



FINAL VERSION

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN OFFICE**

**FIRST CARIBBEAN WORKING GROUP
MEETING**

CAR/WG/1

SUMMARY OF DISCUSSIONS

PORT OF SPAIN, TRINIDAD AND TOBAGO, 21 TO 23 JUNE 2007

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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HISTORICAL

ii.1 Place and Date of the Meeting

The First Caribbean Working Group Meeting (CAR/WG/1) was held at the Crowne Plaza Hotel in the San Fernando Conference Room, in Port of Spain, Trinidad and Tobago, from 21 to 23 June 2007.

ii.2 Opening Ceremony

Mr. Aldo Martínez, representing the ICAO NACC Regional Office, thanked the Director of Civil Aviation of Trinidad and Tobago for the excellent support and facilities provided for this Meeting, welcomed participants, and explained the scope of the Meeting Agenda. He also highlighted the importance for all CAR Region States/Territories/International Organisations to work together to accomplish a coordinated provision of air navigation services in a safe, efficient and effective manner. Mr. Ramesh Lutchmedial, Director of Civil Aviation of the Trinidad and Tobago Civil Aviation Authority, thanked the attendees for their participation, pointed out that the CAR/WG Working Group needs to continue its efforts towards the development of air navigation systems in the Caribbean, and formally opened the Meeting.

ii.3 Organisation of the Meeting

Mr. Norman Cassell (Montserrat), Chairman of the Eastern Caribbean Working Group, was elected to chair this Meeting and Mr. Fidel Ara (Cuba), Chairman of the Central Caribbean Working Group, was elected Vice-Chairperson for the duration of this Meeting. Mr. Víctor Hernández, ICAO Regional Officer, Air Traffic Management and Search and Rescue, acted as Secretary of the Meeting, assisted by Mr. Aldo Martínez, ICAO Regional Officer Communications, Navigation and Surveillance, and by Mr. Masoud Paydar, Technical Officer Communications, Navigation and Surveillance from ICAO Headquarters.

ii.4 Working Languages

The working languages of the Meeting were Spanish and English. The Working Papers and Summary of Discussions of the Meeting were available to participants in both languages.

ii.5 Agenda

The Meeting adopted the following agenda:

Agenda Item 1 General Matters

- 1.1 Valid Conclusions/Decisions of previous DGCA CAP C/CAR WG, C/CAR DCA, E/CAR WG, E/CAR DCA Meetings

- 1.2 Review of the status of air navigation deficiencies
- 1.3 Analysis of ICAO and GREPECAS guidance on global, inter and intra-regional air navigation activities
- 1.4 Other general matters

Agenda Item 2 ATM Developments

- 2.1 Follow-up on the implementation strategies and activities related to the ATM performance objectives of the Second Amendment of the *Global Plan* (Doc 9750) and the corresponding initiatives
- 2.2 Follow-up on regional activities and implementation relating to airspace organisation and management (AOM)
- 2.3 Follow-up on activities relating to Air Traffic Flow Management implementation (ATFM)
- 2.4 Follow-up on implementation programmes related to Air Traffic Management (ATM) safety management
- 2.5 Follow-up on progress achieved in Search and Rescue

Agenda Item 3 CNS Developments

- 3.1 Follow-up on the status of the E/CAR AFS and MEVA II digital networks and their related inter and intra-regional interconnection/integration
- 3.2 Development of voice and data air-ground communication
- 3.3 Development of ground-ground communications
- 3.4 GNSS Implementation
- 3.5 Review of the planning and implementation of surveillance systems.
- 3.6 Radar data sharing among neighbouring ATS units
- 3.7 Support for the ICAO position for the ITU WRC-2007

Agenda Item 4 Establishment of interfaces for ATM automated systems between adjacent ATS units

Agenda Item 5 Other air navigation matters

ii.6 Schedule and Work Mode

The Meeting agreed to hold its daily sessions from 08:30 to 16:30 hours with appropriate breaks.

ii.7 **Attendance**

The Meeting was attended by 42 participants from 12 CAR Region States/Territories, 1 SAM Region State and 3 International Organisations. The Meeting regretted the absence of other CAR Region States/Territories/International Organisations, as well as neighbouring States who were invited to the Meeting. The list of participants is shown in pages iii-1, iv-1 to iii-7.

ii.8 **Conclusions**

The Caribbean Working Group recorded its activities as Draft Conclusions as follows:

DRAFT

CONCLUSIONS: Activities requiring a communication to and/or endorsement by Directors of Civil Aviation of Central Caribbean (C/CAR DCAs) and/or Eastern Caribbean (E/CAR DCAs) and/or Central American States/Territories/International Organisations

LIST OF DRAFT CONCLUSIONS ADOPTED BY THE CAR/WG/1 MEETING

No.	TITLE	PAGE
1/1	Implementation of Air Navigation Systems in the CAR Region	1-3
1/2	Creation of a CAR ATM Task Force(*)	2-2
1/3	Endorsement of WATRS Plus Project	2-5
1/4	Review of the multilateral SAR Agreement Model	2-11
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1/6	Preliminary regional approach for the implementation of the Internet Protocol for AMHS	3-4
1/7	Establishment and implementation of an action plan for the implementation of required ground-ground and air-ground voice and data communications	3-5
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1/9	E/CAR point-of-contact for updating FASID table CNS 3	3-8
1/10	Follow-up on GNSS activities – Cycle 2007-2008	3-9
1/11	Establishment and implementation of an action plan for GNSS implementation	3-9
1/12	ADS-C trials in the CAR Region	3-11
1/13	Application of multilateration system as a surveillance option	3-11
1/14	ADS-B Trials	3-11
1/15	Establishment and implementation of an action plan for surveillance systems implementation	3-12
1/16	Finalising the regional preparation and support to the updated ICAO position for the WRC-2007	3-14
1/17	Establishment of an action plan for interface implementation to establish ATM automated systems among ATS adjacent units	4-2
1/18	Implementation of an AIS/MAP AIM action plan and participation of officers in the Seminar on Terrain and Obstacles Electronic Data (e-TOD) and the follow-up meeting	5-4

ii.9 **List of Working and Information Papers and Flimsies**

WORKING PAPERS				
Number	Agenda Item	Title	Date	Presented by
WP/01	--	Review of the Meeting Agenda and Schedule	31/05/07 Revised	Secretariat
WP/02	1.1	Valid Conclusions and Decisions of previous C/CAR WG, C/CAR DCA, DGCA CAP, E/CAR WG, and E/CAR DCA Meetings	28/05/07	Secretariat
WP/03	1.2	Specific air navigation planning and implementation Deficiencies in the Caribbean	24/05/07	Secretariat
WP/04	1.3	Increasing the efficiency of the regional planning and implementation work	31/05/07	Secretariat
WP/05	2.1	Seamless ATM System	28/05/07	Secretariat
WP/06	2.2	Optimization of the ATS airspace structure	06/06/07	Secretariat
WP/07	2.3	Analysis of the Air Traffic Flow Management Strategy	08/06/07	Secretariat
WP/08	2.4	SMS implementation and related ATM Safety Management Programmes	04/06/07	Secretariat
WP/09	2.5	Proposal for a Multilateral SAR Agreement for the C/CAR States/Territories	23/05/07	C/CAR SAR Rapporteur
WP/10	3.1	Development and Interconnection/Integration of the VSAT MEVA II and E/CAR Digital Networks	16/05/07	Secretariat
WP/11	3.2 3.3	Follow-up to the implementation of air-ground and ground-ground communications	04/06/07	Secretariat
WP/12	3.4	Follow-up to aspects related with the GNSS implementation in the CAR Region	21/05/07	Secretariat
WP/13	3.5 3.6	Review of the Surveillance Systems and Radar Data Sharing Implementation Plans in the CAR Region	21/05/07	Secretariat
WP/14	3.7	Support to the updated ICAO Position for the ITU World Radiocommunication Conference (2007) (WRC-07)	11/06/07 Revised	Secretariat
WP/15	4	Action proposal for an establishment of interfaces for ATM automated systems	01/06/07	Secretariat
WP/16	5	Human Resources and Training Planning	05/06/07	Secretariat
WP/17	2.2	WATRS Plus Route Structure Redesign & Lateral Separation Reduction Project Plans, Schedule & Operational Policies	29/05/07	United States
WP/18	3.3	Draft CAR/SAM IP Implementation Approach	24/05/07 Revised	United States

WORKING PAPERS				
Number	Agenda Item	Title	Date	Presented by
WP/19	5	Review of AIS/MAP – AIM Activities	30/05/07	Secretariat
WP/20	2.2	Proposals for the Amendment of CAR and NAT Regional Supplementary Procedures (SUPPS) (Doc 7030)	31/05/07	Secretariat
WP/21	3.1	Current status of telecommunications between Eastern Caribbean Network and San Juan, P.R.	07/06/07	United States

INFORMATION PAPERS				
Number	Agenda Item	Title	Date	Presented by
IP/01	--	General Information	25/04/07	Secretariat
IP/02	--	List of Working and Information Papers	12/06/07	Secretariat
IP/03	3.1	ICAO Guidelines on Performance of VSAT Networks	17/05/07	Secretariat
IP/04	3.4	ICAO guidelines on the politics of cost allocation for the GNSS and proposal for amendment of the SARPs related to the implementation and evolution of the GNSS	17/05/07	Secretariat
IP/05	2.2	WATRS Plus Project Implementation Task List	01/06/07 Revised	United States
IP/06	1.3	Strategic objectives of ICAO for 2005-2010	31/05/07	Secretariat
IP/07	1.3	Outcome of the worldwide symposium on performance of the Air Navigation System	01/06/07 Revised	Secretariat
NI/08	2.5	Convenios de cooperación mutua en materia SAR firmados por la República Dominicana Available only in Spanish	10/06/07 Revised	Relator SAR C/CAR
IP/09	2.3	Common Air Traffic Flow Management Terminology	08/06/07	United States
IP/10	2.3	Aerodrome Acceptance Rate	10/06/07	United States
IP/11	2.3	Proposed updates to Flight Operating Procedures for Hurricane Hunter Aircraft (TEAL & NOAA)	10/06/07	United States
IP/12	2.5	Outcome from the Search and Rescue (SAR) International Course	13/06/07	Secretariat
IP/13	3.3	Status Report on the Use of the Internet	14/06/07	Secretariat
NI/14	3.5	Ensayos y Estudios sobre Implantación del ADS-B en la Región CAR	14/06/07	Cuba

INFORMATION PAPERS				
Number	Agenda Item	Title	Date	Presented by
		<i>Available only in Spanish</i>		
IP/15	1.3	Evolution to Global Plan Initiatives	14/06/07	Secretariat

FLIMSIES				
Number	Agenda Item	Title	Date	Presented by
Flimsy 01	3.5	Actions from the Report of the First Meeting of the GREPECAS CNS Committee Surveillance Task Force	21/06/07	CNS/SUR/TF Coordinator
Flimsy 02	3	Report of the CNS Ad Hoc Group	22/06/07	CNS Ad-Hoc Rapporteur
Flimsy 03	2	Report of the ATM Ad Hoc Group	22/06/07	ATM Ad-Hoc Rapporteur
Flimsy 04	5	REPORT OF AD-HOC COMMITTEE – EASTERN CARIBBEAN (E/CAR) AIS	22/06/07	ATM Ad-Hoc Rapporteur
Flimsy 05	2.3	Regional Caribbean Contingency Procedures for Hurricane – Volcanic Ash	22/06/07	Secretariat

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Agenda Item 1: General Matters

1.1 Valid Conclusions/Decisions of Previous DGCA CAP C/CAR WG, C/CAR DCA, E/CAR WG, E/CAR DCA Meetings

1.1.1 Under this Agenda Item, the Meeting reviewed the status of compliance of outstanding conclusions of previous meetings of Central and Eastern Caribbean Working Groups, Directors of Civil Aviation. The comments and follow-up actions expressed by the Meeting regarding the status of compliance of conclusions of the C/CAR WG Meetings are presented in **Appendix A** to this part of the Report.

1.1.2 When the Meeting reviewed the status of outstanding conclusions from the Central Caribbean Directors of Civil Aviation Meeting, it was considered that Conclusion 8/2 has been finalised and the remainder are valid.

1.1.3 Regarding the Conclusions from the 92nd Meeting of Directors of Civil Aviation of Central America and Panama, the Meeting was unable to review these Conclusions due to the fact that Central American States and COCESNA were not represented at the Meeting.

1.1.4 The results of the revision made by the Meeting to outstanding Conclusions from E/CAR Working Group Meetings is presented in **Appendix B** to this part of the Report.

1.1.5 Finally, the Meeting reviewed the status of the E/CAR DCA/20 Meeting and considered that all eleven Conclusions remain valid.

1.2: Review of the Status of Air Navigation Deficiencies

1.2.1 Based on the standardised methodology for the identification, evaluation and reporting of air navigation deficiencies formulated by the ICAO Council and by GREPECAS, the Meeting took note of the updated information regarding deficiencies with priority “A,” “B” and “U” in each of the air navigation fields of CAR States, Territories and International Organisations, as well as their action plans for correction.

1.2.2 The Meeting took note that not all States have provided their action plans to resolve air navigation deficiencies to the Regional Offices. It was also recognised that the potential of the GREPECAS database on air navigation deficiencies (GANDD), which is available electronically on the NACC website, has not been taken advantage by the majority of States. The Secretariat recalled the procedures established to maximise the utilisation of the GANDD and invited to contact the focal point at the NACC Office, Mr. Gabriel Meneses (gmeneses@mexico.icao.int), in order to provide the required assistance, as necessary.

1.2.3 Likewise, the Meeting recalled Conclusion 13/92 in which GREPECAS urged CAR/SAM States, Territories and International Organisations to make their greatest effort to eliminate urgent deficiencies by December 2007, as GREPECAS/15 will subsequently review their status of resolution with the intent to consider application of last resort action, wherever applicable.

1.2.4 The Meeting noted that since the ICAO Council approved the implementation of the Uniform Methodology for the identification, assessment and reporting of air navigation deficiencies in 2001, several changes have been introduced that impact the regional process for the reporting and resolution of air navigation deficiencies. Therefore, it is necessary to promote new measures aimed at supporting States in resolving their deficiencies and establishing dates for solution implementation.

1.2.5 The Meeting noted a lack of updates in the GANDD on behalf of States/Territories. In some cases, this is due to lack of staff responsible for coordinating this issue in States/Territories. The Meeting recalled GREPECAS Conclusion 14/59, which states the requirement to have a National Coordinator responsible for updating the GREPECAS Air Navigation Deficiencies Database (GANDD).

1.3 Analysis of ICAO and GREPECAS Guidance on Global, Inter and Intra-Regional Air Navigation Activities

1.3.1 The Meeting recalled that for the harmonised implementation of the Global Plan, the Air Navigation Commission will review Headquarters' activities along with the work of the Regional Offices and took note that the annual report to the Council regarding regional activities would highlight the main achievements with the implementation of the Global Plan Initiatives and the elimination of deficiencies. At the same time, it will provide a comparison among the regions regarding progress achieved in their planning and implementation activities.

1.3.2 In accordance with GREPECAS guidelines, from now on each state and working group in the CAR Region will be required to develop an action plan to exercise their conclusions. This action plan will be evaluated, including corresponding budgetary adjustments and resource allocation, according to the action plan adopted by GREPECAS conclusions, which is attached to **Appendix C** to this part of the Report.

1.3.3 In reassessing the terms of reference for all the working groups in the CAR Region, the ICAO NACC Office is developing a common approach in order to align their work programmes with the Strategic Objectives of the Organisation, and has programmed a comprehensive regional consultation with the Civil Aviation Authorities to conclude the review of the terms of reference for all the aforementioned groups by mid-2008. The Meeting took note that future meetings of the NAM and CAR Regions will be scheduled according to the budget approved by the Assembly for the triennium of 2008-2010, and according to the expectations resulting from this review. Considering the above, the Meeting agreed to the following:

DRAFT

CONCLUSION 1/1

IMPLEMENTATION OF AIR NAVIGATION SYSTEMS IN THE CAR REGION

That:

- a) States/Territories/International Organisations develop an action plan as a follow-up to the results of GREPECAS/14, shown in Appendix C to this part of the report;

- b) the Working Groups of the CAR Region, assisted by ICAO, align its CAR Region planning and implementation work with the ICAO Strategic Objectives, the Global Air Navigation Plan and the Conclusions of GREPECAS; and,
- c) ICAO assist States/Territories/International Organisations in developing their action plans and examining the terms of reference of the CAR Region working groups.

1.3.4 The Secretariat presented information on the Worldwide Symposium on Performance of the Air Navigation System held at ICAO Headquarters from 26 to 30 March 2007, which dealt with issues related to safety, fiscal and management efficiency; it also covered technical aspects of the air navigation system. The outcome of the Seminar on economic and management performance is summarised as follows:

- a) a common understanding was reached that minimum reporting requirements in relation to information disclosure on economic and management performance of ANSPs should include four areas of measurement, namely: safety, quality of service (such as capacity, delay and flight efficiency), productivity and cost-effectiveness;
- b) economic and management performance measurement should take into account local/regional circumstances;
- c) the development of the performance framework should be done in consultation with users;
- d) performance indicators should be based on reliable information, while guarded against costly processes of data collection and analysis. Only key, high-level, simple and relevant indicators should be used to measure performance; and
- e) performance measurement should focus on results, not on the process.

1.3.5 The general view during the Symposium was that performance measures are important management tools for providers, regulators and users, and that economic and management performance measurement can be applied to all aspects of air navigation services and to all types of ANSPs, large or small, regardless of the form of an ANSPs governance and ownership.

1.3.6 In this respect, States should, at a minimum, encourage their ANSPs to measure performance in the areas of safety, quality of service, productivity and cost-effectiveness based on the optional guidelines included in guidance material included in the *Performance Management and Measurement for Air Navigation Services Providers*, available on the Symposium's website.

APPENDIX A

STATUS AND COMMENTS ON CONCLUSIONS OF PREVIOUS MEETINGS OF THE C/CAR WORKING GROUP

AREA	CON/DEC	COMMENTS
<u>Valid:</u>		
AIS	6/1	a) A point of contact was designated by Haiti who informed that coordination and harmonization with neighbouring States had begun. b) The Meeting noted that Administrations who have not yet done so, should inform the ICAO NACC Office on the actions taken.
ATM	6/2	
ATM	6/3	
ATM	6/4	
CNS	6/15	The States and COCESNA are expected to report on the progress of their bilateral and multilateral agreements.
CNS	6/16	This Seminar is pending to be carried out due to lack of resources.
MET	6/17	Replies by CAR States to ICAO correspondence is minimum. Only 2 or 3 States reply.
SAR	6/18 c)	
SAR	6/20	WP/09 contains a model of a multilateral agreement.
SAR	6/21	
CNS/ATM	6/22	The follow-up to this Conclusion was dealt under Agenda Item 5 of the CAR/WG/1 Meeting.
GEN	6/23	The follow-up to this Conclusion was dealt under Agenda Item 5 of the CAR/WG/1 Meeting.
GEN	5/1	b) Only Cuba, Haiti Dominican Republic, United Kingdom, United States, COCESNA and IFALPA have provided the name of the point of contact. Cuba: Finalized. It presented an updated action Plan and informed on the official point of contact for GANDD. It also reported that the systematic work to eliminate, as possible its deficiencies are carried out.
AIS	5/2	Delegates should inform on the actions taken by their respective Administrations. New estimated dates for items a), b) and c) should be proposed.
ATM	5/5	
CNS	5/9	The ICAO NACC Office will discuss this matter with Belize and Mexico. A Meeting is still pending to be held in order to review the ATS requirements related with the Belize APP / Merida ACC ATS speech circuit.
CNS	5/12	The action indicated in pa. a) of this Conclusion was carried out by the ICAO NACC Office. The follow-up of the rest of the actions were discussed through WP/08 of this Meeting. Cuba has stated that they are in the disposition to participate and contribute in the initial actions contained in Appendix F to the C/CAR/WG/5/IF.
CNS	5/18	There has been no progress in the work of the C/CAR and E/CAR Radar Data Exchange Task Forces.
CNS	5/19	The implementation of agreements for radar data exchange nor the implementation of a control for radar data integrity have not been reported.

CAR/WG/1
Appendix A to the Report on Agenda Item 1

1A-2

AREA	CON/DEC	COMMENTS
CNS	5/21	Cuba and Jamaica have started negotiations to prepare and implement a bilateral plan for radar data exchange.
ATM	5/24	Only Cuba and Dominican Republic have provided the name of the PoC. Cuba: Finalized. Cuba provided its point of contact and it is willing to support the group's work.
ATM	4/3 a)	
SAR	4/16	The CAR/WG/1 Meeting developed a SAR multilateral Memorandum of Understanding, which was recommended by Draft Conclusion 1/4
MET	3/12	The ICAO NACC Regional Office has not received other proposals for amendment. Cuba sent updated information.
AGA	2/18	The follow-up is being executed by the C/CAR Working Group.
<u>Superseded:</u>		
CNS	6/10	An update of this plan was adopted by GREPECAS Conclusion 14/53.
CNS	6/11	Superseded by Draft Conclusion 1/10 and 1/11 of the CAR/WG/1 Meeting
CNS	5/13	Superseded by Draft Conclusion 1/5 of the CAR/WG/1 Meeting
CNS	5/14	Superseded by Draft Conclusion 1/15 of the CAR/WG/1 Meeting
CNS	5/15	This conclusion was superseded by Conclusion 6/13.
CNS	5/17	This conclusion was superseded by Conclusion 6/16.
CNS	5/22 b)	Superseded by Draft Conclusion 1/12 of the CAR/WG/1 Meeting
CNS	5/23	Superseded by Draft Conclusion 1/13 and 1/14 of the CAR/WG/1 Meeting
ATM	4/3 c)	This conclusion was superseded by Conclusion 7/8 of the C/CAR DCA/7.
<u>Completed:</u>		
ATM	6/5	States/Territories are expected to have taken note of this Conclusion.
CNS	6/6	a) The transition towards MEVA II was carried out in November 2006. b) This action is being carried out as follow-up to the MR/4 Meeting.
CNS	6/7	These studies are being carried out by the CAR/SAM ATN/TF.
CNS	6/8	The Draft Plan mentioned in the Conclusion was developed by the CAR/WG/1 Meeting and is presented in Appendix F to Agenda Item 2 of the same Meeting.
CNS	6/9	The working group was deactivated.
CNS	6/12	Dominican Republic and Venezuela will coordinated and implemented the agreed solution.
CNS	6/13	States/Territories are expected to have taken note of this Conclusion.
CNS	6/14	States/Territories are expected to have taken note of this Conclusion.
SAR	6/18 a), b)	States/Territories are expected to have taken note of this Conclusion.
SAR	6/19	States/Territories are expected to have taken note of this Conclusion.
GEN	6/24	
GEN	6/25	States/Territories are expected to have taken note of this Conclusion.
CNS	5/16	States/Territories are expected to have taken note of this Conclusion.
CNS	5/20	Mexico and COCESNA initiated bilateral agreements.
CNS/ATM	5/22 a)	The information was requested to IATA. IATA has provided some information regarding this issue.

AREA	CON/DEC	COMMENTS
CNS	4/3 b)	The indicated action was incorporated in the terms of reference of the C/CAR WG.
CNS	4/7	The C/CAR VHF/AMS Coverage Task Force was deactivated.
CNS	4/8	In compliance with this Conclusion and Conclusion 12/41 of GREPECAS, the ATN Seminar was held in October 2006 in Santa Cruz, Bolivia.
CNS	1/19	The FASID Tables were and are being verified.
CNS	1/27	The Task Force was established.

