*International Civil Aviation Organization*

**FIFTEENTH MEETING OF THE
ASIA/PACIFIC AIR NAVIGATION PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APANPIRG/15)**
**Bangkok, Thailand, 23 to 27 August 2004**

**Agenda Item 2.4:      Other Air Navigation Matters**

**RESULTS OF THE ELEVENTH AIR NAVIGATION CONFERENCE (AN-CONF/11) 2003
– FOLLOW-UP ACTION TO BE TAKEN BY APANPIRG/15**

(Presented by the Secretariat)

**SUMMARY**

This working paper reports on the outcome of, and actions taken by, the Council of ICAO on the Eleventh Air Navigation Conference held in Montreal from 22 September to 3 October 2003. The Conference agreed to a number of recommendations which call for further follow-up by ICAO, States, International organizations and Planning and Implementation Groups (PIRGs) as well as communications, navigation, and surveillance/air traffic management (CNS/ATM) partners. The proposed actions on the recommendations, which are analysed in the Appendix to this working paper, are presented with a view to seeking confirmation from APANPIRG that it will make appropriate contributions to the follow-up.

**1.      INTRODUCTION**

1.1      The Eleventh Air Navigation Conference (AN-Conf/11) was held at ICAO Headquarters in Montreal from 22 September to 3 October 2003 and was attended by 686 participants from 122 Contracting States and 24 observer delegations. The Conference, while focusing its attention on Global ATM systems, developed sixty-one recommendations  enveloping a wide range of issues.

1.2      The Council of ICAO, on 10 March 2004 during the eleventh meeting of its 171st Session, considered, taking into account the comments of the Air Navigation Commission, and approved the Report of AN-Conf/11. The Council, in confirming ICAO's role  in the follow-up to recommendations, called upon States, all PIRGs and all the CNS/ATM partners to initiate necessary action on specific recommendations, as detailed in the Appendix attached hereto.

**2.      PROPOSED FOLLOW-UP TO THE RECOMMENDATIONS OF THE AN-CONF/11 CONFERENCE**

2.1      AN-Conf/11 made one recommendation to amend Annex 10 — *Aeronautical Telecommunications*, Volume I — *Radio Navigation Aids* and sixty recommendations on other matters related to its agenda.

2.2     The scope of the follow-up action by planning and implementation regional groups (PIRGs) on the recommendations, in some cases, extends to States and other CNS/ATM partners. This distinction becomes clear when the required follow-up to the recommendations of AN-Conf/11 are examined in the Appendix. In those cases, it is clearly desirable that follow-up action be coordinated. (23 pages)

2.3     It is considered that one of the first coordination efforts required by APANPIRG/15 will be to assign the task of developing an implementation plan for the relevant recommendations and that a report be submitted to APANPIRG, as appropriate.

## 3.     ACTION BY THE MEETING

3.1     In light of the above, the meeting, on the basis of its analysis of the Appendix, is invited to:

a)    note the outcome of the ANConf /11;

b)    take action on the recommendations as proposed in the Appendix to this working paper; and

c)    approve the following:

**Decision 15/x  –     Implementation of AN-Conf/11 Recommendations by APANPIRG**

That the following recommendations of AN-Conf/11 be studied by the concerned subgroups, that action be taken to implement them and that  the outcome be presented to APANPIRG:

Recommendations 1/1, 1/10, 1/13, 4/2, 6/11 and 7/1: ATS/AIS/SAR/SG
Recommendations 1/1, 1/10, 1/13, 4/2, 6/11, 7/1 and 7/3: CNS/MET/SG
Recommendations 1/1, 1/10, 1/13, 4/1, 4/2, 4/4 and 7/3:  CNS/ATM S/SG
Recommendations 4/8: DRTF

**Conclusion 15/x   –     Implementation of AN-Conf/11 Recommendations by States**

That States of the Asia/Pacific regions take action to implement the following twenty-five recommendations of AN-Conf/11:

1/1, 1/2, 1/7, 1/10,1/13, 1/15, 2/2, 2/3, 2/7, 2/8, 4/1, 4/2, 4/5, 4/6,  4/8, 4/9, 5/1, 6/1, 6/2, 6/9, 6/13, 6/14, 7/1, 7/2 and 7/3

**Conclusion 15/x   –     Implementation of AN-Conf/11 Recommendations by international organizations**

That international organizations take action to implement the following twelve recommendations of AN-Conf/11:

1/1, 1/7, 1/10, 1/13, 4/8, 5/1, 6/1, 6/2, 6/9, 6/13, 7/2 and 7/3.

