REPORT OF THE FOURTH MEETING OF THE ALLPIRG/ADVISORY GROUP

Montreal, 6 – 8 February 2001

GENERAL

The fourth meeting of the ALLPIRG/Advisory Group was held at ICAO Headquarters in Montreal from 6 to 8 February 2001.

The meeting was chaired by Dr. Assad Kotaite, President of the Council of ICAO. Mr. V.D. Zubkov, Chief, Regional Affairs Office (RAO) served as Secretary of the meeting. The meeting was also assisted by Mr. J.D. Howell, Director, Air Navigation Bureau, Mr. M.C.F. Heijl, Deputy Director, Air Navigation Bureau, Mr. A. Pavlovic, Chief, Aeronautical Information and Charts (AIS/MAP) Section, Mr. C.-R. Boquist, Chief, Air Traffic Management (ATM) Section, Mr. J. Chagas, Chief, Communications, Navigation and Surveillance (CNS) Section, Mr. V. Galotti, Technical Officer, ATM Section, Mr. G. Herpst, Chief, Operations and Airworthiness (OPS/AIR) Section, Mrs. J. Hupe, Technical Officer, OPS/AIR Section, Mr. M. Elamiri, Director, Air Transport Bureau, Mr. C.B. Lyle, Deputy Director, Air Transport Bureau, Mr. G. Finnsson, Chief, Airport and Route Facility Management (ARFM) Section, Dr. U.K. Wickrama, Chief, Forecasting and Economic Planning Section, Mr. A. Sanchez, Director, Technical Co-operation Bureau, Mr. B. Hakim, Acting Deputy Director, Technical Co-operation Bureau, Mr. W. Amaro, Chief, Field Operations Section – The Americas, Technical Co-operation Bureau, Mr. D. McKnight, Regional Affairs Officer, Mr. H.V. Sudarshan, Regional Affairs Officer, Mr. H.P. Pretorius, Regional Affairs Officer, and Mrs. Y. Ayres, Systems Analyst, Regional Affairs Office.

The meeting was attended by 53 participants and 21 observers, listed at the appendix.

The following agenda was approved by the meeting:

Agenda Item 1:   Review of follow-up actions on the ALLPIRG/3 Report

Agenda Item 2:   Interregional coordination and harmonization mechanism

    2.1   Harmonization of air navigation systems
    2.2   Environmental benefits of CNS/ATM systems
    2.3   Other issues which have global ramifications

Agenda Item 3:   Coordination of CNS/ATM partners' planning and implementation efforts

Agenda Item 4:   Safety oversight-related issues

Agenda Item 5:   Recent developments in the area of airport and air navigation services economics

(46 pages)

Agenda Item 6:   Technical cooperation issues

Agenda Item 7:   Any other business

Agenda Item 8:   Report approval

Electronic copies of the documentation that was presented to the ALLPIRG/4 Meeting — working papers, presentations and the final report — are available on the ALLPIRG web site. To access the documentation:

1.   Go to ICAO's web site: http://www.icao.int.

2.   On the left side of the page, navigate down to the heading "Meetings".

3.   Select "ALLPIRG/4".

4.   On the left side of the ALLPIRG page, under "ALLPIRG/4", select "Documentation".

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AGENDA ITEM 1: REVIEW OF FOLLOW-UP ACTIONS ON THE **ALLPIRG/3** REPORT

1.1 The meeting noted the action taken by the Air Navigation Commission (ANC) and the Council on the report of the third meeting of the ALLPIRG/Advisory Group (ALLPIRG/3), which had been held in Montreal from 6 to 8 April 1999.

1.2 The conclusions of ALLPIRG/3 called for certain actions not only by ICAO, but also by other CNS/ATM partners from the ALLPIRG membership. The meeting received an update on the status of follow-up actions and noted that, in many cases, action had already been completed.

1.3 As a result of the review in the meeting, the updated list of follow-up actions taken on the conclusions developed by ALLPIRG/3 is detailed in the appendix to the report on Agenda Item 1.

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APPENDIX

**FOLLOW-UP ACTIONS TAKEN ON THE CONCLUSIONS
DEVELOPED BY THE ALLPIRG/3 MEETING**

ALLPIRG/3 CONCLUSION	FOLLOW-UP METHOD	STATUS	TARGET DATE/ REMARKS
Conclusion 3/1 – Framework for CNS/ATM planning That:			
a) the *Global Air Navigation Plan for CNS/ATM Systems* constitutes the basis for CNS/ATM planning;	Note	—	Noted
b) PIRGs and regional offices will be consulted during updates of the *Global Air Navigation Plan for CNS/ATM Systems*, particularly with regard to regional elements;	Consult PIRGs and regional offices during the updates	Coordination completed for Amendment No. 1	Ongoing task
c) ALLPIRG will reconcile any divergent proposals in respect of b) above in an expeditious manner;	Harmonize any divergent proposals	Part of ALLPIRG/4 agenda	Ongoing task
d) Chief, Regional Affairs Office will constitute the point of contact at ICAO Headquarters to support and coordinate interregional and other ALLPIRG-related activities; and	Secretary General to make appropriate arrangements	Agreed	Completed
e) regional offices should be provided with the additional resources necessary for them to carry out their full roles in CNS/ATM planning.	Secretary General to ensure resources are sufficient	Agreed	Ongoing task
Conclusion 3/2 – Review of the *Supplementary Procedures* (Doc 7030) That ICAO develop an adequate format and subdivision of Doc 7030 conducive to CNS/ATM systems planning in accordance with the concept of homogeneous ATM areas and major international traffic flows.	Develop, in coordination with PIRGs, an adequate format and subdivision of Doc 7030	Action in hand	June 2001

ALLPIRG/3 Conclusion	Follow-up Method	Status	Target Date/ Remarks
Conclusion 3/3 – Identification of matters needing action by ALLPIRG That PIRGs: a) undertake additional work items identified by Council as part of the follow-up to the World-wide CNS/ATM Systems Implementation Conference, such as those shown in Table 3-1 of the ALLPIRG/3 Report;	Undertake tasks as specified for action by the Council	PIRGs have included the tasks in their respective work programmes	Ongoing
b) organize and conduct their work in such a way that all such matters needing action by ALLPIRG (including those shown in Table 3-1) be identified, documented and communicated in the most expeditious manner; and	Identify, document and communicate any interregional issues	Included as part of PIRGs' work programmes	Ongoing
c) take advantage of the ALLPIRG forum to resolve problems they have identified.	Harmonize any interregional issues	Part of ALLPIRG/4 agenda	Ongoing
Conclusion 3/4 – Regular review of the uniform methodology That the ICAO PIRGs keep the uniform methodology for the identification, assessment and reporting of air navigation shortcomings and deficiencies under regular review and propose modifications thereto if needed in the light of experience gained.	Review the uniform methodology regularly and identify any modifications required	In response to a State filing a difference regarding the implementation of WGS-84, the methodology has been further clarified	ALLPIRG/4 was presented with clarifications to the uniform methodology

ALLPIRG/3 CONCLUSION	**FOLLOW-UP METHOD**	**STATUS**	**TARGET DATE/ REMARKS**
Conclusion 3/5 – Need for complete use of the uniform methodology That States and international organizations be urged to apply the uniform methodology for the identification, assessment and reporting of air navigation shortcomings and deficiencies completely and effectively so that the objectives of the methodology are fully achieved.	Bring the intent of this conclusion to the attention of States and international organizations through a State letter/PIRG meetings	The attention of States was drawn to the conclusion through letter M 7/1 – 99/78, dated 9 July 1999	Completed
Conclusion 3/6 – Shortcomings and deficiencies affecting neighbouring region(s) That air navigation shortcomings and deficiencies which affect neighbouring region(s) should receive urgent attention by the ICAO Regional Office(s) concerned similar to serious cases mentioned in paragraph 6.2 of the uniform methodology.	ICAO Regional Offices, in coordination with PIRGs, to review and take action on shortcomings and deficiencies that affect interface areas between regions — ongoing task	Identification of shortcomings and deficiencies is part of the work programme of each PIRG	Ongoing task

ALLPIRG/3 CONCLUSION	FOLLOW-UP METHOD	STATUS	TARGET DATE/ REMARKS
Conclusion 3/7 – Addition to terms of reference of PIRGs That the Council agree to the explicit inclusion of economic matters in the terms of reference of PIRGs by the introduction of text along the following lines (to be adapted for each PIRG to fit in with its current terms of reference at appropriate place or places): "In facilitating implementation of facilities and services identified in the regional air navigation plan and with due regard to the primacy of safety, the [PIRG concerned] should take into account the costs and benefits of implementation options and the need to facilitate financing of preferred options ... . With regard to multinational facilities and cooperative activities the [PIRG concerned] may wish to use an appropriate mechanism to prepare cost/benefit analyses and business cases, and to provide related guidance material in support of "prototype" sets of planned facilities and services ... . At its discretion, the [PIRG concerned] may invite financial institutions, as required on a consultative basis and at a time it considers appropriate in the planning process, to participate in this work."	Revise the terms of reference of PIRGs to explicitly include economic matters	The PIRGs revised their respective work programmes/ terms of reference to include economic matters	Completed

ALLPIRG/3 CONCLUSION	FOLLOW-UP METHOD	STATUS	TARGET DATE/ REMARKS
Conclusion 3/8 – States assist other States for implementation of WGS-84 That ICAO and those States in a position to do so be urged to provide assistance to other States which need assistance in the implementation of WGS-84.	ICAO to provide assistance to States through TC projects and SIPs	1) During the year 2000, a SIP was implemented for Eastern European States for the transition to WGS-84 2) During the year 2001, technical assistance is planned to be provided to the States of the CAR/SAM Regions as part of a TC Project	Ongoing task
Conclusion 3/9 – Advice to States on technical difficulties in implementation of WGS-84 That ICAO Regional Offices obtain information from States which have not implemented WGS-84 as to what technical difficulties they are facing and provide advice to those States as a matter of priority.	ICAO Regional Offices to ascertain from States any difficulties with implementation of WGS-84 and provide advice	ICAO Regional Offices coordinated and provided assistance to States to resolve the difficulties in implementation of WGS-84	Ongoing