APPENDIX B

STATUS AND COMMENTS ON CONCLUSIONS OF PREVIOUS MEETINGS OF THE E/CAR WORKING GROUP

AREA	CON/DEC	COMMENTS
<u>Valid:</u>		
ATM	30/01	
AIS	30/02	Delegates will inform the Meeting on the actions taken by their respective Administrations.
AIS	30/04	Delegates will inform the Meeting on the actions taken by their respective Administrations.
AIS	30/06	Delegates will inform the Meeting on the actions taken.
SAR	30/07	WP/09 contains a proposal of a Multilateral Agreement.
MET	30/08	Replies by CAR States to ICAO correspondence are minimum. Only 2 or 3 States reply.
ATM	30/09	Ongoing.
ATM	30/14	This issue was dealt under Agenda Item 2.4 of this Meeting.
CNS	30/15	The Action Plan is on-going. This issue is being dealt with under Agenda Item 3.1 of this Meeting.
AVSEC	30/16	It is expected that the CAR WG continue to supporting ICAO and ensuring this Conclusion be taken to the practical extend.
AVSEC	30/17	Ensure to provide ICAO up-to-date information on their AVSEC and FAL points of contact (if they have not already done so).
ATM	30/18	Ongoing.
<u>Superseded:</u>		
<u>Completed:</u>		
AIS	30/03	Delegates will inform the Meeting on the actions taken by their respective Administrations
AIS	30/05	Delegates will inform the Meeting on the actions taken by their respective Administrations
ATM	30/10	The Meeting is expected to receive information on the work carried out.
GEN	30/11	Required a significant amount of joint coordination.
ATM	30/12	
Aldo, las siguientes Conclusiones no tienen estado, por favor indícame dónde van		
GEN	30/13	
GEN	30/19	

**Follow-up to GREPECAS/14 Conclusions/Decisions — Action Plan/
Seguimiento a las Conclusiones/Decisiones del GREPECAS/14 – Plan de Actividades**

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
D 14/1 A , D	IMPLEMENTATION OF ALLPIRG/5 CONCLUSIONS BY GREPECAS	That the following conclusions of ALLPIRG/5 be studied by the concerned subgroups, that action be taken to implement them and that the outcome be presented to ensuing GREPECAS meetings: - Conclusions 5/2 and 5/5: AGA/AOP/SG - Conclusions 5/2, 5/4, 5/5, 5/7, 5/8, 5/9, 5/11, 5/13, 5/16 and 5/17: ATM/CNS/SG - Conclusions 5/2 and 5/5: AIS/MAP/SG - Conclusions 5/2 and 5/5: AERMET/SG -Conclusions5/14and5/15:ASB - Conclusions 5/4: IA/TF	Allocate responsibility to contributory bodies Identify projects for implementation	GREPECAS AGA/AOP/SG ATM/CNS SG AIS/MAP/SG AERMET/SG ASB IA/TF	Implementation of Conclusions Updated work programmes of sub-groups and other contributory bodies Develop Implementation projects	April 2007 April 2007 November 2008
	IMPLANTACIÓN DE LAS CONCLUSIONES DEL ALLPIRG/5 POR PARTE DEL GREPECAS	Que los respectivos subgrupos analicen las siguientes conclusiones del ALLPIRG/5, que se adopte acciones para su implantación, y que los resultados sean presentados a las próximas reuniones del GREPECAS: Conclusiones 5/2 y 5/5: AGA/AOP/SG Conclusiones 5/2, 5/4, 5/5, 5/7, 5/8, 5/9, 5/11, 5/13, 5/16 y 5/17: ATM/CNS/SG Conclusiones 5/2 y 5/5: AIS/MAP/SG Conclusiones 5/2 y 5/5: AERMET/SG Conclusiones 5/14 y 5/15: ASB Conclusión 5/4: IA/TF				
C 14/2 A , D	IMPLEMENTATION OF ALLPIRG/5 CONCLUSIONS BY STATES	That States of the CAR/SAM Regions take action to implement the following conclusions of ALLPIRG/5: Conclusions 5/4, 5/5, 5/7, 5/8,5/9, 5/11, 5/13 and 5/16	Implement conclusions	CAR/SAM States	ICAO State letter	July 2007
	IMPLANTACIÓN DE LAS CONCLUSIONES DEL ALLPIRG/5 POR PARTE DE LOS ESTADOS	Que los Estados de las Regiones CAR/SAM adopten acciones para la implantación de las siguientes nueve conclusiones del ALLPIRG/5: 5/4, 5/5, 5/7, 5/8, 5/9, 5/11, 5/13 y 5/16				
C 14/3 A , D	IMPLEMENTATION OF ALLPIRG/5 CONCLUSIONS BY INTERNATIONAL ORGANIZATIONS	That international organizations take action to implement the following conclusions of ALLPIRG/5: Conclusions 5/2, 5/4, 5/5, 5/7, 5/13 and 5/16	Implement conclusions	Intl organizations	ICAO State letter	July 2007

TBD = To be determined

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
	IMPLANTACIÓN DE LAS CONCLUSIONES DEL ALLPIRG/5 POR PARTE DE LAS ORGANIZACIONES INTERNACIONALES	Que las Organizaciones Internacionales adopten acciones para la implantación de las siguientes seis conclusiones del ALLPIRG/5: 5/2, 5/4, 5/5, 5/7, 5/13 y 5/16				
C 14/4 A, D	SMS IMPLEMENTATION AND INSTRUCTOR TRAINING COURSES	That the States, when planning SMS implementation: a) assign high priority to the implementation of these programmes; and b) when receiving training on safety management systems through the ICAO training programme, designate instructors to receive training courses with a view to the effective implementation of SMS in keeping with ICAO SARPS.	Follow-up determine States SMS Implementation Plans	Regional Offices	Determine number of instructors trained	Jul.2009
	IMPLANTACIÓN DEL SMS Y CURSOS PARA FORMACIÓN DE INSTRUCTORES	Que los Estados al planificar la implantación del SMS: a) den una alta prioridad a la ejecución a dichos programas; y b) cuando reciban instrucción sobre sistemas de gestión de la seguridad operacional, a través del programa de instrucción de la OACI, designen instructores para proseguir con cursos de instrucción, con miras a lograr, una implantación efectiva del SMS, en correspondencia con los SARPs de la OACI.	Acción de seguimiento para determinar planes de implantación SMS del Estado	Oficinas Regionales	Determinar número de instructores SMS formados	Jul.2008
C 14/5 A, D	GENERIC DOCUMENT CONCERNING AN AGREEMENT FOR THE ESTABLISHMENT OF A REGIONAL MULTINATIONAL ORGANIZATION	Whereas the most effective way to implement/consolidate multinational facilities, and manage and provide services is through the implementation of a Regional Multinational Organisation (RMO), and that this requires a basic reference document to serve as basis for the States/Territories concerned to conduct the necessary studies: a) it is recommended that the States/Territories that are interested in implementing an RMO use the summarised Draft Agreement for the Establishment of a Regional Multinational Organisation (RMO) shown in the attached Appendix A, the Draft Agreement for the Establishment, Operation, and Management of an RMO, shown in Appendix B, and the corresponding draft by-laws shown in Appendix C to this part of the Report; and b) the ICAO NACC and SAM Regional Offices are requested to follow-up on action taken by the States with respect to the implementation of an RMO, as appropriate.	Determine States interested in implementing a OMR	Regional Office	State letter.	Dec.2008

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C 14/5 A, D	DOCUMENTO GENÉRICO SOBRE UN PROYECTO DE ACUERDO CONSTITUTIVO PARA UNA ORGANIZACIÓN MULTINACIONAL REGIONAL.	Considerando que la forma más efectiva de implantar/consolidar instalaciones/servicios multinacionales y realizar una gestión y prestación de servicios, es a través de la implantación de una Organización Multinacional Regional (OMR), y que se requiere para esto un documento básico de referencia sobre el cual se puedan realizar los estudios necesarios por los Estados/Territorios interesados, se: a) recomienda que los Estados/Territorios interesados en implantar una OMR utilicen, para este propósito, el resumen del contenido del Proyecto de Acuerdo Constitutivo para una Organización Multinacional Regional (OMR), que se adjunta como Apéndice A, el Proyecto de Acuerdo Constitutivo para el Establecimiento, Operación y Administración de una OMR, que se adjunta como Apéndice B, y el correspondiente anteproyecto de Estatuto que se adjunta como Apéndice C a esta parte del Informe; y b) solicita a las Oficinas Regionales NACC y SAM de la OACI hacer un seguimiento de las acciones que los Estados interesados lleven acabo respecto a la implantación de una OMR, según sea apropiado	Determinar los Estados interesados en implantar una OMR	Oficina Regional	Carta a los Estados	Dec. 2008
		Based on GREPECAS guidelines for the implementation of multinational facilities, the States interested in implementing RMOs should consider, in coordination with ICAO, the formulation of a technical cooperation project that includes an agreement for its establishment, operation, and management, taking into account the possible objectives contained in Appendix D to this part of the Report.	Interested States in formulating a technical cooperation project.	Regional Office	Draft of technical cooperation project document.	Feb. 2009
C 14/6 A, D	NEW TECHNICAL COOPERATION PROJECT TO FACILITATE THE IMPLEMENTATION OF A REGIONAL MULTINATIONAL ORGANISATION (RMO)	Considerando las orientaciones del GREPECAS en relación a la implantación de servicios/instalaciones multinacionales, los Estados interesados en implantar OMRs, en coordinación con la OACI, consideren formular un Proyecto Regional de Cooperación Técnica que comprenda un acuerdo constitutivo para su establecimiento, operación y administración, tomando en cuenta los posibles objetivos contenidos en el Apéndice D a esta parte.	Estados interesados en formular un proyecto de cooperación técnica	Oficina Regional	Proyecto de documento de cooperación técnica	Feb. 2009
	NUEVO PROYECTO REGIONAL DE COOPERACIÓN TÉCNICA PARA FACILITAR LA IMPLANTACIÓN DE UNA ORGANIZACIÓN MULTINACIONAL REGIONAL (OMR).					

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C 14/7 B	AVSEC IMPLEMENTATION SURVEY	That ICAO conduct an AVSEC Survey by 1 September 2006, to determine compliance of Annex 17 standards regarding the National Civil Aviation Security Programme, National Aviation Security Quality Control Programme, Cargo Security Programme and Operator Aviation Security.	Implement conclusion	ICAO & CAR/SAM States	ICAO State letter	Sept. 2006
	ENCUESTA SOBRE IMPLANTACIÓN AVSEC	Que la OACI realice una Encuesta AVSEC a más tardar el 1 de septiembre de 2006 para determinar el cumplimiento de las Normas del Anexo 17 con relación al Programa Nacional de Seguridad de la Aviación Civil, el Programa Nacional de Control de Calidad de Seguridad de la Aviación, el Programa de Seguridad de Carga y los Programas de Seguridad de los Explotadores.	Implantar la conclusión	OACI & Estados CAR/SAM	Circular a los Estados de la OACI	Septiembre 2006
C 14/8 B	RECRUITMENT OF AVSEC PROFESSIONALS	That the States: a) review the ICAO prerequisites and forward this information to AVSEC qualified individuals in their administrations; and b) encourage qualified individuals to apply to ICAO to assist other States with the enhancement of their AVSEC Programmes. Conclusion 5/2	Implement conclusions	CAR/SAM States	States letter	Oct 2007
	RECLUTAMIENTO DE PROFESIONALES AVSEC	Que los Estados: a) revisen los requisitos previos de la OACI y envíen esta información a personas calificadas en el campo AVSEC en sus administraciones; y b) alienten a personas calificadas a que presenten sus solicitudes a la OACI para ayudar a otros Estados a mejorar sus programas AVSEC.	Implantar la conclusión	Estados CAR/SAM	Circular a los Estados de la OACI	Oct 2007

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C 14/9 B	ICAO MACHINE READABLE TRAVEL DOCUMENT (MRTD) TRAINING INITIATIVE	That ICAO: a) study the possibility of establishing a course for Machine Readable Travel Documents (MRTD) addressed to aviation security personnel using TRAINAIR methodology in coordination with the Security and Facilitation Branch; b) develop an Aviation Security Training Package for MRTD before year 2010 to assist States in implementation; and c) encourage States to support the implementation of MRTD using ICAO standards for effective aviation security counter measures through efficient boundary migratory control, to facilitate the exchange of database information of migratory movements and offer increased reliability in the MRTD control by using biometric information and e-passports.	Study feasibility, identify projects for implementation of conclusions, and implement conclusion Identify projects for implementation	ICAO	Allocate tasks	TBD
	INICIATIVA DE LA OACI PARA INSTRUCCIÓN SOBRE DOCUMENTOS DE VIAJE DE LECTURA MECÁNICA (DVLM)	Que la OACI: a) estudie la posibilidad de establecer un curso para Documentos de viaje de lectura mecánica (DVLM), orientada al personal AVSEC utilizando una metodología TRAINAIR en coordinación con la Subdirección de seguridad de la aviación y facilitación; b) desarrolle un conjunto de material didáctico normalizado sobre DVLM antes del 2010 para ayudar a los Estados en la implantación de este importante tema; y c) aliente a los Estados a apoyar la implantación de DVLM bajo las normas de la OACI para aplicar contra medidas de seguridad de la aviación efectivas a través de un eficiente control migratorio, que facilite el intercambio de información en las bases de datos de movimientos migratorios y ofrezca mayor confiabilidad del control de DVLM con datos biométricos y pasaportes-e.	Study feasibility, identify projects for implementation of conclusions, and implement conclusion Identify projects for implementation	ICAO	Allocate tasks	TBD
C 14/10 B	HOLD BAGGAGE SCREENING (HBS) GUIDANCE MATERIAL	That the GREPECAS Secretary forward the technical details related to the functioning of HBS systems and the action plan for negotiation, parts acquisition, maintenance and training in AVSEC screening equipment for consideration for inclusion as guidance material in the Security Manual for Safeguarding Civil Aviation Against Acts of Unlawful Interference (Doc. 8973 - Restricted). Conclusion 5/4	Implementation of conclusion Study feasibility for implementation of conclusion	GREPECAS ICAO	Inter-Office Memorandum Allocate tasks	TBD TBD

TBD = To be determined

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C 14/10 B	MATERIAL DE ORIENTACIÓN SOBRE INSPECCIÓN DEL EQUIPAJE DE BODEGA (hbs)	Que el Secretario del GREPECAS envíe a la Sección SGM de la OACI el detalle técnico del funcionamiento de un sistema HBS y el Plan de Acción para la negociación, adquisición de partes, mantenimiento e instrucción de equipos de inspección AVSEC para que sea considerada su incorporación en el <i>Manual de Seguridad para la Protección de la Aviación Civil contra Actos de Interferencia Ilícita</i> (Doc 8973 – Distribución Limitada) como material de orientación.				
C 14/11 B	IDENTIFICATION OF COMMON CRITERIA IN QUALITY CONTROL PROGRAMMES	That ICAO study the feasibility of implementing a secure website within the existing communication system with the States in order for them to share their Quality Control Programmes with other States. Conclusion 5/5	Study feasibility, identify projects for implementation of conclusions, and implement conclusion	ICAO	Allocate tasks	TBD
	IDENTIFICACIÓN DE CRITERIOS COMUNES EN LOS PROGRAMAS DE CONTROL DE CALIDAD	Que OACI estudie la factibilidad de incorporar un sitio Internet seguro entre su sistema de comunicación con los Estados para que los mismos compartan sus Programas de Control de Calidad con otros Estados.				
C 14/12 B	CARGO SECURITY PROGRAMME WORKSHOP	That ICAO develop a Cargo Security Workshop as a matter of urgency to assist States in the development of their National Cargo Security Programme. Conclusion 5/7	Identify projects for implementation of conclusion	ICAO	Allocate tasks	TBD
	TALLER DEL PROGRAMA DE SEGURIDAD DE LA CARGA	Que la OACI desarrolle un Taller sobre Seguridad de la Carga, con carácter de urgente, a fin de ayudar a los Estados a desarrollar sus Programas Nacionales de Seguridad de la Carga.				
C 14/13 B	PASSENGER/CABIN BAGGAGE SCREENING SEMINAR	That ICAO make the necessary coordination to guarantee the convening of the Passenger/Cabin Baggage Screening Seminar/Meeting to provide States with updated information on screening techniques and advanced technology.	Identify projects for implementation	ICAO	Allocate tasks	Nov 2007
	SEMINARIO DE INSPECCIÓN DE PASAJEROS/EQUIPAJE DE MANO	Que la OACI realice las coordinaciones necesarias para asegurar la realización del Seminario/Reunión sobre Pasajeros/Equipaje de Mano, para proporcionar a los Estados información actualizada sobre técnicas de inspección y tecnología avanzada.				

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C 14/14 B	AVSEC POINT OF CONTACT (PoC) NETWORK	That the States: a) review the criteria and designate the appropriate authority to receive and transmit imminent threats to civil air transport operations through this Network; and b) before 30 September 2006, provide ICAO with the Aviation Security Point of Contact (PoC) using the appropriate form. Conclusion 5/12	Implement conclusions	CAR/SAM States	States letter	Sept 2006
	RED DE PUNTOS DE CONTACTO (PoC)	Que los Estados: a) examinen los criterios de la información y designen a la autoridad competente para recibir y transmitir a través de esta Red las amenazas inminentes a las operaciones del transporte aéreo civil; y b) se registren con la OACI antes del 30 de septiembre de 2006 utilizando el formulario adecuado para la Red de puntos de contacto de seguridad de la aviación (PoC) de la OACI.				
C 14/15 A , D, E	REVIEW OF AGREEMENTS BETWEEN CIVIL AVIATION ADMINISTRATIONS AND MET AUTHORITIES IN CAR STATES/ TERRITORIES	That CAR States/Territories that have delegated the provision of aeronautical meteorological services to the national meteorological service review their agreements with the meteorological authorities in order to improve the service and the rate of response to aeronautical meteorology communications received from the NACC Regional Office.	Implantar la Conclusión	Estados CAR/SAM	Carta de la OACI a los Estados	Junio 2007
	REVISIÓN DE ACUERDOS ENTRE LAS DIRECCIONES DE AVIACIÓN CIVIL Y LAS AUTORIDADES MET EN LOS ESTADOS/ TERRITORIOS CAR	Que los Estados/Territorios de la Región CAR, que hayan delegado la prestación del servicio meteorológico aeronáutico al servicio meteorológico nacional, revisen los acuerdos con las autoridades meteorológicas a fin de mejorar la prestación del servicio y el porcentaje de respuestas a las comunicaciones de la Oficina Regional NACC en lo que a meteorología aeronáutica respecta.				
C 14/16 A , D	CALL PLAN DIAGRAM OF THE AERODROME VOLCANIC ASH EMERGENCY COMMITTEE	That CAR/SAM States/Territories use the call plan diagram, which includes contact information (name, position, telephone and cellular phone) of all members of the aerodrome volcanic ash emergency committee, as shown in Appendix I to this part of the Report.	Implantar la Conclusión	Estados CAR/SAM	Carta de la OACI a los Estados	Junio 2007

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	DIAGRAMA DEL PLAN DE LLAMADAS DEL COMITÉ DE EMERGENCIAS PARA CENIZAS VOLCÁNICAS DE UN AERÓDRONO	Que los Estados/Territorios de las Regiones CAR/SAM utilicen el diagrama de plan de llamadas, que incluye la información de contacto (nombre, cargo, teléfono y celular) de todos los integrantes del comité de emergencias para cenizas volcánicas de un aeródromo, que se presenta como Apéndice I a esta parte del informe				
C 14/17 A	POST-FLIGHT RECORDING AND REPORTING IN THE CAR/SAM REGIONS	That IATA request airlines operating on CAR/SAM air routes to record and report special aircraft observations of pre-eruption volcanic activity, volcanic activity, or volcanic ash clouds on the special volcanic activity air-report (VAR) form, as specified in Annex 3 and PANS ATM, Doc 4444.	Implantar la Conclusión	IATA	Carta de la OACI a los Estados	Junio 2007
	REGISTRO Y NOTIFICACIÓN POSTERIOR AL VUELO EN LAS REGIONES CAR/SAM	Que la IATA solicite a las aerolíneas que vuelan por las rutas aéreas CAR/SAM, a que registren y notifiquen las observaciones especiales de aeronaves sobre actividad volcánica precursora de erupción, erupción volcánica o nube de cenizas volcánicas en el formulario de aeronotificación especial de actividad volcánica (VAR), conforme a lo especificado en el Anexo 3 y PANS ATM, Doc 4444.				
C 14/18 A	USE OF THE TEMPLATE FOR SIGMET AND AIRMET MESSAGES AND SPECIAL AIR-REPORTS (UPLINK)	That CAR/SAM States/Territories update their procedures in order to make strict use of the template for SIGMET and AIRMET messages and special air-reports (uplink), particularly regarding the location indicator and the name of the FIR/CTA for which the SIGMET is being issued, at the beginning of the second line of the message.	Implantar la Conclusión	Estados CAR/SAM	Carta de la OACI a los Estados	Junio 2007
	APLICACIÓN DE LA PLANTILLA PARA MENSAJES SIGMET Y AIRMET Y AERONOTIFICACIONES ESPECIALES (ENLACE ASCENDENTE)	Que los Estados/Territorios de las Regiones CAR/SAM actualicen sus procedimientos para aplicar estrictamente la plantilla para mensajes SIGMET y AIRMET y aeronotificaciones especiales (enlace ascendente), particularmente en lo que respecta al indicador de lugar y nombre de la FIR/CTA para la cual se expide el SIGMET, al inicio de la segunda línea del mensaje.				
C 14/19 A	OPMET EXCHANGE CONTROLS IN THE CAR/SAM REGIONS	That, in order to improve the quality and availability of OPMET information in the CAR/SAM Regions: a) the Brasilia International OPMET Data Bank submit the results of OPMET studies and controls directly to those responsible for OPMET control in the CAR/SAM States/Territories; and b) the States/Territories establish procedures for controlling the quality and availability of OPMET data in their aerodromes.	Implantar la Conclusión	Banco Internacional de datos OPMET de Brasilia Estados CAR/SAM	Carta de la OACI a los Estados a Brasil Carta de la OACI a los Estados	Junio 2007

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	CONTROLES DE INTERCAMBIO OPMET EN LAS REGIONES CAR/SAM	Que, con el fin de mejorar la calidad y disponibilidad de los datos OPMET en las Regiones CAR/SAM: a) el Banco Internacional de datos OPMET de Brasilia envíe los resultados de los estudios y controles OPMET directamente a los responsables del Control OPMET de los Estados/Territorios de las Regiones CAR/SAM; y b) los Estados/Territorios establezcan procedimientos para llevar a cabo controles de calidad y disponibilidad de los datos OPMET de sus aeródromos				
C 14/20 E	GLOBAL OPMET DATA CONTROLS	That, in order to improve the reliability of global periodic assessments of OPMET data availability, the SADISOPSG consider the possibility of identifying in Annex 1 to the SADIS User's Guide those aerodromes that issue OPMET data 24 hours a day.	Estudiar la posibilidad	SADISOPSG	Secretario del SADISOPSG	TBD
	CONTROLES GLOBALES DE DATOS OPMET	Que, con el fin de mejorar la confiabilidad de las evaluaciones periódicas globales de la disponibilidad de datos OPMET, el SADISOPSG considere la posibilidad de identificar los aeródromos que no emiten datos OPMET durante las 24 horas, en el Anexo 1 de la Guía del Usuario del SADIS				
C 14/21 E	REVIEW OF THE TRANSITION TO THE BUFR CODE	That ICAO, in order to reduce the possible adverse impact of the transition from the traditional alphanumeric codes to BUFR-coded OPMET messages on the aeronautical community, invite WMO to review, as a matter of urgency, its plans to use BUFR-coded OPMET information.	Decisión de la ANC	OMM	Asignación de acción	TBD
	REVISIÓN DE LA TRANCISIÓN A LA CLAVE BUFR	Que la OACI, con la finalidad de reducir el impacto potencial adverso para la comunidad aeronáutica, debido a la transición de las claves alfanuméricas tradicionales a la clave BUFR de los mensajes OPMET, invite a la OMM a considerar, como un asunto de urgencia, sus planes para la utilización de la clave BUFR de la información OPMET.				
C 14/22 E	CAR/SAM FASID TABLE MET 1A	That Table MET 1A of the CAR/SAM FASID be amended, deleting column 6 (Areas of Coverage of Charts) and column 7 (AFTN Routing Areas).	Implantar la Conclusión	OACI Oficina SAM	Preparar y circular la propuesta de enmienda	Septiembre 2007
	Tabla MET 1A del FASID CAR/SAM	Que se enmiende la Tabla MET 1A del FASID CAR/SAM de tal manera que se elimine la columna 6 ("zonas de cobertura de los mapas") y la columna 7 ("áreas de encaminamiento AFTN").				

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C 14/23 E	AMENDMENT PROCEDURES FOR TAF AND TREND REQUIREMENTS	That, in order to ensure the currency of information related to the provision of TAF and TREND forecasts to be included in the global database, as of March 2007: a) annual consultations with CAR/SAM States/Territories be carried out in March concerning the issuance of TAFs and TRENDS; b) changes be submitted to the AERMETSG and GREPECAS; c) formal consultations and amendments to the CAR/SAM FASID be made annually by November; and d) the Lima and Mexico Offices forward the amendments to the ICAO MET Section for the updating of the global database annually in December, as appropriate	Implantar la Conclusión	OACI Oficinas NACC y SAM	Carta de la OACI a los Estados	Junio 2007
	PROCEDIMIENTOS DE ENMIENDA DE LOS REQUISITOS DE TAF Y TREND	Que con el fin de asegurar la actualización de la información relacionada con el suministro de pronósticos TAF y TREND a ser incluidos en la base de datos global, a partir de marzo de 2007: a) hagan consultas anuales en el mes de marzo a los Estados/Territorios CAR/SAM sobre la emisión de TAF y TREND; b) presenten los cambios al AERMETSG y al GREPECAS; c) se hagan consultas formales y enmiendas al FASID CAR/SAM para que estén finalizadas en noviembre; y d) las oficinas de Lima y México remitan las enmiendas a la Sección MET de la OACI para que actualice la base de datos global en diciembre, según corresponda.				
C 14/24 E	CAR/SAM FASID TABLE MET 2A	That: a) CAR/SAM FASID Table MET 2A be amended to only include a URL link to the global database with "Availability of OPMET information (METAR/SPECI and TAF) required in ISCS and SADIS", placed below the title; and b) a new table with OPMET exchange requirements (METAR/SPECI and TAF) in CAR/SAM States/Territories be included in the CAR/SAM ANP.	Implantar la Conclusión	OACI Oficina SAM	Preparar y circular la propuesta de enmienda	Septiembre 2007

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	TablaA MET 2A del FASID CAR/SAM	Que: a) se enmiende la Tabla MET 2A del FASID CAR/SAM del tal manera que esté conformada solamente por un enlace URL a la base de datos global "Disponibilidad información OPMET (METAR/SPECI y TAF) requerida en el ISCS y SADIS" incluido debajo del título de la misma; y b) se incluya una nueva tabla en el ANP CAR/SAM con los requerimientos de intercambio OPMET (METAR/SPECI y TAF) en los Estados/Territorios CAR/SAM.				
C 14/25 E	CURRENCY OF THE INFORMATION CONTAINED IN THE OPMET DATABASE (METAR/SPECI AND TAF)	That, in order to ensure the currency of the OPMET database (METAR/SPECI and TAF) that needs to be available in ISCS and SADIS, as of March 2007, the Lima and Mexico Offices, on an annual basis, reconfirm with the relevant States/Territories their agreements for the provision of the OPMET data contained in Annex 1 to the SADIS User's Guide (SUG) on aerodromes not included in Table AOP of the CAR/SAM FASID.	Implantar la Conclusión	OACI Oficina SAM	Carta de la OACI a los Estados	Junio 2007
	Actualización de la información de la base de datos OPMET (METAR/SPECI Y TAF)	Que, con el fin de garantizar la actualización de la base de datos OPMET (METAR/SPECI y TAF) que requieren disponibilidad en el ISCS y en el SADIS, a partir de marzo de 2007 las Oficinas de Lima y México reconfirmen anualmente los acuerdos con los Estados/Territorios pertinentes, sobre el suministro de datos OPMET incluidos en el Anexo 1 de la Guía de Usuario del SADIS (SUG), de los aeródromos no incluidos en la tabla AOP del FASID CAR/SAM.	Implantar la Conclusión	OACI Oficina SAM	Carta de la OACI a los Estados	Junio 2007
C 14/26 E	CAR/SAM FASID TABLE MET 2B	That, a) Table MET 2B of the CAR/SAM FASID be eliminated; and b) an operational table listing SIGMET exchange requirements in CAR/SAM States/Territories be included as an Appendix to the CAR/SAM SIGMET Guide.	Implantar la Conclusión	OACI Oficina SAM	Preparar y circular la propuesta de enmienda	Septiembre 2007
	Tabla MET 2B del FASID CAR/SAM	Que, a) se elimine la Tabla MET 2B del FASID CAR/SAM; y b) se incluya como un Apéndice a la Guía SIGMET CAR/SAM, una tabla operacional que liste los requisitos de SIGMET en los Estados/Territorios CAR/SAM.				
C 14/27 E	ATS/AIS/MET/PILOT COORDINATION SEMINAR	That ICAO, in coordination with WMO, organise an ATS/AIS/MET/Pilot Coordination Seminal for the CAR/SAM Regions.	Decisión de la ANC	OMM	Asignación de acción	TBD