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# APPENDIX

# RECOMMENDATIONS OF AN-CONF/11
## FOLLOW-UP ACTIONS BY ICAO/PIRGs/STATES/INTERNATIONAL ORGANIZATIONS (IOs)

| | # | RECOMMENDATION ITEM | ACTION BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
|---|---|---|---|---|
| **AGENDA ITEM 1:** | | **INTRODUCTION AND ASSESSMENT OF A GLOBAL AIR TRAFFIC MANAGEMENT (ATM) OPERATIONAL CONCEPT** | | |
| 1 | 1/1 | **Endorsement of the global ATM operational concept** <br><br> That: <br><br> a) ICAO, States and planning and implementation regional groups (PIRGs), consider the global ATM operational concept as the common global framework to guide planning for implementation of ATM systems and to focus all ATM development work; | PIRGs/States/ IOs | re (a) and (b): <br> Consider the global ATM operational concept as the common global framework and use as guidance for the planning and implementation of CNS/ATM systems. |
| | | b) the global ATM operational concept be used as guidance for development of ICAO CNS/ATM related provisions; | PIRGs/States/ IOs | |
| | | c) States with the support of the other members of the ATM community undertake work to validate the seven components in the global ATM operational concept; | States/IOs | Validate the seven components in the global ATM operational concept. |
| | | d) ICAO, States and PIRGs develop transition strategies for implementation of ATM systems based on the global ATM operational concept; and | PIRGs/States | Develop transition strategies based on the global ATM operational concept. |
| | | e) ICAO align its technical work programme to facilitate future work related to the global ATM operational concept | ICAO | Secretary General to align its technical work accordingly. |
| 2 | 1/2 | **Coordination with military authorities** <br><br> That States take appropriate action to coordinate the global ATM operational concept with their military authorities with a view to achieving maximum cooperation and integration in an effort to implement a flexible and cooperative approach to airspace organization and management. | States | Coordinate with their military authorities for implementation of a flexible and cooperative approach to airspace organization and management. |

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| | # | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
|---|---|---|---|---|
| | | **RECOMMENDATION** | | **ACTION** |
| 3 | 1/3 | **Development of ATM requirements**<br><br>That ICAO as a high priority develop a set of ATM functional and operating requirements for a global ATM system on the basis of the global ATM operational concept. | ICAO | Requested the Air Traffic Management Operational Concept Panel (ATMCP) to develop relevant proposals before the end of 2005. |
| 4 | 1/4 | **Development of Standards and Recommended Practices (SARPs) from the global ATM operational concept**<br><br>That ICAO, when developing CNS/ATM-related SARPs, ensure that such SARPs are traceable to ATM requirements. | ICAO | Requested the Secretary General to bring it to the attention of relevant panels. |
| 5 | 1/5 | **Interoperability and seamlessness**<br><br>That ICAO, when developing ATM requirements, define a corresponding minimum set of requirements for interoperability and seamlessness. | ICAO | Requested the ATMCP to develop relevant proposals before the end of 2005. |
| 6 | 1/6 | **Endorsement of the automatic dependent surveillance-broadcast (ADS-B) concept of use and recommendations for further work**<br><br>That ICAO:<br><br>a) follow research and development work in the area of ADS-B applications, and update/maintain the ADS-B concept of use as necessary;<br><br>b) work cooperatively with other international bodies to ensure that the ADS-B concept of use is properly aligned with existing operational and technical documents;<br><br>c) utilize the ADS-B concept of use, in its current form and as it matures, as a basis for development of SARPs and guidance material for air-to-air and air-to-ground surveillance applications; and<br><br>d) ensure that all future work on the ADS-B concept of use is aligned with the ATM operational concept and meets the emerging ATM requirements that emanate therefrom. | ICAO | Noted.<br><br>Requested Operational Data Link Panel (OPLINKP) to consider it in its further work to the extent possible.<br><br>Noted.<br><br>Noted. |

| | | RECOMMENDATION | ACTION | |
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| | # | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
| 7 | 1/7 | **Ground and airborne automatic dependent surveillance-broadcast (ADS-B) applications for global interoperability**<br><br>That ICAO and States: | | |
| | | a) recognize ADS-B as an enabler of the global ATM operational concept bringing substantial safety and capacity benefits; | ICAO/States/ IOs | To note. |
| | | b) support the cost-effective early implementation of packages of ground and airborne ADS-B applications, noting the early achievable benefits from new ATM applications; and | ICAO/States/ IOs | To note. |
| | | c) ensure that implementation of ADS-B is harmonized, compatible and interoperable with respect to operational procedures, supporting data link and ATM applications. | States/IOs | Ensure that implementation of ADS-B is harmonized, compatible and interoperable. |
| 8 | 1/8 | **Global aeronautical information management and data exchange model**<br><br>That ICAO: | | |
| | | a) when developing ATM requirements, define corresponding requirements for safe and efficient global aeronautical information management that would support a digital, real-time, accredited and secure aeronautical information environment; | ICAO | Requested the ATMCP to develop relevant proposals by the end of 2005. |
| | | b) urgently adopt a common aeronautical information exchange model, taking into account operational systems or concepts of data interchange, including specifically, AICM/AIXM, and their mutual interoperabilities; and | ICAO | Secretary General is taking appropriate action. |
| | | c) develop, as a matter of urgency, new specifications for Annexes 4 and 15 that would govern provision, electronic storage, on-line access to and maintenance of aeronautical information and charts. | ICAO | Secretary General to progress the work. |

| | # | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
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| | | **RECOMMENDATION** | | **ACTION** |
| 9 | **1/9** | **Raising the status of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750)** <br><br> That ICAO develop a formal review and agreement process for the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750). | ICAO | Noted the intent of the recommendation and requested the ANC to develop relevant proposals. |
| 10 | **1/10** | **Status of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750)** <br><br> That States and planning and implementation regional groups (PIRGs) consider the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) as a catalyst for change, providing a global safety and interoperability framework while allowing regional or local adaptation to efficiently meet regional and local needs. | PIRGs/States/ IOs | To note the intent of the recommendation. |
| 11 | **1/11** | **Publication of the Global ATM Operational Concept** <br><br> That ICAO publish the global ATM operational concept as a new ICAO manual. | ICAO | Secretary General to develop relevant proposals for an appropriate approval and publication process. |
| 12 | **1/12** | **Amendment of Chapter 4 of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750)** <br><br> That ICAO take action to amend Chapter 4 of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750), clearly establishing the linkage to the Global ATM Operational Concept. | ICAO | Secretary General to take it into account when developing the next amendment to Doc 9750. |
| 13 | **1/13** | **Harmonization of air navigation systems** <br><br> That ICAO and the ATM community explore the possibility of developing a mechanism for implementing the interregional interface applications with a view to facilitating the harmonized implementation of air navigation systems giving rise to a global ATM system in an evolutionary fashion. | PIRGs/States/ IOs | To identify interface issues and address them through appropriate interregional mechanism. |

| RECOMMENDATION | | | ACTION | |
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| | # | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
| 14 | 1/14 | **Development of an ICAO air navigation plan database and associated web-based information and charting service**<br><br>That ICAO develop and maintain a database containing all tabular material from all the regional air navigation plans, both Basic Operational Requirements and Planning Criteria (BORPC) and the Facilities and Services Implementation Document (FASID), together with the major traffic flows and other regional data from Part II of the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750), and make this database and associated charts available through the Web. | ICAO | Secretary General to take appropriate action, noting that work was already in progress. |
| 15 | 1/15 | **Implementation of airborne collision avoidance system (ACAS) provisions**<br><br>That States take immediate action to implement, in appropriate national documentation, the ACAS provisions contained in Amendment 28 to ICAO Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes*, and in Amendment 12 to the *Procedures for Air Navigation Services — Operations* (PANS-OPS, Doc 8168), Volume I. | States | Implement, in appropriate national documentation, the ACAS provisions as contained in ICAO Annex/PANS-OPS. |
| 16 | 1/16 | **Provisions related to airborne collision avoidance systems (ACAS)**<br><br>That ICAO review current provisions and investigate the need to develop new provisions to enhance the effectiveness of ACAS as follows:<br><br>a) provisions in Annex 6, Part II concerning training of general aviation pilots in the operation of ACAS;<br><br>b) provisions in Annex 10, Volume IV concerning performance of the ACAS II collision avoidance logic;<br><br>c) provisions concerning the training of air traffic control personnel;<br><br>d) the registering by the parametric flight recorder of resolution advisory commands; and<br><br>e) air traffic control provisions in ICAO Annexes 2 and 11 and the PANS-ATM. | ICAO | Noted parts (a) (b) and (c) of the recommendation and that work is already in progress; and<br><br>as far as part (d) of the recommendation, requested that Surveillance and Conflict Resolution Systems Panel (SCRSP) to develop relevant proposals for review by the ANC.<br><br>Noted the recommendation and that work is already in progress. |

| | # | RECOMMENDATION | | ACTION | |
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| | | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS | |
| **AGENDA ITEM 2:** | | **SAFETY AND SECURITY IN AIR TRAFFIC MANAGEMENT (ATM)** | | | |
| 17 | 2/1 | **A framework for system safety** That ICAO investigate appropriate mechanisms for the development and implementation of a framework for a uniform and system-wide approach to safety, and the application of this framework to: a) the harmonization of provisions relating to safety assessment and safety management in relevant Annexes and Procedures for Air Navigation Services (PANS); and b) the harmonization of the approaches to safety assessment in the development of safety-related standards and recommended practices (SARPs). | ICAO | Requested the Secretary General to take appropriate action. | |
| 18 | 2/2 | **Implementation of ATS safety management programmes and establishment of acceptable levels of safety** That States which have not already done so, take action in accordance with Annex 11, 2.26 to: a) implement systematic and appropriate ATS safety management programmes to ensure that safety is maintained in the provision of ATS within airspaces and at aerodromes; and b) establish the acceptable levels of safety and safety objectives applicable to the provision of ATS within airspaces and at aerodromes. | States States | Implement systematic and appropriate ATS safety management programmes. Establish the acceptable levels of safety and safety objectives to the provision of ATS. | |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** | |
| 19 | **2/3** | **Sharing of ATM accident and incident data** | | | |
| | | That ICAO: | | | |
| | | a) develop guidance material on the use of the ADREP 2000 data base; and | ICAO | Requested the Secretary General to develop the relevant guidance material; and | |
| | | b) encourage States to share information on ATM accidents and incidents. | States | share information on ATM accidents and incidents. | |
| 20 | **2/4** | **The protection of sources of safety information** | | | |
| | | That ICAO develop guidelines which will provide support to States in adopting adequate measures of national law, for the purpose of protecting the sources and free flow of safety information, while taking into account the public interest in the proper administration of justice. | ICAO | Requested the Secretary General to take appropriate action. | |
| 21 | **2/5** | **Monitoring of safety during normal operations** | | | |
| | | That ICAO initiate studies on the development of guidance material for the monitoring of safety during normal air traffic service operations, taking into account, but not limited to, the line operations safety audit (LOSA) programmes which have been implemented by a number of airlines. | ICAO | Requested the Secretary General to develop the relevant guidance material. | |
| 22 | **2/6** | **Safety certification of ATM systems** | | | |
| | | That ICAO investigate the need for the development of provisions for safety certification of ATM systems and service providers. | ICAO | Requested the Secretary General to take appropriate action. | |
| 23 | **2/7** | **Safety oversight capabilities and procedures** | | | |
| | | That ICAO encourage States to develop ATM safety oversight capabilities and procedures. | States | Develop ATM safety oversight capabilities and procedures. | |