ALLPIRG/3 CONCLUSION	FOLLOW-UP METHOD	STATUS	TARGET DATE/ REMARKS
Conclusion 3/10 – Increasing emphasis on interregional and subregional planning for CNS/ATM That, with a view to increasing emphasis on interregional and subregional planning for CNS/ATM, ICAO: a) develop methodologies for subregional and interregional planning of CNS/ATM systems as guidance material for PIRGs;	Develop a framework for interregional planning	Draft guidance completed and presented to the first interregional coordination meeting	April 2001
b) in completing a) above, account be taken of the work carried out in the CAR/SAM Regions as a result of the special CNS/ATM implementation project, as well as of existing regional activities with regard to the implementation of CNS/ATM systems; and	Note	—	Noted
c) encourage and strengthen lateral interregional coordination at the level of Secretaries of PIRGs.	Increased communication and contacts between ICAORDs	First interregional (Asia/Europe/ Middle East) coordination meeting held in Bangkok (11 to 13 Oct. 2000)	Ongoing task
Conclusion 3/11 – Support of Y2K efforts That ICAO Regional Offices and PIRGs: a) support global contingency planning efforts and, noting the very short time in hand, make concerted efforts to take full advantage of the common experience in developing contingency plans by sharing information;	PIRGs to develop regional contingency plans	—	Completed
b) work to ensure that States issue appropriate aeronautical information by 1 July 1999;	Address a State letter to this effect	—	Completed
c) support the ICAO/IATA Action Programme;	Support the ICAO/IATA Action Programme	—	Completed

ALLPIRG/3 CONCLUSION	**FOLLOW-UP METHOD**	**STATUS**	**TARGET DATE/ REMARKS**
d) urge States to publish contingency planning measures not later than 12 August 1999; and	Address a State letter to this effect	—	Completed
e) use the in-flight broadcast procedure (IFBP) and the traffic information broadcast by aircraft (TIBA) for temporary activation as part of the contingency planning process in areas of low traffic density.	Address a State letter to this effect	—	Completed
Conclusion 3/12 – Y2K follow-up activities That the Secretary General: a) issue a State letter advising States not to use the 9 September 1999 and 30 December 1999 AIRAC dates;	Address a State letter	The attention of States was drawn to the conclusion through State letter dated 14 May 1999	Completed
b) develop and circulate an appropriate standard format for States to use for the publication by 1 July 1999 of appropriate aeronautical information on their Y2K compliance in accordance with Assembly Resolution A32-10; and	Develop and circulate a standard format of AIC to States	The Standard format of AIC was sent to States under cover of State letter AN 13/46 – 99/62, dated 14 May 1999	Completed
c) further investigate the capability of the AFTN to support operations during the Y2K transition period and other critical dates.	Investigate the capability of AFTN operations during the Y2K transition period and inform States	The task has been completed by the regional offices	Completed

ALLPIRG/3 CONCLUSION	FOLLOW-UP METHOD	STATUS	TARGET DATE/ REMARKS
Conclusion 3/13 – Support for the ICAO position at WRC-2000 That: a) the utmost importance of securing in a coordinated manner the protection of aeronautical radiofrequency spectrum should be recognized, particularly with regard to the International Telecommunication Union (ITU) World Radiocommunication Conference (2000) (WRC-2000);	Promote the intent of this conclusion	—	Completed
b) the need of securing adequate radio frequency spectrum allocations to guarantee the safety of air navigation should be brought to the attention of States at the highest level;	Letter from the President of the Council to States/Ministers of Transport	—	Completed
c) the progress in the implementation of ALLPIRG/2 Conclusion 2/20, a), b), c), d) and g) should be noted;	Note	—	Noted
d) the continuing urgency of ALLPIRG/2 Conclusion 2/20, a), e), f) and g) should be reaffirmed; and	Note	—	Noted
e) the information material provided to the meeting with regard to the ICAO position for the ITU WRC-2000 and ICAO Assembly Resolution A32-13 should be used to promote consideration of the proposed ICAO position for incorporation into national proposals to WRC-2000.	Send approved ICAO position to States and relevant international organizations, including ITU	—	Completed
Conclusion 3/14 – Cooperation with ICAO/CAEP work That ICAO/CAEP expedite its work on the development of a preliminary methodology for the assessment of the environmental benefits associated with the implementation of CNS/ATM systems to be applied by PIRGs in the earliest opportunity in the analysis of the business cases, while waiting for the final methodology to be incorporated as part of a new chapter in Volume I of the *Global Air Navigation Plan for CNS/ATM Systems*.	Develop a methodology for the assessment of environmental benefits and incorporate it into the Global Plan	Presented to the CAEP/5 Meeting (Montreal, 8 – 17 Jan. 2001)	Mid-2001

ALLPIRG/3 CONCLUSION	**FOLLOW-UP METHOD**	**STATUS**	**TARGET DATE/ REMARKS**
Paragraph 7.1 c) of the ALLPIRG/3 Report: the PIRGs will be informed of the final outcome of the analysis and, if necessary, the *Global Air Navigation Plan for CNS/ATM Systems* will be amended accordingly to reflect the position	i) Inform PIRGs of the final outcome of the analysis of the use of GNSS as a sole means of navigation	All the PIRGs were informed	Completed
	ii) If necessary, amend the *Global Air Navigation Plan for CNS/ATM Systems* accordingly	Action in hand	June 2001

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AGENDA ITEM 2:   INTERREGIONAL COORDINATION AND HARMONIZATION MECHANISM

2.1   **Harmonization of air navigation systems**

Interregional mechanism

2.1.1   The meeting noted that, in order to achieve an integrated global air traffic management system, ICAO has been addressing the planning and implementation of CNS/ATM systems worldwide in a progressive, cost-effective and cooperative manner. This would enable aircraft operators to meet their planned times of departure and arrival and adhere to their preferred flight profiles with minium constraints and without compromising agreed levels of safety.

2.1.2   As the formulation of regional, subregional and national plans for CNS/ATM systems is progressively gaining maturity, States and aircraft operators are investing in the enabling technologies to gain early benefits, eventually migrating to CNS/ATM systems. As this equipage progresses, both on the ground and in aircraft, the meeting confirmed the need to address further steps in the planning and implementation of CNS/ATM systems that would face the challenge of the integration, interoperability and harmonization of the systems.

2.1.3   In discussing the mechanism for interregional planning and coordination for the harmonization of CNS/ATM systems, the meeting recalled that, in 1996, the Council had established the ALLPIRG/Advisory Group to provide a high-level interface to achieve this objective. A lower-level interface is covered by the interregional groups established by planning and implementation regional groups (PIRGs) with a specific objective. Although these interregional groups are meeting the requirements for which they were formed, in response to ALLPIRG/3 Conclusion 3/10, they have been further enlarged, in particular through periodic meetings of the ICAO Regional Directors, to undertake the task of interregional coordination for the harmonization of CNS/ATM systems planning and implementation on the basis of homogeneous air traffic management areas and major international traffic flows. The first such interregional coordination meeting (IRCM/1) — between the Asia/Pacific, Europe and Middle East Regions — was held in Bangkok in October 2000. ALLPIRG was informed that the draft guidance material for the harmonization of CNS/ATM systems which had been reviewed by IRCM/1 would be finalized this year and made available to all the regional offices and PIRGs. ALLPIRG, recognizing that future such IRC meetings would need to be convened on a periodic basis to address interregional planning and implementation issues, agreed that it would be beneficial to adopt a general framework and terms of reference for those meetings. The meeting consequently agreed on the following conclusion:

Conclusion 4/1   –   A general framework and terms of reference for interregional coordination meetings

That the Council agree to adopt a general framework and terms of reference for interregional coordination meetings (IRCMs) as set out in Appendices A and B to the report on Agenda Item 2.

2.1.4   With reference to the participation of international organizations and the user community in these interregional coordination meetings, the meeting received clarification that the coordination meetings take place at different levels, and was informed that such participation would be given due consideration during the next level of IRC meetings.

2.1.5   The meeting further considered the possibility of organizing, on a periodic basis, specially focussed meetings of neighbouring States of two or more regions, with the agenda covering interface and other issues of common interest. The meeting fully supported such meetings, but decided that they should

only be convened as and when required, taking into account the availability of resources in the ICAO Secretariat. The meeting, as a result of discussions, agreed to the following conclusion:

Conclusion 4/2   –   Interregional meetings specifically dedicated to interface areas

> That ICAO convene interregional meetings, as and when required, to address the specifically focussed interface problems and other issues of neighbouring States and/or neighbouring regions as a whole.

2.1.6   While discussing the enhancement of coordination efforts both within and outside ICAO, the meeting was informed about the Air Navigation Bureau (ANB) Regional Coordination Initiative (ARCI), which was established to enhance coordination on technical issues between ANB, the Regional Affairs Office (RAO) and the regional offices. All ANB Sections involved in regional planning are part of this initiative. It was emphasized that the ARCI was informal in nature and that there was no intention to replace any of the existing coordination mechanisms. It was suggested that the ARCI would result in more frequent, direct and informal contacts between ANB, RAO and the regional offices at the Technical Officer level using electronic mail, which was considered to be beneficial for both parties. This initiative would ensure early coordination, e.g. it would be possible for proposals requiring a follow-up by the ANB to be coordinated before they are being formally presented to PIRGs and their sub-groups. Finally, it was noted that the work by the ARCI had only been initiated recently and that most of its activity so far had been related to the development of consolidated comments from the ANB on the RAO draft paper entitled "Comparative analysis on regional developments in air navigation systems".