TBD = To be determined

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	SEMINARIO SOBRE COORDINACIÓN ENTRE LOS SERVICIOS ATS/AIS/MET/PILOTO S	Que la OACI, en coordinación con la OMM, organice un seminario sobre Coordinación ATS/AIS/MET/Pilotos para las Regiones CAR/SAM.				
C 14/28 E	SPECIAL IMPLEMENTATION PROJECT (SIP) FOR THE CAR REGION	That ICAO consider the need of establishing a MET Special Implementation Project for the CAR Region, in order to study and recommend measures for various CAR States/Territories with the purpose of solving specifically the problems affecting MET services. <i>Note: In order to join efforts for proposing solutions to aeronautical meteorology deficiencies, consideration could be given to the possibility of implementing the SIP in coordination with WMO.</i>				
	Proyecto especial de implantación (SIP) MET para la Región CAR	Que, la OACI considere la necesidad de activar un Proyecto Especial de Implantación MET para la Región CAR, con el fin de estudiar y recomendar medidas a varios Estados/Territorios CAR con el propósito de solucionar puntualmente los problemas que afectan el servicio MET. <i>Nota: Con el fin de aunar esfuerzos para proponer soluciones a las deficiencias identificadas en meteorología aeronáutica, se podría considerar la posibilidad de llevar a cabo el SIP en forma coordinada con la OMM</i>	Estudiar posibilidad	OACI	Asignación de TAREA	TBD
A 14/29	TALLER SOBRE PLANES DE EMERGENCIA Y CENTROS DE OPERACIONES DE EMERGENCIA (COE) EN IDIOMA INGLES	Que la OACI: a) coordine la convocatoria a un taller sobre Planes de Emergencia y Centros de Operaciones de Emergencia (COE) en idioma inglés, de conformidad con la Conclusión 13/33 del GREPECAS, el cual sería llevado a cabo por la Oficina NACC, en vista que la mayoría de sus Estados son de habla inglesa; b) aliente a los Estados/Territorios a que respondan a la encuesta sobre planes de emergencia y centros de operaciones de emergencia, y que envíen dicha información a las Oficinas Regionales NACC y SAM de la OACI a la brevedad posible; y c) aliente a los Estados/Territorios y Organizaciones Internacionales a que participen más activamente en eventos de este tipo.	Carta a los Estados/Territorios Carta a los Estados/ Territorios	Oficina NACC (apoyo Oficina SAM)	Entrenamiento de los Estados / Territories Ajuste y Traducción de la Guía producida en el Taller de Habla Hispanica (primer taller)	2007 2008

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A 14/29	ENGLISH SPEAKING WORKSHOP ON EMERGENCY PLANS AND EMERGENCY OPERATIONS CENTRES (EOC)	That ICAO, a) coordinate the convening of an English speaking workshop on Emergency Plans and Emergency Operations Centres (EOC) in accordance with GREPECAS Conclusion 13/33, to be conducted by the NACC Office, in view that most of their States are English speaking; b) encourage States/Territories to reply to the Survey on Emergency Plans and Emergency Operations Centres and send said information to the ICAO NACC and SAM Regional Offices as soon as possible; and, c) encourage States/Territories and International Organizations to participate in events of this type in a more active manner.	State/Territory Letters State/Territory Letters	NACC Office (SAM Office Support)	States/Territory Training Translation of the Guide Developer during the Workshop for Spanish Status (first workshop)	2007 2008
A 14/30	PROPUESTA PARA IDENTIFICAR LAS POSIBLES DIFERENCIAS EN EL NIVEL DE PROTECCIÓN PARA LOS SERVICIOS DE SALVAMENTO Y DE EXTINCIÓN DE INCENDIOS (TABLA AOP-1)	Que: a) la OACI analice la posibilidad de modificar la columna 3 del Plan de Navegación Aérea de la OACI, Doc 8733, Volumen II – FASID, Parte III – AOP, a fin de incluir un nuevo rubro con datos sobre el tipo de aeronave, con su respectivo modelo, el cual sería utilizado para determinar la CAT RFF. Es decir, la columna 3 tendría dos rubros (categoría RFF y tipo/modelo de aeronave) en vez de uno; y b) los Estados/Territorios revisen los datos sobre salvamento y extinción de incendios contenidos en la columna 3, tomando en cuenta el tipo y modelo de la aeronave.	Carta/E-mail Carta a los Estados/ Territorios	Sesión AGA (Sede) Estados/Territorios	Tabla AOP-1 ajustada Informaciones corregidas en la Columna 3 de la Tabla AOP-1	TBD TBD
A 14/30	PROPOSAL TO IDENTIFY POSSIBLE DIFFERENCES BETWEEN THE LEVEL OF PROTECTION FOR RESCUE AND FIRE FIGHTING SERVICES (TABLE AOP-1)	That, a) ICAO study the possibility to modify and incorporate data for Column 3 in the ICAO Air Navigation Plan, Doc 8733, Volume II - FASID, Part III – AOP by including new text that the aircraft type, with its respective model, be used to determine the RFF CAT to be included as an additional data entry. That is, Column 3 will consider two data entries (RFF category and aircraft type/model), not one; and, b) States/Territories review current data in Column 3 in the rescue and fire fighting category, taking into account the type and model of the aircraft.	Letter/E-mail State/Territory Letters	AGA Section (HQ) States/Territories	Adjusted Table AOP-1 Corrected information on Column 3 of Table AOP- 1	TBD TBD

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A 14/31	CERTIFICACIÓN DE AERÓDROMOS/ SISTEMAS DE GESTIÓN DE LA SEGURIDAD OPERACIONAL (SMS)	Que: a) la OACI vuelva a enviar las encuestas sobre Certificación de Aeródromos/Sistemas de Gestión de la Seguridad Operacional (SMS) a los Estados/Territorios durante el primer semestre de 2007; b) los Estados/Territorios llenen las encuestas sobre Certificación de Aeródromos/Sistemas de Gestión de la Seguridad Operacional (SMS) y las envíen a la brevedad posible, a más tardar dentro de los dos meses de la fecha de distribución.	Cartas a los Estados/ Territorios Cartas a las Oficinas Regionales	Oficinas NACC y SAM Estados/ Territorios	Actualización de la información sobre la implementación de Certificación de Aeródromos y SMS (Identificación de necesidad de entrenamiento)	Primer semestre 2007 Según semestre 2007
A 14/31	AERODROME CERTIFICATION/ SAFETY MANAGEMENT SYSTEMS (SMS)	That, a) ICAO re-circulate the surveys on Aerodrome Certification/Safety Management Systems (SMS) among States/Territories during the first semester 2007; b) States/Territories duly complete and return the complete surveys on Aerodrome Certification/Safety Management Systems (SMS), as soon as possible, and no later than two months after the circulation date.	State/Territory Letters Setter to the Regional Offices	NACC and SAM Offices States/Territories	Updated information o n the Aerodrome Certification and SMS implementation (Identification of training needs)	First semester 2007 Second semester 2007
A 14/32	SEMINARIO/TALLER SOBRE ESTUDIOS AERONÁUTICOS SOBRE LAS RESAs, FRANJAS DE PISTAS Y OBSTÁCULOS	Que la OACI: a) aliente a los Estados/Territorios de las Regiones CAR/SAM a que participen en el Seminario/Taller sobre Estudios Aeronáuticos que está siendo programado por la Oficina Regional NACC de la OACI, de manera que sirva de foro para discutir los estudios aeronáuticos en el campo AGA, especialmente con respecto a las RESA, franjas de pista y obstáculos. b) estudie la posibilidad de analizar, durante los dos primeros días del Seminario/Taller, problemas específicos relacionados con las RESA y las franjas de pista, donde lo permite específicamente el Anexo 14.	Carta a los Estados/ Territorios	Oficina NACC Coordinación del taller	Entrenamiento de profesionales de aeropuertos en estudios aeronáuticos	2007
A 14/32	SEMINAR/WORKSHO P ON AERONAUTICAL STUDIES FOR RESAs, RUNWAY STRIPS AND OBSTACLES	That ICAO: a) encourage CAR/SAM States/Territories to attend the Seminar/Workshop on Aeronautical Studies being planned by the ICAO NACC Regional Office, to serve as a forum to discuss aeronautical studies in the AGA area, mainly regarding RESAs, runway strips and obstacles. b) study the possibility that the first two days of the Seminar/Workshop consider specific problems regarding RESAs and runway strips where specifically permitted by Annex 14.	State/Territory Letters	NACC Office Workshop coordination	Training of airport professionals on aeronautical studies	2007

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A 14/33	ENMIENDAS AL PLAN REGIONAL DE NAVEGACIÓN AÉREA CAR/SAM	Que Brasil envíe su solicitud a la Oficina Regional Sudamericana de la OACI, con los datos suplementarios necesarios, de conformidad con los requerimientos del Plan de Navegación Aérea CAR/SAM, Volumen II – FASID, Tabla AOP-1, con el objeto de circular la propuesta de enmienda correspondiente.	Carta del Estado a la Oficina SAM	Brasil	Enmienda a la Tabla AOP-1 del FASID	2008
	AMENDMENTS TO THE CAR/SAM AIR NAVIGATION PLAN	That Brazil send its request to the ICAO SAM Office, with the necessary complementary data, in accordance with CAR/SAM Air Navigation Plan, Volume II – FASID, Table AOP-1 requirements, in order to circulate the corresponding proposal of amendment.	Setter from the State to the SAM Office	Brazil	Amendment to Table AOP-1, FASID	2008
A 14/34	PENDIENTE DESCENDENTE DE LA FRANJA DE PISTA UBICADA MÁS ALLÁ DE LA PORCIÓN NIVELADA	Que la OACI analice, si lo considera oportuno, la indicación de la pendiente ascendente y descendente máximas más allá del segmento nivelado de las franjas de pista, medidas en el sentido del espaciamiento de la pista, contenida en el Anexo 14, Volumen I, Capítulo 3.	Carta/E-mail	Sesión AGA (sede)	Norma revisada	TBD
A 14/34	DOWN SLOPE OF THE RUNWAY STRIP LOCATED BEYOND THE LEVELLED PORTION	That ICAO study the indication of the maximum up and down slope to the segment located beyond the portion levelled in the runway strip, measured in the sense of runway distancing, contained in Annex 14, Volume I, Chapter 3.	Letter/E-mail	AGA Section (HQ)	Revised Standard	TBD
A 14/35	ANCHO DE LAS FRANJAS DE LAS SEÑALES DE PUNTO DE VISADA PARA PISTAS CON UN ANCHO INFERIOR A 30 m	Que la OACI analice, si lo considera oportuno, la norma sobre las franjas de las señales de punto de visada que se superponen a la señal de faja lateral de pista cuando éstas tienen un ancho inferior a 30 m.	Carta/E-mail	Sesión AGA (sede)	Norma revisada	TBD
	AIMING POINT MARKING STRIPE WIDTHS FOR RUNWAYS LESS THAN 30 m WIDE	That ICAO study the standard regarding aiming point marking stripe widths that overlap with the runway lateral stripe when less than 30 m wide.	Letter/E-mail	AGA Section (HQ)	Revised Standard	TBD

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C- 14/36 --- A and D	REQUIREMENTS FOR THE IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEMS FOR AIM IN THE CAR/SAM REGIONS	That the States and Territories of the CAR/SAM Regions, bearing in mind the advantages offered by the standardized application of guidelines and procedures for the implementation of quality management systems in their AIM services, adopt and apply: a) Part – 4 of the Guidance Manual for the Implementation of an AIM Quality Management System for the CAR/SAM Regions; related to the selection, proficiency, training and qualification for the personnel of the Aeronautical Information Service, as presented in Appendix N to this part of the Report. b) the procedures of verification and validation of aeronautical data contained in Appendix O to this part of the report which will be included in the contents of the Guidance Manual for the Implementation of an AIM Quality Management System; c) the procedures to conduct quality audits in the AIM areas (see Appendix P to this part of the report, in order to ensure the effective development of this process in the CAR/SAM Regions, in accordance with the AIS Quality Guidance Manual; and d) the necessary resources and mechanisms to ensure the activation of a lead auditors team to ensure the performance of quality audits in the AIM services of the CAR/SAM Regions.				

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C- 14/36 --- A and D	REQUISITOS PARA LA IMPLANTACIÓN DE SISTEMAS DE GESTIÓN DE LA CALIDAD PARA LOS AIS/MAP DE LAS REGIONES CAR/SAM	Que los Estados y Territorios de las Regiones CAR/SAM, teniendo en cuenta las ventajas que ofrece la aplicación normalizada de guías y procedimientos para la implantación de sistemas de gestión de la calidad en sus servicios AIS/MAP, adopten y apliquen: a) la Parte – 4 del Manual Guía para la Implantación de un Sistema de Gestión de la Calidad para los AIS/MAP de las Regiones CAR/SAM; sobre la selección, competencia, formación y calificación para el personal del Servicio de Información Aeronáutica, tal y como se muestra en el Apéndice A a esta parte del informe (Refiérase al Adjunto 1 a este Apéndice); b) los procedimientos de verificación y validación de datos aeronáuticos, contenidos en el Apéndice B a esta parte del informe (Refiérase al Adjunto 2 a este Apéndice), que serán incorporados al contenido del Manual Guía para la Implantación de un Sistema de Gestión de la calidad en los AIS/MAP; c) los Procedimientos para la realización de Auditorias de la calidad en las áreas AIS/MAP (ver Apéndice C a esta parte del informe (Refiérase al Adjunto 3 a este Apéndice)), a fin de garantizar el desarrollo efectivo de este proceso en las Regiones CAR/SAM, conforme al Manual Guía de Calidad AIS; y d) los recursos y mecanismos necesarios para asegurar la conformación de un equipo de auditores líderes para asegurar la realización de las Auditorias de la calidad en los servicios AIS/MAP de las Regiones CAR/SAM.	Implement conclusions	AIS/MAP/SG	programmes of sub-groups and other contributory bodies	A ser determinada
C- 14/37 --- A and D	CONSOLIDATION OF THE CAR/SAM DIGITAL VFR AERONAUTICAL CHARTS PROJECT	That ICAO NACC and SAM Regional Offices work in a coordinated manner to achieve the CAR/SAM Digital VFR Aeronautical Charts Project by the end of 2008: a) with PAIGH, in order to foster the production of VFR digital aeronautical charts on a common standards and procedures basis; and b) through the establishment of a technical co-operation programme funding mechanism by ICAO.				

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	CONSOLIDACIÓN DEL PROYECTO CAR/SAM SOBRE CARTAS AERONÁUTICAS VFR DIGITALES	Que las Oficinas Regionales NACC y SAM de la OACI trabajen en forma coordinada para el logro del proyecto CAR/SAM sobre Cartas Aeronáuticas VFR digitales a más tardar para finales de 2008: a) con el IPGH, para promover la producción de cartografía aeronáutica digital VFR sobre una base común de estándares y procedimientos; y b) a través de un proyecto de cooperación técnica como método de financiamiento por parte de la OACI.	Identify projects for implementation	AIS/MAP/SG	Develop Implementation projects	finales de 2008
C- 14/38 --- A and D	AIP AUDITS ASSISTANT (AAA) PROCESS INTEGRATION IN THE CAR/SAM AIS	That States/Territories/International Organizations: a) consider integrating the AAA, which can be downloaded for free at web page http://www.eurocontrol.int/aim/public/standard_page/ols_aaa.html in the CAR/SAM AIS so as to improve the AIP production process through the assessment and application of AAA during an experimental period; and b) develop a report on its use, shown in the Appendix S to this part of the Report, to be presented to the NACC and SAM Regional Offices by 31 January 2008 .				
C- 14/38 --- A and D	INTEGRACIÓN DEL PROCESO DE ASISTENTE DE AUDITORIAS AIP (AAA) EN LOS AIS CAR/SAM	Que los Estados/Territorios/Organizaciones Internacionales: a) consideren integrar el AAA que se encuentra para instalación gratuita en la página web http://www.eurocontrol.int/aim/public/standard_page/ols_aaa.html en los AIS CAR/SAM para mejorar los procesos de producción del AIP a través de la evaluación y aplicación del AAA durante un tiempo de forma experimental; y b) elaboren el reporte sobre su uso que aparece en el Apéndice a esta parte del informe (Refiérase al Adjunto 4 a este Apéndice) y lo envíen a las Oficinas Regionales NACC y SAM a más tardar el 31 de enero de 2008	Implement conclusions	AIS/MAP/SG	Develop Implementation projects	31 de enero de 2008

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C- 14/39 --- A and D	ACTIONS FOR THE USE OF GEOGRAPHIC INFORMATION SYSTEMS (GIS) IN THE CAR/SAM REGIONS AIM SERVICES	That, taking into account the appropriateness of evolving towards the concept of digital aeronautical information management by electronic means in the CAR/SAM Regions, and that the use of Geographic Information Systems (GIS) could contribute directly and positively with these requirements, by end of 2008: a) CAR/SAM States and Territories consider the implementation of Geographical Information Systems (GIS) in AIM services as automated support for the electronic display of AIP and aeronautical chart information, and take action to permit training of AIS personnel on the practical management of GIS, in order to facilitate the implementation and operation of these systems in their AIS services; and b) the NACC and SAM Regional Offices take the necessary action to consider within relevant regional technical co-operation regional projects, the implementation requirements of Geographic Information Systems (GIS) as automated support for the activities of AIM services in the CAR/SAM Regions, in direct support of CNS/ATM.				
C- 14/39 --- A and D	ACCIONES PARA EL USO DE SISTEMAS DE INFORMACIÓN GEOGRÁFICA (GIS) EN LOS SERVICIOS AIS/MAP DE LAS REGIONES CAR/SAM	Que, tomando en cuenta la conveniencia de evolucionar hacia el concepto de administración de la información aeronáutica digital por medios electrónicos en las Regiones CAR/SAM, y que el uso de los sistemas de información geográfica (GIS) podría contribuir directa y positivamente con estos requerimientos, a más tardar para finales de 2008: a) los Estados y Territorios de las Regiones CAR/SAM consideren la implantación de Sistemas de Información Geográfica (GIS) en los servicios AIS/MAP, como soporte automatizado para la presentación electrónica de la información AIP y de las cartas aeronáuticas y que tomen las acciones para permitir la instrucción del personal AIS en el manejo práctico de los Sistemas GIS, para facilitar la implantación y operación de estos sistemas en sus servicios AIS; y b) las Oficina Regionales NACC y SAM tomen las acciones que sean necesarias, a fin de considerar como parte de los Proyectos Regionales de Cooperación Técnica pertinentes, el requerimiento sobre la implantación de Sistemas de Información Geográfica (GIS) como soporte automatizado para las actividades de los Servicios AIS/MAP en las Regiones CAR/SAM en directo apoyo al CNS/ATM.	Implement conclusions	AIS/MAP/SG	Develop Implementation projects	finales de 2008:

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C- 14/40 --- A and D	COMPLIANCE WITH SARPS CONTAINED IN CHAPTER 10 OF ICAO ANNEX 15 (ELECTRONIC TERRAIN AND OBSTACLE DATA)	That, the States and Territories of the CAR and SAM Regions, with a view to ensuring the provision of electronic terrain and obstacle data, take action in order to: a) include in their planning as soon as possible, the implementation of all required procedures to ensure that electronic terrain and obstacle data be provided in the period between 20 November 2008 (Annex 15, 10.6.1.1) and 18 November 2010 (Annex 15, 10.6.1.2), respectively, as established; b) ensure effective compliance of item a), through the establishment of a specialist team in charge of the development of corresponding technical studies on this matter; c) put into practice an action plan oriented to the collection of sets of electronic terrain and obstacle data for their classification, storage and availability in digital databases, in accordance with the contents and structure specified in Appendix 8 to ICAO Annex 15; and d) ensure the effective availability of electronic terrain and obstacle data of the State's national territory through coordination with national geographic institutes to have available aeronautical Visual Flight Charts (VFR), in digital format, at scales between 1:250,000 and 1:1,000,000, respectively.				

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C- 14/40 --- A and D	CUMPLIMIENTO CON LOS SARPS CONTENIDOS EN EL CAPÍTULO 10 DEL ANEXO 15 DE LA OACI (DATOS ELECTRÓNICOS DEL TERRENO Y OBSTÁCULOS)	Que los Estados y Territorios de las Regiones CAR y SAM, con miras a garantizar el suministro de los Datos electrónicos del Terreno y Obstáculos, tomen prontas acciones a fin de: a) incorporar dentro de su planificación, la implantación, al más breve plazo, de todos los procedimientos requeridos para asegurar que los Datos Electrónicos del Terreno y Obstáculos sean suministrados en el período comprendido entre el 20 de noviembre del 2008 (Anexo 15, 10.6.1.1) y el 18 de noviembre del año 2010 (Anexo 15, 10.6.1.2), respectivamente, conforme a lo establecido; b) garantizar el efectivo cumplimiento de lo indicado en el inciso a), mediante el establecimiento de un equipo de especialistas que se encargue de desarrollar los estudios técnicos pertinentes sobre esta materia; c) poner en ejecución un plan de acción orientado a la recolección de juegos de datos electrónicos del terreno y los obstáculos, para su clasificación, almacenamiento y disponibilidad en bases de datos digitales, conforme al contenido y estructura especificadas en el Apéndice 8 del Anexo 15 de la OACI; y d) asegurar la efectiva disponibilidad de los datos electrónicos del terreno y los obstáculos respecto al territorio nacional del Estado mediante la coordinación con los Institutos Geográficos Nacionales, para contar con Cartas Aeronáuticas de Vuelo Visual (VFR), en formato digital, a las escalas comprendidas entre 1:250,000 y 1:1,000,000, respectivamente.	Implement conclusions	AIS/MAP/SG	Develop Implementation projects	20 de noviembre del 2008 18 de noviembre del 2010

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C- 14/40 --- A and D	TABLA AIS-4 DEL FASID CAR/SAM	Que, en cumplimiento a la Recomendación 12/5 de la RAN CAR/SAM/3 y con base en el trabajo efectuado sobre esta materia, tanto por las Oficinas Regionales NACC y SAM como por el GREPECAS y por considerar, además, que éste es un requisito operacional para las Regiones CAR/SAM: a) los Estados CAR/SAM que aún no lo hayan hecho envíen a las Oficinas Regionales de la OACI la Tabla FASID AIS-4 que aparece en el Apéndice B a esta parte del informe (Refiérase al Adjunto 5 a este Apéndice) (Tablas FASID AIS 4A y 4B) debidamente llenada a más tardar el 31 de julio de 2007; b) con esa información, las Oficinas Regionales NACC y SAM de la OACI realicen la propuesta de enmienda para que se incorpore en el contenido del Doc 8733 - Plan de Navegación Aérea CAR/SAM, Volumen II - FASID, la Tabla FASID AIS-4 - Requerimientos de Documentación Integrada de Información Aeronáutica en los aeropuertos internacionales para presentar a finales de agosto de 2007; y c) las Oficinas Regionales NACC y SAM de la OACI tomen las acciones que sean necesarias, a fin de asegurar que los Estados CAR/SAM cumplan con mantener la información de la Tabla FASID AIS-4 debidamente actualizada.	Implement conclusions	AIS/MAP/SG	ICAO State letter	31 de julio de 2007
C- 14/40 --- A and D	CAR/SAM FASID TABLE AIS-4	That, in compliance with CAR/SAM/3 RAN Recommendation 12/5, and based on the work carried out on this matter by both NACC and SAM Regional Offices and GREPECAS, and considering also that this is an operational requirement for the CAR/SAM Regions: a) the CAR/SAM States that have not yet done so, send to the ICAO Regional Offices FASID Table AIS-4 as presented in Appendix T to this part of the Report; b) with that information, the ICAO NACC and SAM Regional Offices make the proposal for amendment to incorporate FASID Table AIS-4 - Requirements for Integrated Aeronautical Information Package at International Airports in the contents of Doc 8733, CAR/SAM Air Navigation Plan, Volume II, FASID by the end August 2007; and c) concerned ICAO Regional Offices take the necessary actions in order to ensure that CAR/SAM States comply with maintaining the information of FASID Table AIS-4 duly updated.				

