



A36-WP/321  
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25/9/07

**ASSEMBLY — 36TH SESSION**  
**TECHNICAL COMMISSION**

**DRAFT TEXT FOR THE REPORT**  
**ON**  
**AGENDA ITEMS 31, 33, 35 AND 37**

The attached material on Agenda Items 31, 33, 35 and 37 is submitted for consideration by the Technical Commission.

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

31.1 The Secretary introduced A36-WP/17 by the Council, which contained information on progress achieved by ICAO toward planning and implementation of a performance-based global ATM System. This included Council acceptance of the second amendment of the *Global Air Navigation Plan* (Doc 9750) with its set of twenty-three Global Plan Initiatives (GPIs); development of guidance material on ATM requirements necessary to support the implementation of a global ATM system in the form of the draft *Manual on Air Traffic Management System Requirements* (Doc 9882); development of Part I of the *Manual on Global Performance of the Air Navigation System* (Doc 9883), entitled *Performance-Based Transition Guidelines* which contained transition strategies necessary to support the implementation of a global ATM system; and hosting of the Worldwide Symposium on Performance of the Air Navigation System, Montreal from 26 to 30 March 2007.

31.2 The Commission expressed its satisfaction with the efforts underway, agreeing that interoperability, harmonization and uniformity in the global ATM system were critical issues in which ICAO should continue to take a leading role. The Commission urged the Council to continue its efforts toward ensuring a common approach to development and implementation of a performance-based global ATM system, stressing that the performance framework encompassed the entire ATM Community and not just the air navigation services providers.

31.3 The Secretary introduced A36-WP/29 by the Council, which presented the need for ensuring a globally harmonized and coordinated transition to Performance Based Navigation (PBN). The paper presented proposals for Contracting States, ICAO and other stakeholders to consider in the implementation of PBN.

31.4 The commission noted that the PBN concept had been developed as a result of the Eleventh Air Navigation Conference (Montreal, 22 September to 3 October 2003) which recommended that ICAO, as a matter of urgency, progress issues associated with the introduction of required navigation performance (RNP) and area navigation (RNAV).

31.5 An issue was raised regarding the fact that some States did not use GPS as a sole means of navigation and, therefore, other means of navigation should be supported. In this context, it was noted that PBN was not solely reliant on GNSS and therefore this particular issue would not hinder implementation of PBN.

31.6 The Commission agreed that there was a need to monitor the progress of PBN implementation in States and Regions and that sufficient resources should be made available at the regional level for this purpose. It was also emphasized that, for successful implementation, ICAO should develop appropriate training and guidance material on PBN.

31.7 A concern was expressed that with the increased navigation precision of modern aircraft, the risk of collision in certain circumstances could increase, for example when an error is made by either air traffic control or the flight crew, and that work on lateral offsets should be pursued to mitigate against

this risk. The meeting was informed that ICAO was working on this particular issue and that new ICAO provisions would be available in 2008.

31.8 When discussing the proposed resolution in WP/29, the Commission agreed that safety should be promoted and that in this context the resolution should be amended to urge States to implement approach with vertical guidance (APV) to all runway ends. However, recognizing the costs associated with this, it was agreed that the resolution should address only runways serving aircraft with a maximum certificated take-off mass in excess of 5700 kg. The Commission expressed support for a globally harmonized and coordinated transition to PBN, noting that in addition to the safety benefits, it was a key enabler towards a performance-based global air traffic management (ATM) system.

31.9 Several States expressed concern that dates and milestones for implementation of PBN for en-route oceanic and approach airspace would be counterproductive for planning purposes. The Commission therefore agreed to remove them from the Resolution.

31.10 In view of the discussion, the Commission submits, for adoption by the Plenary, the following resolution:

**Resolution 31/1: Performance based navigation global goals**

*Whereas* a primary objective of ICAO is that of ensuring the safe and efficient performance of the global Air Navigation System;

*Whereas* the improvement of the performance of the Air Navigation System on a harmonized, worldwide basis requires the active collaboration of all stakeholders;

*Whereas* the Eleventh Air Navigation Conference recommended that ICAO, as a matter of urgency, address and progress the issues associated with the introduction of area navigation (RNAV) and required navigation performance (RNP);