Interregional issues

2.1.7   In order to progress and accelerate the interregional planning and harmonization process for the implementation of CNS/ATM systems, the meeting recognized that further steps were required in terms of the identification and addressing of interface issues (at the regional level) and missing elements (at the global level). A general list of interface issues and missing elements — as identified by the PIRGs — that require the attention of all CNS/ATM partners was reviewed. The meeting, in its review, observed that the list would serve as a good instrument in enhancing the interregional planning and harmonization process and, as a result, updated the list of interface issues and missing elements. The meeting consequently adopted the following conclusion:

Conclusion 4/3   –   Increased emphasis on addressing interregional issues and missing elements

> That, with a view to facilitating interregional planning and the harmonization of air navigation systems, ICAO and the CNS/ATM partners put more emphasis on the addressing of interregional issues and the missing elements as outlined in Appendix C to the report on Agenda Item 2.

2.1.8   Discussing the interregional issues further, the meeting, noting that many of the PIRGs had finalized their respective regional air navigation plans (ANPs) and facilities and services implementation documents (FASIDs), expressed deep concern about the considerable delay in their publication by ICAO.

The meeting urged ICAO to allocate sufficient resources and priority to the publication and maintenance ANP/FASID documents. The meeting consequently adopted the following conclusion:

Conclusion 4/4   –   Publication and maintenance of ANP/FASID documents

That:

a) ICAO ensure that sufficient resources and priorities are accorded to the publication of ANP/FASID documents; and

b)   the ANP/FASID be kept up-to-date through regular amendments thereto.

Aeronautical information

2.1.9   The meeting was advised that the European Air Navigation Planning Group (EANPG) had recently been informed of the result of research, within the European Organisation for the Safety of Air Navigation (EUROCONTROL), which revealed that the consequences of inconsistencies in aeronautical information had proven to be serious in terms of safety, as well as economy and capacity. Initial investigation had indicated that this problem was largely related to non-adherence to aeronautical information regulation and control (AIRAC) procedures by States, but further research had highlighted the scope to be much broader. The aeronautical information inconsistencies referred to operational aeronautical data content, data timeliness, data integrity and data consistency and included the full airspace infrastructure. The problem had manifested itself through inconsistencies of aeronautical information inserted in flight management systems, charts, air traffic services (ATS) display screens, flight data processing systems, etc. By way of example, three European States had reported more than twenty occurrences and/or incidents due to this factor.

2.1.10   ALLPIRG noted that such inconsistencies, which were many and varied and had direct and indirect causes, were becoming more visible as airspace considerations became more complicated and demanding. It considered that, although the EANPG had decided to promote awareness of this negative situation at the level of the European Region, other regions were likely to be similarly affected and, as a consequence, it agreed that, as a means of resolving this problem, efforts should be made to improve the consistency of aeronautical information in all ICAO Regions, in particular by increasing the awareness of all States of the problems so far encountered. The meeting accordingly formulated the following conclusion to that effect:

Conclusion 4/5   –   Consistency in aeronautical information

That, on the basis of work being done in the European Region, ICAO:

a) make every effort to increase the awareness of all States of the need to ensure the consistency of aeronautical information, including the development of additional guidance material, if necessary; and

b) draw States' attention to the importance of implementation of the new ICAO standard aeronautical information publication format.

Reduced vertical separation minima (RVSM)

2.1.11   The meeting made an overview of issues and interregional differences that had been identified when planning for the implementation of reduced vertical separation minima in different ICAO Regions, in particular with regard to airspace monitoring and aircraft approvals. In the case of the North

Atlantic (NAT) Region, the initial approach was based on the first edition of ICAO's *Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive* (Doc 9574), but plans had to be changed when insufficient equipage rates to allow a planned pre-implementation safety study were encountered. Planning for RVSM in the Asia and Pacific (ASIA/PAC) Regions initially followed the NAT model, but adjustments were necessary to respond to different monitoring requirements. For the EUR Region, there was no reason to divert from the ICAO guidance contained in Doc 9574, partly due to the increased size of the height monitoring infrastructure and the larger number of airframes already approved as a result of NAT RVSM. Other examples of work on RVSM in the CAR/SAM and North American (NAM) Regions and with regard to South Atlantic routes were cited. RVSM had already been implemented in some parts of the Africa-Indian Ocean (AFI) Region which interfaced with Europe and the South Atlantic.

2.1.12   ALLPIRG further noted that RVSM approval included three parts: the minimum aircraft system performance specification (MASPS) or technical performance, maintenance requirements and operational procedures. The meeting considered that the first two of these elements would benefit from a global approach and appropriate guidance material, which would respond to the vital need for information sharing, minimize paperwork associated with approvals and generally smooth out the kind of difficulties encountered thus far in the different regions. Such a coordination mechanism with direct links to regional planning groups would ensure that regional planning for RVSM fitted into the overall global objectives and that transparency at regional interfaces was guaranteed. In that regard, it was noted that the last meeting of the Review of the General Concept of Separation Panel, in May 2000, had developed a second edition of Doc 9574 which contained considerable new material. In addition, that panel ─ renamed the Separation and Airspace Safety Panel (SASP) ─ would be carrying out further work in this domain. Meanwhile, it was noted that the regional monitoring agency (RMA) managers would continue their harmonization work with the assistance of the EUR/NAT Office.

2.1.13   The meeting was provided with an overview of the status of the European RVSM Programme and an indication of the associated issues and risks that the programme currently faced. EUROCONTROL managed the EUR RVSM Programme, in close cooperation with ICAO and the European Civil Aviation Conference (ECAC), and was responsible for the EUR operating concept, the EUR Region-wide RVSM safety assessments, and the development and implementation of the performance monitoring infrastructure. The programme stakeholders included authorities and ATS providers from 40 States and 3 000 aircraft operators which operate approximately 10 000 aircraft in European airspace at FL 290 and above.

2.1.14   ALLPIRG noted that, although the EUR RVSM Programme was currently on schedule, a number of risks to its timely implementation still existed and that July 2001 would be a critical month when the decision to proceed with the programme as planned, or delay it, would be taken. The main elements of that decision were airspace user readiness, State (ATM) preparedness and the pre-implementation safety case, which would be presented to the EUROCONTROL Safety Regulation Commission (SRC) by May 2001.

2.1.15   Airspace user readiness was dependent on the preparedness of States' regulatory authorities to grant approvals for operations within RVSM airspace (required by 31 March 2001) and thus a pressing issue, particularly since, in some States, no RVSM approval process was yet in place. The meeting therefore agreed that the attention of the Air Navigation Commission should be drawn to this matter in the context of its review of the ALLPIRG/4 Report and that the establishment of a format for this certification process

should be added to the list of interregional issues/missing elements to be addressed, which ALLPIRG had agreed to develop in paragraph 2.1.6 above. The meeting agreed to the following conclusion accordingly:

Conclusion 4/6   –   RVSM certification process

>   That ICAO develop a suitable standard format for use by States in certification of aircraft approval for RVSM operation.

2.1.16   The meeting noted the progress made with regard to many RVSM States' readiness but that cooperation was required with the States which are adjacent to the EUR RVSM area of applicability, such as the Russian Federation and Middle East (MID) and AFI States. It also took note of a number of aspects of RVSM performance monitoring, which required interregional coordination and cooperation. Finally, the meeting was advised of the high priority being attached to RVSM implementation in the ASIA/PAC Regions, the support being given by the United States to those initiatives and the exemplary work done by the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) and the ICAO Bangkok Regional Office in that regard.

Moscow State Aviation Technology University Fund

2.1.17   The meeting was informed that the Moscow State Aviation Technology University (MSATU) Fund of Trustees — Australia, Belarus, Cyprus, Czech Republic, France, Germany, Israel, the Russian Federation, the United Kingdom and the United States — with the support of and extensive cooperation with the scientific community of these and other countries, developed the international programme "Harmonization of the World Air Navigation System" to help accelerate the rate of implementation of CNS/ATM systems. The programme includes institutional, economic, technical, technological and ergonomic measures that contribute to the development of future national air navigation systems and to ensuring their integration into the worldwide system. The measures proposed (projects) are of interest to air navigation services for flights in any country of the world. This should be a good basis for cooperative efforts by countries and successful work by ICAO and the fund in this area. The meeting noted that a Memorandum of Understanding had been signed by ICAO with the MSATU Fund in support of its international programme for harmonization of the world air navigation system.

New intercontinental routes in Russian airspace

2.1.18   The meeting was presented with information on the implementation of the transit ATM cross-polar routes. Traditionally, the basic intercontinental bridge of air connections that pass in the airspace of Russia was the Europe–Asia bridge. However, recent years had witnessed the active development of air connections between North America and Asia through the Far East of Russia and Siberia. Historically, several air traffic flows appeared in Russian airspace. At first it was Asian, trans-Asian and trans-Siberian flows. Trans-East and trans-polar flows were later added, and presently a cross-polar route has been developed. As the needs of transit routes constantly change, depending on the user, these routes must be maintained in an efficient condition. This task is being now successfully addressed by the air traffic organization system of the Russian Federation. Taking into account that cross-polar routes pass through the airspace of a number of States — the United States, Canada, Iceland, Denmark, Norway, China, Mongolia and States of Southeast Asia — these States have carried out intensive work, under the auspices of ICAO, to open these routes and provide for the safety of the first flights using them. As of 1 February 2001, the new polar routes were opened for flights on a non-discriminatory basis and activities on new intercontinental routes are in progress. All the details, including the listing of alternate aerodromes to meet emergency situations on these cross-polar routes, are reflected in the regional plan documentation.