TBD = To be determined

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D- 14/42 --- A and D	CHANGE OF NAME OF THE AIS/MAP SUBGROUP TO AERONAUTICAL INFORMATION MANAGEMENT (AIM) SUBGROUP	That, in order to frame it within the conceptual environment of the electronic exchange of digital aeronautical data, the name of the AIS/MAP Subgroup is changed to Aeronautical Information Management (AIM) Subgroup (AIM/SG) , whose terms of reference and work programme are shown in Appendix G to Agenda Item 5.2 of this Report.				
	CAMBIO DE NOMBRE DEL SUBGRUPO AIS/MAP POR SUBGRUPO GESTIÓN DE LA INFORMACIÓN AERONÁUTICA (AIM)	Para enmarcarlo dentro del entorno conceptual del intercambio electrónico de datos aeronáuticos digitales, se decide cambiar el nombre de Subgrupo AIS/MAP por el de Subgrupo Gestión de la Información Aeronáutica (AIM) - (AIM/SG), cuyos términos de referencia y programa de trabajo aparecen en el Apéndice A a esta parte del informe (Refiérase al Apéndice G a la NE/19).	Implement decision	AIS/MAP/SG	Updated work programmes of sub-groups and other contributory bodies	---
C 14/43 D	AGREEMENTS FOR ATM AUTOMATED SYSTEMS INTERFACE	That CAR/SAM States/Territories/International Organizations: a) take into account technical feasibility studies and operational benefits, and coordinate the establishment of bilateral and multilateral agreements for the interface of automated systems between adjacent units; b) use guidance material specified as the "Interface Control Document for Data Communications between ATS Units in the Caribbean and South American Regions (CAR/SAM ICD)," included in Appendix 4A to this part of the Report, keeping in mind that: i) ICAO guidance material contained in said document is applicable at the regional level; ii) material within the document that does not comply with ICAO guidelines, should be used only as reference and would be agreed on a bilateral or multilateral basis as required; and c) the automated facilities that have another interface can use this advantage in order to link their systems under bilateral or multilateral agreements..	to establish bilateral and multilateral agreements to use the ICD analysis of other interfaces	States/Territories/ International Organizations States/Territories/ International Organizations States/Territories/ International Organizations	Interfaced automated systems Harmonization of the communications interface among ATS units flexibility in the use of other systems	

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C 14/43 D	ACUERDOS PARA INTERFAZ DE LOS SISTEMAS AUTOMATIZADOS	Que los Estados/Territorios/Organizaciones Internacionales de las Regiones CAR y SAM: a) tomen en consideración los estudios de viabilidad técnica y los beneficios operacionales y coordinen el establecimiento de acuerdos bilaterales o multilaterales para la interfaz de los sistemas automatizados entre dependencias ATS adyacentes; b) utilicen el material de orientación especificado como "Documento de Control de Interfaz (ICD) para comunicaciones de datos entre dependencias ATS en las Regiones del Caribe y Sudamérica", incluido en el Apéndice 4A de esta parte del Informe, teniendo en cuenta que: i) el material de referencia de la OACI contenido en dicho documento es de aplicación regional; y ii) el material que en dicho documento no cumpla con los lineamientos de la OACI, se debería utilizar sólo como referencia y será acordado de manera bilateral o multilateral, según corresponda; y. c) las facilidades automatizadas que tengan otra interfaz puedan utilizar esa ventaja de manera de entrelazar sus sistemas bajo acuerdos bilaterales o multilaterales.				
C 14/44 D	ESTABLISHMENT OF AN ACTION PLAN FOR THE INTERFACE OF ATM AUTOMATED SYSTEMS	That CAR/SAM States/Territories/International Organizations, formulate an action plan to interface ATM automated systems, which includes: a) the assignment of an expert as point of contact to carry out regional coordination work for the interface of ATM automated systems; b) the analysis of the current service level provided by ATS automated systems, as well as requirements to satisfy future operational applications of the ATM community using the Table of ATS Operational Requirements for Automated Systems, included in Appendix 4B to this part of the Report; and c) document the action plan and share best practices and experiences with other States/Territories/International Organizations, as required	designate points of contact implement this conclusion implement this conclusion	States/Territories/ International Organizations States/Territories/ International Organizations States/Territories/ International Organizations	Establishment of the Action Plan	

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C 14/44 D	ESTABLECIMIENTO DE UN PLAN DE ACCIÓN PARA LA INTERFAZ DE LOS SISTEMAS AUTOMATIZADOS ATM	Que los Estados/Territorios/Organizaciones Internacionales de las Regiones CAR y SAM, formulen un Plan de acción para la interfaz de los sistemas automatizados ATM que incluya: a) el nombramiento de un experto como punto de contacto para llevar a cabo el trabajo de coordinación regional para la interfaz de los sistemas automatizados ATM; b) el análisis del nivel de servicio actual proporcionado por los sistemas automatizados ATS, así como los requerimientos para satisfacer las aplicaciones operacionales futuras de la comunidad ATM utilizando la Tabla sobre Requerimientos Operacionales ATS para los Sistemas Automatizados, incluida en el Apéndice 4B a esta parte del Informe; y c) documentar el plan de acción y compartir las mejores prácticas y experiencias con otros Estados/Territorios/Organizaciones Internacionales, que así lo requieran.				
C14/45 D	TRAINING ON THE ANALYSIS OF LARGE HEIGHT DEVIATIONS (LHD)	That, taking into account the need to have qualified experts available to assist in the activities of the GTE, the CAR and SAM States/Territories/International Organizations: support training on analysis of Large Height Deviations as part of regional activities; send technical experts to the training sessions envisaging those experts becoming regular participants of the GTE; and that ICAO take the necessary actions to coordinate GTE training sessions in each Region.	Support training Send technical experts to training sessions Coordinate training sessions	States/Territories/ International Organizations States/Territories/Inte rnational Organizations ICAO	Experts trained State letter	Nov 2008 Nov 2008 March 2008
C 14/45 E	CAPACITACIÓN SOBRE EL ANÁLISIS DE LAS GRANDES DESVIACIONES DE ALTITUD (LHD)	Que, tomando en cuenta la necesidad de disponer de expertos calificados en las actividades del Grupo de tarea Escrutinio (GTE) los Estados/Territorios/Organizaciones Internacionales de las Regiones CAR y SAM: apoyen la instrucción sobre el análisis de las grandes desviaciones de altitud, como parte de las actividades regionales; envíen expertos técnicos a las sesiones de instrucción, con miras a que se conviertan en participantes regulares del GTE; y que la OACI tome las acciones necesarias para coordinar las sesiones de instrucción del GTE en cada Región.	Apoyar instrucción Enviar expertos a sesiones de instrucción Coordinar sesiones de instrucción	Estados/Territorios y Organizaciones Internacionales Estados/Territorios y Organizaciones Internacionales OACI	Expertos debidamente entrenados	Nov. 2008

TBD = To be determined

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C 14/46 D	CAR/SAM ROADMAP FOR PBN	That States/Territories and International Organizations adopt and apply the CAR/SAM Roadmap for PBN as shown in Appendix XX to this part of the report.	To apply the Road Map for PBN	States/Territories/ International Organizations	Harmonized implementation of PBN	Short term 2010 Medium term 2011/2015
GREPECAS 14/46 E	MAPA DE RUTA PBN CAR/SAM	Que los Estados/Territorios y Organizaciones Internacionales adopten y apliquen el Mapa de Ruta PBN para las Regiones CAR/SAM que figura en el Apéndice XX a esta parte del informe.	Aplicar Mapa de Ruta PBN	Estados/Territorios y Organizaciones Internacionales	Implantación armonizada de la PBN	Corto plazo 2010 Mediano plazo 2011-2015
C 14/47 D	SAFETY ASSESSMENT SEMINARS AND METHODOLOGY	That ICAO: a) promote seminars related to safety assessments, aiming at the preparation of personnel to work in the future PBN implementation; b) encourage safety airspace and separation panel (SASP) to develop a common methodology for safety assessment in terminal areas.	To coordinate safety assessment activities To ICAO encourage SASP to develop a common methodology for safety in TMA.	ICAO Regional Offices ICAO HQ	Safety assessment seminars Common methodology	2008 TBD
GREPECAS 14/47 E	SEMINARIOS Y METODOLOGÍA DE EVALUACIÓN DE LA SEGURIDAD OPERACIONAL	Que la OACI: a) promueva la realización de seminarios relacionados con la evaluación de la seguridad operacional, con miras a preparar al personal para trabajar en la futura implantación de la PBN; y b) inste al Panel de Separación y Seguridad Operacional del Espacio Aéreo (SASP) a desarrollar una metodología común para la evaluación de seguridad en las áreas terminales.	Coordinar actividad sobre evaluación de la seguridad operacional Pedir a ANC que inste al SASP a evaluar la posibilidad de establecer metodología común para la evaluación de la seguridad en áreas terminales	OACI	Eventos disponibles Metodo común disponible para realizar las evaluaciones de seguridad en TMA	2008 TBD
C 14/48 C - D	ATFM OPERATIONAL AGREEMENTS	That CAR and SAM States/Territories/International Organizations, which so require and that have not done so, when reviewing operational bilateral agreements among ATS units include balance measures between demand and capacity not later than 30 November 2007	To revise ATS operational agreements	States/Territories/ International Organizations	To include balance measures between demand and capacity in ATS operational agreements	June 2008
GREPECAS 14/48	ACUERDOS OPERACIONALES ATFM	Que aquellos Estados/Territorios/ Organizaciones Internacionales de las Regiones CAR/SAM que así lo requieran y que aún no lo hayan hecho revisen sus acuerdos operacionales bilaterales entre dependencias ATS e incluyan medidas de equilibrio entre demanda y capacidad, a más tardar el 30 de noviembre de 2007.	Revisar Acuerdos Operacionales ATS	Estados/Territorios y Organizaciones Internacionales	Acuerdos operacionales ATS con medidas de equilibrio entre demanda y capacidad incluidas.	Junio 2008

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C 14/49 C - D	ADOPTION OF THE CAR AND SAM ATFM CONCEPT OF OPERATIONS (ATFM CAR/SAM CONOPS)	That the CAR and SAM States/Territories and International Organizations: a) adopt the CAR and SAM ATFM Concept of Operations (ATFM CONOPS) shown in Appendix XX to this part of the report; and b) establish a work program to enable the implementation of the ATFM CONOPS.	To adopt CAR/SAM ATFM CONOPS To establish a work programme for ATFM implementation	States/Territories/ International Organizations	Harmonize ATFM implementation	2015
GREPECAS 14/49 E	ADOPCIÓN DEL CONCEPTO OPERACIONAL ATFM PARA LAS REGIONES CAR/SAM	Que los Estados/Territorios y Organizaciones Internacionales CAR/SAM: a) adopten el Concepto Operacional ATFM de las Regiones CAR/SAM (CONOPS ATFM) que aparece en el Apéndice XX a esta parte del informe.; y b) establezcan un programa de trabajo para permitir la implantación del CONOPS ATFM.	Adoptar CONOPS ATFM CAR/SAM Establecer programa de trabajo para implantación ATFM	Estados/Territorios y Organizaciones Internacionales	Implantación armonizada de la ATFM	2015
C 14/50 D - E	CATALOGUE OF CAR/SAM ATS CONTINGENCY PLANS	That: a) the Catalogue of CAR/SAM ATS contingency plans, shown in Appendix XX to this part of the report, is adopted; and b) CAR/SAM States/Territories/International Organization send the updated information to ICAO, before 1st July 2007, for its inclusion in said document.	Adoption of Model Catalogue To send information to NACC and SAM Regional Offices	GREPECAS States/Territories/ International Organizations	Model adopted ATS contingency plan catalogue completed	2007 Nov 2008
GREPECAS 14/50 E	CATÁLOGO DE PLANES DE CONTINGENCIA ATS DE LAS REGIONES CAR/SAM	Que: a) se adopta el Modelo de Catálogo de planes de contingencia ATS de las Regiones CAR/SAM que figura en el Apéndice XX a esta parte del Informe; y que b) los Estados/Territorios/Organizaciones Internacionales de las Regiones CAR/SAM envíen a la OACI, antes del 01 de Junio de 2007, la información actualizada para su inclusión en dicho documento.	Enviar información sobre planes de contingencia ATS a las Oficinas Regionales NACC y SAM	Estados/Territorios y Organizaciones Internacionales	Catálogo de Planes de Contingencia ATS completado	Noviembre 2008
C 14/51 D	RE-ORGANIZATION OF THE WORK PROGRAMMES TO SUPPORT THE ATM PERFORMANCE OBJECTIVES FOR THE CAR AND SAM REGIONS	That, to support the evolution from a system-based towards a performance-based approach for the planning and implementation of air navigation infrastructure: a) CAR/SAM States, Territories and International Organizations take the necessary actions to develop and implement national ATM work programmes in accordance with the performance objectives; and b) ICAO continue the coordination to re-organize the CAR/SAM ATM Work Programmes in accordance with the new Global Plan Initiatives (GPI) and to support ICAO Strategic Objectives.	To develop and implement an ATM work programme oriented to performance objectives To continue with the re-organization of the ATM programme according with the GPIs and ICAO Strategic Objectives	States/Territories/ International Organizations ICAO	Harmonize ATM performance objectives implemented ATM work programme aligned with performance objectives and ICAO Strategic Objectives	2009 2008

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GREPECAS 14/51 E	REORGANIZACION DE LOS PROGRAMAS DE TRABAJO EN APOYO A LOS OBJETIVOS DE DESEMPEÑO ATM PARA LAS REGIONES CAR Y SAM	Que en apoyo a la evolución desde un enfoque basado en sistemas hacia uno basado en el desempeño, para la planificación e implementación de la infraestructura de navegación aérea: a) los Estados, Territorios y Organizaciones Internacionales de las Regiones CAR y SAM tomen las acciones necesarias para elaborar e implementar programas de trabajo ATM nacionales de acuerdo a los objetivos de desempeño, y b) la OACI continúe la coordinación para reorganizar los Programas de Trabajo ATM de las Regiones CAR y SAM acorde a las nuevas Iniciativas del Plan Mundial (GPI) y en apoyo a los Objetivos Estratégicos de la OACI.	Elaborar e implantar programa de trabajo ATM orientado a los objetivos de desempeño Continuar con la reorganización del programa de trabajo ATM acorde con los GPI del plan mundial de navegación aérea y en apoyo a los Objetivos Estratégicos de la OACI	Estados/Territorios y Organizaciones Internacionales OACI	Implantación armonizada de los objetivos de desempeño ATM Alinear plan de trabajo ATM con los objetivos de desempeño y los Objetivos Estratégicos de la OACI	2009 2008
C 14/52	REVIEW FOR THE ADOPTION OF THE MEMORANDUM OF UNDERSTANDING AND IMPLEMENTATION OF THE ACTION PLAN FOR THE MEVA II / REDDIG INTERCONNECTION	That in order to implement the interconnection of the VSAT MEVA II and the organization of the REDDIG networks, the Member States/Territories/International Organizations of these networks: a) study and review the feasibility to adopt the Memorandum of Understanding (MoU); and b) approve and implement the tasks related to the Action Plan presented in Appendix B to this part of the report.	Review and adopt the MoU Implement the Action Plan	States and Intl. Organizations States and Intl. Organizations	Signed MoU Implementation interconnection	May 2007 November 2007
C 14/52	REVISIÓN PARA LA ADOPCIÓN DEL MEMORANDO DE ENTENDIMIENTO Y EJECUCIÓN DEL PLAN DE ACCIÓN PARA LA INTERCONEXIÓN MEVA II/REDDIG	Que, los Estados/Territorios/Organizaciones Internacionales miembros de las redes VSAT MEVA II y la Organización de la REDDIG, con el propósito de implementar la interconexión de estas redes, y coordinar sus operaciones: a) estudien y revisen para la posible adopción del Memorando de Entendimiento (MoU); y b) aprueben y ejecuten las tareas que les correspondan del Plan de Acción que se presenta en el Apéndice B de esta parte del Informe.	Revisar y adoptar el MoU Implementar el Plan de acción	Estados Estados	MoU firmado Implementación de la interconexión	Mayo 2007 Noviembre 2007
C 14/53	UPDATING OF THE AMS AND AMSS REGIONAL PLAN	That ICAO forward the proposal for amendment to the CAR/SAM Regional Plan for the Aeronautical Mobile Service (AMS) and the Aeronautical Mobile Satellite Service (AMSS), included in the Table CNS 2A of the FASID, as presented in Appendix A to this part of the Report.	Forward the proposal for amendment	ICAO	Amendment approved	November 2007

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C 14/53	ACTUALIZACIÓN DEL PLAN REGIONAL DEL SMA Y SMAS	Que, la OACI encamine la propuesta de enmienda al Plan Regional CAR/SAM del Servicio Móvil Aeronáutico (SMA) y el Servicio Móvil Aeronáutico por Satélite (SMAS) contenido en la Tabla CNS 2A del FASID conforme se presenta en el Apéndice A de esta parte del Informe.	Encamine la propuesta de enmienda	OACI	Enmienda aprobada	Noviembre 2007
D 14/54	COMMUNICATION ASPECTS FOR THE MIGRATION TOWARDS THE METEOROLOGICAL MESSAGE EXCHANGE IN BUFR CODE	That the ATN Task Force of the CNS Committee, as well as the COM/MET Task Force of AERMET Subgroup, analyse in detail the following communication aspects considered necessary for the migration towards the meteorological message exchange in BUFR format in the CAR/SAM Regions for possible implementation for the first and second transition stages: a) use of terminals with coding/decoding capacity; b) use of AMHS systems with extended service; and c) develop of an interface control document (ICD) to integrate AMHS and MET systems, establish of standards for presentation systems, specification for the conversion of templates and security aspects.	Developed Decision	AERMET SG and CNS Committee	Regional guidance	August 2008
D 14/54	ASPECTOS DE COMUNICACIONES PARA LA MIGRACIÓN HACIA EL INTERCAMBIO DE MENSAJES METEOROLÓGICOS EN CÓDIGOS BUFR	Que el Grupo de tarea ATN del Comité CNS, así como el Grupo de tarea COM/MET del Subgrupo AERMET analicen detalladamente los siguientes aspectos de comunicaciones considerados necesarios para la migración hacia el intercambio de mensajes meteorológicos en formato BUFR en las regiones CAR/SAM, para su posible implantación para la primera y segunda etapa de transición: a) uso de terminales con capacidad de codificación/descodificación; b) uso de sistemas AMHS con servicio extendido; y c) elaboración de un documento de control de interfaz (ICD) para integrar los sistemas AMHS y MET, establecimiento de normas sobre sistemas de presentación, especificaciones de conversión de plantillas, normas de aceptación, programas de conversión y aspectos de seguridad.	Decisión desarrollada	AERMET SG y Comité CNS	Orientación Regional	Agosto 2008

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D 14/55	APV I CAPABILITY AS A MINIMUM PERFORMANCE REQUIREMENT FOR THE CAR/SAM REGIONAL SBAS IMPLEMENTATION	That in order to coordinate the initiatives and projects for the SBAS solutions proposed for the CAR/SAM Regions, the CNS Committee must keep in mind that they be capable of achieving at least APV I capability.	Developed Decision	CNS Committee	Guidance of work	August 2008
D 14/55	CAPACIDAD APV I COMO MÍNIMO REQUERIMIENTO DE PERFORMANCE PARA LA IMPLANTACIÓN DEL SBAS REGIONAL CAR/SAM	Que el Comité CNS al coordinar las iniciativas y proyectos para las soluciones SBAS que sean propuestas para las regiones CAR/SAM debe tener en cuenta que deberían ser orientadas para alcanzar por lo menos la capacidad APV I.	Decisión desarrollada	Comité CNS	Orientación del trabajo	Agosto 2008
C 14/56	PROGRESSIVE DEACTIVATION NDB STATIONS OF	That in order to develop progressive deactivation of NDB Stations without affecting safety, States, Territories, International Organizations and airspace users: a) analyse the service provided by each NDB station, its function, procedural existence with other aids such as VOR/DME, GNSS-RNAV, as well as the aircraft capacity/development that operate in serviced airspace; b) based on the analysis described in item a) above and in the Table format included in the Appendix AF to this part of the Report, develop a plan for the progressive deactivation of NDB stations; and c) inform the corresponding ICAO NACC or SAM Regional Office regarding their respective plan for the progressive deactivation of NDB stations before 30 November 2007.	Developed Conclusion	States and Intl. Organizations	Progressive deactivation of NDB stations	November 2007

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C 14/56	DEACTIVACIÓN GRADUAL DE LAS ESTACIONES NDB	Que los Estados, Territorios, Organizaciones Internacionales y usuarios del espacio aéreo, con vistas a la elaboración de un Plan de desactivación gradual de las estaciones NDB sin afectar la seguridad operacional: a) analicen el servicio que proporciona cada estación NDB, su función, la existencia de procedimientos con otras ayudas como VOR/DME, GNSS-RNAV, así como la capacidad/desarrollo de las aeronaves que operan en el espacio aéreo servido; b) basado en el análisis descrito en el epígrafe a) anterior y en el formato de la Tabla que se presenta en el Apéndice AF de esta parte del Informe, elaboren un plan de desactivación gradual de las estaciones NDB; e c) informen a la Oficina regional NACC o SAM de la OACI, según corresponda, sobre sus respectivos planes de desactivación de estaciones NDB, de manera que sean recibidas antes del 30 de noviembre de 2007.	Conclusion Desarrollada	Estados y Organizaciones Internacionales	Desactivacion gradual de estaciones NDB	Noviembre 2007
D 14/57	DEVELOPMENT OF A REGIONAL PLAN FOR THE PROGRESSIVE DEACTIVATION OF NDB STATIONS	That the CNS Committee: a) prepare a regional plan for the progressive deactivation of NDB stations, taking into account the responses received from States, Territories, International Organizations and airspace users, Conclusion 14/X and the Table presented in the Appendix AF to this part of the Report; and b) based on the results of item a) above, propose the corresponding amendments to Table CNS 3 of the FASID.	Developed Decisión Proposed Amendment	CNS Committee	NDB stations deactivation plan Proposal of amendment	August 2008
D 14/57	ELABORACIÓN DE UN PLAN REGIONAL DE DESACTIVACIÓN GRADUAL DE LAS ESTACIONES NDB	Que, el Comité CNS: a) teniendo en cuenta las respuestas que sean recibidas de los Estados, Territorios, Organizaciones Internacionales y usuarios del espacio aéreo, la Conclusión 14/5? y el formato de la Tabla que se presenta en el Apéndice AF de esta parte del Informe, elabore un Plan regional de desactivación gradual de las estaciones NDB; y b) basado en los resultados de la acción a) anterior, proponga enmiendas a la Tabla CNS 3 del FASID.	Decisión desarrollada Enmienda Propuesta	CNS Committee	Plan de desactivación de estaciones NDB Propuesta de enmienda	August 2008

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D 14/58	ELIMINATION OF APPENDIX B	That, a) GREPECAS move deficiencies classified as region-wide deficiencies from Appendix B into Appendix A Specific Deficiencies, showing still unresolved deficiencies in association with the specific State/Territory; b) once the action specified in the previous paragraph has been completed, Appendix B be eliminated.				
D 14/58	ELIMINACIÓN DEL APENDICE B	Que, a) GREPECAS mueva las deficiencias clasificadas como regionales del Apéndice B al Apéndice A, Deficiencias Específicas, mostrando las deficiencias que no hayan sido solucionadas relacionadas con el Estado/Territorio específico; b) una vez ejecutada la acción indicada en el párrafo anterior, se elimine el Apéndice B.				
C 14/59	NATIONAL COORDINATOR RESPONSIBLE FOR UPDATING THE GREPECAS AIR NAVIGATION DEFICIENCY DATABASE	That, a) the States/Territories designate a National Coordinator responsible for updating the GREPECAS Air Navigation Deficiency Database (GANDD); b) the name, e-mail address, phone and fax numbers, etc., of the National Coordinator be forwarded to the ICAO Regional Offices no later than 31 May 2007; and c) the Regional Offices foster a workshop to train identified National Coordinators, so that they can fully master all aspects concerning the GANDD.				
C 14/59	COORDINADOR NACIONAL PARA ACTUALIZAR LA BASE DE DATOS DE DEFICIENCIAS DE LA NAVEGACIÓN AEREA DEL GREPECAS	Que, a) los Estados/Territorios nombren un Coordinador Nacional para actualizar la Base de Datos del GREPECAS sobre deficiencias en la Navegación Aérea (GANDD); b) el nombre del Coordinador Nacional, dirección electrónica, teléfono, fax, etc., sean enviados a las Oficinas Regionales de la OACI, no más allá, del 31 de mayo de 2007; y, c) las Oficinas Regionales promuevan un taller para el entrenamiento de los Coordinadores Nacionales a fin de que los mismos dominen plenamente todos los aspectos concernientes a la GANDD.				

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D 14/60	PROCEDURES FOR CLASSIFYING AND ADDRESSING GREPECAS "U" DEFICIENCIES	That, a) the ICAO Regional Offices, in accordance with the Uniform Methodology of the Council, develop procedures for classifying and addressing GREPECAS deficiencies, which should contain at a minimum the following: i) common classification criteria; ii) procedure for using the database; iii) reports on deficiencies to be submitted to GREPECAS; iv) the responsibility of the States for database maintenance; v) the responsibility of the States for presenting action plans to correct deficiencies; vi) the responsibility of the Regional Offices for completing coordination; vii) follow-up of deficiencies, etc. b) the procedures referred to in the previous paragraph be sent to the members of GREPECAS for approval, using the Fast-Track System; c) once the procedures are approved, the Regional Offices apply it to "U" deficiencies contained in the GANDD; d) the Secretary of GREPECAS convene a meeting of the ASB for the first quarter of 2008.				

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D 14/60	PROCEDIMIENTOS PARA EL TRATAMIENTO Y CLASIFICACIÓN DE LAS DEFICIENCIAS “U” DE GREPECAS	Que, a) las Oficinas Regionales de la OACI, en total concordancia con la Metodología Uniforme del Consejo, elaboren procedimientos para el tratamiento y clasificación de las deficiencias en GREPECAS, la que deberá contener al menos: i) criterios comunes para su clasificación; ii) procedimiento para el uso de la base de datos; iii) informes sobre deficiencias a ser presentado al GREPECAS; iv) responsabilidad de los Estados en el mantenimiento de la base de datos; v) responsabilidad de los Estados en presentar planes de acción para corrección de las deficiencias; vi) responsabilidad de las Oficinas Regionales en la coordinación; vii) seguimiento de tratamiento de las deficiencias, etc. b) que los procedimientos a que hace referencia el párrafo anterior sea remitida a los miembros del GREPECAS para su aprobación utilizando el sistema expreso (“fast track”); c) una vez aprobados los procedimientos a que se refiere esta Decisión, las Oficinas Regionales la apliquen a las deficiencias “U” contenidas en la GANDD; d) el Secretario del GREPECAS convoque a una Reunión del ASB durante el primer trimestre del año 2008;				
C 14/61	ANALYSIS OF RUNWAY END SAFETY AREA (RESA) AND RUNWAY STRIP DEFICIENCIES	a) That States and Territories of the CAR/SAM Regions, as applicable, submit to ICAO Regional Offices, not later than January 2008, for further analysis by the GREPECAS AGA/AOP/SG; i) specific runway ends and/or full runways that are in non-compliance with RESA and/or runway strip SARPs, in order to define possible mitigation alternatives; ii) alternatives that provide resolution of deficiencies with RESA and/or runway strip SARPs; and b) the ICAO Regional Offices send the information referred to in i) and ii) to the AGA/AOP/SG Subgroup so the RESA/Runway Strip Task Force may analyze alternative means to achieve compliance with the respective ICAO standards.	a) States/Territories b) Regional Offices	a) States/Territories b) Regional Offices	Provide alternatives to solve RESA and Runway Strip deficiencies	November 2008

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C 14/61	ANALISIS DE DEFICIENCIAS DE AREAS DE SEGURIDAD DE EXTREMO DE PISTA (RESA) Y FRANJAS DE PISTA	a) Que los Estados y Territorios de las Regiones CAR/SAM, según corresponda, envíen a las Oficinas Regionales de la OACI, a más tardar el 30 de enero de 2008, para su posterior análisis en el AGA/AOP/SG del GREPECAS: i) los extremos de pista específicos y/o pistas completas que no cumplan con las SARP sobre la RESA y/o la franja de pista, a fin de determinar las posibles alternativas de mitigación; ii) las alternativas que permitan solucionar las deficiencias para cumplir con las SARPS sobre la RESA y/o la franja de pista; y, b) las Oficinas Regionales envíen la información referida en los acápites i) y ii) al Subgrupo AGA/AOP/SG para que su Grupo de Tarea sobre RESA/Franjas de Pista estudie formas alternas de cumplir con las respectivas normas de la OACI.				
D 14/62	TENTATIVE PROGRAMME OF MEETINGS FOR 2008	The tentative programme of meetings for 2008 is approved, as shown in Appendix K to this part of the Report.				
D 14/62	PROGRAMA TENTATIVO DE REUNIONES PARA EL AÑO 2008.	Se aprueba el programa tentativo de reuniones para el año 2008 que se adjunta como Apéndice K a esta parte del Informe.				
D 14/63	TERMS OF REFERENCE, WORK PROGRAMME, AND COMPOSITION OF GREPECAS CONTRIBUTORY BODIES	GREPECAS approves the Terms of Reference, Work Programme, and composition of its contributory bodies, as shown in Appendices A to J to this part of the Report.				
D 14/63	TÉRMINOS DE REFERENCIA, PROGRAMA DE TRABAJO Y COMPOSICIÓN DE LOS ÓRGANOS AUXILIARES DEL GREPECAS	El GREPECAS aprueba los Términos de Referencia, Programa de Trabajo y composición de sus órganos auxiliares, como figuran en los Apéndices A a la J de esta parte del Informe.				
C 14/64	WHTI/GEASSA ACTIVITIES	That States/Territories/International Organisations: a) consider GEASSA as an important means for supporting regional technical cooperation; and b) participate in the activities of GEASSA as they deem appropriate.				

Conc/Dec Strategic Objective/C onc/Dec Obj. Estratégico	Title of Conclusion/ Decision / Título de Conclusión	Text of Conclusion/Decision /Texto de Conclusión/Decisión	Follow-up Action/Acciones de Seguimiento	To be initiated by/A ser iniciado por	Deliverable/ Entregable	Target date/ Fecha límite
C 14/64	ACTIVIDADES DEL ITHO/GESPAA	Los Estados/Territorios/Organizaciones Internacionales: a) consideren al GESPAA como un medio para proveer apoyo a la cooperación técnica regional; y b) participar en las actividades del GESPAA como lo consideren apropiado.				

