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ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 37: Development of an up-to-date consolidated statement of continuing ICAO policies and practices related to a global ATM system and communications, navigation and surveillance/air traffic management (CNS/ATM) systems

IMPLEMENTING PERFORMANCE-BASED NAVIGATION IN RUSSIAN FEDERATION AIRSPACE

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

This document sets out information about the implementation of performance-based navigation (PBN), in the Russian Federation, taking into consideration the factors connected with the specific nature of using PBN in Russian airspace.

Strategic Objectives:	This working paper relates to Strategic Objective A.
Financial implications:	Not applicable.
References:	Doc 9902, *Assembly Resolutions in Force* (as of 28 September 2007) Doc 9613, *Performance-based Navigation (PBN) Manual*

* Russian version provided by the Russian Federation.

1. INTRODUCTION

1.1 In accordance with Resolution A36-23 of the ICAO Assembly, a plan has been drawn up in the Russian Federation for the introduction of PBN in Russian airspace.

1.2 The plan has been drawn up based on *Performance-based Navigation (PBN) Manual* (Doc 9613) in order to implement the benefits of PBN with minimal expense for aircraft operators and air navigation service providers, and to integrate the Russian air navigation system into the regional European and international air navigation systems.

1.3 The plan has been published on the website of the regional ICAO office under the section http://www.paris.icao.int/documents_open_meetings/files.php?subcategory_id=78.

2. MAIN ELEMENTS OF THE PBN IMPLEMENATION PLAN

2.1 The introduction of flights using regional navigation methods based on PBN will open up new possibilities for the civil aviation authority for flights with Russian airspace as a result of increased safety and effectiveness of flights.

2.2 The plan to introduce PBN in Russian Federation airspace involves the use of short-range navigation systems using VHF omnidirectional radio range/distance measuring equipment (VOR/DME) and DME/DME technology, as well as global navigation satellite system (GNSS) for the introduction of PBN, taking into consideration air traffic volume forecasts, the availability of aircraft, the condition and development prospects for the land infrastructure as regards communication, navigation and surveillance, and a number of other factors connected with the specific nature of using PBN in Russian Federation airspace.

2.3 A key element determining the requirements for the airspace and the air traffic management technical resources is the choice of PBN specifications.

2.4 Implementing PBN involves providing the appropriate navigation infrastructure, including the appropriate GNSS combination, automatic on-board navigation system (inertial navigation system) and traditional land-based navigation technology. Given these conditions, the first stage consists of choosing the following PBN specifications in the Russian Federation:

a) RNP-10 for aircraft flights along regional navigation routes over the Arctic Ocean and other open water where the Russian Federation is responsible for air traffic management, and along routes in remote continental regions with a poorly developed air traffic management infrastructure, based on navigation using automatic on-board navigation systems and GNSS;

b) RNAV-5 for aircraft flights along regional navigation routes in continental regions based on navigation which uses automatic on-board navigation systems, VOR/DME, DME/DME and GNSS; and

c) RNAV-1 for aircraft flights along regional navigation routes near the airfield based on navigation using DME/DME and GNSS.

2.5 The PBN implementation strategy in the Russian Federation includes:

a) an assessment of the safety of the measures introduced to implement RNAV and monitoring their safety after implementation;

b) a transitional period when the aircraft will be serviced, both those equipped with RNAV systems and those without; and

c) measures to implement PBN in the Russian Federation, connected with developing normative and legal documents, fitting RNAV equipment for the land infrastructure and other issues.

2.6 The strategy for implementing PBN in the Russian Federation consists of three stages, including a short-term stage (2009-2012), medium-term (2013-2017) and a long-term stage (2018-2022).

2.7 The short-term stage of the PBN introduction involves the provision of:

a) RNP-10 for aircraft flights along regional navigation routes over the Arctic Ocean and other open water where the Russian Federation is responsible for air traffic management, and along routes in remote continental regions with a poorly developed air traffic management infrastructure, based on navigation using automatic on-board navigation systems and GNSS;

b) RNAV-5 for aircraft flights along regional navigation routes in continental regions based on navigation which uses automatic on-board navigation systems, VOR/DME, DME/DME and GNSS;

c) RNAV-1 for aircraft flights near the airfield using DME/DME and GNSS; and

d) RNP APCH based on Baro-VNAV and implementing ICAO Category I landings at a number of airports for aircraft equipped with GNSS/GBAS equipment.

2.8 In the medium-term stage of implementing PBN, RNP-4 will start to be introduced in the oceanic airspace and remote continental routes, RNAV-5 will continue to be introduced in continental airspace, implementation will continue under RNAV-1 conditions near the airfield, RNP APCH will continue to be introduced on Baro-VNAV, and ICAO Category I landings will be introduced for aircraft equipped with GNSS/GBAS equipment.

2.9 The long-term period for introducing PBN will make use of the fully developed GNSS infrastructure in the Russian Federation airspace.

2.10 The oceanic airspace and the remote continental routes will undergo a transition to RNP-4, RNAV-5 will be introduced in the continental airspace, and there will be a partial transition to RNAV-2 in airspace with high air traffic volume.

2.11 Near the airfield, flights will be introduced at airports using standard instrument departure/standard instrument arrival (SID/STAR) procedure under RNAV-1, conditions for aircraft equipped with DME/DME and GNSS, RNP APCH will be implemented based on Baro-VNAV, specific ICAO Category I landing approaches will be introduced for aircraft equipped with GNSS/GBAS equipment, and ICAO Category II/III landing approaches will start to be introduced using GBAS. In a number of cases the traditional navigation resources will not be reinstated which will mean abandoning transitional landing approach systems.

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