Standards and Recommended Practices

2.1.19   The meeting was presented with an overview of the technical developments related to CNS systems mainly focussing on Standards and Recommended Practices (SARPs) and guidance material. The meeting noted that the first package of global navigation satellite systems (GNSS) SARPs would be presented to the Council of ICAO in March 2001, with an applicability of November 2001. The meeting discussed various issues related to the implementation of GNSS in the regions, including the availability of approval procedures and flight inspection standards, avionics, ground equipment, training, human resources and operational requirements. The meeting was informed that the approval of procedures is the responsibility of States and that ICAO would be ready to provide any assistance and guidance material in developing these procedures. The meeting further noted that the Testing of Radio Navigation Aids Study Group (TRNSG) was currently preparing guidance material for flight inspection procedures for inclusion in Doc 8071.

Implementation of WGS-84

2.1.20   The meeting was apprised of the current status of worldwide implementation of the world geodetic system – 1984 (WGS-84) and noted that good progress had been achieved. The meeting highlighted the importance of WGS-84 implementation and underscored the need for its implementation in relation to the introduction of GNSS.

2.1.21   In discussing the monitoring of WGS-84 implementation, the meeting agreed that the format of reporting WGS-84 implementation was inadequate to do a full analysis and therefore the results could be ambiguous. With this in mind, ALLPIRG agreed that the proposed format for WGS-84 reporting be adopted and that PIRGs be tasked with the monitoring and documenting the status of implementation.

2.1.22   The meeting recognized that this standardized format of reporting of WGS-84 implementation will assist States and regional offices in compiling up-to-date, detailed information on the implementation of WGS-84 by States. It was further agreed that there would be no need to include this new reporting format of WGS-84 into the facilities and services implementation document (FASID).

2.1.23   The meeting welcomed the special implementation project (SIP) approved by the Council of ICAO to respond to the request from Armenia, Azerbaijan and Georgia for assistance with the implementation of WGS-84.

2.1.24   The meeting accordingly formulated the following conclusion:

Conclusion 4/7   –   Adoption of a uniform format for the reporting of WGS-84 implementation

                    That the table available at Appendix D to the report on Agenda Item 2 be adopted as a uniform format for the reporting of WGS-84 implementation by PIRGs and States.

ICAO's WGS-84-related web site

2.1.25   The meeting was informed that ICAO had initiated the creation and establishment of ICAO's WGS-84-related web site. The site will be available in four of ICAO's official languages: English, French, Russian and Spanish. It is envisaged that the web site will have several parts which would have links to the appropriate data bases, and that the first part will highlight those paragraphs of Annexes 4, 11, 14 (Volumes I and II) and 15 which are specifically related to WGS-84 SARPs, together with the tables containing the aeronautical information quality requirements. The second part will provide access to the *World Geodetic System – 1984 (WGS-84) Manual* (Doc 9674). A special part dealing with the subject of the vertical datum and geoid will be included.

2.1.26   Another part will be related to the WGS-84 parts of the basic air navigation plan (ANP) and FASID for each particular ICAO Region. In that respect, FASID AIS-5 Tables will be provided containing WGS-84 requirements for each ICAO Region, in the same format as it was approved by the Council for the CAR/SAM Regions as recommended by the Third Caribbean/South American Regional Air Navigation Meeting. These tables will be completed with data available at ICAO Headquarters and verified by the regional offices. Basic ANP and FASID material for each region will be used by the regional planning and implementation groups as their basic planning material when dealing with WGS-84.

2.1.27   Separate tables containing the time schedule for implementation of the WGS-84 requirements, as specified in the respective FASID AIS-5 Table, and its status will have to be filled in by each State. This will also be used by the respective PIRGs during their regular review of the ANP and FASID.

2.1.28   In addition, the web site will have the capability of providing expert advice in the form of questions and answers. This will be backed up by the establishment of an expert panel. It is also intended to provide a list of those licenced surveying companies that could be contracted by States to do the field work in accordance with the ICAO SARPs.

2.1.29   The primary users of the web site will be the regional offices and their respective PIRGs, all ICAO Contracting States and Headquarters. Maintenance of the site will be in the Aeronautical Information and Charts (AIS/MAP) Section of the ANB and the announcement of the site ─ together with its address and the complete procedure, including passwords ─ will be made available through an official State letter. It is anticipated that the web site development could be completed within a four-month period, followed by the test and, after being verified by the regional offices, put into official use. If appropriate priority is provided for this project, it could be completed by the end of June 2001.

Multifunctional Transport Satellite (MTSAT)

2.1.30   The meeting was presented with information on Japan's Multifunctional Transport Satellite (MTSAT) and its status. MTSAT will provide the Asia/Pacific Region with the aeronautical mobile satellite service (AMSS) and satellite-based augmentation system (SBAS) capabilities. The AMSS functions of MTSAT include the provision of all the aeronautical communications defined by ICAO. These communications could be available for ATS providers and aircraft operators within the Asia/Pacific Regions through data link service providers. The AMSS functions of MTSAT will become operational in Japanese fiscal year 2003. Regarding the SBAS function by MTSAT, the meeting was informed that an SBAS Technical Interoperability Working Group (IWG) had been established with the Canada, Europe, Japan and the United States in order to ensure interoperability among SBAS systems [wide area augmentation systems (WAAS), European geo-stationary navigation overlay service (EGNOS) and MTSAT satellite-based augmentation system (MSAS)]. Following the total system integration test and certification work of MSAS, it would commence its first phase of operation with a single MTSAT in 2004. The second phase of operation, with two MTSATs, is scheduled for commissioning in 2006. The meeting noted that the MTSAT system would be made available to the Asia/Pacific States on a non-profit basis in support of the implementation of CNS/ATM systems.

Re-examination of the term "CNS/ATM system"

2.1.31   The meeting was presented with a proposal by the International Air Transport Association (IATA) to re-examine the term *CNS/ATM system* in light of developments that have occurred since 1991. It suggested that ATM has now assumed a predominant position and it was indeed a primary factor in the development and implementation of communications, navigation and surveillance systems. The meeting,

while expressing total support for this approach, noted that, in the development of implementation plans for CNS/ATM systems, all the PIRGs have in fact first addressed ATM objectives and operational scenarios, followed by the establishment of CNS requirements. In relation to a proposal for a change of terminology from the current *CNS/ATM system* to *ATM_cns*, the meeting agreed that it would require further consideration.

Aeronautical mobile satellite services

2.1.32   The meeting was advised that the restructuring of Inmarsat involved the incorporation of holding and operating companies, located in England and registered under British law on 15 April 1999. A Public Services Agreement between the International Mobile Satellite Organization (IMSO) and the privatized Inmarsat was also signed with immediate effect. The meeting was further advised that IMSO had concluded an Agreement of Cooperation with ICAO, under which the Organizations have established and maintain close ─ but non-exclusive ─ consultation and cooperation in matters of common concern relating to aeronautical mobile satellite communications. Under this Agreement, IMSO would ensure that the company takes into account the applicable ICAO Standards and Recommended Practices in line with the Public Services Agreement and would regularly inform ICAO accordingly.

2.1.33   The meeting was informed that it would now be timely for the PIRGs to examine the implementation of AMSS in oceanic and remote airspace in adjacent regions, with a view to increasing their efforts to bring the level of implementation in all regions up to the level of the better-equipped regions. This would allow aircraft to receive a consistently high level of service and all parties to share the benefits. The meeting was further informed that the cost of implementing ground systems to support CNS/ATM in oceanic and remote airspace using AMSS was small compared to most other CNS/ATM systems.

2.2   **Environmental benefits of CNS/ATM systems**

2.2.1   The meeting welcomed the efforts of the Committee on Aviation Environmental Protection (CAEP) towards the development of a methodology for the quantification of potential benefits produced by the implementation of CNS/ATM systems.

2.2.2   The meeting was informed of the results of the fifth meeting of CAEP (CAEP/5) and, in particular, the status of development of the methodology and its results. CAEP, with support from the United States Federal Aviation Administration (FAA) and the European Organisation for the Safety of Air Navigation (EUROCONTROL), has developed a parametric model capable of estimating global emissions and fuel usage and evaluating the impact of various CNS/ATM systems enhancements. The results of the study demonstrate overall fuel savings, and associated reductions of CO_2 in the order of 5% in both the United States and European Region.

2.2.3   CAEP/5, while approving the methodology, requested that its results be brought to the attention of the ALLPIRG/4 Meeting and that the methodology be included in the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750), as appropriate, following a review by the Secretariat. CAEP also recommended that the expansion of the methodology to other regions be included in its work programme, subject to the availability of data and resources.

2.2.4   The meeting noted that the implementation of CNS/ATM systems varies from region to region based on regional needs, capabilities and resources. It is therefore important for each region to assess the environmental impact of its specific implementation plan, and to promote those benefits to the government policy makers faced with making the necessary commitments to CNS/ATM systems implementation. In this context, the meeting also recognized the importance of adopting a common

methodology which would enable the inclusion of the specificities of each region in the respective regional plans, while establishing a uniform basis for the environmental assessment.

2.2.5   The meeting was informed on how ATM environmental issues were being addressed by EUROCONTROL, as well as on EUROCONTROL's environmental policy and strategy. The meeting highlighted the need to consider the environmental implications as part of the ATM decision-making process.

2.2.6   The meeting noted that, in addition to addressing safety, capacity and efficiency requirements, EUROCONTROL was increasingly taking environmental issues into account in all ATM activities when progressing operational ATM improvements. Furthermore, it was highlighted that EUROCONTROL would continue to support the relevant international processes.