*** Note:** ICAO has established the following Strategic Objectives for the period 2005-2010:

A: Safety - Enhance global civil aviation safety; **B: Security** - Enhance global civil aviation security; **C: Environmental Protection** - Minimize the adverse effect of global civil aviation on the environment; **D: Efficiency** - Enhance the efficiency of aviation operations; **E: Continuity** - Maintain the continuity of aviation operations; **F: Rule of Law** - Strengthen law governing international civil aviation.

Agenda Item 2

ATM Developments

2.1 Follow-Up on the Implementation Strategies and Activities Related to the ATM Performance Objectives of the Second Amendment of the Global Plan (Doc 9750) and the Corresponding Initiatives

2.1.1 The Secretariat presented activities that the NACC Office has carried out in the last few years in close coordination with ICAO Headquarters in order to harmonise regional work processes with the Global Planning Initiatives (GPIs) of the Global Plan. The CAR Region work programmes are aligned with the ATM performance objectives approved by the GREPECAS/14 Meeting and in support of the strategic objectives of ICAO. The goal is to focus attention on regional implementation activities and to ensure efficient use of resources in order to avoid duplication of efforts. The new process and work methods will guarantee that performance objectives will be able to be measured within established deadlines and will ease the submission of progress reports to the ICAO Council and the Air Navigation Commission.

2.1.2 **Appendix A** to this part of the Report, presents the ATM performance objectives approved by the GREPECAS/14 Meeting for States, Territories and International Organisations to develop their own national action plans or work programmes. Each performance objective describes expected benefits and their connection to ICAO strategic objectives, tasks designated in accordance with ICAO Doc 9854, and regional activities of the work programme to be completed in the short and medium-term. This includes a description of strategic tasks and their relationship with the GPIs. The performance objectives will be used as the foundation to organise work, ensuring that the activities undertaken in the CAR Region will be harmonised with the NAT, NAM, and SAM regional work programmes, in order to implement a seamless global ATM system.

2.1.3 In order to enhance the progress of ATM performance objectives, States/Territories/International Organisations and air navigation providers should include in their work programme timetables, the staff responsible for the status of the work, to monitor progress and report on the progress of these activities as required. Additionally, it should be considered a requirement that detailed information on additional activities be recorded in order to complete implementation and as a means to provide feedback on the progress of work through an annual reporting process. This will help Civil Aviation Administrations prioritise activities and provide needed support, and will also help identify States' annual needs and assistance required from ICAO.

2.1.4 The Meeting considered that regarding future work programmes, specific action plans should also be considered for ATM safety system implementation, planning and training of human resources, and environmental protection during aircraft operations.

2.1.5 The Meeting took note that the development of harmonised operational initiatives and procedures within States/Territories/International Organisations and regions, will lead to a successful and cost effective implementation of a seamless global ATM system. The ATFM work done in preparation for the 2007 Cricket World Cup and the WATRS airspace redesign and harmonisation are significant steps in this direction, enhancing safety, efficiency and increasing capacity. Taken separately, each improvement initiative benefits the system to an extent that, if worked jointly, a seamless ATM system will be possible in the near future.

2.1.6 The Meeting considered of the utmost importance the creation of a regional ATM Task Force in the CAR Region with the purpose of analysing the optimisation of the airspace and ATS route structure. It will be based on operational requirements and customer needs, reviewing and assessing the current ATM structure, identifying the roadmap related areas of improvement and development, and aimed at achieving a seamless ATM system in the CAR Region. The work of the Task Force will be coordinated via electronic mail and teleconferences when deemed necessary.

2.1.7 The terms of reference and work programme will be developed by the Task Force, based on the existing terms of reference for the different sub-regional working groups (E/CAR, C/CAR, and Central America), who will present a progress report for a regional action plan at the next CAR/WG Meeting. To this end the Meeting adopted the following:

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CONCLUSION 1/2

CREATION OF A CAR ATM TASK FORCE (*)

That, based on the existing terms of reference for the different sub-regional working groups (E/CAR, C/CAR, and Central America):

- a) the ICAO NACC Office organise a CAR ATM Task Force Meeting in early 2008, to develop an ATM Regional Action Plan for a seamless CAR ATM System, based on Appendix A to this part of the Report, to be presented in the next CAR/WG Meeting; and
- b) States/Territories/International Organisations, nominate their ATM experts to form the ATM Task Force Group of the Caribbean.

() Members: Cuba, Barbados, Dominican Republic, Haiti, Trinidad y Tabago, United States, IATA, IFATCA. Rapporteur: Fidel Ara (Cuba).*

2.2 Follow-up on regional activities and implementation relating to airspace organisation and management (AOM)

2.2.1 The Meeting took note that the airspace organisation and corresponding ATS route infrastructure, installations and ground services defined by air navigation regional agreements and published in the ANPs are still largely based on national requirements. The Caribbean Region still requires improvement with current airspace fragmentation; it also requires harmonisation of the diverse national system and improvement with airspace segregation for military use, which often prevents optimum use of airspace, thus limiting the system's capability to meet operational demand.

2.2.2 The seamless ATM system aims at achieving unlimited interoperability among worldwide regions for all users and during all phases of flight; complying with agreed safety levels; allowing optimum economic operations, being environmentally sustainable; and abiding by with national aviation security requirements.

2.2.3 Interoperability should be understood as the ability to transfer information or achieve operational functionality. Interoperability is mainly associated with the requirement that systems, individuals, procedures, among other items, operate effectively with other systems.

2.2.4 Continuity or “seamless” is described as the property that allows transition across boundaries which, from the perspective of the user, does not require a specific action to facilitate the transition. Continuity is related mainly to the users and/or operators of a system.

2.2.5 The Meeting considered that States should increase their efforts to optimise and redesign route structures and airspace to accommodate current systems, while ensuring that emerging systems and new technological solutions can be integrated into the air navigation infrastructure. The goal is to achieve transparent functions, procedures and operations in different airspaces.

2.2.6 A homogeneous ATM area is an airspace with a common ATM interest, based on similar characteristics of traffic density, complexity, air navigation system infrastructure requirements or other specified considerations wherein a common detailed plan will foster the implementation of interoperable ATM systems. Homogeneous ATM areas may extend over States, specific portions of States, or groupings of States. They may also extend over large oceanic and continental areas that are considered areas with shared interest and requirements.

2.2.7 A major traffic flow refers to a concentration of significant volumes of air traffic on the same or proximate flight trajectories. Major traffic flows may cross several homogeneous ATM areas with different characteristics. The north/south flow between the New York area and the Eastern Caribbean is a major traffic flow, as are several between the NAM and CAR Regions.

2.2.8 A routing area encompasses one or more major traffic flows, defined for the purpose of developing a detailed plan for the implementation of ATM systems and procedures. A routing area may cross several homogeneous ATM areas with different characteristics. A routing area specifies common interests and requirements among underlying homogeneous areas, for which a detailed plan for the implementation of ATM systems and procedures either for airspace or aircraft is necessary. The route networks of North America, taken together, is an example of a routing area with distinct flows north/south and east/west wherein traffic is common to both networks, yet the underlying homogeneous area has variations in infrastructures, procedures and requirements.

Air Transport Environmental Challenges

2.2.9 Considering ICAO's goal as the basis to limit or reduce fuel emissions, States were reminded of the responsibility to analyse the impact that air transport has on global climate. This entails firm actions in order to review and improve ATS areas and routes structures, airspace operational management, and airports.

2.2.10 According to the work carried out by the ICAO Committee on Aviation Environmental Protection (CAEP), as well as the methodologies for the assessment of such benefits at global and regional levels, the areas where operational improvements can be achieved are, among others, a promotion of flight planning and flexible tracks, RNAV and RNP continental airspace implementation, continuous descent approach implementation, delay and airport noise reduction, etc. The CAEP/7 Report is available on the ICAO webpage.

2.2.11 Planning requirements should include airspace optimisation and redesign, and civil/military coordination, so that services provided can be optimum and efficient to the benefit of the ATM community, ensuring interoperability and airspace continuity.

2.2.12 In order to review the airspace structure, there are two fundamental types of projects. The first one focuses on the optimisation of current structures, and the second one seeks airspace redesign. The difference between optimisation and redesign lays on the development of tasks and implementation deadlines.

2.2.13 Optimisation efforts strengthen the current system; they occur in the short-term through a development process and concentrate on existing structures and technology.

2.2.14 To develop new structures that incorporate technological and conceptual improvements, redesign efforts require longer terms, as the improvements become available. During the airspace assessment process, the focus will shift from near term optimisation of the present structures to longer term redesign efforts.

2.2.15 To achieve a successful implementation of airspace redesign, a major commitment to time, effort, and financial funding, along with collaborative work, is necessary. The outcome will be a common, constantly evolving development of the airspace structure vision. All efforts must focus, develop and maintain a regional vision ensuring an efficient outcome of the regional ATS airspace. This work requires CDM process, as team work, along with a corresponding high level of support on their organisations.

WATRS Plus Route Structure redesign and Lateral Separation Reduction

2.2.16 The Meeting reviewed the information presented by the United States to coordinate and advance with implementation of the WATRS Plus Project with the related groups in the North Atlantic and Caribbean Regions. It was noted that the NAT/SPG subgroups and the NAT/CAR ATS working groups, had reviewed and approved the projects' plan, programme and policies during the meetings held in March – May of the current year. The RNP 10 implementation with 50 NM of lateral separation and ATS route redesign in the WATRS airspace is foreseen for 5 June 2008.

2.2.17 With the work in progress to redesign WATRS and to analyse routes and flows across the CAR Region, we have the opportunity to move toward a short-term view of seamless international operations and a long-term view of a seamless global ATM system.

2.2.18 In support of the wide endorsement to the WATRS Plus initiatives, the Meeting unanimously agreed that ICAO disseminate the Proposal for Amendment of the CAR and NAT Regional Supplementary Procedures (SUPPS – Doc. 7030) as appropriate. All information related to the WATRS Plus Project Overview (FAA Notice update); the Draft Route Structure Redesign Chart dated 15 May 2007; the Implementation Tasks List; and the Planned Concept of Operations is included in **Appendix B** to this part of the Report.

2.2.19 The Meeting considered that the Project was excellent and a good example of ATS airspace structure optimisation and fully endorsed the WATRS PLUS Project and task schedule, planned operational policies and related revisions to NAT and CAR Regional Supplementary Procedures (NAT/CAR SUPPS), recognising the benefits these can provide to the CAR Region. To this end the Meeting agreed to the following:

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CONCLUSION 1/3

ENDORSEMENT OF WATRS PLUS PROJECT

That,

- a) States/Territories/International Organisations of the CAR Region endorse the WATRS PLUS Project implementation on **5 June 2008**; and
- b) ICAO take the necessary measures to distribute in the NAT and CAR Regions the proposals for amendment of Regional Supplementary Procedures (SUPPS, Doc 7030), for the implementation of 50 NM lateral separation and redesign of ATS routes in WATRS airspace, correspondingly.

Performance-Based Navigation (PBN)

2.2.20 It is evident that with the implementation of RNP, there is a close connection between the criteria for the design of en-route and terminal area operational procedures and airspace and the assurance that only those aircraft, systems, and operators with certified performance be authorised to conduct such operations. All aircraft certification and operator approval requirements represent a specific safety aspect that needs to be addressed by the States.

2.2.21 When operational risk assessment requirements, as well as national regulations for PBN approval of aircraft and operators are being developed, it is advisable to consider the guidance and operational criteria developed by ICAO. Also, it is important that States/Territories/International Organisations use all possible resources for training air traffic controllers and pilots, bearing in mind future implementation of this concept in the CAR/SAM Regions.

2.2.22 In order to execute en-route and terminal area PBN and to develop their implementation action plans, involved States/Territories/International Organisations should consider the performance objective related to the airspace improvements with the implementation of RNAV and RNP, as well as the PBN Roadmap approved by GREPECAS/14, which establish short-term (until 2010) and medium-term (2011-2015) action plan implementation strategies.

2.2.23 The strategy to review and improve ATS routes and airspace structure, requires joint actions for airspace operational and airport management. It is necessary that States encourage interested parties to adopt a pro-active approach to face environmental management and to apply urgent operational management measures to limit or reduce the impact of aircraft engine emissions on the environment.

2.3 Follow-up on activities relating to Air Traffic Flow Management implementation (ATFM)

2.3.1 The GREPECAS also considered that airspace should be free of operational discontinuities and inconsistencies in standards and procedures. The alignment of airspace classifications; the development of data link communications; the improvement of flight plan processing; and the development of ATFM message exchange should be encouraged. Based on the strategy and work programme approved by the GREPECAS/14 Meeting for ATFM service implementation, **Appendix C** to this part of the Report presents an action plan so that States, Territories and International Organisations can develop their ATFM implementation plan in the CAR Region.

2.3.2 The Meeting acknowledged the work performed by Trinidad and Tobago through weekly teleconferences in close coordination with Eastern Caribbean States and Territories, which were initiated during the second half of 2006 to establish ATFM implementation in the Piarco FIR.

2.3.3 The Meeting took note that in order to ensure capacity, ATS providers are required to develop a 5-year plan that includes sufficient competent staff in order to provide safe, regular and efficient services. In order to have staff who comply with the required competencies, an appropriate training programme should be developed for ATS specialised personnel and for those airport operators who require it.

2.3.4 According to ICAO guidelines, the type of service provided, the number of specialised personnel, competencies, and their relationship to the workload that impacts service are among the factors that determine capacity. ATS capacity analysis should be mainly focused on workload studies caused by air operations, as well as on necessary measures to balance the demand of these operations and the service provided.

2.3.5 In order to increase air navigation efficiency, ATFM training should cover assessment aspects of demand and capacity of airspace and international airports; ATFM planning on the strategic, pre-tactical and tactical phases; and safety and collaborative decision making (CDM) methods. **Appendix D** to this part of the Report presents a model to determine the aerodrome acceptance rate (AAR).

Collaborative Decision Making (CDM)

2.3.6 Collaborative Decision Making (CDM) is a process in which all ATM stakeholders share data in order to improve information awareness so that the most appropriate decision can be made. CDM is the key to optimise aerodrome and air operations capacity and efficiency by examining the many elements affecting each stakeholder participating in the process.

2.3.7 CDM involves identifying the best sources of information and disseminating that information to those parts responsible for the decision making process. According to a set of standards, better decisions can be made thus resulting in a better performance of the overall ATM system; this includes an increase in capacity, fewer delays, and operational efficiency. The exchange of information between different stakeholders in charge of the planning and operation of aircraft flights will also result in increased capacity of the whole system, which enhances the quality and stability of operations.

2.3.8 This stability will be reliable and predictable, particularly where Demand and Capacity Balancing, Traffic Synchronisation, and Airspace Organisation and Management (components of the ATM system) are critical. Appendix I to Doc 9854 – *Global Air Traffic Management Operational Concept*, describes the CDM process.

2.3.9 For collaborative decision making, the stakeholders should use all possible means and electronic instruments available that will allow them to analyse different scenarios presented, and they should coordinate initiatives agreed upon in order to balance demand and capacity. Teleconferences have proven to be an excellent media to ensure the participation of all parties involved.

ATFM teleconference coordination procedures

2.3.10 The CDM / ATFM process, starts with coordination between each one of the users previous to a teleconference; evaluating conditions that will affect safety and efficiency; time and meteorological conditions for each route and destination airport, as well as of route availability, new flight route requirements; and traffic and saturation conditions of airports.

2.3.11 Furthermore, foreseen flight conditions should also be analysed; this could include storm activity, high-level turbulence and airport conditions, such as visibility, snow, thaw, winds and landing conditions. Other factors to be analysed are the use of the military airspace, temporary restrictions and other unexpected conditions, such as volcanic ash clouds, hurricanes, storms and other factors that could impact ATS routes.

2.3.12 Once the analysis phase has been finalised, an operational plan should be developed in collaboration with users. **Appendix E** to this Report details the ATFM operational plan. States should continue performing regional work already in progress with a view to harmonise the process of data collection, analysis, and coordinate activities so as to formulate a coordinated and integrated CAR ATFM Operational Plan.

2.3.13 Operation plans should normally be disseminated through a teleconference in order to provide the users with strategic information in respect to the volume of traffic, weather conditions and airport limitations. The plan's objective is the following:

- 1) Redefine air traffic routes in adverse weather conditions in order to save fuel, as far as practicable, on the new routes.
- 2) Manage air traffic at saturated airports, eliminating, as far as practicable, ground delays to achieve timely departures and landings at destination airports; therefore, preventing unnecessary fuel consumption.
- 3) Manage departures at congested airports by coordinating aircraft boarding and taxiing in such a manner that fuel consumption is reduced, as well as waiting time for aircraft departures.
- 4) Coordinate optimum arrival routes at congested terminals in such manner that the flight distance between the departure point and destination airport is optimised; therefore, reducing the fuel consumption.

2.3.14 GREPECAS recognised that the establishment of terms and common phrases is a key element to eliminate language barriers. The differences in terminology and phraseology use in air traffic flow management, not yet standardised by ICAO, could cause confusion during the communications among international traffic management units. Therefore, it is necessary to analyse future ATFM messages that will be applied in the CAR/SAM Regions. **Appendix F** to this part of the Report presents the ATFM messages currently analysed for ATFM service implementation.

Air Transport Environmental Challenges

2.3.15 According to the work of the ICAO Committee on Civil Aviation Environmental Protection (CAEP), States can achieve ATFM operational improvements through:

- developing uniform techniques and methodologies for evaluation of airspace demand and capacity and international airports,
- increasing airspace and airport capacity, aimed at optimising operational efficiency providing fuel-efficient aircraft operations;
- improving air navigation services efficiency, as well as ATM global system integration; and,
- reducing noise emissions at airports, etc., as far as practicable; design procedures against noise impact to avoid flying closer than 600 m (2 000 ft) vertically over hospitals, educational institutions and similar noise-sensitive activities, e.g., zoological gardens.

Regional Contingency Procedures for Hurricane and Volcanic Ash

2.3.16 The Meeting was informed of the activities undertaken by the *Hurricane Hunters – Aircraft Flight Operations* under the call signs TEAL & NOAA. Due to safety concerns, the *Hurricane Hunters* proposed to update their operational procedures to continuous Instrument Flight Rules (IFR) operations. It was noted that the Federal Aviation Administration (FAA), the National Ocean and Atmospheric Administration (NOAA), and the U.S. Air Force are in the process of reviewing the proposed changes and will be updating the National Hurricane Operations Plan (NHOP) accordingly.

2.3.17 As the Hurricane Hunters area of operation includes the Caribbean, Gulf of Mexico, Central and Eastern Pacific, and Western Atlantic, coordination is expected with North American, Central American, and Caribbean States. **Appendix G** to this part of this Report contains the operational considerations and safety elements for safe continuous IFR operations Hurricane Hunter Aircraft (TEAL & NOAA). The Meeting also noted the necessity to review Regional Contingency Procedures for Hurricane and Volcanic Ash coordination included in the **Appendix H** to this part of the Report.

2.4 *Follow-up on implementation programmes related to Air Traffic Management (ATM) safety management*

2.4.1 The Meeting took note that within the implementation activities related to Air Traffic Management (ATM) safety management, the SMS Course stands out. The course is being carried out by ICAO for all the States, Territories and International Organisations who require so for the SMS implementation. The Meeting recalled that the ICAO NACC Office has prepared a training programme for the period 2007-2009 with SMS courses addressed to the specialists proposed by the States. Among the objectives of the SMS training assistance programme for NAM/CAR States, are:

- a) identify assistance and priorities to conduct training courses for additional groups of specialists for a better understanding of SMS guidelines at a regional, sub-regional and national level;
- b) guide and encourage, at a national level, the transition and implementation of a wide and integrated system approach to safety;
- c) increase broad dissemination of knowledge and the level of awareness in both regulatory and operational fields;
- d) foster harmonised implementation of a safety culture for operations, airworthiness, airport security inspectors, air traffic services, and aircraft accident and incident investigation;
- e) identify and address the means, procedures and all related aspects associated with SMS; and
- f) take advantage of currently qualified personnel in order to have additional instructors available for SMS training within the States.

2.4.2 During 2006 and 2007, ICAO has carried out two regional SMS courses; additionally, three courses were held in the States and one SMS Seminar was conducted for Directors General of CAAs of the CAR Region (Spanish). Furthermore, ICAO has received requests from three States and one International Organisation to conduct five additional courses as implementation backup for their Administration.

2.4.3 The Meeting noted that some of the State's specialists will also receive OJT/SMS training to conduct SMS Courses on behalf of ICAO, and that in late 2007, it is expected that a minimum of 300 specialists and 6 regional instructors will be trained on SMS by ICAO. The following table summarises relevant information related to the courses carried out and programmed in the Region for the period 2006-2007:

State/Territory	2006	2007	Number. of participants
Costa Rica	xx	27-31 Aug 3-7 Set	TBD TBD
Cuba	30 Oct / 3 Nov	xx	35
Dominican Republic	xx	19-23 Nov	TBD
El Salvador	xx	25-29 June	40
Guatemala	xx	19-23 Feb	42
Mexico	xx	TBD	TBD
United States	xx	Jan 2007	33
COCESNA	xx	TBD	TBD
NACC Office	xx	27 Feb / 2 Mar	25

2.4.4 The Meeting noted that the training course is currently available in Spanish, English, and French. It is expected that the States who receive the courses will be able to train instructors and develop national courses based on the training material provided by ICAO in order to create an SMS culture and develop a programme to be implemented according to the corresponding applicable SARPS.

2.4.5 Regarding training related to ATM safety risk assessment, the need for States to have their own group of ATM safety experts was recognised, in order that the States, Territories and International Organisations implement a safety management system in the medium-term.

2.4.6 The Meeting took note that the NACC Office is coordinating two more events on SMS implementation with ICAO Headquarters: "Workshop – Regional SMS Implementation" and the "Seminar on SMS Implementation" to be held between 2007 and 2008.

2.4.7. To determine ATM safety management programmes, it depends on an adequate evaluation and risk management process. Therefore, it is important that the States foster SMS training among ATS providers. Some of the required programmes related to ATM safety are: runway safety, bird hazard prevention, human resources planning and training, and aeronautical language proficiency.

2.4.8 In spite of regional initiatives to implement SMS, there are States/Territories that still have not yet received ICAO SMS Courses nor have programmed them for 2007, indicating that efforts to implement SMS are insufficient. These States/Territories/International Organisations should increase SMS regional training efforts in order to implement programmes related to ATM safety management.

2.5 Follow-up on progress achieved in Search and Rescue

2.5.1 The Meeting recalled that the Doc 9731, *International Aeronautical and Maritime Search and Rescue Manual* (IAMSAR) recommends that a modern SAR system should be developed with an operational perspective, with a basic system of regional cooperation between States/Territories/International Organisations without boundaries. The aeronautical and maritime SAR services, should consider holding joint periodical sessions in order to promote consistency and regional cooperation of SAR operations to provide necessary humanitarian aid.

2.5.2 States should adopt solid cooperation measures to provide SAR services from other locations to satisfy sufficient air coverage requirements in the appropriate areas. For the effectiveness of this process, it is of vital importance to ratify and/or develop bilateral and multilateral agreements in order to provide SAR services. **Appendix I** to this Report presents a Multilateral SAR Agreement of the C/CAR.

2.5.3 With the Multilateral SAR Agreement, the Central Caribbean States will be able to efficiently coordinate and organise SAR operations with a minimum of formalities, allowing the assistance of SAR brigades for the search and rescue of survivors in other States where an aviation and/or maritime accident may occur.

2.5.4 The Meeting agreed that SAR agreements are the cornerstone for any coordination plan that is based on the effective use of installations and existing personnel. It should be remembered that these agreements should be harmonised with the SAR National Plan of each signatory State. Some advantages of this model of agreement are:

- a) increasing the possibilities to safeguard a larger amount of human lives, which is the main objective of SAR Services;
- b) strengthening of the National SAR System of each C/CAR State, as well as relations and cooperation between the C/CAR States; and,
- c) reducing SAR operational cost.

2.5.5 Considering the advantages of a Multilateral Agreement Model, the Meeting was of the opinion that it should be reviewed by a specific SAR experts meeting and agreed to the following:

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CONCLUSION 1/4

REVIEW OF THE MULTILATERAL SAR AGREEMENT MODEL

That,

- a) ICAO take appropriate action to organise, in **early 2008**, a CAR SAR Meeting; and
- b) States, Territories and International Organisations appoint SAR experts to attend Regional CAR SAR Meetings to review the Multilateral SAR Agreement model for the CAR Region, as shown in the Appendix to this Report.

2.5.6 The Secretariat presented information on the International Course of Search and Rescue (SAR) held in Pachuca, Mexico, from 14 to 19 May 2007. The outcome of the SAR International Course, together with related aspects should be considered to improve the efficiency of the SAR regional system in terms of organisation, coordination and quick response. The Meeting considered that the SAR groups should develop action plans including the following:

- I) That a SAR working group be formally assembled by States with clear functions and responsibilities, and that a single point-of-contact be appointed to represent a SAR Authority to work in association with international agencies, in order to begin strategic improvement activities for SAR planning and services and to assign tasks for:
 - a) optimising the use of existing SAR equipment / facilities within a State / Region as a source of major cost-effectiveness improvements;
 - b) avoiding duplication of tasks between aviation and maritime SAR systems and between other SAR-participating agencies by making efforts to harmonise aviation and maritime SAR policy, practices and procedures with an ultimate view of establishing a joint aviation / maritime SAR system and rescue coordination centre;
 - c) planning allocation of sufficient resources, including satellite and electronic tools, for the further training of SAR coordinators and other operational staff to build and maintain SAR efficiency within the State;
 - d) planning allocation of funds for the organisation of SAR exercises for the improvement of the system and reduction of lives lost in the conduct of live SAR;
 - e) drafting SAR operational agreement letters between neighbouring States;
 - f) promoting SAR as a community service obligation;
 - g) developing SAR empowering documentation;
 - h) prescribing a robust regulatory framework to adequately structure the SAR systems under the context of properly ordered and competently enforced aviation regulations in conformity with ICAO Standards and Recommended Practices;
 - i) exploring all possible sources of funds for SAR activities, including air navigation charges;
 - j) exploring the establishment of regional SAR systems, from both operational and financial perspectives;
 - k) exploring the creation of a cooperative SAR funding mechanism at the regional level; and

- l) submitting a report to ICAO *by December 2007*, as a National SAR Action Plan.

II) In short-term, some activities need to be carried out as strategies to minimise the need for resources, while seeking to maximise the effectiveness of the SAR services, as follows:

- a) conducting a comprehensive SAR needs assessment, based on sound principles of safety management (SMS) and risk assessment;
- b) developing, updating and ratifying SAR agreements both between participating States and SAR administrations of neighbouring States;
- c) developing preventive SAR regulatory measures;
- d) arranging use of national assets on a shared basis;
- e) arranging for assumption of SAR responsibilities by suitably qualified staff on an incremental basis according to a pre-agreed schedule of functions and responsibilities;
- f) planning the integration of national SAR services under an agreement according to Regional SAR provisions whereby all participating States would contribute to and benefit from an enhanced, cost-effective service in the CAR Region;
- g) researching the viability of joint aviation/maritime SAR services provision and, in particular, the establishment of a joint rescue coordination centre (RCC);
- h) conducting an education and awareness campaign that will facilitate cooperation across cooperating disciplines and the general public; and
- i) encouraging the integration of SAR volunteer organisations in an orderly, formalised and specialised manner.

