

## **FOURTH MEETING OF THE ALLPIRG/ADVISORY GROUP**

**(Montreal, 6 - 8 February 2001)**

**Agenda Item 2.3: Interregional coordination and harmonization mechanism – Other issues which have global ramifications**

### **NEED FOR A GLOBAL AIR NAVIGATION MEETING/CONFERENCE AND AN INTEGRATED GLOBAL AIR NAVIGATION PLAN**

(Presented by the Secretariat)

#### **SUMMARY**

The Air Navigation Commission will review a working paper in March which will present proposals concerning the documentation structure associated with planning for implementation of CNS/ATM systems and present the basis for the convening of a global air navigation conference or meeting in Montreal during the next triennium — 2002 to 2004. This paper presents a review of the options to be presented to the Commission in March.

## **1. INTRODUCTION**

1.1 During the President of the Council's remarks to the opening meeting of the 152<sup>nd</sup> Session of the Air Navigation Commission (152-1), he indicated that it seemed to him that ICAO was not advancing as it should be in terms of implementation of communications, navigation, and surveillance/air traffic management (CNS/ATM) systems and that serious consideration should be given to the convening of an air navigation conference. The President stated that his vision was "to realize the future global air navigation plan and an integrated global air traffic management system that would be the key to the safe and orderly growth of civil aviation". At the opening of the 153<sup>rd</sup> Session of the Commission (153-1), the President of the Council suggested that, if implementation of CNS/ATM systems should be global, ICAO should prepare for a global air navigation plan and an integrated air traffic management system.

1.2 On 3 February 2000, the Commission (153-4) reviewed its objectives and considered proposals in AN-WP/7492. The Commission decided to include a new main objective entitled: *Enhance the planning and*

*implementation of a cohesive global air navigation infrastructure of services and facilities* (Air Navigation Commission Aide Memoire - 156th Session, refers). Objectives for 2001 were included as follows:

- 13.1 Develop a comparative analysis of the regional developments through PIRGs.
- 13.2 Develop proposals for a global air navigation plan and an integrated global air traffic management system.
- 13.3 Identify criteria and objectives for a global air navigation conference/meeting.

1.3 To address the requirements of sub-elements 13.2 and 13.3 of the new objective as stated above, a multi-faceted approach is proposed which addresses the benefits of integrating the CNS/ATM systems planning into the regular regional air navigation planning framework; the need to amalgamate the regional air navigation plans (ANPs) into a set of global requirements of facilities and services, with an associated database; and proposes that a global air navigation meeting or conference be convened.

## 2. AIR NAVIGATION PLANNING

### 2.1 Regional air navigation planning

2.1.1 In accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300), each Contracting State undertakes, *inter alia*, to provide facilities and services to support international air navigation. These requirements are largely established at regional air navigation (RAN) meetings and are reflected in regional ANPs which are approved by the Council in accordance with specific procedures for amendment of Basic ANP and Facilities and Services Implementation Documents (FASID) parts of the plan. The requirements listed in the ANPs are regularly updated through, and followed-up by, the planning and implementation regional groups (PIRGs). The facilities and services listed in the ANPs reflect the collective commitment by States to provide the required air navigation facilities and services. This framework has greatly facilitated the development of a global air navigation infrastructure over the past half century.

### 2.2 Planning for CNS/ATM systems

2.2.1 When endorsing the CNS/ATM systems concept in 1991, the Tenth Air Navigation Conference recommended that ICAO accomplish the planning for implementation of CNS/ATM systems through the regional planning groups.

2.2.2 Based on the experience gained in recent years, the PIRGs have proven to be an effective vehicle for the development and maintenance of regional plans for CNS/ATM systems. In most cases, separate sub-groups have been established to deal exclusively with the planning for implementation of CNS/ATM systems.

2.2.3 In follow-up of instructions of the Council (148/4) in 1996, the *Global Coordinated Plan for Transition to ICAO CNS/ATM Systems* was revised and updated. On 13 March 1998, the Council (153/10) accepted the revised plan, which was re-titled *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750). In accordance with a Conclusion of the Second Meeting of the ALLPIRG/Advisory Group, the *Global Air Navigation Plan for CNS/ATM Systems* described the concept of homogeneous ATM areas and major traffic flows and suggested that the PIRGs identify a number of homogeneous ATM areas and/or major traffic flows based upon specific features of a geographical nature, traffic flows, airspace structure, traffic density and the

level of sophistication required. To date, 54 homogeneous ATM areas and major traffic flows have been identified globally. These areas and flows will be incorporated into the first amendment of the *Global Air Navigation Plan for CNS/ATM Systems*.

2.2.4 The homogeneous areas and traffic flows mentioned above have formed the basis for detailed planning of CNS/ATM systems facilities and services. Subsequent to the development of ATM plans based on these areas, ATM objectives and CNS requirements continue to be identified and updated. Further decisions on technical and operational systems implementation timelines are also being made. The appendix presents the approach taken by the individual regions with brief descriptions of the progress achieved with regard to CNS/ATM systems planning.