2.2.7   The meeting noted the information provided on the environmental benefits associated with the implementation of CNS/ATM systems in the CAR/SAM Regions. The meeting also noted that the results obtained for the nine traffic flows analysed so far, for the first two phases of the project, supported the results obtained by the CAEP methodology.

2.2.8   While recognizing the importance of considering the environmental issues when defining CNS/ATM systems implementation strategies, the meeting agreed to the following conclusion:

Conclusion 4/8   –   Environmental benefits of CNS/ATM systems

That:

a) ICAO Regional Offices and PIRGs support ICAO/CAEP efforts to expand the methodology for the quantification of CNS/ATM environmental benefits to each region by collecting data, as necessary;

b) ICAO/CAEP continue its work on the expansion of the methodology for the assessment of the environmental benefits associated with the implementation of CNS/ATM systems to the various regions; and

c) ICAO proceeds with the revision of the methodology for inclusion in the *Global Air Navigation Plan for CNS/ATM Systems* (Doc 9750) at the earliest opportunity.

2.3   **Other issues which have global ramifications**

A global air navigation meeting or conference and an integrated global air navigation plan

2.3.1   The meeting was presented with a working paper on the need for a global air navigation meeting or conference and an integrated global air navigation plan. It was noted that the Air Navigation Commission would address the issue. The paper presented a multi-faceted approach which reiterated the need to integrate the CNS/ATM systems planning into the regular regional air navigation planning framework. It also outlined the benefits of amalgamating the regional air navigation plans into a set of global requirements of facilities and services in the form of a global ANP, with an associated database, and suggested objectives for a global air navigation meeting or conference to be convened during the next triennium ─ 2002 to 2004.

2.3.2   It was recalled that the regional ANPs reflected the obligations of States, in accordance with Article 28 of the *Convention on International Civil Aviation* (Doc 7300), to provide facilities and services to support international air navigation.

2.3.3   It was recognized that CNS/ATM systems formed essential elements of the regional air navigation infrastructure and that formal commitment by States to implement these systems is required to achieve a cohesive, global CNS/ATM systems infrastructure. Formal recognition of the requirements for CNS/ATM systems would encourage the availability of funding on a timely basis to allow an orderly, coordinated investment in the necessary enhancements of airborne capability in step with ground and satellite-based enhancements, and provide the basis for cost recovery for the regional facilities and services through air navigation user charges.

2.3.4   The process of incorporating CNS/ATM systems requirements into the air navigation plans was already well underway in several regions. Consolidation of all global requirements for facilities and services to support international civil aviation could take the form of a global ANP, supported by a comprehensive database. The global ANP and database would form a global blueprint, reflecting a worldwide consensus on requirements for implementation of facilities and services. The meeting noted that one global part would be required encompassing common global requirements applicable to all regions, such as global principles and Council policy statements, while separate parts would reflect the specific requirements of the nine ICAO regions.

2.3.5   The meeting noted that work on a global ATM operational concept was currently underway by the Air Traffic Management Operational Concept Panel (ATMCP). The operational concept would describe how an integrated global ATM system should operate. It would also define system performance requirements of the future ATM system, ensuring that safety, regularity and efficiency objectives were met. The meeting agreed that there was an urgent need for this work to be completed.

2.3.6   The meeting agreed that a conference would be useful toward achieving worldwide consensus on the ATM operational concept and encouraging States and PIRGs to implement the concept into their own planning framework. It would also permit discussions on technical tasks being addressed by panels. However, concerns were expressed that other goals did not seem to warrant a global conference and that such a conference should not be held at the expense of resources being provided to the interregional coordination activities that were needed and supported by ALLPIRG. It was also stated that the States were presently in the implementation phase, which proceeded independent of the global developments. In light of this, it was suggested that serious consideration should be given to the possibility of reaching some of the objectives stipulated for the conference through other means.

2.3.7   Further to paragraph 2.3.4 above, the meeting supported the concept of an online database containing the requirements of the regional ANPs, which together would comprise a global presentation of all the regional ANPs, in that it would be widely used and easily accessible, it would enhance the usefulness of the plans, and would allow for expeditious updates. At the same time, the meeting urged a prompt action on such a database.

First amendment to the Global Air Navigation Plan for CNS/ATM Systems *(Doc 9750)*

2.3.8   It was recalled that, in line with instructions of the Council in 1996, the Secretariat had revised and updated the Global Co-ordinated Plan for Transition to ICAO CNS/ATM Systems, which was re-titled as the Global Air Navigation Plan for CNS/ATM Systems (Global Plan). The revised Global Plan was accepted by the Council on 13 March 1998.

2.3.9   The meeting was reminded that ALLPIRG had made significant input into the revised Global Plan regarding homogeneous ATM areas and major traffic flows, among other things. The idea of firmly establishing the relationship between the Global Plan and the regional and national planning mechanisms had also been stressed by ALLPIRG.

2.3.10   The meeting was informed that several bodies, including the PIRGs, had recognized the utility of the Global Plan in relation to their work, and its relevance in the overall ICAO CNS/ATM documentation structure. The need to amend the document to reflect the latest work of these groups was recognized by the Secretariat and a review was conducted in coordination with several panels, working groups and PIRGs. A comprehensive proposal for amendment to several parts of the document had been developed and was presented to ALLPIRG. The meeting noted that the updated information with regard to Part II of the Global Plan was submitted by the PIRGs in coordination with the regional offices. In this regard, 54 homogeneous ATM areas and major traffic flows had been identified by the PIRGs and were included in the amendment.

2.3.11   The meeting was made aware that the amendment was not final in that it was yet to be reviewed by the Air Navigation Commission and the Council, and that both of these bodies would likely make some changes. Furthermore, it was noted that prior to its submission to the Commission, the Air Traffic Management Operational Concept (ATMCP) would make additional changes to Chapter 4 of Part I at its upcoming working group meeting. Amendments to Chapters 12, 13 and 14 would also be included in the final version, and new material would be added in follow-up to the most recent meeting of the Committee on Aviation Environmental Protection.

2.3.12   The meeting noted that, as agreed by the Council, amendments to the Global Plan would be developed by the Secretariat based on the ongoing work of ICAO, at both the global and regional levels, followed by Commission review. The consultation process should be kept to a minimum, limited to ICAO Regional Directors and Chairmen of the PIRGs. After review by the Commission, the proposed amendments would be submitted to the Council for acceptance.

2.3.13   The meeting was informed that comments from the regional offices on the first amendment to the Global Plan should be received by ICAO Headquarters not later than 16 March 2001.

Spectrum issues

2.3.14   The meeting was provided with an overview of the outcome of the International Telecommunication Union (ITU) World Radiocommunication Conference 2000 (WRC-2000), held in June 2000 in Istanbul, Turkey. The meeting recognized that the ICAO delegation to the WRC-2000 successfully presented its position and that the outcome of the conference was fully satisfactory to international civil aviation. This success was attributed mainly to the higher profile of spectrum management issues in accordance with Assembly Resolution A32-13 and the early development and dissemination of the ICAO position.

2.3.15   The meeting noted the active participation of ICAO experts in the work of ITU and agreed that the participation of ICAO experts in the meetings of the regional telecommunication organizations be increased. The meeting recognized the competition for radio frequency spectrum from commercial interests and the possible safety problem posed to civil aviation.

2.3.16   The meeting agreed that a strategy for establishing and promoting the ICAO position for future ITU WRCs was required. It was noted that, during the formulation and execution of a successful strategy, direct contact with the national delegations was essential and that this would help establish national positions consistent with ICAO's position. Regional involvement in WRC preparatory activity was deemed essential.

2.3.17   The meeting noted that there was a disparity in the level of utilization of various frequency bands and that aviation spectrum issues needed to be considered at all levels of CNS/ATM systems planning in order to address the matter and enhance the credibility of the ICAO position. The meeting agreed that studies under way to assess current and future requirements for MLS operations should continue.

2.3.18   The meeting noted European initiatives in relation to aviation spectrum issues. The meeting was informed that the European Parliament's Committee on Industry, External Trade, Research and Energy is dealing with this issue and would develop its opinion on radio spectrum policy during a debate to be held in March 2001. The meeting noted that cooperation between ICAO, EUROCONTROL, IATA and other international organizations has resulted in rapid progress towards the streamlining of spectrum and frequency management processes.

2.3.19   The meeting accordingly formulated the following conclusion:

Conclusion 4/9   –   Support for the ICAO position at WRC-2003

That regional planning groups and regional offices address matters concerning the allocation and protection of radio frequency spectrum, in coordination with national civil aviation authorities, ICAO Headquarters and regional telecommunication organizations.

Regional flight safety groups (FSGs)

2.3.20   The meeting recognized the work done by ICAO and agreed that the establishment of regional flight safety groups (FSGs) to proactively address flight safety issues in each region was a step in the right direction. It was recognized that additional resources would be required to achieve this goal and that expertise from Headquarters would also be needed.

2.3.21   The meeting agreed that the work programmes of PIRGs and FSGs should include the remedial action on shortcomings and deficiencies found during ICAO safety oversight audits. This would be in addition to the emphasis on reviewing regional accident and incident data, identifying repetitive causes and recommending specific action.

2.3.22   The meeting noted the Council's acceptance in principle of the proposal to establish regional flight safety groups, pending a final decision on the programme budget, and recommended that sufficient resources be allocated to support these groups.