APPENDIX A

SEAMLESS ATM SYSTEM

REGIONAL PLANNING PROCESS

The regional planning process should be conducted in accordance with the global plan initiatives (GPIs) of the Global Plan (Doc 9750) and the ICAO vision for an integrated ATM system, harmonized and interoperable, as established in the Global ATM Operational Concept (Doc 9854).

The objective is to achieve the maximum level of inter-operability and harmonization among sub-systems for a seamless and interoperable regional ATM system for all users during all phases of flight, complying with agreed levels of safety, providing optimum economic operations, to be environmentally sustainable and to fulfil national aviation security requirements.

The planning should be developed based on clearly defined performance objectives. The planning horizon should be focused on the strategies of development, activities or main tasks for two periods – that of less than 5 years (short-term) and 6 to 10 years (medium-term). Some already identified tasks to be analyzed beyond this period may be included if they conform to ICAO ATM requirements.

ATM PERFORMANCE OBJECTIVES

The performance objectives for regional ATM work programmes should be developed using a performance approach so as to reflect the necessary activities needed to support regional ATM system implementation.

During its life cycle, the performance objectives may change in a dynamic manner depending on the ATM system's evolution; therefore, these should be coordinated with and available to all interested parties within the ATM Community in order to achieve timely communication throughout the implementation process. The establishment of collaborative decision making processes (CDM) ensures that all stakeholders are involved in and concur with the requirements, tasks and timelines.

The following sections describe aspects pertaining to the performance objectives and required changes, and how these changes foster harmonized improvements throughout the regional ATM system.

Benefits

The ATM implementation strategies should provide a group of common benefits for all stakeholders and be achieved through the operational and technical activities planned in each performance objective. These benefits should be in accordance with the ICAO strategic objectives.

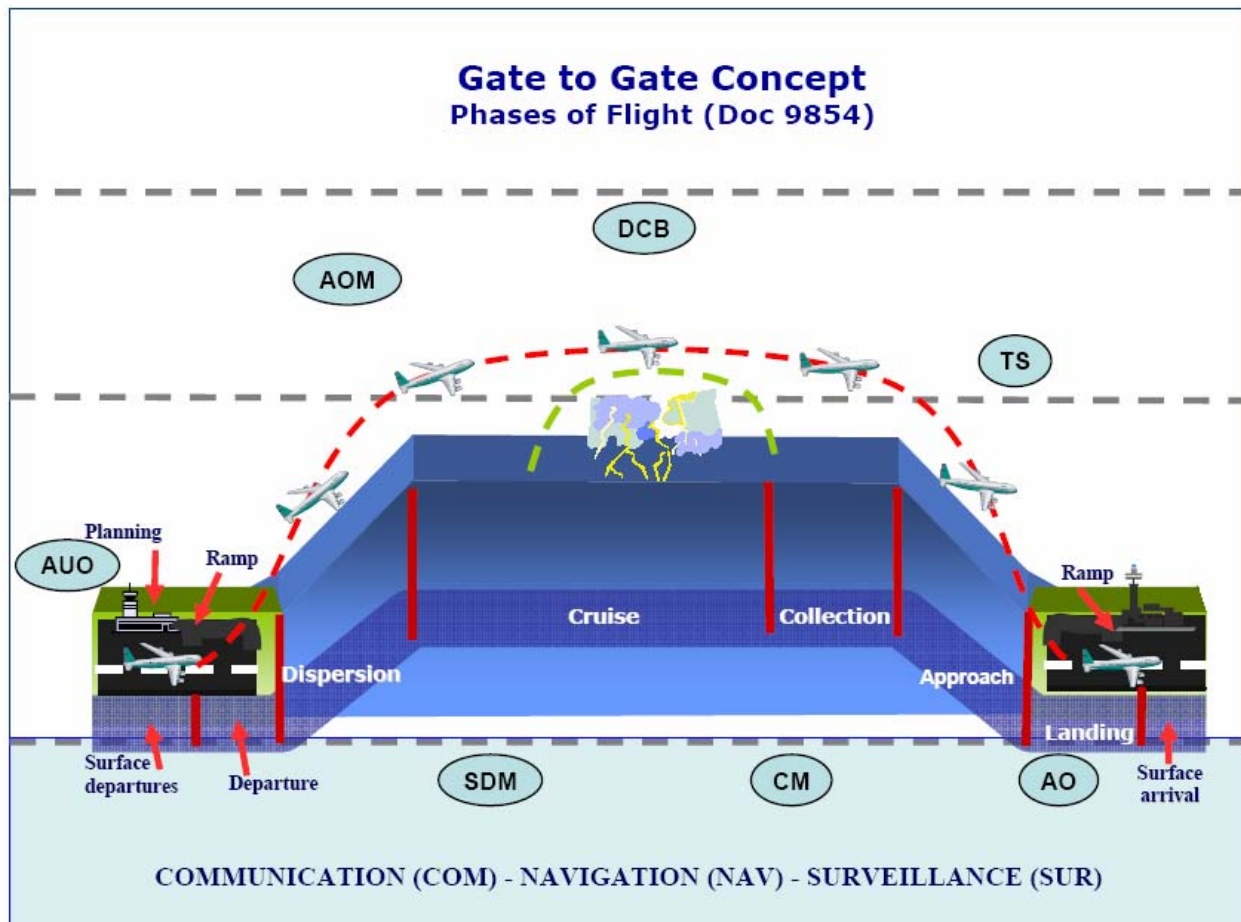
Identification of work

Each task should be identified firstly by the activity associated with components of the ATM system when describing the tasks. According to the Doc 9854, the designators for ATM components are as follows:

- | | |
|-----------|--|
| • AOM | — Airspace organization and management |
| • DCB | — Demand and capacity balancing |
| • AO | — Aerodrome operations |
| • TS | — Traffic synchronization |
| • CM | — Conflict management |
| • AUO | — Airspace user operations |
| • ATM SDM | — ATM service delivery management |

Each designator looks to link ATM system component pertains to tasks and activities related to phases of air operations, ATC en-route, terminal and airport, capacity management, airspace management including its flexible use and aeronautical information management.

The infrastructure includes the ground technical systems and capacity required to support operations such as communications, navigation and surveillance, data processing, inter-operability of systems, information management system and spectrum management, including both civil and military systems. The following diagram shows the ATM components in relation to the phases of flight:



Work Programmes

ATM evolution requires a clearly defined progressive strategy including tasks and activities which best represent the national and regional planning processes in accordance with the global planning framework. The goal is to achieve harmonized regional implementation evolving toward a seamless global ATM system.

This means the need to develop short and medium term work programmes, focusing on the necessary changes to the system in which a clear work commitment will be carried out by the parties involved.

The regional work programmes should define additional tasks and activities, maintaining a direct relation with ATM system components such as airspace organization, civil-military coordination, human factors, aeronautical regulations, operational safety management systems and environmental protection, among others.

The framework for regional activities should also include the coordination of activities with military authorities who play an important role in helping to ensure that the best use is made of the available airspace resources by all airspace users while still safeguarding national security.

The following principles should be considered when developing work programmes:

- The work should be organized using project management techniques and performance-based objectives in alignment with the Global Plan and the strategic objectives of ICAO. The work programmes should be in accordance with the progress, characteristics and regional implementation needs.
- All activities involved in accomplishing the performance objectives should be designed following strategies, concepts, action plans and roadmaps which can be shared among States to align the regional work with the fundamental objective of achieving interoperability and seamlessness to the highest level.
- The planning of all activities should include optimizing human resources, as well as encouraging dynamic use of electronic communication between States such as the Internet, videoconferences, teleconferences, e-mail, telephone and facsimile. It should be ensured that all resources will be efficiently used, avoiding any duplication or unnecessary work.
- The new work process and methods should ensure that performance objectives can be measured against timelines and the regional progress achieved can be easily reported to the Air Navigation Commission and to the ICAO Council.

Status

The status is mainly focused on monitoring the progress of the implementation activity as it progresses toward a specific completion date. The status of the activity is defined as follows:

- **Valid** the feasibility and benefits of an activity has been confirmed, work has been initiated but the activity itself has not been finalized.
- **Completed** implementation of the activity has been finalized by the involved parties.
- **Tentative** the feasibility and benefits of an activity investigated or to be developed.

A tentative status indicates a potential activity; normally this activity will not be included in the regional planning documents unless it is an ICAO defined requirement.

Relationship between Performance Objectives and Global Plan Initiatives

The 23 GPIs provide a global strategic framework and are designed to contribute to achieving the regional performance objectives and to support the logical progression of regional implementation work programmes.

Each performance objective should be referenced to the pertinent GPIs. The goal is to ensure that the work process will be integrated into the global planning framework

NATIONAL ACTION PLANS

States should develop their own national action plans reflecting the specific activities or tasks along with the expected benefits to be obtained and the date by which each should be completed according to the national needs and based on the regionally-agreed performance objectives.

The activities should include the necessary detailed actions to successfully achieve the national performance objectives, relating these activities with the short and medium term regionally-agreed performance objectives.

National plans should identify the individuals or teamwork responsible for achieving the objectives as well as a means for monitoring and eventually reporting progress on the actions to ICAO. The responsibilities and time-tables should be clearly defined so that the involved parties are aware of their commitments throughout the planning process.

Additionally, national action plans should include adequate means to provide information on implementation progress achieved such as through a periodic reporting process. This facilitates senior management levels' efforts to prioritize the actions and resources required. The same information provided to ICAO will allow feedback and assistance to be provided specific for each Region as they work to achieve a Global ATM system.

[illegible]

IMPLEMENT RNP APPROACHES			
Benefits			
Efficiency	• Improvements in capacity and efficiency at aerodromes.		
Safety	• Improvements in safety at aerodromes.		
Strategy (2008-2015)			
TASK	DESCRIPTION	START- END	STATUS
AOM	- development of a regional strategy and work programme for implementation of RNP approaches at aerodromes where aircraft weighing 5700 kg or more are operated, on the basis of the transition plan as follows: Stage 1 – Evaluate existing procedures, determine compatibility of use with RNAV overlay routes Stage 2 – Carry out cost benefit analysis and safety assessments of RNAV procedures Stage 3 – Use existing radar vectoring patterns as the basis for RNAV departure and arrival tracks Stage 4 – Evaluation and simulation of procedures Stage 5 – Design stand-alone RNAV procedures Stage 6 – Training phase Stage 7 – Publish new procedures and introduce into new service, meet AIRAC dates Stage 8 – Operational review Stage 9 – Removal of conventional procedures - monitor implementation progress		
References	GPI/5: performance-based navigation, GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/10: terminal area design and management, GPI/11: RNP and RNAV SIDs and STARs and GPI/12: FMS-based arrival procedures.		

ENHANCE CIVIL/MILITARY COORDINATION AND CO-OPERATION			
Benefits			
Efficiency	• increase airspace capacity;		
Continuity	• allow a more efficient ATS route structure • ensure safe and efficient action in the event of unlawful interference; • make available military restricted airspace more hours of the day so that aircraft can fly on their preferred trajectories; and • improve search and rescue services.		
Strategy (2008-2012)			
TASK	DESCRIPTION	START- END	STATUS
AOM	• develop guidance material on civil/military coordination and co-operation to be used by States/Territories to develop national policies, procedures and rules; • establish civil/military coordination bodies; • arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defense units; • conduct a regional review of special use airspace; • develop a regional strategy and work programme for implementation of flexible use of airspace in a phased approach beginning with more dynamic sharing of restricted airspace while working towards full integration of civil and military aviation activities by 2012; and • monitor implementation progress		
References	GPI/1: flexible use of airspace.		

ALIGN UPPER AIRSPACE CLASSIFICATION			
Benefits			
Efficiency	• better utilization of data link communication; • optimize use of flight plan data processing systems; • enhance airspace management coordination, message exchange capabilities and utilization of flexible and dynamic airspace management techniques; • harmonization of interregional coordination processes;		
Continuity	• improvement of airspace interoperability and seamlessness; and • ensure the provision of positive air traffic control services to all aircraft operations.		
Strategy (Target: 2008)			
TASK	DESCRIPTION	START- END	STATUS
AOM	• Develop a regional implementation strategy and work programme for the implementation of ICAO Annex 11 airspace Class A above FL 195. • identify key stakeholders, ATCOs, pilots, and relevant international organisations for coordination and cooperation on changes for new airspace organization, using a CDM process; • develop new national airspace organization in accordance with ICAO provisions, as needed; • Coordinate changes for regional and national documents; ◦ Doc 8733, CAR/SAM ANP; ◦ AIP; and, ◦ ATS letters of agreement • carry out improvements in ground systems to support new airspace organization configurations, as necessary; • publish national regulatory material for implementation of new rules and procedures to reflect airspace organizational changes; • train ATCOs and pilots in new procedures, including all civil and military airspace users, as required; • monitor implementation progress.		
References	GPI/4: align upper airspace classification.		

IMPROVE DEMAND AND CAPACITY BALANCING			
Benefits			
Environment	- reduction in weather- and traffic-induced holding, leading to reduced fuel consumption and emissions; - improved and smoother traffic flows; - improved predictability; - improved management of excess demand for service in ATC sectors and aerodromes; - improved operational efficiency; - enhanced airport capacity; - enhanced airspace capacity; and - improved safety management.		
Efficiency			
Safety			
Strategy Near term (2008)			
TASK	DESCRIPTION	START- END	STATUS
DCB	- identify key stakeholders (ATC service providers and users, military authorities, airport authorities, aircraft operators and relevant international organisations) for purposes of coordination and cooperation, using a CDM process; - identify and analyse traffic flow problems and develop methods for improving efficiencies on a gradual basis, as needed, through enhancements in current: - airspace organization and management (AOM) and ATS route structure (unidirectional routes) and SID and STARS, - communication, navigation and surveillance systems, - aerodrome capacity, - ATS capacity, - training for pilots and Controllers; and - ATS letters of agreement; - define common elements of situational awareness between FMUs; - common traffic displays, - common weather displays (Internet), - communications (teleconferences, web), and - daily teleconference/messages methodology advisories; - develop methods to establish demand/capacity forecasting; - develop a regional strategy and work programme for harmonized implementation of ATFM service; and,		

Medium term (2010)			
	• develop a regional strategy for the implementation of flexible use of airspace (FUA); ○ assess use of airspace management processes; ○ improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows; ○ introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes; ○ implement dynamic ATC sectorization in order to provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows, and to accommodate in short-term the preferred routes of users; • define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between Centralized ATFM units; • develop regional procedures for efficient and optimum use of aerodrome and runway capacity; • develop a regional ATFM procedural manual to manage demand/capacity balancing; • develop a regional strategy and framework for the implementation of a Centralized ATFM unit; • develop operational agreements between Centralized ATFM units for interregional demand/capacity balancing; and, • monitor implementation progress.		
References	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems.		

IMPROVE ATM SITUATIONAL AWARENESS			
Benefits			
Efficiency	- enhanced traffic surveillance; - enhanced collaboration between flight crew and the ATM system; - improved collaborative decision-making through sharing electronic aeronautical data information; - reduced of workload for both pilots and controllers; - improved operational efficiency; - enhanced airspace capacity; - improved implementation on a cost-effective basis;		
Safety	- improved available electronic terrain and obstacle data in the cockpit; - reduced of the number of controlled flight into terrain related accidents; and - improved safety management.		
Strategy Near term (2010)			
TASK	DESCRIPTION	START- END	STATUS
SDM	- identify parties concerned - identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing - operational architecture design, - characteristics and attributes for interoperability, - data bases and software, and - technical requirements; - improve ATS interfacility communication - implement flight plan data processing system and electronic transmission tools - implement radar data sharing programs where benefits can be obtained - develop situational awareness training programmes for pilots and controllers - implement ATM surveillance systems for situational traffic information and associated procedures - implement ATS automated message exchanges, as required - FPL, CPL, CNL, DLA, etc. - implement automated radar handovers, where able; - implement ground and air electronic warnings, as needed - Conflict prediction - Terrain proximity - MSAW - DAIW - Surveillance system for surface movement - implement data link surveillance technologies and applications: ADS, CPDLC, AIDC, as required.		

<i>Medium term (2015)</i>			
	• implement additional/advanced automation support tools to increase sharing of aeronautical information - o ETMS or similar - o MET information - o AIS/NOTAM dissemination - o Surveillance tools to identify airspace sector constraints - o A-SMGC in specific aerodromes, as required • implement teleconferences with ATM stakeholders • monitor implementation progress		
References	GPI/1: flexible use of airspace; GPI/6: air traffic flow management; and GPI/7: dynamic and flexible ATS route management; GPI/9: Situational awareness; GPI/13: aerodrome design and management; GPI/14: runway operations; and GPI/16: decision support and alerting systems; GPI/17: implementation of data link applications; GPI/18: aeronautical Information; GPI/19: meteorological systems.		

APPENDIX B

PROJECT OVERVIEW WATRS PLUS ROUTE STRUCTURE REDESIGN & SEPARATION REDUCTION

Note: this document is an updated version of the FAA advance notice that was published in November 2006 and disseminated to State and industry organizations.

Introduction. On 5 June 2008, the FAA is planning on introducing a redesigned route structure and a reduced lateral separation standard on oceanic routes or areas in the WATRS Plus Control Areas (CTA). The WATRS Plus CTAs are shown on the attached chart. They are: the Atlantic portion of the Miami Oceanic CTA, the CTA of the San Juan FIR and the West Atlantic Route System (WATRS). In addition, New York Oceanic airspace outside WATRS is planned to be transition airspace where reduced lateral separation may be applied between appropriately authorized aircraft.

Background. In 1998, lateral separation was reduced to 50 NM in conjunction with the introduction of Required Navigation Performance 10 (RNP 10) for aircraft operating on the North Pacific Route System. Since that time, application of 50 NM lateral separation and RNP 10 has been expanded throughout the Pacific Flight Information Regions (FIR). The WATRS Plus initiative will apply the experience gained in Pacific operations.

Aircraft Population Status. FAA studies show that approximately 90% of flights operating in the WATRS Plus CTAs are conducted by aircraft that already meet RNP 10 or RNP 4 requirements. To obtain RNP 10 or RNP 4 authority, operators must apply to the responsible State (country) authority. Applicable documents are discussed below.

Project Objectives. The objectives of the WATRS Plus project are to:

- a) Reduce lateral separation on oceanic routes or areas from the existing 90 NM standard to 50 NM between aircraft authorized Required Navigation Performance 10 (RNP 10) or RNP 4. (50 NM lateral will be applied at any altitude when aircraft are authorized RNP 10 or RNP 4);
- b) Have a significant percentage of WATRS Plus operators obtain RNP 10 or RNP 4 authority from the appropriate State authority. **(RNP 10 is the minimum navigation specification for the application of 50 NM lateral separation; RNP 4 is an operator option);**
- c) Accommodate operation of the small percentage of flights not projected to meet RNP 10 or RNP 4. See the note below;

Note: the U.S. plans to develop and coordinate a proposal that would require RNP 10 or RNP 4 authorization for flight on WATRS Plus CTA oceanic routes or areas between flight level 290-410 (inclusive). The proposed effective date will be some time after June 2008.

- d) Redesign the WATRS Plus route structure to make approximately 40% more routes available to enhance operator access to time/fuel efficient routes and altitudes and to enhance enroute capacity; and

- e) Harmonize the WATRS Plus route structure with that in the Caribbean and North Atlantic regions.

Routes Not Affected by WATRS Plus Project. Operation on certain routes that are located within the WATRS Plus CTAs will not be affected by the introduction of RNP 10/50 NM lateral separation. Examples are: routes defined by VOR, VOR/DME or NDB; Special Area Navigation (RNAV) routes (now designated as T-routes) between Florida and Puerto Rico and routes located within radar and VHF coverage (e.g., A761 between HANRI and ETOCA and R511 between AZEZU and ELTEE at/above Flight Level 310).

Operator Action by 5 May 2008. To the maximum extent possible, operators flying on oceanic routes or areas in WATRS Plus CTAs between flight level (FL) 290-410 should obtain RNP 10 or RNP 4 authority **by 5 May 2008**. Competition for routes and altitudes is greatest at those FLs. To enhance operational flexibility, the FAA also recommends that operators flying on oceanic routes or areas above or below those FL's obtain RNP 10 or RNP 4 authority.

Having operators RNP 10 or RNP 4-ready one month in advance of the implementation date will help the transition to the new route structure and separation standard on 5 June 2008. The FAA will track the authorization status of operator/aircraft combinations that operate in WATRS Plus CTAs to confirm that the fleet will be ready on time.

Accommodation of Aircraft Not Authorized RNP 10 or RNP 4 (Non-RNP 10 Aircraft). Aircraft that are authorized RNP 10 or RNP 4 will have a better opportunity of obtaining their preferred altitude and route because the 50 NM lateral separation standard will be applied to those aircraft. 50 NM lateral separation will not be applied to Non-RNP 10 aircraft.

The following basic accommodation policies will apply:

- a) Non-RNP 10 operators/aircraft will be able to file any route at any altitude in WATRS Plus airspace. They will be cleared to operate on their preferred routes and altitudes as traffic permits.
- b) Non-RNP 10 aircraft will retain the option of climbing to operate at altitudes above those where traffic is most dense (i.e., at/above FL 410). To minimize the chance of conflict with aircraft on adjacent routes, Non-RNP 10 aircraft should plan on completing their climb to or descent from higher FL's within radar coverage.
- c) All aircraft can enhance their opportunity to be cleared on their preferred route and altitude if they operate at non-peak hours, approximately 0100 to 1100 UTC.

Criteria for RNP 10 Authorization for Operators and Aircraft

Criteria for aircraft and operator RNP 10 authorization is contained in FAA Order 8400.12A – *RNP 10 Operational Approval*; and ICAO Document 9613 – *Manual on Required Navigation Performance (RNP)*. Criteria for RNP 4 is contained in FAA 8400.12A (FAA Order 8400.12A is being revised to eliminate dated information on manual Letters of Authorization for General Aviation operators). The FAA documents are posted on the WATRS Plus Webpage (see Webpage address below) and Doc 9613 is posted on the ICAO-NET.

RNP 10 criteria includes:

- a) a requirement for two operational Long-Range Navigation Systems (LRNS) meeting RNP 10 standards. (A detailed discussion of acceptable aircraft LRNS configurations on/after project implementation is posted on the WATRS Plus Webpage, Section 2d (Operator/Aircraft RNP 10 Authorization Policy/Procedures); and
- b) ****unless approved otherwise, an RNP-10 time limit of 6.2 hours between position updates for aircraft on which Inertial Navigation Systems (INS) or Inertial Reference Units (IRU) provide the only source of long range navigation.**

****Note: Extended RNP-10 time limits of 10 hours and greater are already approved for many IRU systems.** Time limit may be an issue for INS only equipped aircraft on westbound flights entering WATRS Plus airspace from Europe, Africa and the Mid-East.

WATRS Plus Webpage: Policy/Procedures Information for Operators and Regulators

Information on policies and procedures related to the introduction of 50 NM lateral separation and RNP 10 or RNP 4 is posted on the “WATRS Plus Webpage”. The WATRS Plus Webpage is linked to the existing Oceanic/International Operations Standards Group Homepage at: www.faa.gov/ats/ato/130.htm. It is recommended that regulators and operators review the briefing entitled “Operational Approval for RNP 10” posted in Section 2d of the WATRS Plus Webpage. This briefing provides details on RNP 10 aircraft and operator requirements.

A Job Aid showing the format and content for operator submissions for RNP 10 authorization is also posted in Section 2d of the WATRS Plus Webpage. The FAA is working with ICAO regional offices to update the Job Aid, as necessary, and disseminate it with related information to appropriate State authorities and industry.

As the project progresses, the FAA will coordinate with ICAO, other authorities and industry to take additional measures to disseminate information, as necessary.

ICAO Coordination. The FAA is coordinating this project with the ICAO working groups in the North Atlantic and Caribbean regions. The FAA is working with the ICAO North American, Central American and Caribbean (NACC) Office in Mexico City and the European and North Atlantic Office in Paris to progress the work, revise the necessary documents and inform operators and regulatory authorities of program requirements.

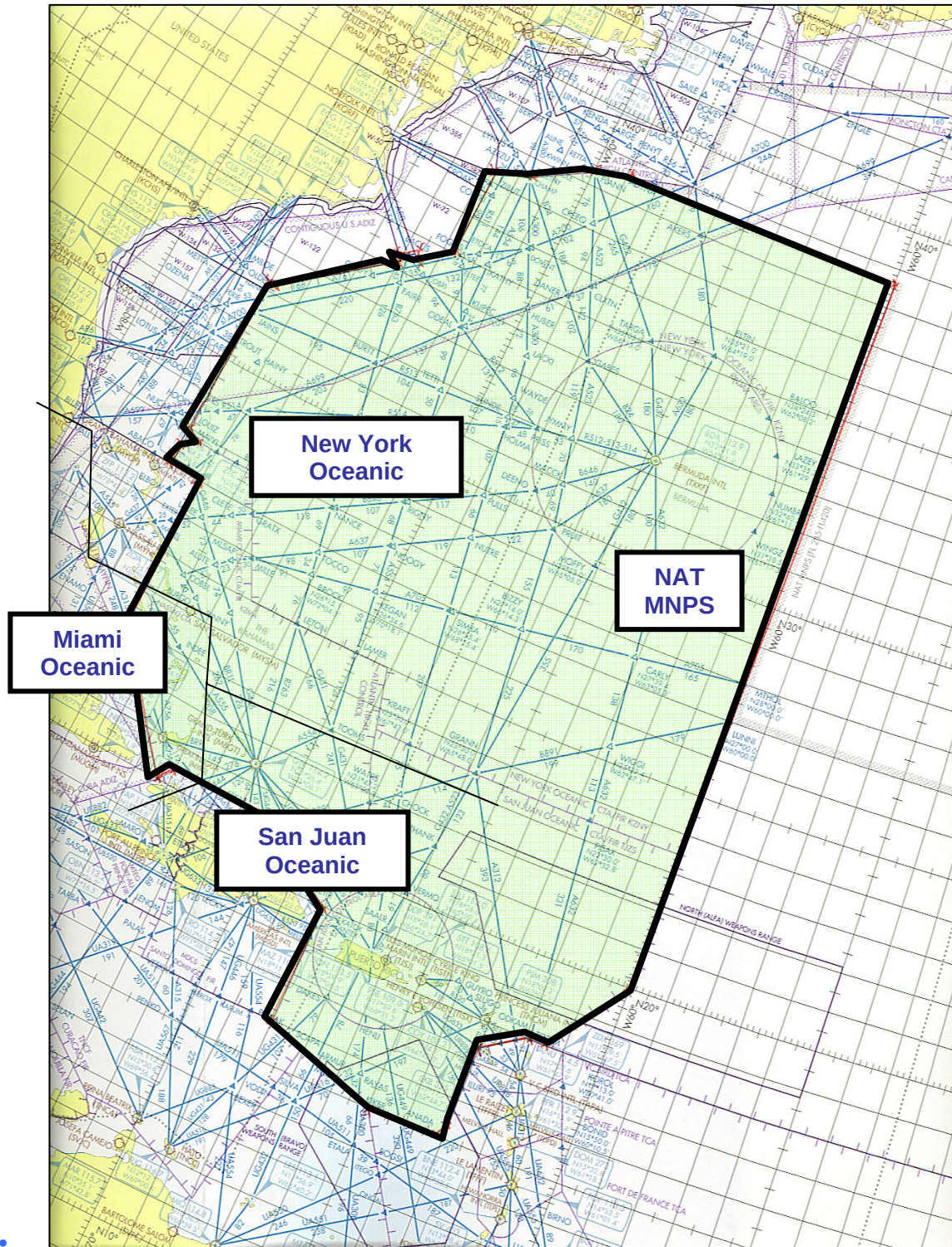
Industry Coordination. As the project progresses, the FAA will coordinate with and inform United States and international industry groups on a regular basis. The project leads listed below will ensure that industry groups are informed of program requirements and progress.