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| # | | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
| 24 | 2/8 | **Harmonization of aviation safety and aviation security**<br><br>That ICAO:<br><br>a) continue its efforts to encourage and monitor the harmonization of aviation safety and aviation security; and<br><br>b) encourage States to monitor the impact of aviation security measures on aviation safety, and to take action as necessary. | ICAO<br><br>States | Requested the Secretary General to take action as necessary; and<br><br>monitor the impact of aviation security measures on aviation safety and to take action as necessary. |
| 25 | 2/9 | **In-flight emergency response procedures for air traffic controllers**<br><br>That, consistent with the ICAO Aviation Security Plan of Action and the ATM operational concept, ICAO consider developing in-flight emergency response and coordination procedures for air traffic controllers, together with training guidance, related to the distinctly different types and phases of unlawful interference. These procedures and guidance material should allow for the different conditions which exist in States. | ICAO | Requested the Secretary General to take appropriate action. |
| **AGENDA ITEM 3:** | | **AIR TRAFFIC MANAGEMENT (ATM) PERFORMANCE TARGETS FOR SAFETY, EFFICIENCY AND REGULARITY AND THE ROLE OF REQUIRED TOTAL SYSTEM PERFORMANCE (RTSP) IN THIS RESPECT** | | |
| 26 | 3/1 | **Required communication performance (RCP)**<br><br>That ICAO:<br><br>a) continue the development of Standards and Recommended Practices (SARPs), procedures and guidance material on RCP; and<br><br>b) investigate areas for further work to determine the relationship of the RCP concept to separation studies and interoperability, the standardization of RCP types and allocations, the adequacy of ATS functions and procedures for new CNS/ATM environments, as well as requirements for safety performance monitoring. | ICAO<br><br>ICAO | Noted.<br><br>Requested OPLINKP to progress with the work accordingly. |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** |
| 27 | **3/2** | **Standardization of minimum reporting requirements** <br><br> That ICAO continue its work in the field of economic performance of ATM and benchmarking, and assess the need for world-wide standardization of minimum reporting requirements in relation to information disclosure. | ICAO | Requested the Secretary General to take appropriate action. |
| 28 | **3/3** | **Performance framework** <br><br> That ICAO, in consultation with the other members of the ATM community: | | |
| | | a) formulate the performance objectives and targets for a future global ATM system; | ICAO | re (a) and (b): <br> Requested the ATMCP to develop relevant proposals for review by the ANC. |
| | | b) continue the definition of related performance metrics and elementary characteristics in the context of the overall behaviour of the ATM system; and | ICAO | |
| | | c) coordinate and harmonize all related contributions within the overall performance framework initiated by the Air Traffic Management Operational Concept Panel, including definitions, standards for reporting requirements and guidance for monitoring. | ICAO | Requested the Secretary General to take appropriate action. |
| **AGENDA ITEM 4: CAPACITY-ENHANCEMENT MEASURES** | | | | |
| 29 | **4/1** | **Harmonization of air navigation systems between regions** <br><br> That ICAO: | | |
| | | a) maintain, and develop further, a coordination mechanism between regions for planning and implementation of capacity-enhancing measures and ATM performance improvement between regions for a harmonized evolution aimed at enhancing aviation efficiency and safety; | ICAO/PIRGs | Develop further, a coordination mechanism between regions for a harmonized evolution aimed at enhancing aviation efficiency and safety. |
| | | b) be systematically involved in any regional initiatives aiming at enhancing ATM capacity and performance; and | ICAO | Noted. |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** | |
| | | c) urge States, who have not already done so, to establish national CNS/ATM coordination and implementation committees, with a point of contact to be made known to the respective ICAO Regional Office, so as to facilitate harmonized transition to CNS/ATM systems. | States | Establish national CNS/ATM coordination and implementation committees, with a point of contact to be made known to the respective ICAO Regional Office. | |
| 30 | **4/2** | **Investigation of performance-driven planning and implementation methods**<br><br>That States study the approach to planning and implementation commonly adopted by European States, with a view to the possible application of its elements in their respective regions. | PIRGs/States | Study the approach to planning and implementation commonly adopted by European States, with a view to the possible application of its elements. | |
| 31 | **4/3** | **Collaborative decision-making and global demand/capacity balancing**<br><br>That ICAO:<br><br>a) develop SARPs and procedures for global air traffic flow and capacity management based on the concept of demand/capacity balancing as described in the operational concept; and<br><br>b) develop guidance material for States to implement global demand/capacity balancing techniques based on collaborative decision-making processes, and sharing of aviation information in accordance with the operational concept. | ICAO | re (a) and (b):<br>Requested the Secretary General to take appropriate action. | |
| 32 | **4/4** | **Investigation and analysis of the "Single European Sky" approach to global harmonization**<br><br>That ICAO follow the progress of the "Single European Sky" project for possible use in other homogeneous regions or at the global level. | ICAO/PIRGs | Follow the progress of the "Single European Sky" project for possible use in other homogeneous regions or at the global level. | |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** |
| 33 | **4/5** | **Runway safety programmes** <br><br> That States: <br><br> a) take appropriate actions to improve runway safety worldwide through the implementation of runway safety programmes; <br><br> b) collect and share runway incursion incidents in accordance with Annex 13 — *Aircraft Accident and Incident Investigation*, Chapter 8, *Accident Prevention Measures*; and <br><br> c) take into consideration that part of the ICAO *Manual on Advanced Surface Movement Guidance and Control Systems (A-SMGCS)* related to surveillance and control functions, when implementing such systems at airports. | <br><br><br><br> States <br><br><br> States <br><br><br><br> States | <br><br><br><br> Improve runway safety through the implementation of runway safety programmes. <br><br> Collect and share runway incursion incidents in accordance with Annex 13. <br><br><br> To note. |
| 34 | **4/6** | **Capacity-enhancing procedures** <br><br> That States, when considering capacity-enhancing procedures at aerodromes, conduct appropriate safety studies and take due consideration of the effect on runway safety. | <br><br> States | <br><br> When considering capacity-enhancing procedures at aerodromes, conduct appropriate safety studies and take due consideration of the effect on runway safety. |
| 35 | **4/7** | **Global runway incursion risk management** <br><br> That ICAO: <br><br> a) urgently progress the development of a formal definition for "runway incursion" as a prerequisite for further actions to be taken in this domain; and <br><br> b) enhance the Accident/Incident Data Reporting (ADREP) to incorporate a common categorization taxonomy of runway incursion severity, error type and/or factors that contribute to incursions. | <br><br><br><br> ICAO <br><br><br> ICAO | <br><br><br><br> The work was already being progressed. <br><br><br> Requested the Secretary General to take appropriate action, noting that work was already being progressed. |