Uniform methodology for the identification, assessment and reporting of air navigation shortcomings and deficiencies

2.3.23   The meeting recalled that ALLPIRG/3, by its Conclusion 3/4, had agreed that PIRGs keep the uniform methodology for the identification, assessment and reporting of air navigation shortcomings and deficiencies under regular review and propose modifications thereto if needed in light of experience gained. The meeting noted that certain Contracting States may not be favourable to the idea that the non-implementation of a Standard which has been notified to ICAO as a difference be nevertheless qualified and listed as a *deficiency* in PIRG reports.

2.3.24   The meeting agreed that PIRGs should be advised to apply a general guideline that a lack of implementation of air navigation systems with reference to the notification of a difference, where there is no negative impact on safety, regularity and/or efficiency of international air navigation as assessed by PIRGs, should not be listed in the reporting form as an air navigation shortcoming or deficiency.

2.3.25   The meeting recognized that some difficulty existed with the definitions of the uniform methodology, and noted that a review was planned to develop a single definition for *shortcomings and deficiencies* to further enhance the uniform methodology. With this in mind, it was agreed that the word *deficiency* be retained, as the negative connotation associated with the word had political and financial leverage.

2.3.26   As a result of discussions, the meeting agreed with the following definition of *deficiency*, to be further refined before being transmitted to the ICAO Council for its consideration:

> "A *deficiency* is a situation where a facility, service or a procedure is not provided in accordance with ICAO Standards and Recommended Practices which has a negative impact on the safety, regularity and/or efficiency of international civil aviation".

2.3.27   In view of the foregoing, the meeting agreed on the following conclusions:

Conclusion 4/10   –   Reporting of shortcomings and deficiencies

> That where a State, by virtue of Article 38, has notified ICAO of a difference to Standards and Recommended Practices governing the actual provision of facilities and services listed in an air navigation plan, the non-implementation of a facility or service, in the context of the uniform methodology for the identification and reporting of air navigation shortcomings and deficiencies, should not be reported as either a shortcoming or a deficiency when it has no negative impact on safety, regularity and/or efficiency.

Conclusion 4/11   –   Single definition

> That ICAO be invited to refine the following single definition of a shortcoming/deficiency with a view to its incorporation into the uniform methodology for the identification and reporting of air navigation shortcomings and deficiencies:
>
> "A *deficiency* is a situation where a facility, service or a procedure is not provided in accordance with ICAO Standards and Recommended Practices which has a negative impact on the safety, regularity and/or efficiency of international civil aviation".

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APPENDIX A

FRAMEWORK FOR INTERREGIONAL COORDINATION MEETINGS

The following principles were recognized as elements to be considered in developing a framework for interregional coordination (IRC) meetings:

1)   IRC may be carried out at the levels of

    - ALLPIRG

    - RDs

    - PIRGs

    on a peer-to-peer basis within the auspices of ICAO the Secretariat.

2)   Interregional coordination meetings convened by ICAO Regional Directors should also have the attendance of the Chief of the Regional Affairs Office. Care should be exercised not to involve too many regions at one time so that information, views and proceedings can be managed efficiently.

3)   Support for ICAO Regional Directors at IRC meetings may be required when dealing with operational issues in order to come to a meaningful conclusion.

4)   A practice of rotating the venue within the common area of interest should be followed.

5)   The host ICAO Regional Director will normally oversee the proceedings of the meeting.

6)   IRC meetings will be kept at an informal level, with minimum focus on documentation and maximum focus on implementation enhancement.

7)   IRC meetings will take place on an ad hoc basis. The prime task will be to identify major impediments and issues, as well as to progress the implementation of other air navigation matters.

8)   A matrix is to be developed to follow up on interregional issues; the matrix will identify, prioritize and describe actions by appropriate parties with specific target dates. Consideration should be given to the development of a global common database of interregional coordination issues.

9)   Progress will be reported to ALLPIRG where appropriate.

10)   On issues of major procedural or operational differences between regions, which pose major impediments to interregional harmonization, the Air Navigation Commission or the Council may be advised as appropriate.

11)   Care must be exercised to avoid duplication of efforts. The prime objective is to streamline and complement the functions of existing bodies.

12)   Air navigation is the major thrust of IRC. Consideration should also be given to developing methodologies in other areas where gaps in States' capabilities require ICAO's assistance.

13)   IRC meetings are unique opportunities and should be utilized to consider strategies that would give a common approach to issues of mutual interest in a manner that would enhance the visibility and presence of ICAO in the regions.

14)   Where projects or issues cross regional boundaries, consideration should be given to common agenda items at relevant PIRG meetings.

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APPENDIX B

TERMS OF REFERENCE

a) Identify major impediments and issues and assess the progress of implementation of air navigation matters of an interregional nature;

b) Identify, prioritize and describe actions by appropriate parties with specific target dates;

c) Develop a common database of interregional coordination issues;

d) Ensure that appropriate regional initiatives and information are shared with other regions;

e) Strategize to give a common approach to air navigation issues of an interregional nature;

f) Keep the interregional coordination process under continuous review to ensure optimum productivity and enhancement of the pace of implementation on air navigation matters; and

g) Facilitate and contribute to the work of the ALLPIRG/Advisory Group.

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APPENDIX C

**INTERREGIONAL ISSUES AND MISSING ELEMENTS
WHICH NEED TO BE ADDRESSED TO FACILITATE INTERREGIONAL PLANNING
AND THE HARMONIZATION OF AIR NAVIGATION SYSTEMS**

S.No	Interregional issues/ missing elements	Comments	To be addressed by
1	ATS route planning and implementation between regions	Being addressed as part of the work programmes of interregional coordination meetings	ICAO Regions/ PIRGs
2	Provisions for RVSM minimum monitoring requirements	Although ICAO is not currently developing SARPs on this subject, guidance is contained in Doc 9474, which is to be updated to clarify minimum requirements	ICAO
3	State approval of aircraft for RVSM operations	The operational approval process is established in various documents. The main issue is for States to develop their own approval processes and documentation	States
4	Harmonization of procedures for transition from RVSM levels to non-RVSM levels	Being addressed as part of the work programmes of interregional coordination meetings	ICAO Regions/PIRGs
5	Additional guidance material on the RNP operational approvals process for RNP types	Guidance on the RNP 10 generic approval process has been provided in Doc 9613 and in new RGCSP/10 material for Doc 9613. Further development of additional, detailed guidance on the operational approval process for each RNP type is required	ICAO
6	Provisions and guidance material for annotation of RNP requirements on aeronautical charts	This is presently under development	ICAO
7	Progressive implementation of ATN islands, domains and backbones and their interconnections	Guidance material has been developed; to be addressed in due course by the interregional coordination meetings	ICAO Regions/PIRGs
8	Interfacing OLDI and AIDC	To be addressed in due course	Industry

S.No	Interregional issues/ missing elements	Comments	To be addressed by
9	Frequency planning criteria for VDL modes	This is presently under development	ICAO
10	Combined GNSS receiver to integrate signals from different constellations	SARPs for combined GPS/GLONASS receiver have been developed; for new elements, they are presently under development	ICAO
11	Harmonization of different satellite-based augmentation systems for GNSS (WAAS/EGNOS/MSAS)	SARPs for SBAS have been developed; the draft SARPs for the integration of SBAS are presently under development	ICAO
12	Multi-mode receiver (MMR) for ILS/MLS/GNSS	MMR specifications have been developed; the equipage is presently under development	Industry
13	Availability of ANP/FASID documents	This is presently under development by PIRGs; as and when finalized, the documents will be made available on priority	ICAO
14	Allocation and protection of aviation frequency band	Successfully addressed at WRC-2000; preparations for WRC-2003 are under way	ICAO/States/ Industry
15	Guidance material for a business case methodology for the implementation CNS/ATM systems	This is presently under development	ICAO
16	Methodology for determining the environmental benefits of CNS/ATM systems	This is presently under development	ICAO
17	Flight planning enhancements – Global guidance for the uniform use of characters in the optional flight plan fields	To be addressed in due course	ICAO
18	Flight planning enhancements – Introduction of new concepts and technologies to expand flight planning functionality to include aircraft and crew capabilities	To be addressed in due course	ICAO
19	Development of an operational concept of air traffic management	This is presently under development	ICAO

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APPENDIX D

STATUS OF WGS-84 IMPLEMENTATION

EXPLANATION OF THE TABLE

Column

1   Name of the State, territory or aerodrome for which WGS-84 coordinates are required with the designation of the aerodrome use:

      RS   —   international scheduled air transport, regular use
      RNS   —   international non-scheduled air transport, regular use
      RG   —   international general aviation, regular use
      AS   —   international scheduled air transport, alternate use

2   Runway designation numbers

3   Type of each of the runways to be provided. The types of runways, as defined in Annex 14, Volume 1, Chapter I, are:

      NINST —   non-instrument runway;
      NPA   —   non-precision approach runway
      PA1   —   precision approach runway, Category I;
      PA2   —   precision approach runway, Category II;
      PA3   —   precision approach runway, Category III.

4   Requirement for the WGS-84 coordinates for FIR, indicated by the expected date of implementation or an "X" if already implemented.

5   Requirement for the WGS-84 coordinates for En route points, indicated by the expected date of implementation or an "X" if already implemented.

6   Requirement for the WGS-84 coordinates for the Terminal Area, indicated by the expected date of implementation or an "X" if already implemented..

7   Requirement for the WGS-84 coordinates for the Approach points, indicated by the expected date of implementation or an "X" if already implemented.

8   Requirement for the WGS-84 coordinates for runways, indicated by the expected date of implementation or an "X" if already implemented.

9   Requirement for the WGS-84 coordinates for Aerodrome/Heliport points (e.g. aerodrome/heliport reference point, taxiway, parking position, etc.), indicated by the expected date of implementation or an "X" if already implemented.