Contacts. If there are questions, please contact one of the following:

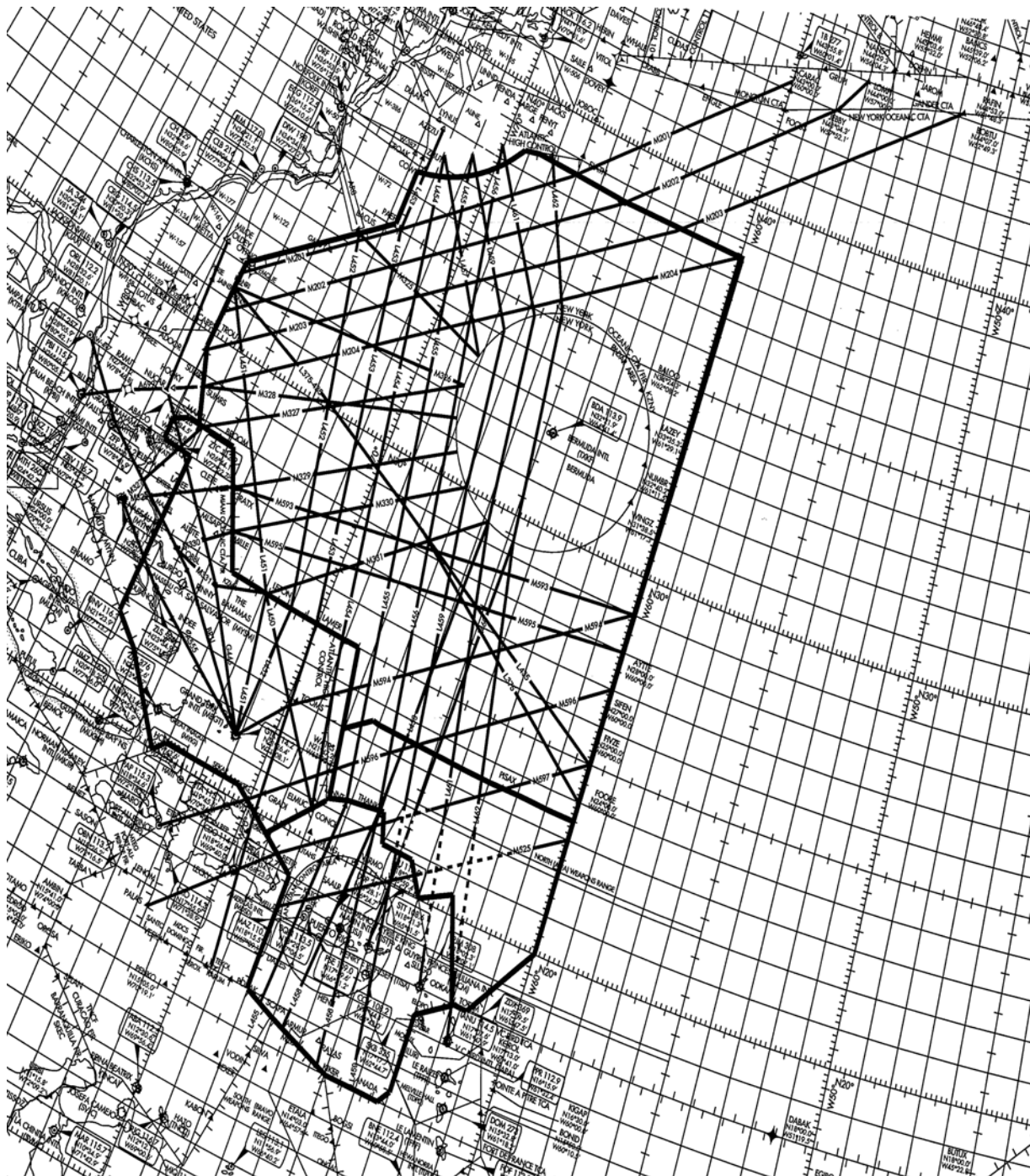
David Maynard (Project Lead)	Manager, Oceanic & Offshore Group; FAA Air Traffic Organization (ATO)	+1 202-267-3448	David.Maynard@faa.gov;
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WATRS Plus Control Areas (CTA)

This chart is only intended to show the general location of WATRS Plus CTAs. Full WATRS coordinates are posted at www.faa.gov/ats/ato/watrs.htm



**WATRS Plus Control Areas
Route Structure Design
Draft May 15, 2007**



SUMMARY OF MAJOR IMPLEMENTATION TASKS

Introduction. The summary task list below was developed from the “WATRS Plus Implementation Task List” which is provided in a separate paper. The major sections of the detailed Implementation Task List are shown on the next page.

	<u>SUBJECT</u>	<u>TARGET DATE</u>	<u>WATRS PLUS: SUMMARY OF MAJOR IMPLEMENTATION TASKS (16 MAY 07)</u>
			Note: a detailed task list is provided in a separate document.
1	Advance notice	Complete Nov 2006	Provide advance notice to States and operators of intent to implement (key dates, basic plan and operating policy, etc.)
2	ICAO SARPS and Guidance	Complete Dec 06	Identify related ICAO SARPS and guidance documents: ICAO Doc 4444; Annexes 2, 6, 11; ICAO RNP Manual (now replaced by ICAO Performance Based Navigation (PBN) Manual (new Doc 9613)
3	Information Dissemination Program	On-going	WATRS Plus Webpage established; distribution list for State and industry organizations and key individuals developed; ICAO State letters to be distributed, as necessary; exploring necessity to conduct seminars. Note: WATRS Plus Webpage linked to: http://www.faa.gov/ats/ato/130.htm
4	International Coordination	On-going	Coordinate with ICAO CAR and NAT Working Groups. Convene NAT/CAR ATS Routes WG, as necessary.
5	RNP 10 or RNP 4 authorization	5 Jun 07	Distribute RNP 10/RNP 4 Authorization Job Aid (Checklist) and other appropriate attachments. Coordinate effort with EUR/NAT and NACC Offices.
6	State regulator preparation	Recommend 5 Jun 07	States prepare responsible offices for RNP 10 or RNP 4 authorization tasks
7	State regulations and guidance	Recommend 5 Jun 07	States revise or develop regulations and guidance for RNP 10 or RNP 4 authorization, as necessary
8	Concept of Operations document	On-going	Maintain current copy of Concept of Operations document on WATRS Plus Webpage.
9	Safety Assessment	30 Jun 07	Complete Safety Assessment document for Doc 7030 submission
10	U.S. Fast-time simulations	30 Jun 07	U.S. obtain Fast-time simulation data (effect of added routes and associated FLs on route and FL use; effect of Non-RNP 10 flights)
11	Operational policy & procedures notice	15 July 07	After international coordination, U.S. publish FAA notice containing operational policy and procedures specific to WATRS Plus 50 NM lateral separation and RNP 10 (minimum) authorization
12	Cost/Benefit Analysis	1 Aug 07	Assess costs and benefits; complete Cost/Benefit Analysis
13	Route structure redesign	1 Aug 07	Complete airspace analysis and route structure redesign including: validation of routes and fix coordinates; coordination with ATS providers with adjoining airspace; possible impact on related SIDs/STARs and airport operations.
14	U.S. ATC automation system simulations	3/Q 07	U.S. conduct simulations with Ocean21 ATC automation system and redesigned route structure to assess effect on ATC of added routes and FLs and Non-RNP 10 aircraft
15	State ATC automation systems	As necessary	Modify ATC automation systems and programs, as necessary. (U.S.: Ocean21 system)
16	Operator/aircraft fleet readiness projection	5 Mar 08	Project operator/aircraft fleet readiness goal will be met (goal: approximately 85% of flights conducted by RNP 10 or RNP 4 authorized aircraft)

	<u>SUBJECT</u>	<u>TARGET DATE</u>	<u>WATRS PLUS: SUMMARY OF MAJOR IMPLEMENTATION TASKS (16 MAY 07)</u>
			Note: a detailed task list is provided in a separate document.
17	State ATS policy documents	Recommend 5 Mar 08	States revise or develop Air Traffic Services policy documents, as necessary (e.g., FAA Order 7110.65)
18	Pre-implementation Safety Assessment & Implementation Decision	5 Mar 08	Complete final Safety Assessment and Readiness Review.
19	Notice of implementation	10 Mar 08	Provide notification to States and operators of decision to implement
20	CAR and NAT Doc 7030 publication	1 April 08	Publish CAR and NAT Doc 7030 revised for WATRS Plus project
21	CAR/SAM ANP publication	1 April 08	Publish revised CAR/SAM Air Navigation Plan (ICAO Doc 8733) Volumes I and II (ATS Route Networks)
22	State controller training	Recommend Apr - Jun 08	States train controllers
23	Aeronautical chart and navigation databases	10 Apr 08	Publish and distribute revised aeronautical chart and navigation database information for redesigned route structure
24	Operator RNP 10 or RNP 4 authorization	5 May 08	To maximum extent possible, WATRS Plus operators obtain RNP 10 or RNP 4 authorization
25	Implementation	5 June 08	Implement redesigned route structure and 50 NM lateral separation
26	Post implementation monitoring	On-going	Conduct post-implementation monitoring; convene WATRS Plus Scrutiny Group, as necessary for monitoring

Major Sections of the WATRS Plus Implementation Task List:

I. General Project Development & Management	VI. Operations, Airworthiness & RNP Authorization
II. International Coordination: ICAO Groups & Documents	VII. State Responsibilities For RNP Authorization
III. Route Structure Redesign & Publication	VIII. Operator Responsibilities & Tasks
IV. Safety Analysis & Monitoring	IX. Final Implementation Decision & Notification
V. Air Traffic Control Tasks – General	X. Post-Implementation Tasks

PLANNED CONCEPT OF OPERATIONS

WATRS PLUS CONTROL AREAS (CTA)

1. Vertical and horizontal boundaries of airspace

a. Horizontal Boundary. 50 NM lateral separation is planned to be applied between aircraft authorized RNP 10 or RNP 4 operating on oceanic routes or areas:

- Within the control area of the San Juan FIR, the Atlantic portion of the Miami Oceanic control area or the West Atlantic Route System (WATRS);

Note: the control areas listed above are referred to hereafter as the “WATRS Plus CTAs”.

- In addition, New York Oceanic airspace outside WATRS is planned to be transition airspace where reduced lateral separation may be applied between appropriately authorized aircraft.

Note: a chart depicting the boundaries of the WATRS Plus CTAs is published on the WATRS Plus Webpage. The coordinates defining the horizontal boundary of WATRS are published in ICAO Regional Supplementary Procedures (Doc 7030) for the Caribbean (CAR) and North Atlantic (NAT) regions.

b. Vertical Boundary. 50 NM lateral separation is planned to be applied between aircraft authorized RNP 10 or RNP 4 operating above the floor of controlled airspace within the WATRS Plus CTAs.

2. Lateral separation standard(s) to be applied

a. 50 NM Lateral Separation.

(1) WATRS Plus CTAs. 50 NM lateral separation will be applied between aircraft authorized RNP 10 or RNP 4 operating at any altitude within WATRS Plus CTAs above the floor of controlled airspace.

(2) New York Oceanic CTA/FIR Outside of WATRS. 50 NM lateral separation may be applied between aircraft authorized RNP 10 or RNP 4 operating at any altitude above the floor of controlled airspace.

b. 90 NM Lateral Separation. Within the WATRS Plus CTAs, the lateral separation standard applicable to Non-RNP 10 aircraft will be 90 NM.

Note: policies for application of the following lateral separation standards are not affected by the WATRS Plus project:

- 60 NM within WATRS and outside WATRS within the New York Oceanic CTA/FIR
- 90 NM outside the WATRS Plus CTAs
- 100 NM west of 55 West
- 120 NM east of 55 West

3. Concept for transfer of control to adjoining FIR's

- a. Transfer of Flights into non-U.S. Controlled NAT MNPS Airspace. New York Oceanic Center will provide 60 NM lateral separation between aircraft authorized MNPS when transferring aircraft control to ATS providers in NAT MNPS airspace.
- b. Transfer to Other CTAs. Aircraft transiting FAA controlled airspace to other FIRs will be transferred per regional documentation with the appropriate separation standard applied.

4. Transition airspace

- a. Transition airspace is airspace in the CAR and NAT regions adjoining the WATRS Plus CTAs. Coordination is necessary to establish policies related to transfer of control and the separation to be applied.
- b. The airspace outside the WATRS Plus CTAs within the control area of the New York Oceanic FIR is considered transition airspace.

5. Concept for use of fixed routes

Fixed routes will be planned based on a 50 NM lateral separation minima.

6. Flight Plan Equipment Suffix Requirements

- a. ICAO Flight Plans. To inform ATC and to key Ocean21 automation that they have RNP 10 or RNP 4 authorization and are eligible for 50 NM separation, operators must:
 - (1) annotate ICAO Flight Plan Item 10 (Communication, Navigation and Approach Equipment) with the letter "R" and letter "Z" and...
 - (2) annotate Item 18 (Other Information) with "NAV/RNP10" or "NAV/RNP4", as appropriate.

Note 1: on the ICAO Flight Plan, letter "R" currently indicates that the aircraft will maintain the appropriate RNP navigation specification for the entire flight through airspace where RNP is prescribed. Letter "Z" indicates that information explaining aircraft navigation and/or communication capability is found in Item 18.

Note 2: the ICAO Flight Plan Study Group is developing revised flight equipment suffixes that are proposed to be effective in late 2010. The WATRS-Plus Task Force will maintain contact with the appropriate FAA and ICAO organizations to track pertinent ICAO flight plan change developments.

7. Concept for use of Ocean21 in New York Oceanic Airspace

Ocean21 will provide the New York Oceanic air traffic controller with a set of automated tools to assist in assuring that the correct separation is applied between aircraft with a mix of navigation capabilities (i.e., RNP 10 or 4, non-RNP 10). Automated tools will include: automated conflict prediction and reporting (CPAR), graphic dynamic situation display to the controller and interactive electronic flight strips, aircraft labels and aircraft position symbols.

8. Provisions for accommodating aircraft not meeting RNP 10 or RNP 4

a. For the project to be fully successful, operators flying on oceanic routes or areas in the WATRS Plus CTAs between FL 290-410 (inclusive) should obtain RNP 10 or RNP 4 authority (to the maximum extent possible). For initial project implementation, however, the airspace of the WATRS Plus CTAs will not be “exclusionary”. Aircraft not authorized RNP 10 or RNP 4 will be allowed to fly on oceanic routes or areas within WATRS Plus CTAs, however, 50 NM lateral separation will not be applied to them. They will be cleared on their preferred routes and altitudes as traffic permits. Aircraft that are authorized RNP 10 or

RNP 4 will have a better opportunity of obtaining their preferred route and altitude because the 50 NM lateral separation standard will be applied to those aircraft.

b. The following basic accommodation policies will apply:

(1) Non-RNP 10 operators/aircraft will be able to file any route at any altitude in the WATRS Plus CTAs. They will be cleared to operate on their preferred routes and altitudes as traffic permits.

(2) Non-RNP 10 aircraft will retain the option of climbing to operate at altitudes above those where traffic is most dense (i.e., at/above FL 410). To minimize the chance of conflict with aircraft on adjacent routes, Non-RNP 10 aircraft should plan on completing their climb to or descent from higher FL's within radar coverage.

(3) All aircraft can enhance their opportunity to be cleared on their preferred route and altitude if they operate at non-peak hours, approximately 0100 to 1100 UTC.

c. Proposed Plan to Stop Accommodation of Non-RNP 10 Aircraft. The FAA is planning to propose a regulatory change that would be effective some time (to be determined) after the June 2008 project implementation date. The goal of the proposal would likely be to maximize operational efficiency by requiring RNP 10 or RNP 4 authority for cruise operations in the WATRS Plus Control Area oceanic airspace between FL 290-410 (inclusive). The content of and effective date for the change would be established after the necessary coordination required by the rulemaking process.

9. Operator/Aircraft requirements for operation on routes on the periphery of the WATRS Plus CTAs. Operation on certain routes that fall within the boundaries of WATRS Plus airspace will not be affected by the introduction of RNP 10/50 NM lateral separation, scheduled for 5 June 2008. Operation on the following routes will not be affected:

a. Routes that are flown by reference to ICAO standard ground-based navigation aids (VOR, VOR/DME, NDB) (such as the routes in the airspace between Florida and Puerto Rico).

b. Special Area Navigation (RNAV) routes currently designated as T-routes that are located in the airspace between Florida and Puerto Rico. (A new RNAV route structure is planned to replace the current T-route structure in the June 2007 timeframe. The new routes will be designated as “Y-routes”).

c. Routes that are located within radar and VHF coverage (e.g., A761 between HANRI and ETOCA and R511 between AZEZU and ELTEE at/above Flight Level 310).

10. Flight of aircraft previously authorized RNP 10 or RNP 4 with one of two required long range navigation systems inoperative.

a. To the maximum extent possible, operators that are authorized RNP 10 or RNP 4 should operate on WATRS Plus oceanic routes in compliance with those standards. Operators may, however, if the situation warrants, fly an aircraft on WATRS Plus oceanic routes with one of two long range navigation systems (LRNS) inoperative. The intent of this policy is to allow an aircraft to be flown to a maintenance facility for repair. For U.S. operators conducting operations under Part 121, 125 or 135 of the Code of Federal Regulations, Operations Specifications paragraph B054 (Class II (Oceanic) Navigation Using Single Long-Range Navigation System) applies.

b. **In this situation, operators will not annotate their filed flight plan with an aircraft equipment suffix indicating RNP 10 or RNP 4 compliance.** The aircraft will be treated as Non-RNP 10 aircraft and appropriate lateral separation will be applied.

11. Aircraft Population RNP 10 Authorization Objective

a. Implementation Objective: Percentage of Flights Authorized RNP 10 or RNP 4. The WATRS-Plus Task Force will progress its work with the objective of having at least **85% of flights** operating in WATRS Plus Control Area oceanic airspace authorized for RNP 10 or RNP 4 by 5 May 2008 (i.e., one month prior to the 5 June 2008 planned project implementation date).

b. RNP 10 or RNP 4 Compliance To the Maximum Extent Possible. The WATRS Plus Task Force will advocate that all operators/aircraft that fly in the WATRS Plus CTAs obtain RNP 10 or RNP 4 authorization as soon as possible.

12. Aircraft/operator authorization requirements (equipeage, RNP 10 authorization documents)

a. For 50 NM lateral separation to be applied, operators will be required to obtain RNP 10 or RNP 4 authorization from the appropriate State authority.

b. Guidance To Be Used. The FAA will use FAA Order 8400.12 (as amended) or, if applicable, FAA Order 8400.33 (as amended). It is recommended that other States use either the FAA orders or the ICAO *Performance Based Navigation (PBN) Manual* (Doc 9613). This manual was posted on the ICAO NET in April 2007. It replaced the ICAO *Manual on RNP* which was previously Doc 9613.

13. Target Dates:

a. Implementation Decision Date: 5 March 2008 (calendar date, 3 months prior to target implementation date).

b. Operator/Aircraft RNP 10 or RNP 4 Authorization Date: 5 May 2008 (calendar date, 1 month prior to target implementation date).

c. Target Implementation Date: 5 June 2008 (AIRAC date, effective date for application of 50 NM lateral separation and re-designed route structure).

APPENDIX C

ACTION PLAN FOR ATFM IMPLEMENTATION - CAR REGION

State/Organization:

Date

Jun-07

No.	Strategic Objective/ AN-Conf/11	Global Plan/ GPI	Regional Plan / FASID	GREPECAS No. Con/Dec/Pa	Target Activity	Follow-up Action	To be developed by	Deliverable	Target date	Remarks
1	2	3		4	5	6	7	8	9	10
					2008					
1	C, D		GPI-6		Develop a regional strategy and work programme for harmonized implementation of ATFM service.	Completed	E/T/OI	Work programme	2007	
				14/48						
2	D		GPI-6		Identify key stakeholders (ATC service providers and users, military authorities, airport authorities, aircraft operators and relevant international organisations) for purposes of coordination and cooperation, using a CDM process.	Completed	E/T/OI	CDM process	2007	CDM guidelines in WP/07.
3	D		GPI-7		Identify and analyse traffic flow problems and develop enhancements in current:	Completed	E/T/OI	Improvements to operational capacity	GRPCS/13	GREPECAS has defined main traffic flows and homogeneous CAR/SAM areas.
			GPI-7		airspace organization and management (AOM) and ATS routes structure (unidirectional routes) and SID and STARS;	Valid	E/T/OI	Airspace improvements		Guidelines are presented in WP/06.
			GPI-6		publication of the correspondant regulation;	Valid	OACI	Amendment to Doc 7030.	2008	Publish standards in AIPs.
			GPI-16		ATM automation;	Completed	E/T/OI	Action plan of E/T/OI	2007	Additional guidelines are presented in WP/15 from the ones approved by GREPECAS.
				14/48						

APPENDIX C

No.	Strategic Objective/ AN-Conf/11	Global Plan/ GPI	Regional Plan / FASID	GREPECAS No. Con/Dec/Pa	Target Activity	Follow-up Action	To be developed by	Deliverable	Target date	Remarks
1	2	3		4	5	6	7	8	9	10
			GPI-21-22		communication, navigation and surveillance systems;	Valid	E/T/OI	Define requirements	TBD	
			GPI-14		aerodrome capacity;	Completed	E/T/OI	Aerodrome Acceptance Rate (AAR)	2007	Guidelines in CAR/SAM ATFM CONOPS. Require to publish capacity.
			GPI-6		ATS capacity;	Valid	E/T/OI	ATS capacity	2008	Guidelines in the CAR/SAM ATFM CONOPS. Require to determine and publish the capacity.
			GPI-6	13/67	training for pilots and Controllers; and	Valid	E/T/OI	Training Programme	2008	Guidelines are presented in WP/07.
			GPI-6	14/48	ATS letters of agreement.	Valid	E/T/OI	ATS agreements	2008	ECAR completed.
4	D		GPI-9	14/48	Define common elements of situational awareness between FMUs;	Valid	E/T/OI	Enhance situational awareness	2008	Action plan of E/T/OI.
			GPI-9		common traffic displays;	Valid	E/T/OI	Define tools	2008	Analyze ETMS or similar applications.
			GPI-9		common weather displays (Internet);	Valid	E/T/OI	Define tools	2008	

Appendix C to the Report on Agenda Item 2

APPENDIX C

No.	Strategic Objective/	AN-Conf/11	Global Plan/ GPI	Regional Plan / FASID	GREPECAS No. Con/Dec/Pa	Target Activity	Follow-up Action	To be developed by	Deliverable	Target date	Remarks
1	2		3		4	5	6	7	8	9	10
			GPI-9			communications (teleconferences, web); and,	Valid	E/T/OI	Define tools	2008	Weekly teleconferences carried out in Piarco FIR between January-April 2007.
	D		GPI-6			define daily teleconference/messages methodology advisories.	Completed	E/T/OI	Teleconferences methodology	2007	Guidelines in WP-07. Requires an agreement.
5	D		GPI-6			Develop methods to establish demand/capacity forecasting.	Valid	E/T/OI	Traffic forecast methodology	2008	Electronic tools are being analyzed.
						2010					
6	D		GPI-1			Develop a regional strategy for the implementation of flexible use of airspace (FUA); -assess use of airspace management processes; -improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows; -introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes; and,	Valid	E/T/OI	FUA implementation	2010	Requires to analyze RAN CAR/SAM/3 recommendations.
	D		GPI-6			implement dynamic ATC sectorization in order to provide the best balance between demand and capacity to respond in real-time to changing situations in traffic flows, and to accommodate in short-term the preferred routes of users.	Valid	E/T/OI	Dinamic Sectorization	2010	

APPENDIX C

No.	Strategic Objective/	AN-Conf/11	Global Plan/ GPI	Regional Plan / FASID	GREPECAS No. Con/Dec/Pa	Target Activity	Follow-up Action	To be developed by	Deliverable	Target date	Remarks
1	2		3		4	5	6	7	8	9	10
7			GPI-16			Define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between Centralized ATFM units.	Valid	E/T/OI		2010	Analyze ETMS or similar applications.
8	D		GPI-6			Develop regional procedures for efficient and optimum use of aerodrome and runway capacity.	Valid	E/T/OI	Improve aerodrome capacity	2010	Requires development of methodology to optimize runway occupancy.
9	D		GPI-6			Develop a regional ATFM procedural manual to manage demand/capacity balancing.	Valid	E/T/OI	Regional ATFM Procedures	2010	Requires development of regional manual in accordance with SUPPS.
10	D		GPI-6		13/64	Develop a regional strategy and framework for the implementation of a Centralized ATFM unit.	Completed	E/T/OI	Centralized ATFM strategy	GRPCS/13	Regional guidelines in CAR/SAM ATFM CONOPS.
11	D		GPI-6			Develop operational agreements between Centralized ATFM units for interregional demand/capacity balancing.	Valid	E/T/OI	Agreements between Central ATFM units.	2010	

APÉNDICE D

AERODROME ACCEPTANCE RATE

1 Background

1.1 An important foundation for providing Air Traffic Flow Management service is the establishment of the aerodrome acceptance rate (AAR). Traffic managers require a numeric value for the arrival rate at key aerodromes in order to: measure the aircraft demand at the aerodrome against the available capacity; establish the traffic management initiatives required to balance demand and capacity; and evaluate the effectiveness of Air Traffic Flow Management (ATFM) measures.

1.2 The AAR is typically developed for three types of meteorological conditions: Visual Meteorological Conditions (VMC), Marginal VMC, and Instrument Meteorological Conditions (IMC). By defining the AAR for these three sets of weather conditions, traffic managers can adjust quickly to the capacity declared at an aerodrome by air traffic control.

1.3 The information in this working paper is based on years of work conducted by the Federal Aviation Administration and on the practical application of this model at aerodromes across the United States. This methodology has been successfully employed and has proven very useful and beneficial for traffic managers.