*Whereas* the Eleventh Air Navigation Conference recommended that ICAO develop RNAV procedures supported by global navigation satellite system (GNSS) for fixed wing aircraft, providing high track and velocity-keeping accuracy to maintain separation through curves and enable flexible approach line-ups;

*Whereas* the Eleventh Air Navigation Conference recommended that ICAO develop RNAV procedures supported by GNSS for both fixed and rotary wing aircraft, enabling lower operating minima in obstacle rich or otherwise constrained environments;

*Whereas* Resolution A33-16 requested the Council to develop a programme to encourage States to implement approach procedures with vertical guidance (APV) utilizing such inputs as GNSS or distance measuring equipment (DME)/DME, in accordance with ICAO provisions;

*Recognizing* that implementation of approach with vertical guidance (APV) is still not widespread;

*Recognizing* that the Global Aviation Safety Plan has identified Global Safety Initiatives (GSIs) to concentrate on developing a safety strategy for the future that includes the effective use of technology to enhance safety, consistent adoption of industry best practices, alignment of global industry safety strategies and consistent regulatory oversight;

*Recognizing* that the Global Air Navigation Plan has identified Global Plan Initiatives (GPIs) to concentrate on the incorporation of advanced aircraft navigation capabilities into the air navigation system infrastructure, the optimization of the terminal control area through improved design and management techniques, the optimization of the terminal control area through implementation of RNP and RNAV SIDs and STARs and the optimization of terminal control area to provide for more fuel efficient aircraft operations through FMS-based arrival procedures; and

*Recognizing* that the continuing development of diverging navigation specifications would result in safety and efficiency impacts and penalties to States and industry;

*The Assembly:*

1. *Urges* all States to implement RNAV and RNP air traffic services (ATS) routes and approach procedures in accordance with the ICAO PBN concept laid down in the *Performance Based Navigation Manual* (Doc 9613);

2. *Resolves* that:

a) States and planning and implementation regional groups (PIRGs) complete a PBN implementation plan by 2009 to achieve:

- i) implementation of RNAV and RNP operations (where required) for en route (oceanic and continental) and terminal areas according to established timelines and intermediate milestones; and
- ii) implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or SBAS) for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as follows: 30 per cent by 2010, 70 per cent by 2014; and

b) ICAO develop a coordinated action plan to assist States in the implementation of PBN and to ensure development and/or maintenance of globally harmonized SARPs and guidance material to keep pace with operational demands;

3. *Urges* that States include in their PBN implementation plan provisions for implementation of approach procedures with vertical guidance (APV) to all runway ends serving aircraft with a maximum certificated take-off mass of 5700 kg or more, according to established timelines and intermediate milestones.

4. *Instructs* the Council to provide a progress report on PBN implementation to the next ordinary session of the Assembly; and

5. *Requests* the Planning and Implementation Regional Groups (PIRG) to include in their work programme the review of status of implementation of PBN by States according to the defined implementation plans and report to ICAO any deficiencies that may occur.

31.11 The Commission reviewed A36-WP/52 presented by Portugal on behalf of the European Community, European Civil Aviation Conference and EUROCONTROL and A36-WP/113 presented by the United States on their respective initiatives to meet the future demands on their ATM systems. Both papers recognized the importance of ICAO's Global ATM Operational Concept and the Global Air Navigation Plan as effective tools to guide the global effort and serve as the framework for continued improvements. The Commission therefore agreed that all such efforts should be aligned with these two documents, stressing that a common global framework would help to achieve interoperability and harmonization.

31.12 A36-WP/52 outlined the state of the Single European Sky (SES) initiative and its relevance for non-EU Contracting States; requested ICAO to take note of the future establishment of the European upper flight information region (EUIR) aimed at optimizing the airspace and facilitating operational improvements with complimentary cost benefits; and proposed that ICAO coordinate the SES ATM Research (SESAR) program in a systematic manner to ensure seamless implementation of new technologies and systems with worldwide impact. The Commission recognized the benefits of implementing flexible use of airspace and the need for close civil and military cooperation to ensure maximum airspace availability for civil aviation. Furthermore, the expertise gained by the SES participants was offered to other Contracting States.

31.13 A36-WP/113 provided an overview of the United States' Next Generation Air Transportation System (NextGen) and its impact on global aviation. It was noted that the goal of NextGen was to ensure an environmentally friendly, globally interoperable air transportation system for 2025 was dependent on international harmonization. Like SESAR, NextGen information was offered for other States interested in transforming their own systems.

