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**ASSEMBLY — 37TH SESSION**  
**TECHNICAL COMMISSION**

**DRAFT TEXT FOR THE REPORT**  
**ON**  
**AGENDA ITEM 36**

The attached material on Agenda Item 36 is submitted for consideration by the Technical Commission.

**Agenda Item 36: NextGen and SESAR as part of the Global ATM system**

36.1 The Commission considered A37-WP/13, presented by the Council, which provided an overview of activities since the last Assembly and provided some statistics on the progress of performance-based navigation (PBN) planning on both the regional and State levels. While all ICAO Regions have submitted regional plans, about two-thirds of the States have submitted their implementation plans. ICAO started a mechanism for measuring implementation worldwide. The database of that mechanism indicated a steady but slow increase of PBN implementation. The slow increase can be attributed to the complexity of PBN and the time required for States to gain proper understanding of the implementation issues and to the lack of resources within ICAO.

36.2 The Commission noted that not all aircraft can be readily equipped for Approach Procedures with Vertical guidance (APV) but could fly the same track with lateral guidance only. The paper therefore proposed an amendment to Resolution A36-23 to include a requirement for a lateral navigation (LNAV) minimum line on each APV procedure. A37-WP/148, presented by Australia, addressed the same matter but requested a further amendment to the Resolution to include the need for LNAV-only procedures as well when particular operational circumstances cannot be met, which was agreed to.

36.3 Working paper A37-WP/13 indicated that the proposed runway aligned LNAV procedures resulted in a safety improvement of the order of twenty-five times, while the additional vertical guidance enhanced this a further eight times. Consequently, this initial safety benefit justified an intermediate step to be included in the resolution.

36.4 IFALPA and Venezuela supported the proposed amendment, provided that this amendment should not give the impression that the implementation of LNAV-only procedures justified deferring the final implementation of APV.

36.5 In view of the discussion, the Commission submits, for adoption by the Plenary, the following resolutions:

**Resolution 36/1: 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 11th 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 11th 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 11th 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 not all airports have the infrastructure to support APV operations and not all aircraft are currently capable of APV;

*Recognizing* that many States already have the requisite infrastructure and aircraft capable of performing straight-in approaches with lateral guidance (LNAV approaches) based on the RNP specifications and that straight in approaches provide demonstrated and significant safety enhancements over circling approaches;

*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;

*Noting with satisfaction* that planning and implementation regional groups (PIRGs) have completed regional PBN implementation plans;

*Recognizing* that not all States have developed a PBN implementation plan by the target date of 2009;

*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 (PBN) Manual* (Doc 9613);

2. *Resolves* that:

a) States complete a PBN implementation plan as a matter of urgency to achieve:

- 1) implementation of RNAV and RNP operations (where required) for en route and terminal areas according to established timelines and intermediate milestones; and
- 2) implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), including LNAV only minima, 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
- 3) implementation of straight-in LNAV only procedures, as an exception to 2) above, for instrument runways at aerodromes where there is no local altimeter setting available and where there are no aircraft suitably equipped for APV operations with a maximum certificated take-off mass of 5 700 kg or more;

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, Procedures for Air Navigation Services (PANS) and guidance material including a global harmonized safety assessment methodology 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 end serving aircraft with a maximum certificated take-off mass of 5 700 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, as necessary;

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

6. *Declares* that this resolution supersedes Resolution A36-23.

36.6 The Commission considered paper A37/WP-15, presented by the Council, which explained the process used by ICAO to anticipate and commence the standards development work for NextGen/SESAR. A new approach was necessary in order for ICAO to develop the necessary standards in a timely manner and that this approach be applied to all future ATM Modernisation Plans. The Commission agreed that details of this approach should be included in the Global Air Navigation Plan, in order for them to be followed by States.

36.7 The Commission submits, for adoption by the Plenary, the following resolution:

**Resolution 36/2: ICAO global planning for safety and sustainability**

*Whereas* the enhancement of the efficiency of aviation operations is a key element of the ICAO Strategic Objectives;

*Having adopted* Resolution A35-15, a consolidated statement of continuing ICAO policies and practices related to a global air traffic management (ATM) system and communications, navigation and surveillance/air traffic management (CNS/ATM) systems; and

*Noting* the acceptance of 30 November 2006 by the Council of the new version of the Global Air Navigation Plan (GANP); and

*Recognizing* that many States are developing new generation plans for their own air navigation modernization.

*The Assembly:*

1. *Instructs* the Council to amend the GANP to include a framework that will allow ICAO to easily analyze the impact of States' air navigation modernization plans on the global system and then take appropriate action as needed to ensure global harmonization.
2. *Calls upon* States, planning and implementation regional groups (PIRGs) and the aviation industry to utilize the guidance provided in the GANP for planning and implementation activities.
3. *Urges* Contracting States, industry and financing institutions to provide the necessary support for coordinated implementation of the GANP, avoiding duplication of effort.
4. *Urges* States that are developing new generation plans for their own air navigation modernization to share their plans in a timely manner with ICAO for review and assessment to ensure global compatibility and harmonization.
5. *Instructs* the Council to ensure that the GANP is continuously maintained up to date in light of further operational and technical developments, in close collaboration with States and other stakeholders.

36.8 The Commission considered A37-WP/179 that described China's progress and plans in GNSS development and PBN implementation. It also called on ICAO to include Annex 10 provisions for the Chinese GNSS System known as BeiDou (COMPASS) in order to ensure a harmonized, safe, cost-effective and smooth transition in the future.

36.9 The Commission noted the proposals in A37-WP/179 and agreed to refer them to the Council for incorporating in the triennium work programme as SAFE funding become available.

36.10 The Commission noted that as we move forward with a performance-based approach to SARPs development, Annex 10 may still need to be amended for reasons of harmonization and interoperability and, consequently, such interoperability standards will be brought to the attention of ICAO in the normal manner. On this basis, the Chairman concluded discussion on the working paper.

36.11 The Commission reviewed A37-WP/184, also presented by China, which provided information on the BeiDou (COMPASS) GNSS system, outlining its history and proposed enhancement and development, the fourth largest satellite system in existence. The Commission noted China's development of the COMPASS system and recognized that, where necessary, suitable material would be included in ICAO documentation to assure interoperability within the global GNSS system.

36.12 The Commission reviewed AN37-WP/202, presented by the Russian Federation, which highlighted the large number of ATM modernization programmes that were currently underway or in the late planning stages, and could without oversight put global interoperability at risk. ICAO was urged to take measures to coordinate the research and development supporting the various ATM programmes in order to detect differences in the early stages.

36.13 The paper also called upon ICAO to establish a special body to coordinate States' ATM modernization activities, specifically to address common problems and to forge agreement between States.

36.14 The Commission noted that the move by ICAO to performance-based Standards addressed many of the points raised by the paper and activities such as the Standards Roundtable process and the planned update of the Global Air Navigation Plan would deal with the call for a special body to coordinate States' ATM modernization programmes.

36.15 A view was expressed that both inter and intra-regional cooperation was especially important.

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