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| | | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS | |
| 36 | 4/8 | **Rectification of air navigation deficiencies** <br><br> That ICAO: <br><br> a) urge States to: <br><br>  1) review their respective lists of identified deficiencies and inform the ICAO Regional Office of those that have been eliminated; <br><br>  2) formulate and forward an action plan and time-table for rectification of outstanding deficiencies to the respective ICAO Regional Office for review; and <br><br>  3) identify areas, if any, where the establishment of multinational agreements or informal coordination groups may contribute to the resolution of deficiencies; | States | re (a): <br> Review respective lists of identified deficiencies; formulate and forward an action plan to the respective ICAO Regional Office for review; and identify areas, where the establishment of multinational agreements may contribute to the resolution of deficiencies. | |
| | | b) encourage users of air navigation facilities and services to report to the respective regional office once they note that the remedial action on the deficiency they had reported has been taken; and | IOs | Users to report once they note that the remedial action on the deficiency has been taken. | |
| | | c) continue to provide assistance to States for the purpose of rectifying deficiencies. | ICAO/PIRGs | Continue to provide assistance to States for the purpose of rectifying deficiencies. | |
| 37 | 4/9 | **Harmonization of flight level assignment methodology across flight information boundaries** <br><br> That relevant States, when planning for the introduction of reduced vertical separation minimum (RVSM) at interfaces between airspaces where different units of measurement are used, taking into account relevant operational and technical considerations, should apply a common cruising levels structure in accordance with the tables of cruising levels expressed in metres or feet, as outlined in Annex 2 — *Rules of the Air*, Appendix 3. | States | When planning for RVSM, apply a common cruising levels structure in accordance with the tables of cruising levels expressed in metres or feet, as outlined in Annex 2 — *Rules of the Air*, Appendix 3. | |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** |
| 38 | **4/10** | **Tables of cruising levels** That ICAO continue to study the common cruising levels structure, as outlined in Annex 2 — *Rules of the Air*, Appendix 3. | ICAO | Noted the recommendation and its relation to Recommendation 4/9, and agreed that no action was required. |
| **AGENDA ITEM 5:** | | **REVIEW OF THE OUTCOME OF THE ITU WORLD RADIO CONFERENCE (2003) (WRC-2003) AND ITS IMPACT ON AERONAUTICAL ELECTROMAGNETIC SPECTRUM UTILIZATION** | | |
| 39 | **5/1** | **Preparation for WRC-2007** That ICAO; a) urge States and international organizations to continue their efforts on implementation of the relevant elements of Assembly Resolution A32-13 and in particular participate in the preparatory work of the ITU and the regional telecommunication organizations for WRC-07; and | States/IOs | Continue participating in the preparatory work of the ITU and the regional telecommunication organizations for WRC-07. |
| | | b) continue to assign high priority to the tasks relating to the protection and availability of radio-frequency spectrum allocated to aeronautical services and in particular actively participates in the relevant activities of the ITU-R and of the regional telecommunication organizations. | ICAO | Noted. |
| 40 | **5/2** | **ICAO activities on interference** That ICAO a) intensify its activities to secure protection of aeronautical communication, navigation and surveillance systems from the adverse effects of electromagnetic interference and develops guidance material, as necessary; | ICAO | The Secretary General to take appropriate action. |
| | | b) develop material to assist States in assessing interference from FM broadcasting stations; *(continued...)* | ICAO | re (b) and (d): The Aeronautical Communications Panel (ACP) in coordination with the Navigation Systems Panel (NSP) as required, to develop the necessary guidance material. |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** |
| 40 | **5/2** | **ICAO activities on interference** *(continued)* | | |
| | | c) support the relevant activities of the ITU and regional telecommunication and standards-making organizations; and | ICAO | Noted. |
| | | d) develop guidance material on the control and removal of interference to aeronautical systems. | ICAO | See above. |
| **AGENDA ITEM 6:** | | **AERONAUTICAL NAVIGATION ISSUES** | | |
| 41 | **6/1** | **Transition to satellite-based air navigation**<br><br>That: | | |
| | | a) ICAO continue to develop as necessary provisions which would support seamless GNSS guidance for all phases of flight and facilitate transition to satellite-based sole navigation service with due consideration of safety of flight, technical, operational and economics factors; | ICAO | The relevant panels continue the development of SARPs, procedures and guidance material in line with part (a). |
| | | b) air navigation service providers move rapidly, in coordination with airspace users, with a view to achieving, as soon as possible, worldwide navigation capability to at least APV I performance; and | States/IOs | Implement, in coordination with airspace users, navigation capability to at least APV I performance. |
| | | c) States and airspace users take note of the available and upcoming SBAS navigation services providing for APV operations and take necessary steps towards installation and certification of SBAS capable avionics. | States/IOs | Take necessary steps towards installation and certification of SBAS capable avionics. |
| 42 | **6/2** | **Guidelines on mitigation of GNSS vulnerabilities**<br><br>That States in their planning and introduction of GNSS services: | States/IOs | Assess the likelihood and effects of GNSS vulnerabilities in their airspace. |
| | | a) assess the likelihood and effects of GNSS vulnerabilities in their airspace and utilize, as necessary, the mitigation methods as outlined in the guidelines contained in Appendix A to the report on Agenda Item 6;<br><br>*(continued...)* | ICAO | Incorporate the guidelines contained in Appendix A to the report on Agenda Item 6 in the first edition of the *Global Navigation Satellite System (GNSS) Manual*. |

