



WORKING PAPER

ASSEMBLY — 36TH SESSION

TECHNICAL COMMISSION

Agenda Item 31: Continued evolution of a performance-based global air traffic management (ATM) system

**CONTINUED EVOLUTION OF A
PERFORMANCE-BASED GLOBAL ATM SYSTEM**

(Presented by the Council of ICAO)

EXECUTIVE SUMMARY

Pursuant to Resolution A35-15, this working paper contains a report to the Assembly on progress by the Organization toward implementation of a performance-based global ATM system.

The report highlights acceptance by Council of the second amendment to the Global Air Navigation Plan (GANP), work undertaken by the Air Navigation Commission on system requirements, transition strategies and a performance framework, and topics discussed at the Worldwide Symposium on Performance of the Air Navigation System (Montreal, 26 to 30 March 2007).

Action: The Assembly is invited to urge the Council to take steps to encourage the aviation community to follow a common approach toward developing and implementing a performance-based ATM system.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objectives A and D, and aims to raise awareness among States and international organizations on developments related to implementation of a performance based global ATM system.
<i>Financial implications:</i>	Not applicable.
<i>References:</i>	Doc 9750, <i>Global Air Navigation Plan for CNS/ATM Systems</i> Doc 9848, <i>Assembly Resolutions in Force (as of 8 October 2004)</i> Doc 9854, <i>Global Air Traffic Management Operational Concept</i> Doc 9882, <i>Manual on Air Traffic Management System Requirements</i> Doc 9883, <i>Manual on Global Performance of the Air Navigation System, Part I – Performance-Based Transition Guidelines</i>

1. INTRODUCTION

1.1 Since the 35th Session of the Assembly and within the context of Resolution A35-15, several developments have taken place related to the implementation of a global ATM system. The Global Air Navigation Plan (GANP) has been updated, ATM system requirements and transition strategies have been developed in support of the Global ATM Operational Concept, and the development of a performance framework is near completion. An integrated programme to facilitate the planning and implementation process is under development and a Worldwide Symposium on Performance of the Air Navigation System has been held.

2. ICAO EFFORTS TOWARD IMPLEMENTATION OF A GLOBAL ATM SYSTEM

2.1 Update of the Global Air Navigation Plan and development of an integrated programme to support implementation planning

2.1.1 On 30 November 2006 the Council accepted the second amendment of the *Global Air Navigation Plan* (GANP) (Doc 9750). This amendment originated from the Sixth Air Navigation Commission Consultation Meeting with Industry on Fostering the Implementation of the Recommendations of the Eleventh Air Navigation Conference (2004).

2.1.2 The GANP now contains a set of twenty-three Global Plan Initiatives (GPIs) which stem from the industry roadmap. The initiatives are a logical progression of the evolutionary work already accomplished by the Planning and Implementation Regional Groups (PIRGs) and will integrate into the present planning framework.

2.1.3 The GANP will be supported by planning tools (e.g. software applications, planning documentation, web-based reporting forms and project management tools). As States and PIRGs consider improvements to the regional air navigation infrastructures, it is intended that they will use the GPIs and associated common programme templates as the basis for establishing performance objectives and implementation timelines, as well as to develop a comprehensive schedule and programme of planning activities to achieve the work.

2.1.4 A planning framework has been developed to facilitate the planning processes. The framework will serve as an ICAO internal tool and help to ensure the integration of the GANP and the regional plans and associated work programmes. The planning framework will be supported by software and a website to serve as a mechanism for monitoring and review by management and governing bodies of the detailed activities and time lines which should lead to the realization of the global air navigation system as envisaged in the operational concept.

2.2 ATM system requirements

2.2.1 Resolution A35-15 urged the Council to ensure that ICAO develop ATM requirements necessary to support the implementation of a global ATM system (Appendix B, Resolving Clause 2). In this respect, guidance material, in the form of the *Manual on Air Traffic Management System Requirements* (Doc 9882) was developed, a draft of which is posted on the ICAO-NET pending editorial finalization and translation.

2.3 Performance-based transition strategies

2.3.1 Resolution A35-15 also urged the Council to ensure that ICAO develop transition strategies necessary to support the implementation of a global ATM system (Appendix B, Resolving Clause 2). In support of this aspect of global planning, the Commission developed Part I of the *Manual on Global Performance of the Air Navigation System* (Doc 9883), entitled *Performance-Based Transition Guidelines*. It is posted to the ICAO-NET, pending editorial finalization and translation.

