ASSEMBLY — 37TH SESSION

**REPORT OF THE TECHNICAL COMMISSION
ON
AGENDA ITEMS 35 AND 36**

(Presented by the Chairman of the Technical Commission)

The attached report on Agenda Items 35 and 36 has been approved by the Technical Commission. Resolutions 36/1 and 36/2 are recommended for adoption by the Plenary.

Note.— After removal of this covering sheet, this paper should be inserted in the appropriate place in the report folder.

(9 pages)

Agenda Item   35:   The Global Air Traffic Management (ATM) system

35.1   The Commission considered A37-WP/11, presented by the Council, which described the efforts made by the Organization toward implementation of a performance-based global air navigation system. This included development of guidance material to support the implementation of a global air navigation system; development of a global performance framework including workshops covering all ICAO regions; and the ongoing work to develop the new concept related to flight and flow information.

35.2   The need to continue efforts aimed at ensuring interoperability, harmonization and uniformity was stressed.

35.3   The Commission considered A37-WP/14, presented by the Council, which proposed that ICAO develop and maintain a global communications, navigation, and surveillance (CNS) technology roadmap, to provide guidance to all stakeholders in making their investment decisions for CNS equipage. Among the various rationales given were the existence of much confusion as to the operational benefits achievable from the wide selection of avionics products available and more importantly, the absence of a single roadmap which addresses the needs of all stakeholders.

35.4   The Commission reviewed A37-WP/85, presented by Belgium on behalf of the European Union and its Member States, the European Civil Aviation Conference, and EUROCONTROL, which recommended the adoption of an agenda for planning major activities for the medium and long terms, based on close cooperation with the regions, international organizations, industry and with programmes like NextGen, SESAR and others. More detailed planning could be derived from this agenda. The paper stressed the need for ICAO to initiate work on a common information reference model intended to specify information requirements in different domains. It was stressed that attention should be given to aeronautical information management, including improved linkage of meteorology and air traffic management (ATM), and especially the progression to System Wide Information Management (SWIM). ICAO was urged to continue its work on development of a performance-based approach for the future ATM system. Similar attention should also be given to civil/military cooperation and the development of flexible use of airspace. The Commission was informed that ICAO would require assistance in these areas.

35.5   Paper A37-WP/153, presented by Brazil, described some operational improvements implemented in the Brazilian airspace which followed the Global Air Navigation Plan Initiatives and addressed several expectations of the ATM community, such as increasing capacity, predictability, cost effectiveness and reduced impact of operations on the environment, among others.

35.6   The paper requested actions from ICAO towards harmonization at a global level, including that a tool to measure environment benefits accrued from operational improvements be the first step and other key performance areas would follow in the future.

35.7   The Commission recognized the need to have a harmonized way to measure and report the benefits of operational improvements on different key performance areas, including but not limited to the environment. It noted that the ICAO Secretariat was already working on such a tool.

35.8   A37-WP/84, presented by Colombia, outlined plans to implement an augmentation system for Global Positioning System (GPS) navigation. The object of the exercise was the improvement of safety and efficiency in a cost-effective manner at low-traffic airports as part of a bicentennial initiative by the Colombian Space Commission. The working paper also acknowledged that the growth and development of air transport were uneven and that such initiatives indicated that Contracting States were committed to implementing CNS/ATM technologies in order to meet ICAO's Strategic Objectives.

35.9   A37-WP/165, presented by Saudi Arabia, highlighted that a lack of knowledge and direct experience with future navigation systems was delaying implementation by States. Specifically, it called for ICAO to implement a mechanism for the collection of information on the experiences of States in the implementation and operation of CNS/ATM systems. Information such as defects, anomalies and solutions to obstacles and difficulties was seen as especially beneficial. The collected information should be made available to all States in order to adequately inform them before embarking on CNS/ATM investment or implementation activity.

35.10   The Civil Air Navigation Services Organization (CANSO) presented A37-WP/294, which described CANSO's Global Vision on the Future of Air Navigation Services and identified areas of change needed within the regulatory and operational domains in order to achieve a global ATM system. The working paper also expressed the view that it was time for the Global Air Navigation Plan (GANP) and its Global Plan Initiatives (GPIs) to be reviewed to ensure that they were aligned with the realities on the ground and recognize the institutional hurdles to implementation. It proposed that the GANP be revised to include a process to prioritize actions and address roadblocks to implementation.

35.11   The Commission noted that the ICAO Secretariat had already been tasked with updating the GANP and GPIs as requested by A37-WP/294 prior to the Twelfth Air Navigation Conference (2012).

35.12   A37-WP/203, presented by Venezuela, proposed harmonization of minimum en-route altitudes (MEAs) on regional area navigation (RNAV) routes in order to extend their vertical limits beyond those defined for reduced vertical separation minimum (RVSM) operations.

35.13   The Commission noted that the matter raised in A37-WP/203 was, from the ICAO perspective, for regional coordination and should be dealt with at the regional level by the planning and implementation regional groups (PIRG).

35.14   A37-WP/134 was presented on behalf of the 22 member States of the Latin American Civil Aviation Commission. This paper raised a number of issues related to the implementation of ICAO Standards and Recommended Practices (SARPs). Key points were that: a) more time should be given to implement complex SARPs; b) additional funding was needed to allow the translation of a greater number of ICAO documents in a timely manner; and c) the need to improve the processing and presentation of ICAO documents and update these with wide-reaching functional and performance requirements. The actions in these key points also refer to Agenda Items 36 and 39.

35.15   This paper also contained a resolution calling for an amendment to Assembly Resolution 44/1 which was dealt with under Agenda Item 44 (A37-WP/366 refers).

35.16   Colombia supported A37-WP/134, reminding ICAO to act on Resolution 3.3 a) of the High-level Safety Conference and make all documents available in all languages. They also stated that

ICAO Headquarters should preside over issues where there were differences between adjacent regions and that a greater level of coordination between ICAO Regional Offices was warranted.

35.17   Nicaragua voiced support for A37-WP/134 citing the fact that the implementation of the continuous monitoring approach (CMA) needed significant time and resources. Other comments included a call for more funding for workshops and a reminder that Resolution 3.3 a) of the High-level Safety Conference called for ICAO documents to be available in all languages. On the subject of the CMA, it was explained that training activity was already funded and that on-line training would be available by January 2011.

35.18   With respect to the proposals that had financial implications, the meeting noted that these would be subject to Council review of the Business Plan and in accordance with other priorities.

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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 resolution:

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 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 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 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.

          6.   *Instructs* the Council to organize a Twelfth Air Navigation Conference in 2012, to develop longer-term planning for ICAO based on an update of the GANP;

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 A37-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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