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| | # | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
| 42 | 6/2 | **Guidelines on mitigation of GNSS vulnerabilities** *(continued)* | | |
| | | b) provide effective spectrum management and protection of GNSS frequencies to reduce the possibility of unintentional interference; | States | Reduce the possibility of unintentional interference. |
| | | c) take full advantage of on-board mitigation techniques, particularly inertial navigation; | States/IOs | To note. |
| | | d) where determined that terrestrial navigation aids need to be retained as part of an evolutionary transition to GNSS, give priority to retention of DME in support of INS/DME or DME/DME RNAV for en-route and terminal operations, and of ILS or MLS in support of precision approach operations at selected runways; and | States | As part of an evolutionary transition to GNSS, give priority to retention of DME if required. |
| | | e) take full advantage of the future contribution of new GNSS signals and constellations in the reduction of GNSS failures and vulnerabilities. | States | To note. |
| 43 | 6/3 | **Assessment of atmospheric effects on SBAS performance in equatorial regions** That ICAO, in order to aid the work on mitigation of ionospheric effects on SBAS performance in equatorial regions, assess the results of data collection being carried out in States and develop appropriated guidance material. | ICAO | Requested the Navigation Systems Panel (NSP) to give priority to the development of suitable guidance material. |
| 44 | 6/4 | **Automated means for reporting and assessing the effects of outages on GNSS operations** That ICAO consider standardization of an automated means of monitoring and reporting scheduled and unscheduled GNSS outages and assessing their effects on GNSS operations and develop, as necessary, the requisite provisions. | ICAO | Requested the Navigation Systems Panel (NSP) to consider the development of the relevant provisions. |
| 45 | 6/5 | **Early resolution of issues arising from implementation of RNAV and RNP** That ICAO as a matter of urgency address and progress the issues associated with the introduction of RNP and RNAV. | ICAO | Requested the Secretary General to progress the necessary work with the assistance of the Required Navigation Performance and Special Operational Requirements Study Group (RNPSORSG). |