31.14 The Commission noted the recommendation in both papers that ICAO coordinate and monitor the progress of SESAR, NextGen and any similar initiatives that would have worldwide impact. Additionally, the Commission noted the legal provision of the SES concerning the future establishment of the European Upper Flight Information Region (EUIR) in the framework of the reorganization of the European airspace structure associated with the SES and urged the Council to coordinate, as appropriate, its establishment.

31.15 The International Federation of Air Traffic Controllers' Associations (IFATCA) presented A36-WP/115 which contained a summary of their interpretation of the Global ATM Operational Concept and expressed concern that this topic was not clearly understood. The Commission agreed with the need expressed in the paper for close cooperation and commitment between all members of the ATM community toward achieving shared goals and that collaborative decision making at all levels in the planning process would serve as an important tool for continued improvements to the global ATM system.

31.16 With regard to A36-WP/200, the Commission noted the experience of Venezuela in its transformation of local geodetic coordinate databases to WGS-84 and the potential for that experience to be applied to the *World Geodetic System — 1984 (WGS-84) Manual* (Doc 9674). The Commission also

noted that more technical and economic cooperation amongst States was necessary to carry out geodetic surveys. The Commission agreed to urge the Council to review sections 4.2.1 and 4.2.2 of the *World Geodetic System — 1984 (WGS-84) Manual* (Doc 9674) in light of the Venezuelan experience.

31.17 The Commission was presented with A36-WP/51 by Portugal on behalf of forty-three ICAO Contracting States, also comprising the European Community and its member States, members of the European Civil Aviation Conference and EUROCONTROL. The Commission recognized that to satisfy new requirements arising from the Global ATM Operational Concept, aeronautical information services (AIS) must transition to the broader concept of aeronautical information management (AIM). The Commission agreed that there was a need for an AIM strategy and concept in this respect and noted the recommendations of the 2006 AIS Global Congress which outlined a transition strategy. During the discussion, questions were raised relating to the 2006 AIS Global Congress and the subsequent work. The Secretary informed the meeting that although ICAO had not assumed a leadership role on AIS matters over the last triennium, it was now actively pursuing an AIS work programme which would be presented to the ICAO Air Navigation Commission and Council in the coming months. The working paper was strongly supported, and the need for the Secretariat to support the recommendations of the AIS Global Congress was recognized together with the need for further coordination and transparency.

31.18 China presented A36-WP/176 describing their RVSM implementation plan and proposed flight level allocation scheme (FLAS). The Commission noted the challenges encountered by China in developing the FLAS using meters and the successful efforts to harmonize the new scheme with the Russian Federation. China proposed that the Tables of Cruising Levels in Appendix 3 of Annex 2 be reviewed and amended to incorporate a joint proposal submitted earlier to ICAO, by China and Russia. The Commission noted that the Secretariat had already initiated action to amend Annex 2 in this respect.

31.19 Several information papers related to ATM improvements were made available for review by the Commission. A36-WP/153 provided information on initiatives taken by India to enhance aerodrome and airspace capacity which included implementation of performance based navigation. A36-WP/175, described the research efforts of the Civil Aviation Flight University of China to introduce automatic dependent surveillance – broadcast (ADS-B). A-36-WP/178 described Venezuela's efforts at modernization of its ATM system.

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**Agenda Item 33: Other efficiency matters**

33.1 The Commission supported that proposal by CANSO contained in A36-WP/123 concerning the benefits resulting from autonomy for the air navigation services provider and its separation from the regulatory oversight function as contained in ICAO guidance material. It was noted that such separation enhanced ATM performance, increased public confidence in the air navigation services provider and was consistent with good governance. The Commission noted the available ICAO guidance material and agreed that States should be further encouraged to take appropriate measures to observe the material contained in the guidance material.

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**Agenda Item 35: Other continuity matters**

35.1           The Technical Commission noted that no working papers had been submitted under this item.

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**Agenda Item 37: Other air navigation matters**

37.1 In A36-WP/144, the Russian Federation provided an update on the operation and modernization of the Cross-Polar Route Structure linking North America with Southeast Asia and the Pacific region. The steady growth of traffic on the route structure and the ever-increasing demands for access to the routes highlighted the importance of this system and the need for States to work across regional boundaries to address the issues. As such, the Commission agreed upon the importance of ICAO support and endorsed the following amendment to Resolution A33-13.