2.2.5 All of the PIRGs have now integrated the planning methodology and the format prescribed in the *Global Air Navigation Plan for CNS/ATM Systems*, into their own CNS/ATM systems planning framework. This process has facilitated, to some degree, the formal recognition of CNS/ATM systems requirements as an essential part of the worldwide air navigation infrastructure. However, the pace and consistency of progress with planning has varied between regions in the absence of a clear method for obtaining commitments for implementation of the planned systems from aircraft operators and service providers, and for measuring progress and ensuring that implementation is on schedule.

### 3. NEED FOR FORMAL COMMITMENT

3.1 Although the *Global Air Navigation Plan for CNS/ATM Systems* and the regional CNS/ATM systems implementation plans have served a useful purpose as focal points for the timely development and implementation of CNS/ATM Systems, these plans on their own are afforded no formal status in the planning process of States. The regional air navigation plans, on the other hand, reflect the requirements for facilities and services for international air navigation that Contracting States undertake to provide in accordance with Article 28 of the Convention on International Civil Aviation.

3.2 Recognizing that CNS/ATM systems form essential elements of the regional air navigation infrastructure and that formal commitment by States to implement these systems is required to achieve a cohesive, global CNS/ATM systems infrastructure, it is now necessary to ensure that the CNS/ATM systems planning output is fully integrated into the regular regional air navigation planning framework, which would afford these requirements formal status. Formal recognition of the requirements for CNS/ATM systems will also encourage the availability of funding on a timely basis to allow an orderly, coordinated investment in the necessary enhancements of airborne capability in step with ground and satellite based enhancements, and provide the basis for cost recovery for the regional facilities and services through air navigation charges.

3.3 It will be recalled that the Third Caribbean/South American (CAR/SAM/3) Regional Air Navigation Meeting (Buenos Aires, 5 to 15 October 1999) began the above process by integrating relevant parts of the CAR/SAM Regional Plan for the Implementation of CNS/ATM Systems as developed by the Caribbean/South American Regional Planning and Implementation Regional Group (GREPECAS), as well as applicable parts of the *Global Air Navigation Plan for CNS/ATM Systems*, into the regional ANP. This approach is proving to be an effective planning tool for the GREPECAS and the two ICAO regional offices concerned, which have reported positively on its merits. The approach taken by the CAR/SAM Regions and the CAR/SAM/3 RAN Meeting can be considered as a model for other regions. In fact, the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) has already begun a similar process of integration.

#### **4. CONSOLIDATION OF REGIONAL REQUIREMENTS**

4.1 In the President's opening remarks to the CAR/SAM/3 RAN Meeting, he stated that "global requirements for CNS/ATM systems, which are largely satellite-based, should be given formal status by incorporating them in a future Global Air Navigation Plan. Regional air navigation planning would be guided by the global blueprint, which will reflect worldwide consensus on implementation of facilities and services, including time scales". In light of these remarks, it is suggested that incorporation of the CNS/ATM systems requirements into the regional ANPs should be followed by consolidation of the regional requirements into a Global ANP.

4.2 Achieving the goal of consolidation of all global requirements for facilities and services to support international civil aviation will require the creation of a Global ANP, supported by a comprehensive database. The Global ANP and database would form a global blueprint, reflecting a worldwide consensus on requirements for implementation of facilities and services. It is envisaged that one global part would be required encompassing common requirements for all regions, while separate parts would reflect the specific requirements of the nine ICAO regions. These parts would initially comprise the present regional Basic ANPs and FASIDs. Common elements would be consolidated into the global part, which would also address regional interface requirements.

4.3 The amendment procedures for the regional parts of a global ANP would remain the same as they are today for the regional basic ANP and FASID parts, while the database could be updated on a timely basis. Amendment of the global part would be subject to Council approval. As creation of a global database could result in cost-benefit advantages, procedures for printing and distribution, among other things, should be reviewed at a later date. The global ANP database would be created using the experience gained by ICAO over the course of 1999 during which time an extensive database was developed for the Y2K problem.

4.4 Additional benefits that can be expected from a global database include a greater degree of organization and clarity, easy identification of differences between States and regions, as well as easier analyses of shortcomings and deficiencies. The utility of the Global ANP would therefore be enhanced as States, airspace users and providers as well as other CNS/ATM partners would have instant access to the database. Additionally, the means and methods for airspace modelling could be implemented which would allow for scenario generation for development of airspace infrastructure alternatives and for cost-benefit analyses.

#### **5. GLOBAL AIR NAVIGATION MEETING OR CONFERENCE**

5.1 Assembly Resolution A32-14, Appendix B provides for the holding of worldwide air navigation meetings as an important function of ICAO and states that "these shall be the principal means of progressing the resolution of problems of world-wide import, including the development of amendments to the Annexes and other basic documents in the air navigation field". Based on the above, an air navigation conference or meeting of worldwide scope could be justified in accordance with A32-14. Momentum towards the implementation of CNS/ATM systems and a global ATM system could be gained at such a conference. Further commitments could be made in follow-up of the conference at the regional, sub-regional and State levels toward implementing the agreed air navigation infrastructure of facilities and services necessary to support a global, integrated ATM system.