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| | # | ITEM | BY ICAO/PIRGs/ STATES/IOs | ACTION/TASKS |
| 46 | 6/6 | **Advanced GNSS procedure design**<br><br>That ICAO develop RNAV procedures supported by GNSS for both fixed and rotary wing aircraft, enabling lower operating minimas in obstacle rich or otherwise constraint environments. | ICAO | Requested the Navigation Systems Panel (NSP) and Obstacle Clearance Panel (OCP) to develop relevant proposals for consideration by the ANC. |
| 47 | 6/7 | **Curved RNAV procedures**<br><br>That ICAO develop RNAV procedures supported by GNSS for fixed wing aircraft, providing high track and velocity keeping accuracy to maintain separation through curves and enable flexible approach line-ups. | ICAO | Requested the Navigation Systems Panel (NSP) and Obstacle Clearance Panel (OCP) to develop relevant proposals for consideration by the ANC. |
| 48 | 6/8 | **GNSS/INS integration**<br><br>That ICAO develop provisions for the integration of GNSS/INS in order to reduce the vulnerability of GNSS to RF interference and aid the development of advanced GBAS capabilities. | ICAO | Requested the Navigation Systems Panel (NSP) to develop relevant proposals for consideration by the ANC. |
| 49 | 6/9 | **Support of and participation in SBAS pre-operational implementation activities**<br><br>That:<br><br>a) States that develop and introduce satellite-based augmentation systems and other SBAS service providers commence or continue to provide their technical and financial support and participation in the activities leading to the extension of their SBAS service areas into neighbouring States and Regions; and<br><br>b) States participating in SBAS implementation activities coordinate with other participating States to optimize their effort, minimize duplication of service and facilitate participation of service providers. | States/IOs<br><br><br><br><br>States | To note<br><br><br><br><br>States participating in SBAS implementation coordinate with other participating States to optimize their effort. |
| 50 | 6/10 | **Amendment to Annex 10, Volume I, Attachment B — Updating the strategy for introduction and application of non-visual aids to approach and landing** | | |

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| | | That Attachment B to Annex 10, Volume I be amended as shown in Appendix B to the report on Agenda Item 6. | ICAO | The Air Navigation Commission made a preliminary review of Recommendation 6/10, and agreed that it should be transmitted to Contracting States and interested international organizations for comments, together with the Commission's comments and proposals thereon. Following receipt of these comments, a further review will be conducted by the Commission, which will then present its final proposals to the Council for adoption of the amendments to Annex 10, Volume I. |
| 51 | 6/11 | **Amendment to the Global Plan — Navigation**<br><br>That:<br><br>a) the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) be amended as shown in Appendix C to the report on Agenda Item 6; and<br><br>b) updated CNS/ATM systems implementation time lines contained in Part II of the Global Plan be reviewed by the Regional Implementation Group and consolidated for incorporation in the next edition of the Global Plan. | ICAO<br><br>PIRGs | Requested the Secretary General to take appropriate action.<br><br>Update CNS/ATM systems implementation time lines contained in Part II of the Global Plan. |
| 52 | 6/12 | **Development of guidance material on applications of new GNSS elements and their combinations**<br><br>That ICAO, in developing standards for new GNSS elements and signals, address the issues associated with the use of multiple signals and their combinations, and develop guidance on the most promising combinations of GNSS elements. | ICAO | Requested the Navigation Systems Panel (NSP) to develop the required guidance material. |

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| 53 | 6/13 | **Potential constraints on using multiple GNSS signals** <br><br> That States, in their planning for implementation of GNSS services, take full advantage of future benefits accrued from using independent core satellite constellations, other GNSS elements and their combinations, and avoid limitations on the use of specific system elements. | States/IOs | Take full advantage of future benefits, and avoid limitations on the use of specific system elements. |
| 54 | 6/14 | **GNSS services in the 960 - 1 215 MHz band** <br><br> That, <br><br> a) States be encouraged to take into account the need to minimize potential interference to GNSS services in their planning of the deployment of DMEs; and | States | Minimize potential interference to GNSS services in their planning of the deployment of DMEs |
| | | b) an appropriate ICAO body be tasked to review the issues listed in paragraph 6.4.2.4 of the report on Agenda Item 6. | ICAO | Requested the Navigation Systems Panel (NSP) to develop proposals for consideration by the ANC. |
| 55 | 6/15 | **Updating of SARPs for radio navigation aids in Annex 10, Volume I** <br><br> That ICAO undertake a review of SARPs and guidance material in Annex 10, Volume I in the areas identified in paragraph 6.4.3.4 of the report on Agenda Item 6. | ICAO | Requested the Navigation Systems Panel (NSP) to develop relevant proposals for consideration by the ANC. |
| 56 | 6/16 | **Completion of guidance material on application of data quality SARPs in Annex 15** <br><br> That ICAO give high priority to the completion of guidance material for the data quality assurance including the data processing from origination to end-use. | ICAO | Requested the Secretary General to expedite publication of the *Quality Management System Manual for AIS/MAP Services*. |