10   Requirement for geoid undulation indicated by the expected date of implementation or an "X" if already implemented.

11   Requirement for the WGS-84 Quality System, indicated by the expected date of implementation or an "X" if already implemented.

12   Requirement for publication of WGS-84 coordinates in the AIP indicated by the expected date of publication or an "X" if already published.

13   Remarks

STATE, TERRITORY OR AERODROME FOR WHICH WGS-84 IS REQUIRED			WGS-84 IMPLEMENTATION										
CITY/AERODROME	RWY No	RWY TYPE	FIR	ENR	TMA CTA CTZ	APP	RWY	AD/ HEL	GUND	QUALITY SYSTEM	AIP	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13

Legend

RWY	Runway		APP	Approach
FIR	Flight information region		AD	Aerodrome
ENR	En-route		HEL	Heliport
TMA	Terminal area		GUND	Geoid undulation
CTA	Control area		AIP	Aeronautical information publication
CTZ	Control zone			

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AGENDA ITEM 3:   COORDINATION OF CNS/ATM PARTNERS' PLANNING AND IMPLEMENTATION EFFORTS

3.1   The meeting was provided with an overview of the coordination mechanisms which have been implemented in Europe, in connection with the EUROCONTROL ATM Strategy for the years 2000+ ─ approved by the ECAC Ministers of Transport in January 2000 ─ and with the corresponding EUROCONTROL performance enhancement programme for ATM in Europe, known as EATMP. EATMP was developed by EUROCONTROL to draw together the programmes, support services and implementation actions that are needed to improve the European ATM network as a whole and meet the continuous rise in demand for air transport, while maintaining the highest level of safety. An important characteristic of both the strategy and the EATMP is the "gate-to-gate" concept, which means that each flight is managed and treated as a continuum ─ from first interaction with ATM (which, in some cases, can be as early as several months before actual operations) until post-flight activities, such as performance analysis and the billing of charges for services rendered. The implementation of this concept requires a much closer partnership between all aviation stakeholders, and a more widespread sharing of information than previously.

3.2   ALLPIRG was advised of the current relationship between sub-regional and regional planning in Europe and noted that the European Air Navigation Planning Group is responsible for, *inter alia*, managing the regional air navigation plan for the EUR Region. In its discussions on measures and means to facilitate regional planning, the EANPG has been kept abreast of the efforts made within EUROCONTROL to develop the European Convergence and Implementation Plan (ECIP) for the ECAC area. The meeting was provided with an explanatory note on the ECIP and took particular note of its complementary relationship with the regional EUR ANP.

3.3   The meeting also took note that the ATM 2000+ Strategy refers to the fact that EUROCONTROL must initiate and coordinate, with all affected partners, the rule-making process that influences ATM, and that both airspace users and service providers are responsible for their timely and effective response to agreed plans, programmes and projects. The ATM 2000+ Strategy also identified several areas where cooperation improvements were needed, including EUROCONTROL collaboration with airspace users, air navigation service providers, airports and the manufacturing industry, as well as civil/military collaboration and stakeholder relations management.

3.4   ALLPIRG found the approach used and the experience gained by EUROCONTROL with performance-driven planning and implementation of great interest, particularly with regard to the collaborative links with its CNS/ATM partners, and considered that it might serve as a model that each PIRG could study for possible application in its respective region. It also agreed that all PIRGs could benefit from EUROCONTROL's experience and expertise in these fields and encouraged them to take steps to make appropriate invitations for that agency's attendance at PIRG meetings. It formulated the following conclusion in the above regard:

Conclusion 4/12   ─   EUROCONTROL planning and implementation methods

That, with a view to benefiting from EUROCONTROL's experience and expertise in the field of performance-driven planning and implementation methods, particularly with regard to the collaborative links that the agency maintained with its CNS/ATM partners, PIRGs:

a)   study the approach to planning and implementation taken by EUROCONTROL, with a view to the possible application of its elements in their respective regions of responsibility; and

b)   take steps to issue appropriate invitations for EUROCONTROL's attendance at PIRG meetings.

3.5   The meeting recognized that some PIRGs were already applying some of the elements of the EUROCONTROL approach. In particular, the work of the NAM PIRG had stressed the importance of coordinating its CNS/ATM partners' planning and implementation efforts at regional and interregional levels as important steps towards the creation of a seamless CNS/ATM systems environment. That PIRG had created task forces to proceed on that basis and, for example, following the recent introduction of new ATM systems in Canada and Mexico, had developed an interface control document to facilitate the automatic flow of flight plan material.

3.6   The NAM PIRG had also recently committed to bringing up to date the NAM regional air navigation plan, which had not been updated since 1993 but which it considered to be an important operating requirements document. In that regard, the preparation of the main body of an up-to-date, two-volume ANP comprising a basic ANP and FASID, aligned with the format outline approved by Council in 1997 was close to completion. The main body had been fleshed out with already-approved NAM material and in line with the model two-volume CAR/SAM ANP developed at the CAR/SAM/3 RAN Meeting in October 1999. That ANP incorporated CNS/ATM systems elements and was approved by Council in late 1999. The development of that part of the plan, which now required only fine tuning, was editorial in nature and followed the approach taken with respect to the EUR ANP.

3.7   On the other hand, the tables of facilities and services — which would constitute the majority of the updated NAM ANP — were significantly out of date. A task force had, however, been created to finalize this work and was expected to proceed in a way that would ensure that changes to tables took account of the Council-approved process for amending such ANP material. Once this tabular material and any charts based on it were completed and added to the main body of the document, the NAM ANP would enjoy fully approved status.

3.8   The meeting was also advised that the NAM PIRG, when considering the process for amending ANPs, considered that a more intensive information technology effort by ICAO and its CNS/ATM partners in that regard would be of value, not only in the NAM Region. It believed, for example, that if electronic versions of the tabular material from all ANPs were accessible to States, then the amendment process could take place in real time. In addition, electronic access to this ANP material and, indeed, to planning and implementation data of CNS/ATM partners would constitute an invaluable analytical planning tool.

3.9   The above ideas gained the unanimous support of the meeting, which recommended their widest possible implementation. In so doing, it recognized that complete ANPs are saleable ICAO documents and the question of paying for electronic access to ANP material arose. ALLPIRG considered, however, that the initial steps envisaged would first lead to a prototype database that required full testing and that initial electronic access could be limited to the ICAO Secretariat, PIRGs and selected CNS/ATM partners on a no-cost basis. Further steps would be taken to refine and develop the database at which time access to it could be offered to States, CNS/ATM partners and other interested users in accordance with ICAO sale of publications practices.

3.10   In concrete terms, it was envisaged that a full set of tabular material for all facilities and services from all ANPs would first be promptly posted to an ICAO-controlled web site in a simple PDF format similar to that adopted for the CAR/SAM ANP posted to www.icao.int/icao/en/ro/sam/carsam3/report/startme.pdf at the end of the CAR/SAM/3 RAN Meeting in 1999. CNS/ATM partners would be invited to contribute material on their plans for inclusion at this site. From that starting point, relevant ICAO Sections, Regional Offices and interested CNS/ATM partners would work together under the supervision of an ICAO project manager to refine the product into a more sophisticated database product to be maintained by the AIS/MAP Section of the Air Navigation Bureau along

the lines envisaged for the tabular material for WGS-84 requirements in paragraphs 2.1.25 to 2.1.29 above. The meeting accordingly adopted the following conclusion:

Conclusion 4/13   –   Database developments

That ICAO:

a) post promptly all tabular material from all regional air navigation plans relating to facilities and services to an ICAO-controlled web site in a simple PDF format;

b) invite CNS/ATM partners to post their relevant planning material on the web site referred to in a) above;

c) provide appropriate free access to relevant ICAO Headquarters' Sections, Regional Offices, PIRGs and participating CNS/ATM partners;

d) maintain the currency of this database, *inter alia*, to take account of amendments made to hard copy ANPs;

e) with the assistance of PIRGs and interested CNS/ATM partners, refine and develop the database, as a matter of urgency, to provide access and functionality commensurate with its use as a planning tool and in line with ICAO sale of publications practices.

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AGENDA ITEM 4:   **SAFETY OVERSIGHT-RELATED ISSUES**

4.1   **ICAO Universal Safety Oversight Audit Programme**

4.1.1   The meeting recalled that the ICAO Universal Safety Oversight Audit Programme was launched on 1 January 1999, pursuant to Assembly Resolution A32-11 and on the basis of the recommendations made by the Directors General of Civil Aviation (DGCA) Conference on a Global Strategy for Safety Oversight.

4.1.2   The meeting recognized that the objective of the ICAO Universal Safety Oversight Audit Programme is to promote global aviation safety through the auditing of Contracting States, on an ongoing basis, to determine the status of States' implementation on safety oversight and relevant ICAO Standards and Recommended Practices, associated procedures, guidance material and safety-related practices. More importantly, the implementation of the States' corrective action plans would enhance aviation safety.

4.1.3   The meeting noted with satisfaction the audit results achieved to date and congratulated ICAO on the programme. The meeting recognized that certain States without the adequate resources had difficulty implementing the action plans and agreed that the remedial action was important. The meeting was informed of a remedy mechanism to be tabled at the 33rd Session of the ICAO Assembly (25 September – 5 October 2001) concerning an aeronautical fund for aviation safety (AFAS) to assist States with remedial action. It was emphasized that the mechanism would be a turn-key operation to be developed by industry based on sound business plans.

4.1.4   The meeting recalled efforts in the AFI Region to find sub-regional solutions to solve the problem of implementation and noted that a study was underway by the Technical Co-operation Bureau to serve as a model for a single safety entity for the States of the West African Monetary Union (WAMU).