**A33-13: Use of cross-polar routes**

*Whereas* a new air route structure over the North Pole, linking the North American continent with South East Asia and the Pacific region, has been established within the framework of ICAO;

*Whereas* the establishment of this structure was the result of the combined efforts made by Canada, China, Finland, Germany, Iceland, Japan, Mongolia, Norway, the Russian Federation and the United States who demonstrated an unprecedented spirit of international cooperation in resolving this most complex task;

*Whereas* this structure became operational on 1 February 2001, with the announcement of the Russian Aviation Authorities about the implementation of the cross-polar airways system traversing the waters of the Arctic Ocean;

*Whereas* the implementation of this airways structure using cross-polar routes is an event of exceptional significance as it allows for substantially reduced flight time between destinations in North America and South East Asia and the Pacific region;

*Whereas* the use of cross-polar routes shall be open for aircraft of all Contracting States in accordance with the provisions of the *Convention on International Civil Aviation*;

*Whereas* the use of cross-polar routes holds considerable ecological benefits with regard to environmental protection, and significant economical advantages for passengers and airlines;

*Whereas* the analysis and forecast of traffic density growth on cross-polar airways indicate that it is necessary to take timely measures to further enhance the operational characteristics of the cross-polar routes;

*Whereas* meeting the requirements for enhancing the operational characteristics of the cross-polar airways entails significant financial and material expenditures for ensuring the proper level of safety;

*The Assembly:*

1. *Declares* that, in order to reap the maximum benefits from the implementation of cross-polar routes, it is necessary for the States providing air traffic services within the framework of the new international airways structure using cross-polar routes to endeavour to achieve the utmost extent of coordinated planning to increase the capacity of that structure;

2. *Requests* the Council to take appropriate measures to mobilize the resources of States, international organizations and financial institutions so as to ensure the dynamic development of the new international airways structure using cross-polar routes; ~~and~~

3. *Requests* the Council, as a priority, to monitor the development of the new international airways structure using cross-polar routes, and if necessary, to elaborate recommendations relating to the operation and development of that structure. ~~and;~~

4. *Requests* the Council to maintain its coordinating role and support initiatives in the organization of inter-regional activities related to the operation of the international trans-regional airways structure using cross-polar routes, and to the modernization of ATM systems that support these routes.

37.2 A36-WP/146, presented by the Russian Federation outlined the functional responsibilities of Rosaeronavigatsia, the Russian federal executive authority responsible for implementing aviation policy, regulation and oversight. It was noted that Rosaeronavigatsia had integrated the operational activities of civil and military authorities thereby furthering development of flexible use of airspace while enhancing safety. The Commission noted the benefits of integration of civil and military air traffic services described by the Russian Federation and agreed that States should be further encouraged to work toward this end and that ICAO should support this effort.

37.3 The Commission noted the information provided by the Russian Federation in A36-WP/250 on the status of the GLONASS system and its use within GNSS. The guarantee of free-of-charge navigation signals to worldwide users of the GLONASS system, a basic principle of their program, was captured in a Decree signed by the President of the Russian Federation. Additional benefits were provided to users through the interoperability of GLONASS and GPS as well as the implementation of ground-based augmentation systems which already began along with plans for development of a Russian space-based augmentation system. The Commission noted the benefits of combined use of GNSS signals.

37.4 The Commission also noted the following information papers.

- a) A36-WP/146 presented by the Russian Federation on the State Regulation of the Air Navigation System of the Russian Federation;
- b) A36-WP/155 presented by India on GPS aided GEO augmented navigation (GAGAN);
- c) A36-WP/156 presented by the Russian Federation on the concept of establishment and development of the air navigation system of the Russian Federation;

- d) A36-WP/157 presented by the Russian Federation on the Implementation of ATM Safety Management System in the Russian Federation;
- e) A36-WP/158 presented by Islamic Republic of Iran on the new approach radars for Iranian airports (ARIA systems);
- f) A36-WP/214 presented by the Russian Federation on the establishment of consolidated centres of the Joint ATM System of the Russian Federation;
- g) A36-WP/216 presented by Indonesia on GNSS activities in Indonesia; and
- h) A36-WP/260 presented by the Republic of Korea on the ICAO fellowship training programme for developing countries.

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