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| | **#** | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** | |
| **AGENDA ITEM 7:** | | **AERONAUTICAL AIR-GROUND AND AIR-TO-AIR COMMUNICATIONS** | | | |
| 57 | **7/1** | **Strategy for the near-term introduction of ADS-B**  <br><br>That States:  <br><br>a) note that a common element in most of the approaches currently adopted for early implementation of ADS-B is the selection of the SSR Mode S extended squitter as the initial data link; and  <br><br>b) take into account this common element to the extent possible in their national and regional implementation choices in order to facilitate global interoperability for the initial introduction of ADS-B. | PIRGs/States  <br><br><br>PIRGs/States | To note.  <br><br><br>Take into account this SSR Mode S extended squitter as a common element in their national and regional implementation choices for the initial introduction of ADS-B. | |
| 58 | **7/2** | **Support of longer term ADS-B requirements**  <br><br>That  <br><br>a) States recognize that in the longer term the current SSR Mode S extended squitter technology may not be able to fully satisfy all of the requirements for ADS-B services in all airspaces; and  <br><br>b) ICAO continue development of technical standards for ADS-B link technologies, including SSR Mode S extended squitter, VDL Mode 4 and UAT, with special attention being paid to ICAO ADS-B operational requirements, frequency spectrum availability and aircraft integration issues. | States/IOs  <br><br><br><br>ICAO | To note.  <br><br><br><br>Requested the ACP and the SCRSP, in coordination with other appropriate panels, to continue the development of provisions for ADS-B technologies as required. | |
| 59 | **7/3** | **Evolutionary approach for global interoperability of air-ground communications**  <br><br>That States: | | | |

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| | | a) continue the use of currently implemented ICAO standardized systems for VHF band voice and data communications until such time as either saturation of the VHF band is approached or significant cost/benefit or safety advantages are expected from the implementation of other ICAO Standards; | PIRGs/States /IOs | To note. |
| | | b) continue efforts in maximizing efficient use of existing aeronautical spectrum allocations through spectrum management measures | PIRGs/States/ IOs | To note. |
| | | c) continue the progressive deployment of data communications on the basis of applicable ICAO Standards such as aeronautical telecommunication network (ATN) using VDL Mode 2 as dictated by evolving operational requirements with a view to complementing or replacing voice communications for most routine communications; | PIRGs/States/ IOs | To note. |
| | | d) provide a forecast of anticipated VHF band saturation in high-density regions; *(continued...)* | States | Provide a forecast of anticipated VHF band saturation in high-density regions. |
| 59 | 7/3 | **Evolutionary approach for global interoperability of air-ground communications** *(continued)* | | |
| | | e) in view of the anticipated saturation of the VHF band for voice communication, consider transition to spectrally more efficient ICAO systems, and/or make increased use of data communications; and | States | To note. |
| | | f) investigate multi-mode avionics as a transitional method of achieving interoperability of air/ground communications, where global harmonization has not been achieved. | States/IOs | Use multi-mode avionics for achieving interoperability of air/ground communications. |
| 60 | 7/4 | **Investigation of future technology alternatives for air-ground communications** That ICAO | ICAO | Requested the ACP to carry out the relevant activities in (a), (b) and (c). |

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| | | a) investigate new terrestrial and satellite-based technologies, on the basis of their potential for ICAO standardization for aeronautical mobile communications use, taking into account the safety-critical standards of aviation and the associated cost issues; | | | |
| | | b) continue evolutionary development of existing standardized ICAO technologies with a view to increasing their efficiency and performance; and | | | |
| | | c) assess the needs for additional aeronautical spectrum to meet requirements for increased communications capacity and new applications, and assist States in securing appropriate additional allocations by the ITU. | | | |
| 61 | 7/5 | **Standardization of aeronautical communication systems**<br><br>That, for new aeronautical communication systems, ICAO:<br><br>a) continue to monitor emerging communication systems technologies but undertake standardization work only when the systems meet all of the following conditions:<br><br>  1) can meet current and emerging ICAO ATM requirements;<br><br>  2) are technically proven and offer proven operational benefits;<br><br>  3) are consistent with the requirements for safety;<br><br>  4) are cost-beneficial;<br><br>  5) can be implemented without prejudice to global harmonization of the CNS/ATM systems; and<br><br>  6) are consistent with the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750)<br><br>b) include in Annex 10 provisions ensuring that the introduction of mandatory carriage of new equipment be based only on appropriate ICAO regional and interregional coordination; and | ICAO | Requested all ICAO bodies involved in the standardization of aeronautical communication systems to apply it in their work. | |

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| | | **ITEM** | **BY ICAO/PIRGs/ STATES/IOs** | **ACTION/TASKS** |
| | | c) further limit SARPs for complex aeronautical systems to broad, system-level, functional and performance requirements and better capitalize on the work of other standard-making organizations so as to reduce the complexity/size of technical provisions. | | |

— END —