4.1.5   The meeting agreed that the experience of EUROCONTROL in the field of ATS quality assurance should be taken into account during the expansion process of the Safety Oversight Programme. The experience with the CAR/SAM ATS quality assurance programme was also noted.

4.1.6   The meeting emphasized the need for the expansion of the Universal Safety Oversight Audit Programme to include Annexes 11 and 14, and also recommended that expansion to Annex 13 be considered to a lesser degree. ALLPIRG acknowledged the importance of the expansion of the programme and urged ICAO to make the necessary resources available to ensure its implementation.

Conclusion 4/14   –   Expansion of the Universal Safety Oversight Audit Programme

                  That the Universal Safety Oversight Audit Programme be expanded to include Annexes 11 and 14 and the necessary resources be made available.

Conclusion 4/15   –   Remedial action

                  That, in following up the audits carried out in the context of the Universal Safety Oversight Audit Programme, the necessary remedial actions be taken as a matter of urgency.

4.2   **ATM safety regulation and management**

4.2.1   The meeting noted a high-level overview of EUROCONTROL's activities in the field of ATM safety regulation and management and, in particular, the work of its Safety Regulation Commission (SRC), which had established a comprehensive work programme addressing the definition and implementation of harmonized approaches to ATM safety regulation.

4.2.2   The meeting was informed that EUROCONTROL had developed safety regulatory requirements in the areas of safety management, risk assessment and mitigation in air traffic management which allowed the implementation, at the ECAC level, of proposed amendments in the field of air traffic services.

4.2.3   The meeting noted that the extension of the ICAO Universal Safety Oversight Programme to air traffic services and airports was related to the Safety Regulations Commission's activities for the ECAC area and recognized that EUROCONTROL was promoting the implementation of safety management systems in ECAC States to ensure that safety regulatory requirements were met. The work of EUROCONTROL could form the basis of the work programmes of the regional flight safety groups referred to in paragraphs 2.3.20 to 2.3.22 above.

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AGENDA ITEM 5:   RECENT DEVELOPMENTS IN THE AREA OF AIRPORT AND AIR NAVIGATION SERVICES ECONOMICS

5.1   **Airport and air navigation services ─ Cost recovery policy organization and management**

Follow-up by the Council on recommendations of the Conference on the Economics of Airports and Air Navigation Services

5.1.1   The meeting was provided with a report on the follow-up action taken by the Council on those recommendations of the Conference on the Economics of Airports and Air Navigation Services (Montreal, 19 ─ 28 June 2000) that were of relevance to the work of ALLPIRG. The recommendations adopted by the conference fell into two categories, that is those relating to *ICAO's Policies on Charges for Airports and Air Navigation Services* [Doc 9082/6, due to be circulated in March 2001 replacing the *Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services* (Doc 9082/5)]. The revised ICAO's Policies were approved by the Council on 8 December 2000. The other category of Conference recommendations addressed other aspects of airport and air navigation service economics (essentially guidance and assistance to States and studies).

5.1.2   Among the recommendations identified as being relevant to the work of ALLPIRG, particular attention was invited to:

    a) Recommendations concerning ICAO's Policies in Doc 9082/6:

        Recommendation 5 ─ Joint charges collection;

        Recommendation 12 ─ Independent mechanism for economic regulation of airports and air navigation services; and

        Recommendation 22 ─ Pre-funding of projects through charges.

    b) Other recommendations:

        Recommendation 7 ─ Guidance on infrastructure financing;

        Recommendation 16 ─ Cost allocation methodologies;

        Recommendation 17 ─ Study on identification and allocation of air navigation services costs; and

        Recommendation 18 ─ Guidance on cost allocation by stage in flight path.

Economic developments in Europe relating to the provision of air navigation services

5.1.3   The meeting was advised by EUROCONTROL that past initiatives in Europe had failed to adequately address the economic components of air navigation service provision, and that the organization was currently investigating the concept of an incentive pricing system within the framework of economic regulation. This involved addressing both the supply side of air navigation services provision and demand management. EUROCONTROL considered that giving incentives to airspace users and air navigation services providers may promote the best use of airspace capacity and ensure an appropriate quantity and level of service.

Concluding observation

5.1.4   The meeting noted the importance of States acting in conformity with the cost recovery principles set forth in Article 15 of the *Convention on International Civil Aviation* (Doc 7300) and *ICAO's Policies on Charges for Airports and Air Navigation Services* (Doc 9082/6).

5.2   **Development of business cases and relevant databases**

5.2.1   The meeting was provided with an overview of the work being conducted by the Secretariat for the development of business cases in support of the implementation of CNS/ATM systems. The need for credible business cases to guide CNS/ATM systems implementation was extremely important to bring business partners and financial organizations into consensus on CNS/ATM systems implementation. Business cases might be developed jointly or separately for the service providers and the airlines. However, an integrated business case which takes into account both the providers' and the users' perspectives would be the most desirable. Given the multi-disciplinary nature of the analysis, cooperation between States, the different partners and within ICAO was emphasized.

5.2.2   The meeting was provided with the cost tables prepared for CNS/ATM systems planning and evaluation tools. The establishment of a mechanism within the Secretariat for the creation and maintenance of tables/databases of the different elements of the CNS/ATM systems was proposed.

5.2.3   One of the critical elements of the development of business cases was the collection of pertinent data. It was noted that the utmost cooperation of the States would be required to collect the appropriate data. With reference to the cost tables presented, it was noted that aircraft operating cost would vary from region to region and by stage length. With regard to consistency of the databases to be developed to meet the planning requirements for all of the ICAO Regions, the meeting recognized the need to collect and maintain the relevant data on a value added basis following careful evaluation and validation by the Secretariat.

Conclusion 4/16   –   Databases for CNS/ATM systems planning activities

That ICAO set up a mechanism to collect and update the relevant data to be used by regions, sub-regions and States for their CNS/ATM systems planning activities.

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AGENDA ITEM 6:   TECHNICAL COOPERATION ISSUES

6.1   **Technical cooperation programmes**

6.1.1   The meeting noted the details on CNS/ATM systems requirements of developing States and options for its coordinated implementation using the Technical Cooperation Bureau's programmes. The meeting recalled that the ICAO Council recognized the necessity for global coordination of CNS/ATM systems implementation and stressed the need for ICAO's Technical Co-operation Programme to perform this function, with the funds that could be channelled through the ICAO Objective Implementation Funding Mechanism.

6.1.2   The meeting was informed that almost all the States that were surveyed had stated their need for external technical assistance in the field of CNS/ATM systems and had requested ICAO 's Technical Co-operation Programme to provide this assistance in its implementation. The meeting noted that implementation of CNS/ATM projects could not be achieved without funding from the donors community. The meeting also noted that there were serious financial obstacles for certain States to the implementation of the CNS/ATM systems, and that a need existed to continue making financial institutions aware of the full potential for investment benefits that could be obtained from the implementation of CNS/ATM systems. In this context, a need for an active dialogue with the development banks and other funding sources was emphasized. Such a dialogue should be based on a well-developed project justifying investment

6.2   **Status report on technical cooperation project on CNS/ATM systems implementation in the CAR/SAM Regions**

6.2.1   The meeting was presented with a status report on CNS/ATM activities carried out in the CAR/SAM Regions under Project RLA/98/003. The project, in consultation with States concerned, was to analyse the different traffic flows identified by the South American and Caribbean Planning and Implementation Regional Group (GREPECAS) and to propose ways and means of planning and implementing CNS/ATM systems in the regions. The analysis of nine of the eighteen traffic flows had been completed. The analysis had, in addition to identifying future requirements, identified immediate technical and operational improvements that could produce, through the elimination of shortcomings and modifications, savings exceeding US $58 million per year. The last phase of the project, which is expected to be completed in 2002, will consist of the development of a detailed CNS/ATM systems implementation plan.

6.2.2   As part of the analysis of the flows and the implementation of immediate improvements, the meeting was also informed that significant environmental benefits would also be achieved through a reduction of fuel burn. This reduction of gas emission would result mainly from reductions in flying times and the greater availability of optimum flight profile. The environmental benefits identified for the different flows, taking into consideration flying time and flight profile, could amount to as much as 7.79% but averaged around 2.75%.

6.2.3   Considering the large number of technical and operational solutions as well as the many different ways and means systems and services could be provided, the meeting noted that GREPECAS saw the need for tools and procedures that would facilitate the creation of implementation scenarios (What If?) that would facilitate the evaluation of different options [i.e. cost/benefit analysis (CBA)] and measure the criticality of the different factors (sensitivity) used in the make-up of the scenarios. The tools consisted of a "scenario generator" used to define the parameters of the scenario and a "scenario pre-processor" which would draw, from associated databases, the necessary data to establish the costs and benefits of both the present and future systems for a given implementation schedule. The resulting information would subsequently be processed through the CBA to determine the viability of the approach and then, through the

sensitivity analysis, highlight the critical elements. The meeting noted that the required tools had been developed and that their validation would be undertaken once the associated databases had been completed.

6.2.4   The experience gained in carrying out the above projects in the CAR/SAM Regions was recognized as potentially useful for other regions. It was pointed out that the economic and operational advantages promised by application of these methodologies needed to be well explained to the users who are considered to be important partners in such undertakings.

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AGENDA ITEM 7:   ANY OTHER BUSINESS

7.1   No other business was discussed by the meeting.

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APPENDIX

LIST OF PARTICIPANTS

Chairman – Dr. Assad Kotaite
Secretary – Mr. V.D. Zubkov
First Vice-President of the Air Navigation Commission – Mr. W. Price

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Chairman:	Mr. H.S. Khola
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Chairman of CNS/ATM sub-group:	Mr. R. Bracefield

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Head Specialist, State Civil Aviation Authority, Mr. V.P. Topchiev
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– END –