2.3.2 An important objective of this document is to raise general awareness of the need to change the way in which the evolution of ATM is planned at national, regional and global levels and to support the GANP as a transition planning document. Planning choices increasingly need to be justified in advance by a thorough analysis of anticipated performance needs, expected benefits and achievement timelines. Such explicit management and planning of ATM performance will be needed to ensure that throughout the transition process the expectations of the ATM community are met.

2.3.3 Another objective of Doc 9883 is to provide practical guidance to PIRGs and other ICAO bodies on how to integrate a performance-based approach into their work. Furthermore, a globally harmonized and agreed approach to transition planning is necessary in order to enable States and regions to work collaboratively in the development of their transition arrangements.

2.3.4 This document should not be considered in isolation, but in the context of Doc 9854, which provides the overall vision and direction; the *Manual on Air Traffic Management System Requirements* (Doc 9882), which elaborates the overall vision into material specifying the functional evolution of ATM; and Doc 9750, which will serve as the basis for harmonized and coordinated implementation planning.

2.4 Performance framework

2.4.1 In addition to encouraging work be undertaken on ATM requirements and transition strategies, Resolution A35-15 urged the Council to take steps necessary to ensure that the future global ATM system be performance-based and that the performance objectives and targets for the future system be developed in a timely manner (Appendix B, Clause 4). Guidance material is expected to be completed by the end of 2007. Its main objectives are:

- a) to raise awareness for the need to change the way in which the evolution of ATM is planned at national, regional and global levels;
- b) to provide initial guidance on how to adopt a performance-based approach in the transition from today's ATM system towards the future ATM system as described in Doc 9854; and
- c) to promote a globally harmonized and agreed approach to transition planning in order for regions and States to work collaboratively in developing their future transition arrangements towards the ATM system envisioned in the Global ATM Operational Concept.

3. WORLDWIDE SYMPOSIUM ON PERFORMANCE OF THE AIR NAVIGATION SYSTEM

3.1 The Worldwide Symposium on Performance of the Air Navigation System was held in Montreal from 26 to 30 March 2007. More than 400 participants from States, international organizations and industry attended the event. Where discussions focussed on the way forward for the aviation community at this juncture, a number of avenues were suggested. These included implementation of area navigation (RNAV) and Required Navigation Performance in accordance with the Performance-Based Navigation (PBN) concept; use of the GANP in performance-based transition planning; collaboration on establishing performance indicators; performance measurement and reporting by air navigation service providers (ANSPs); use of the ICAO key performance areas (KPAs) for performance management; implementation by States of safety programmes and establishment of acceptable levels of safety; implementation of safety management systems by service providers, aircraft operators, aerodromes and maintenance organizations; and use of the Global Aviation Safety Plan (GASP) to meet safety performance objectives.

3.2 As for the role of ICAO, topics focussed on were advancement of the performance work in operational, technical, safety and management areas; assurance of global interoperability between major air navigation initiatives; development and promotion of minimum reporting requirements for ANSPs on performance; development of a methodology to measure the eleven expectations of the ATM Community in terms of KPAs; development of guidance to facilitate collaborative decision-making; and acceleration of PBN implementation.

3.3 During the course of the symposium there were presentations, among others, by European speakers on the Single European Sky ATM Research (SESAR) initiative and by the United States Federal Aviation Administration on the Next Generation Air Transportation System (NextGen). Both of these major programmes are aligned with the ICAO operational concept and incorporate the performance framework contained therein, to some degree, as the basis for their work. However, from discussions in the symposium it was evident that in order to ensure global interoperability there is an urgent need for greater coordination between these two programmes and ATM transition initiatives in other parts of the world as well as with ICAO.

4. CONCLUSIONS

4.1 The notion of a performance-based air navigation system emanated from good industry practices that have evolved over many years outside of aviation. As the aviation industry has evolved into a less regulated and more corporatized environment with greater accountabilities, the advantages of implementing a performance-based air navigation system are becoming increasingly apparent. Putting in place a performance framework will require knowledge sharing, training and some specific expertise. There would also be hardware and software requirements and analysis capabilities. Considering ~~that~~ the overall objective of establishing targets and measuring achievement, the effort will result in a more efficient system through identified cost savings, reduction in waste of resources, more equitable charging practices, and more efficient provision of services. As the work effort is challenging, requiring a globally coordinated effort, the aviation community should be encouraged to follow a common approach toward developing and implementing a performance-based ATM system.

4.2 In terms of major programmes that might focus on specific regions or operational requirements, the ICAO effort will continue to be aimed at ensuring interoperability, harmonization and uniformity between such initiatives and the remainder of the international civil aviation community. Such an effort should lead to greater interoperability, common procedures and equipage requirements among other things, thereby reducing costs and increasing efficiency of the air navigation system.

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