

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

Agenda Item 6 Aeronautical navigation : issues

PROPOSED AMENDMENTS TO THE GLOBAL AIR NAVIGATION PLAN FOR CNS/ATM SYSTEMS (DOC 9750)

(Presented by the Secretariat)

SUMMARY

At the request by the ICAO Air Navigation Commission, the Global Navigation Satellite System Panel (GNSS) reviewed the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) and developed proposals for amendments to the plan that concern navigation parts of this document, particularly those dealing with GNSS. These amendments introduce a revised vision of GNSS as part of air navigation system to be used for area navigation and approach, landing and departure operations while maintaining the ultimate goal of transition to GNSS as a global navigation system for all phases of flight where this goal can be safely achieved.

Changes to various sections of the Doc 9750 are also proposed to align the Global Plan with GNSS SARPs in Annex 10, Volume I and account for recent developments.

Action by the conference is in paragraph 3.

REFERENCES

AN-Conf/11-WPs/17, 18, 19 and 20

1. INTRODUCTION

1.1 Since the time the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) was published, significant progress has been made in the development and implementation of the global navigation satellite system (GNSS). This progress was, however, slower than expected, and a number of various issues were identified and addressed in the course of initial system implementation. Some of them, such as vulnerability to interference, had a significant bearing on GNSS and its role in aeronautical navigation.

1.2 The first package of GNSS Standards and Recommended Practices (SARPs) has been adopted since the publication of the Global Plan. The document should therefore be updated to take this into account as well as current progress in system development and implementation. Future system development, such as planned modernization of global positioning system (GPS) and GLObal NAVigation Satellite System (GLONASS) and introduction of GALILEO, and potential use of combinations of system elements and signals also have a significant impact on the long term planning.

2. OVERVIEW OF PROPOSED AMENDMENTS

2.1 Proposed amendments to the Global Plan that are attached to this document were developed using results of studies carried out by the Global Navigation Satellite System Panel (GNSSP) and presented in AN-Conf/11-WP/17, AN-Conf/11-WP/18, AN-Conf/11-WP/19 and AN-Conf/11-WP/20. Amendments are based on the following key considerations:

- a) a vision of GNSS is evolving away from the concepts of supplementary, primary or sole means of navigation (using a single system) to the concept of multiple sensors to be used for area navigation and approach, landing and departure operations, where GNSS elements are regarded as individual sensors;
- b) the goal of transition to GNSS, which removes the requirement for conventional ground-based navigation aids, is maintained for the GNSS-based navigation and future ATM environments where this goal can be safely achieved;
- c) the need for some or all conventional ground-based navigation aids during the transition is maintained until such time when the requirements for safe operation using GNSS are met; and
- d) the need to retain conventional ground-based navigation aids during the transition does not imply a requirement to add ground-based NAVAIDs in less developed regions when introducing GNSS-based operations unless it is demonstrated that the safe implementation of particular operations demand such additional NAVAIDs.

2.2 The above-mentioned considerations have resulted in proposed amendments to Chapter 1, sections 1.20 and 1.21 and Chapter 6. In addition, the following amendments are proposed:

- a) removal of Tables I-4-1 to I-4-5 in Part I, Chapter 1, as they are not adding value to the overall document. This proposal has been coordinated for the COM, SUR and AUTOMATION parts of the Global Plan;
- b) addition of sections on distance measuring equipment (DME) and inertial reference system (IRS)/inertial navigation system (INS) in Part I, Chapter 6 to complement the information on GNSS; and
- c) addition of a reference to RNAV and RNP in Part I, Chapter 12 to stress their importance in realization of GNSS benefits.

3. ACTION BY THE CONFERENCE

- 3.1 Noting the above, the conference is invited to agree on the following recommendation:

**Recommendation 6/F — Amendment to the Global Plan —
Navigation**

That the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) be amended as shown in the appendix to this working paper.

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