNSS elements**

2.4.1 The meeting reviewed information on the status of currently defined elements of GNSS and the plans for the development of new elements and signals. The information was noted and taken into account in the proposed revisions to the work programme of the panel.

Secretariat's comments

2.4.2 Report on Agenda Item 4 provides useful information on GNSS-related activities in States and international organizations involved in the development of GNSS.

2.5 **Agenda Item 5: Review of GNSS spectrum issues**

2.5.1 The meeting reviewed the status of work on spectrum issues relevant to radio navigation aids, agreed to the future work programme in this area and re-confirmed the need for continuation of its Spectrum sub-group (SSG).

Secretariat's comments

2.5.2 It is noted that the meeting developments under this agenda item are in concert with general arrangements for aeronautical spectrum management activities in ICAO.

2.6 **Agenda Item 6: Future work planning**

2.6.1 Following the review of the current work programme of the panel and proposed new work items, the meeting agreed that the scope of work prior to GNSSP/4 and the work planned towards the next panel meeting would require substantial part of panel resources to be devoted to conventional navigation aids. Having recognized that the future work of the panel will continue to focus on GNSS issues, the meeting

¹ Special applicability date of 25 November 2004 has been established for Amendment 33 to Annex 15 and Amendment 27 to Doc 8400.

believed, however, that the panel has to be re-organized in the way to accommodate the work on the conventional nav aids and its name should be changed respectively.

2.6.2 The meeting therefore suggested to rename the GNSS Panel as the Navigation Systems Panel (NSP), proposed the work programme for the NSP and agreed to the structure of working groups/sub-groups. The meeting also developed a schedule of working group/sub-group meetings towards the NSP/1 meeting which is envisaged in 2007 subject to approval of the re-organized panel by the ANC. The proposed new work programme of the NSP would incorporate the work which is currently being progressed with the assistance of the Testing of Radio Nav aids Study group (TRNSG). Recommendations 6/1, 6/2 and 6/3 proposed, for approval by the Commission, the work programme, the new name for the panel and the tentative date for the next panel meeting, respectively.

Secretariat's comments

2.6.3 Recommendations 6/1, 6/2 and 6/3 are in line with a general view that introduction of satellite-based navigation should be accomplished through progressive integration of GNSS elements with the existing navigation infrastructure and that the work towards this goal would be progressed most efficiently by a group of experts in satellite-based and conventional ground-based navigation systems. The recommendations are therefore supported by the Secretariat. The revised work programme as per Recommendation 6/1 is included in Appendix B with additional references to a new ANC Task CNS-03xx (to be presented to the ANC at a later date).

2.6.4 It is noted that the tentative planning for the next panel meeting in 2007 is based on the envisaged completion of major items of the work programme such as SARPs for Category II/III GBAS, modernized GPS and GLONASS, and Galileo. A number of other tasks are however envisaged for completion by 2005, and the respective outcome is expected to be agreed by the panel through correspondence. The latter tasks include consideration of issues associated with development of SARPs for RNAV/Baro-VNAV equipment that were referred by the ANC (163-1) to the GNSS Panel as a consequence of Recommendation 5.2/1 of the thirteenth meeting of the Obstacle Clearance Panel (OCP/13).

2.6.5 The Secretariat also supports a proposed integration of the TRNSG and its remaining work into the NSP. It is suggested that, subject to approval of the proposal by the Commission, States participating in the work of this study group should be advised accordingly and encouraged to provide their TRNSG expertise in the framework of the NSP through participation as members or advisors. This study group can therefore be disbanded.

3. ACTION BY THE APIRG

3.1 The APIRG is invited to:

- a) note the report of the fourth meeting of the GNSSP;