5.2 Work on a global ATM operational concept is currently underway by the Air Traffic Management Operational Concept Panel (ATMCP). The operational concept will clarify the benefits and describe how an integrated global ATM system should operate. It will provide States and industry clearer objectives for designing and implementing ATM and supporting systems. This model of the future would then be a target to be achieved through a number of steps starting from the current situation, the goal being an interoperable global ATM system for all users, during all phases of flight, that meets agreed levels of safety and provides for optimum economic operations.

5.3 Based on the above, a global air navigation conference or meeting could accomplish the following:

- a) to seek worldwide consensus on the ATM operational concept and encourage States and PIRGs to implement the concept into their own planning framework;
- b) to reach consensus on the need to establish a Global ANP and database in order to facilitate the development of a cohesive global air navigation infrastructure and an integrated air traffic management system; and
- c) to foster the commitment by States to implement the air navigation requirements as agreed in the air navigation plans and establish agreed time scales for such implementation based on homogeneous ATM areas and major traffic flows.

5.4 Additionally, there are various technical tasks being progressed by a number of Air Navigation Commission panels which may benefit from discussion with Contracting States and relevant international organizations.

## **6. DATES AND SITE OF A GLOBAL AIR NAVIGATION CONFERENCE OR MEETING**

6.1 A global air navigation meeting or conference should be held in follow-up to a review by the Commission of a draft global ATM operational concept. For this reason, such a conference may not be possible until the last quarter of 2003. A meeting of this size and magnitude should be held in Montreal.

## **7. ACTION BY ALLPIRG**

7.1 The meeting is invited to note the contents of this paper concerning a revised documentation structure and the concept of holding a global air navigation conference or meeting, and comment and make suggestions as appropriate.

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## APPENDIX

### BRIEF DESCRIPTIONS OF PROGRESS ACHIEVED BY THE REGIONS WITH REGARD TO CNS/ATM SYSTEMS PLANNING

#### *Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG).*

A CNS/ATM sub-group was established in 1991 to produce a CNS/ATM plan for the ASIA/PAC Regions. A broad plan was first developed in 1994 which contained traffic forecasts, a description of the envisaged CNS/ATM system, transition guidelines, trials and developments and an implementation summary. The plan is updated annually.

#### *Middle East Air Navigation Planning and Implementation Regional Group (MIDANPIRG).*

The first meeting of the CNS/ATM sub-group, established to structure the planning and implementation of CNS/ATM systems within the region, was held in January 1995. In 1997, the group developed a draft regional plan for CNS/ATM systems which was adopted by the MIDANPIRG in September 2000 and is subject to ongoing updates.

#### *Africa-Indian Ocean Planning and Implementation Regional Group (APIRG).*

The Africa-Indian Ocean implementation plan for CNS/ATM systems, as developed by the CNS/ATM sub-group, was adopted by APIRG in June 1996 and was endorsed by the Seventh Africa-Indian Ocean Regional Air Navigation Meeting (AFI/7) in May 1997. The plan is reviewed and updated regularly by APIRG.

#### *North Atlantic Systems Planning Group (NAT SPG).*

In 1992, the NAT SPG tasked itself with developing proposals for CNS/ATM systems implementation, as well as proposals for institutional arrangements. In 1994, the North Atlantic Implementation Management Group (NAT IMG) was created to coordinate and manage the North Atlantic implementation plan as developed by the NAT SPG.

#### *North American Planning Group (NAMPG)*

In 1994, the civil aviation authorities of Canada, Mexico and the United States, agreed to form the NAMPG which was established under the auspices of the North American Free Trade Agreement (NAFTA). This group serves as a focal point for the planning and implementation of CNS/ATM systems in the North American Region. Mexico's CNS/ATM plans are also included in the Caribbean/South American Regional Planning and Implementation Group (GREPECAS) planning processes. The plan has been reviewed and updated annually and in February 1999, the plan was reformatted using the ICAO Global Plan as the model.

#### *Caribbean/South American Regional Planning and Implementation Group (GREPECAS).*

A CNS/ATM implementation coordination sub-group of GREPECAS, formed shortly after the creation of GREPECAS in 1990, developed an action plan for the implementation of CNS/ATM systems. The CNS/ATM sub-group was eventually disbanded and reformed as the ATM/CNS Sub-group, which has as its objective, among others, to promote and follow-up on the implementation of CNS/ATM systems required in the CAR/SAM ANP.

*European Air Navigation Planning Group (EANPG).*

The EANPG directly monitors progress made with the implementation of CNS/ATM systems. Much of the work in the western part of the region is managed by EUROCONTROL. With respect to the remaining part of the region, work is in progress through the Group for Air Traffic Management in the Eastern part of the ICAO EUR Region, including Middle Asia (GATE), a sub-group of EANPG. GATE also ensures coherent planning and implementation of CNS/ATM systems, taking into account the interfaces between sub-regions and other regions. A specific EANPG CNS/ATM sub-group was established in December 2000 to oversee and coordinate all CNS/ATM systems planning.

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