

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

Agenda Item 1: Introduction and assessment of a global air traffic management (ATM) operational concept

1.3 The need for a global air navigation plan

:

THE ROLE AND FUNCTION OF THE GLOBAL AIR NAVIGATION PLAN FOR CNS/ATM SYSTEMS

(Presented by the Secretariat)

SUMMARY

On 13 March 1998, the ICAO Council reviewed and accepted the *Global Air Navigation Plan for CNS/ATM Systems* (Global Plan, Doc 9750). The Council also agreed that future updates of the Global Plan should be accomplished by the Secretariat based on the ongoing work of ICAO at both the global and regional levels. With an ATM operational concept having been completed, it is necessary to determine where that concept should reside and to gain an understanding of how the concept would fit into the global and regional planning processes. Additionally, there may be a need to reinforce the role of the Global Plan as high level guidance to the international civil aviation community for considering options when planning for implementation of their air navigation infrastructures. This common framework would serve to harmonize planning in order to facilitate implementation of a more integrated, global ATM system.

Action by the Conference is at paragraph 4.

1. INTRODUCTION

1.1 In order to progress implementation of communications, navigation, and surveillance/air traffic management (CNS/ATM) systems, a plan of action was needed. The first such effort towards developing a plan was the *Global Coordinated Plan for Transition to ICAO CNS/ATM Systems* (Global Coordinated Plan) which was included as an appendix in the *Report of the Fourth Meeting of the Special Committee for the Monitoring and Coordination of Development and Transition Planning for the Future Air Navigation System (FANS Phase II)* (Doc 9623). The objective of the Global Coordinated Plan was to provide a progressive and coordinated worldwide implementation of the elements of the future air navigation system in a timely and beneficial manner. In this respect, the plan fulfilled two principal functions:

- a) it provided guidelines for use by regional planning bodies, States, service providers and users, for transition to CNS/ATM systems; and
- b) it functioned as a benchmark for the evaluation of implementation progress.

1.2 The Special Committee for the Monitoring and Coordination of Development and Transition Planning for the Future Air Navigation System (FANS Phase II) was fully cognizant of the fact that the Global Coordinated Plan must be a living document and that it would require updates and modifications as the transition proceeded. A mechanism was therefore developed to assure the continuing maintenance of the document and to ensure periodic updates and distribution to Contracting States, users and providers of CNS/ATM systems.

1.3 In 1996, the ICAO Council recognized that the Global Coordinated Plan had served its purpose well and had made a significant contribution toward realizing the vision established by the FANS Committee, while educating the international community on CNS/ATM systems and associated implementation issues. The Council concluded, however, that CNS/ATM systems had matured; therefore, a more concrete plan which would include all developments, while placing the focus on regional implementation, was required.

1.4 In light of the above, the Council directed the ICAO Secretariat to revise the Global Plan as a “living” document comprising technical, operational, economic, financial, legal, human resource development needs and institutional elements, offering practical advice and guidance to regional planning groups and States on implementation and funding strategies, which should include technical cooperation aspects.

1.5 On 13 March 1998, the Council reviewed and accepted the revised Global Coordinated Plan, which was retitled the *Global Air Navigation Plan for CNS/ATM Systems* (Global Plan) (Doc 9750). The Council also agreed at the time, that future updates of the Global Plan should be carried out by the ICAO Secretariat based on ongoing work of ICAO at both the global and regional levels.

1.6 Since the acceptance of the first edition of the newly-revised Global Plan by the Council in 1998, the Secretariat, the Committee on Aviation Environmental Protection (CAEP), several panels of the Air Navigation Commission, and the planning and implementation regional groups (PIRGs) have recognized the increasing utility of the Global Plan in relation to their work, and its relevance in the overall ICAO CNS/ATM documentation structure. The need to update the document was subsequently recognized. Based on the above, the Secretariat conducted a review of the Global Plan and a comprehensive proposal for

amendment to several parts of the document were developed. In June 2001, the Council accepted the first amendment to the Global Plan and, subsequently, the second edition was published in 2002.

2. THE ATM OPERATIONAL CONCEPT

2.1 At the same time that ICAO was progressing its work on CNS/ATM systems since 1991, several States and all ICAO PIRGs had also embarked on CNS/ATM systems planning and implementation programmes intended to improve aviation operations by making use of CNS/ATM technologies. However, it was recognized that technology was not an end in itself, and that a comprehensive concept of an integrated ATM system was needed. Such a concept, in turn, would form the basis for the coordinated implementation of CNS/ATM technologies based on clearly-established requirements.

2.2 To develop a global ATM operational concept, the Air Navigation Commission, on 12 March 1998, agreed to the establishment of the Air Traffic Management Operational Concept Panel (ATMCP). The ATMCP was established with a primary work programme element of developing and describing, in sufficient clarity and detail, a gate-to-gate ATM operational concept that would facilitate the evolutionary implementation of a seamless, global ATM system. The ATM operational concept contained in AN-Conf/11-WP/4 addresses this critical element of the work programme of the ATMCP.

2.3 While the operational concept is visionary, many of the current practices and processes will continue to exist through the planning horizon. In this sense, the implementation of an ATM system based on the operational concept should be seen as evolutionary and nothing should keep States and PIRGs from beginning to use the operational concept as the basis for planning for implementation of their future ATM systems.

3. PLANNING FOR IMPLEMENTATION OF FUTURE ATM SYSTEMS

3.1 Recognizing that not all States or regions can move immediately to the ATM system described in the operational concept, the concept contains details on an expected planning and evolutionary process within the ICAO framework. In this sense, it should be noted that the implementation of an ATM system based on the operational concept is provided for by strategic plans, *inter alia*, the Global Plan, regional plans and State implementation plans, which also describe the progressive intermediate steps toward that goal. The plans of all States and regions, therefore, need to be aligned to ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple requirements for equipment carriage in the air or for a proliferation of ground equipment requirements.

3.2 Based on the above, it is considered that the core portion of the ATM operational concept as developed by the ATMCP and presented in AN-Conf/11-WP/4, should be placed in Chapter 4 of the Global Plan and replace the material that is currently contained therein. In this way, the operational concept would provide a global vision that will allow States and regions to align their planning processes and, based on clearly established ATM requirements, allow system solution engineering to be directed toward a harmonized and interoperable outcome to achieve the best mutual outcome, and enhance levels of safety, economy and efficiency. The implementation of the various CNS/ATM technologies would then be based on

well-developed plans that take into account the high-level objectives as defined in the ATM operational concept.

Regional air navigation plans

3.3 Under Article 28 of the Convention on International Civil Aviation, each Contracting State is responsible for the provision, in its territory, of facilities and services and application of appropriate procedures. Regional air navigation plans (ANP) set forth in detail the facilities, services and procedures required for international air navigation within a specified area. Such plans contain recommendations which governments can follow in programming the provision of their air navigation facilities and services furnished in accordance with the plan, with those of other States, into an integrated system adequate for the foreseeable future.

3.4 While the traditional focus of regional ANPs has been to cover the facilities and services required for a period of five years, the introduction of CNS/ATM systems with longer planning horizons is recognized and CNS/ATM planning and implementation elements are being introduced progressively in the regional ANPs.

3.5 The introduction of CNS/ATM planning elements has been guided by the Global Plan, which was developed so that it has a clear and functional relationship with the regional ANPs.

Global Air Navigation Plan for CNS/ATM Systems

3.6 The operational concept was developed in a technology-independent manner. This was done on the basis that, within a planning horizon of more than twenty years, much of the technology that exists or is in development today may change or cease to exist. However, there will always be a need to consider which available technologies should be used as the basis for planning at any given time. Given the extensive availability of various technologies, and the need for some degree of convergence, ICAO has in the past, attempted to identify, in coordination with States and international organizations, technologies that appeared most promising and that would offer the greatest benefits to the international civil aviation community. The Commission, assisted by its panels, then develops technical standards and guidance material for those particular technologies.

3.7 As technologies proliferate and more options become available, it may serve the planning purposes of the international civil aviation community if the Global Plan were used as the basis for planning and for considering options and making other decisions. In this way, States and PIRGs would consult the Global Plan and, using the ATM operational concept as the basic planning premise, base the choice of technologies, models or systems, on clearly-established requirements and the additional guidance provided therein. At the same time, ATM system design would take into account external constraints which were also identified in the Global Plan (e.g. environmental issues, financial aspects, training needs, legal, organizational).

3.8 In the context of the above, the regional ANPs would then provide the transition plans for implementation of system changes that must occur on a region-wide basis as well as contain a listing of the facilities, services, procedures, and technologies including Human Factors considerations, based on the guidance provided in the Global Plan.

3.9 The Commission, through the work of its panels, would then develop technical standards and guidance material for those particular technologies, as is presently done. In follow-up to this Conference, this work will likely be based, more and more, on a clearly-defined set of ATM requirements.

4. ACTION BY THE CONFERENCE

4.1 The Conference is invited to agree to the following recommendations:

Recommendation 1/ — Inclusion of the ATM operational concept in the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750)

That ICAO place the core components of the ATM operational concept in Chapter 4 of the *Global Air Navigation Plan for CNS/ATM Systems*.

Recommendation 1/ — Status of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750)

That the *Global Air Navigation Plan for CNS/ATM Systems* be considered the main source of high-level guidance for States and planning and implementation regional groups (PIRGs) when considering various options for the modernization of their air navigation systems.

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