2 Discussion

2.1 Definitions:

- a. **Aerodrome Acceptance Rate (AAR):** The number of arrival aircraft that an aerodrome -- in conjunction with weather conditions, terminal airspace, ramp space, parking space, and facilities -- can accept per hour.
- b. **Aerodrome Primary Runway Configuration:** Each aerodrome configuration which handles 3 percent or more of the annual operations.
- c. **Potential AAR:** The theoretical acceptance rate at the runway threshold -- before taking other factors into consideration.
- d. **Actual AAR:** The Potential AAR at the runway threshold adjusted for other factors.
For any runway configuration, the Potential AAR minus Adjustment Factors equals the Actual AAR:

-- POTENTIAL AAR
ADJUSTMENT FACTORS

ACTUAL AAR

- e. **Adjustment factors:** The factors that must be considered when establishing the Actual AAR. These include, but are not limited to:
1. Weather conditions
 2. Runway conditions
 3. Taxiway layout
 4. Ramp space
 5. Facilities

2.2 Establishing the Actual AAR.

- a. Establish Actual AAR values for each aerodrome runway configuration for the following weather conditions:
1. Visual Meteorological Conditions (VMC) - weather allows vectoring for visual approaches.
 2. Marginal VMC - weather does not allow vectoring for visual approaches, but visual separation on final is possible.
 3. Instrument Meteorological Conditions (IMC) – Visual approaches and visual separation on final are not possible.

2.3 Calculate the Actual AAR as follows:

- a. First, calculate the Potential AAR.

1. Determine the average ground speed crossing the runway threshold and the spacing interval required between successive arrivals.
2. Divide the groundspeed by the spacing interval to determine the Potential AAR.
3. **FORMULA METHOD:** Ground speed in knots at the runway threshold divided by spacing interval at the runway threshold in miles.

NOTE: when the quotient is a fraction, round down to the next whole number

4. Example 1: 130 KTS / 5 nm = 26
Potential AAR = 26 arrivals per hour
5. Example 2: 120 KTS / 7 nm = 17.14
round down to 17

Potential AAR = 17 arrivals per hour
6. Or, use the **TABLE METHOD** to determine the Potential AAR.

Table: Potential AAR

Nautical miles between aircraft at the Runway Threshold										
	3	3.5	4	4.5	5	6	7	8	9	10
	Potential AAR									
Ground Speed at the Runway Threshold										
140 knots	46	40	35	31	28	23	20	17	15	14
130 knots	43	37	32	28	26	21	18	16	14	13
120 knots	40	34	30	26	24	20	17	15	13	12
110 knots	36	31	27	24	22	18	15	13	12	11

- b. Next, identify any conditions that may reduce the Potential AAR. Conditions include:
1. Intersecting arrival and departure runways
 2. Lateral distance between arrival runways
 3. Dual use runways – runways that share arrivals and departures
 4. Land and Hold Short operations
 5. Availability of high speed taxiways
 6. Airspace limitations and constraints
 7. Procedural limitations (noise abatement, missed approach procedures)
 8. Taxiway layouts
 9. Meteorological conditions
- c. Finally, subtract the adjustments from the Potential AAR to determine the Actual AAR for each runway used in an aerodrome configuration.

POTENTIAL AAR

-- ADJUSTMENT FACTORS

ACTUAL AAR

d. Example

Table: EXAMPLE OF AN ACTUAL AAR TABLE

RUNWAY CONFIGURATION	AAR for VMC	AAR for MARGINAL VMC	AAR for IMC
RWY 13	24	21	19
RWY 31	23	20	17

2.4 Administrative considerations:

- a. Identify the organization responsible for the establishment and implementation of AARs at select aerodromes.
- b. Establish a table of Actual AARs for the aerodromes identified by each State/Territory.
- c. Review and validate the aerodrome primary runway configurations and associated AARs at least once each year.

APPENDIX E

REGIONAL ATFM OPERATIONS PLAN (ATFM OPS Plan)

PURPOSE

Establish, through CDM process, structure, and responsibilities for developing, managing and implementing a daily regional operations plan for air traffic flow management (ATFM) operations in CAR/SAM regions.

CONTENT

1. The ATFM OPS Plan will be developed in collaboration between State air traffic flow managers, weather forecasters, and customer representatives. Other participants may be included in the process as necessary including military representatives, aerodrome representatives, and technical representatives.
 - a) The ATFM OPS Plan will normally be developed:
 - i. for one day at a time; and
 - ii. for the twelve (24) hour period following the Planning Telephone Conference (Planning TELCON).
 - iii. utilizing agreed weather tools/products.
2. The ATFM OPS Plan will specify:
 - a) Aerodrome constraints. Where delays are expected to reach 15 minutes or greater.
 - b) En route constraints. Where expanded miles-in-trail, expanded minutes-in-trail, en route deviations, or tactical rerouting that may be required.
3. Responsibilities.
 - a) Each State's FMU / Air Traffic Flow Management Unit.
 - i. Participate via a daily Planning TELCON in the formulation and development of the ATFM OPS Plan.
 - ii. Provide input on:
 1. Aerodrome constraints. For example, include aerodrome acceptance rate (AAR) information when arrival delays are anticipated at a particular aerodrome.
 2. En route constraints. For example, include the impact of thunderstorm and hurricane activity and route closures.
 3. Equipment outages. For example, include radar and sector frequency outages that have an operational impact.
 4. Other issues that may have an impact on operations. Examples include: staffing, special events, volcanic activity.
 5. Anticipated traffic management initiatives that will be used to manage regional traffic.
 - iii. Coordinate with and provide direction to their State ATS facilities on implementation of the ATFM OPS Plan.

- b) FMU / Air Traffic Flow Management Unit.
 - i. Maintain the Planning TELCON bridge.
 - ii. Maintain a web page for publicizing the ATFM OPS Plan to aviation system customers.
 - iii. Lead the Planning TELCON and facilitate the development of the ATFM OPS Plan.
 - iv. Record the list of participants on the Planning TELCON.
 - v. Post the ATFM OPS Plan on the web page and issue the plan as a numbered advisory.
 - vi. Coordinate with and provide direction to ATS facilities on implementation of the ATFM OPS Plan.
- 4. Planning TELCON preparation checklist.
 - i. Review the weather conditions (thunderstorms, hurricane activity, etc.)
 - ii. Obtain input from ACCs/FMUs
 - 1. Constraints
 - 2. Anticipated traffic volume
 - 3. Anticipated traffic management initiatives
 - 4. Staffing capacity
 - 5. Equipment outages
 - 6. Other
 - iii. Obtain input from Aerodromes
 - 1. Aerodrome acceptance rate (AAR)
 - 2. Constraints
 - 3. Anticipated traffic volume
 - 4. Anticipated traffic management initiatives
 - 5. Staffing capacity
 - 6. Equipment outages
 - 7. Other
 - iv. Miscellaneous
 - 1. Special events
 - 2. Military activities
 - 3. Volcanic activity

APPENDIX F

COMMON AIR TRAFFIC FLOW MANAGEMENT TERMINOLOGY

1. Background

1.1 Centralized traffic management facilities are best able to communicate their national system's ability to accept traffic from adjacent international air traffic service (ATS) providers. As coordination and collaboration efforts increase between the States and Territories, effective communications are essential. A key element in removing language barriers is establishing common terms and phrases. Terminology and phraseology differences in air traffic flow management (ATFM) could be a potential source of confusion during communications among international Traffic Management Units.

1.2 The terminology will be an essential element in developing definitive, clear, and concise communication between international ATFM units. Likewise, the phraseology will be a technical pattern of communication to exchange standardized and harmonized messages between international ATFM units. This work should be combined with an ICAO effort to standardize ATFM terms.

1.3 This information paper is based largely on the "Phraseology for the Exchange of ATFM Messages Handbook" dated February 2003, by the Multi-Agency Air Traffic Services Procedures Coordination Group (MAPCOG) ATFM Task Force, which is a joint effort between EUROCONTROL, NAV CANADA and the FAA. It also draws on the work accomplished between the ATCSCC and the Japan Civil Aviation Bureau Air Traffic Management Center (ATMC).

2 Discussion

2.1 ATFM is a service complementary to air traffic control. The objective of ATFM is to ensure an optimum flow of air traffic to or through areas and aerodromes where traffic demand at times exceeds the available capacity of the ATC system. This optimum flow will be achieved by maintaining, in continuous cooperation with related ATC units and airspace users, a balance between the traffic demand and the ability to accommodate that demand.

2.2 The operation of ATFM services, while respecting the intentions of the airspace users to the maximum extent possible, will ensure:

- a. Full exploitation of available ATC capacity
- b. Maximum flexibility in handling traffic flows
- c. Expeditious and orderly traffic flows

2.3 The operation of ATFM services includes the application of ATFM measures that are designed to achieve the optimum flow of traffic. These measures include but are not limited to:

- a. Allocating and updating departure slots
- b. Allocating and updating arrival slots
- c. Rerouting of traffic
- d. Alternate flight profiles
- e. Minutes-in-trail assignments

- f. Miles-in-trail assignments
- g. Airborne holding
- h. Ground stops

2.4 In the FAA, the ATCSCC is the approving authority for ATFM measures within the United States national airspace system.

2.5 ATFM is performed by the ATCSCC in six phases on a daily basis:

- a. Exploration
- b. Justification
- c. Implementation
- d. Validation
- e. Critique
- f. Review

2.6 The Exploration phase of ATFM consists of examining demand in relation to capacity. This is accomplished via evaluation of Enhanced Traffic Management System (ETMS) data and through periodic telephone conferences (TELCONs) that are designed to consider planned and anticipated events. The Justification phase consists of determining the rationale for implementing an ATFM measure. The Implementation phase consists of the notification and application of the ATFM measure. The Validation phase consists of monitoring the implemented ATFM measure to validate the rationale for its implementation. The Critique phase examines if the implemented ATFM measure achieved the desired outcome. The Review phase documents the day's events and includes the retention of data.

Terminology and Phraseology as Used in the Exchange of ATFM Messages

2.7 Terminology and phraseology for air traffic control are both standardized and documented to ensure that communications between air traffic controllers and pilots are brief, complete, accurate and understood. Terminology and phraseology for the exchange of ATFM messages, however, have been neither standardized nor documented.

2.8 Historically, air traffic controllers were the initial operators of the ATFM system. For example, a departure controller would contact a tower controller and say "stop departures." A tower controller would also have contacted an approach controller to say "hold arrivals." These two common ATC phrases are neither standardized nor documented. Although there are elements of standardization for communications between air traffic controllers, there has always also been a plain language element of ATC communications.

2.9 The evolution of ATFM has brought about more robust and complex systems, but the use of plain language is still evident and is current practice. Additionally, the transparency of current ATFM systems and the inclusion of non-ATC users also contribute to the use of plain language.

2.10 As ATFM becomes more global in nature, regional providers of ATFM service such as the *Centro de Control de Flujo de Mexico (CCFMEX)* and the ATCSCC may need to consider which plain language words and phrases are best suited for the exchange of ATFM messages. This is especially important when linking adjacent ATFM systems or introducing ATFM in areas where it presently does not exist.

2.11 The attached document was prepared by the Common ATFM Task Force which was established during the 22nd Meeting of the Informal Pacific Air Traffic Control Coordination Group (IPACG). This Task Force was established to address bilateral issues in the North and Central Pacific oceanic areas. The document contains terminology and phraseology for the exchange of ATFM messages between the Japan Civil Aviation Bureau Air Traffic Management Center (ATMC) and the ATCSCC. The work is based on the MAPCOG Phraseology for the Exchange of ATFM Messages Handbook. The terminology and phraseology are not intended to be a requirement for ATFM communications, but may be used as a guideline for the exchange of ATFM messages. It also contains those ATFM related abbreviations used by the ATCSCC and ATMC that are not defined in the ICAO Doc. 8400 (PANS-ABC).

Interim Guideline for ATFM Communication

Version 1.0

October 2006

FOREWORD

Centralized traffic management facilities are best able to communicate their national system's ability to accept traffic from adjacent international air traffic service (ATS) providers. As coordination and collaboration efforts intensify between the countries, effective communications are essential. A key element in removing language barriers is establishing common terms and phrases. Terminology and phraseology differences in air traffic flow management (ATFM) could be a potential source of confusion during communications among the Japan Civil Aviation Bureau (JCAB) Air Traffic Management Center (ATMC) and the Federal Aviation Administration (FAA) David J. Hurley Air Traffic Control System Command Center (ATCSCC).

IPACG/21 discussions resulted in a recommendation to develop the common terms of reference for ATFM communications. IPACG/22 supported the formation of a Task Force to address this issue. The operation of the Task Force was outlined at IPACG/23. The ATCSCC and ATMC established a process to examine the ATFM common terminology and phraseology at IPACG/24. This document was submitted by the Task Force at IPACG/25. The bilateral effort herein should be combined with an ICAO effort to standardize ATFM terms in the future.

The terminology will be an essential element in developing definitive, clear, and concise communication between international ATFM units. Likewise, the phraseology will be a technical pattern of communication to exchange standardized and harmonized messages between international ATFM units. These terminology and phraseology are not intended to be a requirement for ATFM communications, but may be used as a guideline for the exchange of ATFM messages.

This guideline is largely based on the "Phraseology for the Exchange of ATFM Messages Handbook" dated February 2003, by the Multi-Agency Air Traffic Services Procedures Coordination Group (MAPCOG) ATFM Task Force, which is a joint effort between EUROCONTROL, NAV CANADA and the FAA.

TABLE OF CONTENTS

1. General

2. ATFM Message Components

3. ATFM Message Types

4. Abbreviations

Appendix: Table of Abbreviations

1. General

1.1 The primary goal of these guidelines is to develop terminology and phraseology for the exchange of ATFM messages between units providing ATFM services. The terminology and phraseology contained herein are intended to both reflect the current use of plain language and provide a basis for standardization and harmonization.

1.2 Although there are various plain language words and phrases in use today by ATFM service providers, these words and phrases can be organized into a modular and structured method of delivery to ensure communication harmonization and reduce the incidence of misunderstanding between units providing ATFM service.

1.3 These guidelines include the concept of modular and structured ATFM messages and defines an ATFM message's components as *who*, *what*, *where*, *when* and *why*. These five components are described as follows:

- 1). Who: The ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact.
- 2). What: The ATFM objective to be achieved.
- 3). Where: The location of the ATFM objective to be achieved.
- 4). When: The time and/or duration of the ATFM objective to be achieved.
- 5). Why: The reason for the ATFM objective.

1.4 There should be no module regarding “how” the ATFM restrictions should be achieved by the counterpart ATFM service provider. It is the counterpart’s responsibility how they fulfill the requested ATFM restrictions within their airspace. However, the center being asked for the ATFM restrictions may collaborate with the originating center on the type and method of ATFM measure application.

1.5 Below are the examples of possible ATFM messages:

- ATCSCC, this is ATMC...We need 100 miles interval regardless of altitude on R220, R580 and all the PACOTS tracks for traffic landing at Narita airport estimated FIR boundary from 0100 UTC until 0500 UTC due to severe weather.
- ATMC, this is ATCSCC...Information maybe developed into ATFM... Los Angeles has started flow control for all aircraft landing at Los Angeles airport due to earthquake. They are requesting ground stops for arrivals until further notice.

2. ATFM Message Components

2.1 The use of a modular and structured ATFM message provides for consistent ATFM message design and delivery. Each of the ATFM message's five components can contain plain language elements that when combined provide a complete ATFM message. The harmonization achieved lies in the delivery of an ATFM message that has all of the required components in a structured format while making allowances for different plain language elements. This is of particular benefit for ATFM service providers that use different ATFM terminology or for ATFM service providers that do not use English for their intra-ATFM coordination.

As the modular and structured ATFM message may contain several different elements of plain language, this section will examine each of the five components and detail some of the possible plain language words and phrases that are in use today.

2.2 **WHO:** The *who* component identifies the ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact. Examples of the *who* component:

- ATMC, this is ATCSCC...
- ATCSCC, this is ATMC...

2.3 **WHAT:** The *what* component identifies the ATFM objective to be achieved. Objectives include but are not limited to:

I/WE NEED...

- (X) MILES/MINUTES INTERVAL AT THE SAME ALTITUDE...
- (X) MILES/MINUTES INTERVAL REGARDLESS OF ALTITUDE...
- A RATE OF (X) AIRCRAFT PER HOUR...
- (X) MILES-IN-TRAIL AT (specified altitude(s))...
- (X) MINUTES-IN-TRAIL AT (specified altitude(s))...
- TO BLOCK (specified altitude(s))
- TO LIMIT THE ACCEPTABLE ALTITUDE TO (specified altitude(s))
- TO SUSPEND THE FIR ENTRY...

2.4 **WHERE:** The *where* component represents the location of the ATFM objective to be achieved. It is often preceded by modifying clause, indicating what aircraft or traffic the restriction will apply to. The modifying clause and the location combination are used to construct the *where* component.

Examples of the *where* clause:

- ...OVER NIPPI...
- ...NARITA AIRPORT...
- ...ANCHORAGE APPROACH...
- ...ON A337...
- ...WESTBOUND ON PACOTS TRACK C...
- ...EAST FLOW ON A590...
- ...INBOUND ON G344...
- ...ON PACOTS TRACK 2 LANDING AT SAN FRANCISCO AIRPORT...
- ...ON PACOTS TRACK E BELOW FLIGHT LEVEL (X)...
- ...ABOVE FLIGHT LEVEL (X)...
- ...INBOUND TO TOKYO ACC...
- ...INBOUND TO OCEANIC SECTOR 5...
- ... (compass direction) OF (a significant point/airway/location)...

Examples of the modifying clause:

- ...FOR TURBOJET TRAFFIC...
- ...FOR ALL AIRCRAFT...

- ...FOR TRAFFIC GREATER THAN (X) KNOTS...
- ...FOR HEAVY AIRCRAFT...
- ...FOR TRAFFIC LANDING...
- ...FOR AIRCRAFT DEPARTING...
- ...FOR TRAFFIC OVERFLYING...
- ...FOR AIRCRAFT PASSING...

2.5 **WHEN:** The *when* component represents the time and/or duration of the ATFM objective to be achieved:

- ...FROM 0300 UTC UNTIL 0600 UTC...
- ...FROM NOW UNTIL 0600 UTC...
- ...FROM 2300 UTC UNTIL FURTHER NOTICE...
- ...UNTIL FURTHER NOTICE...
- ...FOR THE NEXT (X) HOURS...

2.6 **WHY:** The *why* component represents the reason for the ATFM objective:

DUE TO/FOR...

- RUNWAY CLOSURE
- (SEVERE) WEATHER
- COMMUNICATION SYSTEM OUTAGE
- RADAR FAILURE
- (significant event)
- (natural disturbance such as FIRE or VOLCANIC ASH)
- STATE ACTIVITY
- MILITARY ACTIVITY
- EQUIPMENT OUTAGE
- EMERGENCY
- ADJACENT ATFM MEASURES

3. **ATFM Message Types**

3.1 **Information to be shared prior to invoking the ATFM restrictions:** The information-sharing should be facilitated not only during the actual flow control but also (and more importantly) well prior to invoking the ATFM restrictions when the possibility of flow control arises. The following phrases will make clear the distinction between the ATFM messages and the information provided for situation awareness:

- INFORMATION MAY BE DEVELOPED INTO ATFM
- CAPACITY RELATED INFORMATION

3.2 Examples of messages sent prior to invoking ATFM restrictions follow:

- ATCSCC, this is ATMC...**Information may be developed into ATFM...** Narita airport has closed one of the runways and started snow removal.

- ATCSCC, this is ATMC...**Capacity related information**...Narita airport has entered the storm zone of the typhoon.

3.3 **ATFM Initiative Message:** ATFM initiatives communicate air traffic restrictions from one nation to another. They follow the five component structure described earlier:

- 1). Who: The ATFM service unit being contacted followed by the ATFM service unit that is initiating the contact.
- 2). What: The ATFM objective to be achieved.
- 3). Where: The location of the ATFM objective to be achieved.
- 4). When: The time and/or duration of the ATFM objective to be achieved.
- 5). Why: The reason for the ATFM objective.

3.4 Examples of ATFM initiatives follow:

- ATMC, this is ATCSCC...**I need a 30 minute interval at the same altitude for all aircraft landing at Chicago airport from 0800 UTC until further notice** due to state activities.
- ATCSCC, this is ATMC...**We need to block FL350 and below for aircraft overflying Japanese domestic airspace for the next 12 hours** due to emergency.

3.5 **Coordination of aircraft exempted from ATFM initiatives:** The following phrases will be used for the coordination of aircraft which are deemed necessary to exempt from the ATFM restrictions:

- REQUEST EXEMPTION FROM ATFM
- COORDINATION OF ATFM EXEMPTION

3.6 The following types of aircraft may be exempted from the flow control restrictions:

- Aircraft in a state of emergency
- Aircraft engaged in search and rescue missions
- Aircraft operating for humanitarian reasons
- Aircraft carrying the head of state or distinguished visitors of state
- Aircraft carrying a patient who needs urgent treatment

3.7 Examples of messages requesting ATFM exemption follow:

- ATMC, this is ATCSCC...**Request exemption from ATFM**...UAL123 is carrying a patient who needs urgent treatment.
UAL123...Exemption is approved.
- ATCSCC, this is ATMC...**Coordination of ATFM exemption**... JA501A is operating for search and rescue missions.

3.8 **Information for the next coordination:** If it is possible and appropriate, the expected time of next coordination will be forwarded with the ATFM messages:

- I WILL CALL YOU AT 0400 UTC FOR FURTHER COORDINATION
- WE WILL CALL YOU AGAIN IN 30 MINUTES

3.9 An example of a message with information for the next coordination follows:

- ATMC, this is ATCSCC...I need a 30 minute interval regardless of altitude for all aircraft on PACOTS track 8 from 1000 UTC until further notice due to military activity. I will call you again in 60 minutes.

3.10 **Amendment:** The amendment of an ATFM message should be structured as the initial message and include similar elements but with additional modifiers. These modifiers may include:

- CHANGE
- AMEND
- REDUCE
- INCREASE
- DECREASE

3.11 Amendment messages should also identify which message is being amended, as several restrictions could be in place at one time. Examples of ATFM amendment messages follow:

- ATCSCC, this is ATMC...We have **changed** the restriction on traffic flying PACOTS tracks C, E and F for Narita airport. We now need 20 minutes intervals at the same altitude on PACOTS tracks C, E and F for traffic landing at Narita airport from now until 0900 UTC.
- ATMC, this is ATCSCC...We have **increased** the inbound rate from 5 aircraft per hour to 10 aircraft per hour for traffic beyond Oakland FIR until further notice.

3.12 **Cancellation:** The cancellation of an ATFM message should be structured as the initial message and include similar elements but contain a canceling word or phrase. It is normally not necessary to state the *why* or reason for the cancellation. A canceling word or phrase may include:

- CANCEL
- RESUME
- RESUME NORMAL
- RELEASE

3.13 Cancellation messages should also identify which message is being cancelled, as several restrictions could be in place at one time. An example of an ATFM cancellation message follows:

- ATCSCC, this is ATMC...We have **canceled** the restriction on traffic beyond the Fukuoka FIR at this time. **Resume normal** traffic flow.

4. Abbreviations

4.1 The abbreviations used by the ATCSCC and ATMC that are not defined in the ICAO Doc. 8400 (PANS-ABC), are shown in the **Appendix**. The shaded abbreviations are considered to be the common terms between the two centers.

4.2 The non-common abbreviations are deemed inappropriate for the inter-facility ATFM communication between ATCSCC and ATMC.

Table of Abbreviations

The abbreviations listed here are those used by ATCSCC and ATMC respectively that are not defined in the ICAO Doc. 8400 (PANS-ABC). The shaded abbreviations are considered to be the common terms between the two centers. The asterisk shows verbatim difference in the original collocation but the abbreviation still indicates the common object.

	ATCSCC	ATMC
AAR	Airport Acceptance Rate	
ACID	Aircraft Identification	
ADL	Aggregate Demand List	
ADR	Airport Departure Rate	
ADZY	Advisory	
AIM	Aeronautical Information Manual	
ALTRV	Altitude Reservation	Altitude Reservation
ANP	Air Navigation Plan	
AOA	Office of the Administrator	
AOC	Airline Operations Center	
AP	Air Patrol	
APREQ	Approval Request	Approval Request
APVL	Approval	Approval
ARINC	Aeronautical Radio Incorporated	
ARO	Airport Reservation Office	
ARTCC	Air Route Traffic Control Center	Air Route Traffic Control Center
ARU	Airspace Reservation Unit (Canada)	
ASM		Airspace Management
AT	Air Traffic	
ATCSCC	Air Traffic Control System Command Center	Air Traffic Control System Command Center
ATMC	Air Traffic Management Center	Air Traffic Management Center
ATMetC		Air Traffic Meteorological Center
ATO	Air Traffic Operations Program	
AUTODIN	Automatic Digital Network	
CARF	Central Altitude Reservation Function	
CCFP	Collaborative Collective Forecast Product	
CCWSU	Command Center Weather Service Unit	
CDM	Collaborative Decision Making	Collaborative Decision Making
CDR	Coded Departure Route(s)	Conditional Route
CDR	Continuous Data Recording	

	ATCSCC	ATMC
CDT	Controlled Departure Time	
CFR	Code of Federal Regulations (formerly FAR)	
CIWS	Corridor Integrated Weather System	
COMSEC	Communications Security System	
CR	Collaborative Routing	
CT	Select Flights Ground Delay Program	
CTA	Controlled Time of Arrival	
CTAS-TMA	Center TRACON Automation System Traffic Management Advisor	
CVRS	Computerized Voice Reservation System	
CWA	Central Weather Advisory	
CWSU	Center Weather Service Unit	
DARC	Direct Access Radar Channel	
DCCWU	ATCSCC Weather Unit	
DOTS	Dynamic Ocean Track System	Dynamic Ocean Track System
DP	Departure Procedure	
DSP	Departure Sequencing Program	
EDCT	Expected Departure Clearance Time	Expected Departure Clearance Time
EFAS	Enroute Flight Advisory Service	
EFTO	Encrypt For Transmission Only	
EOF	Emergency Operations Facility	
EOR	Emergency Operations Room	
EPS	Engineered Performance Standards	
ESCAT	Emergency Security Control of Air Traffic	
ETE	Estimated Time Enroute	Estimated Time Enroute
ETMS	Enhanced Traffic Management System	
EUCARF	European Central Altitude Reservation Facility	
FA	General Ground Delay Program	
FAA	Federal Aviation Administration	Federal Aviation Administration
FADT	Fuel Advisory Delay Time	
FCA	Flow Constrained Area	
FDMS		Flight Data Management System
FDPS		Flight Data Processing Section
FEA	Flow Evaluation Area	
FP	Flight Plan	
FPL	Full Performance Level	
GA	General Aviation	
GAAP	General Aviation Airport Program	

CAR/WG/1
Attachment to Appendix F to the Report on Agenda Item 2

AF2-12

	ATCSCC	ATMC
GDP	Ground Delay Program	
GS	Ground Stop	
HARS	High Altitude Route System	
HDTA	High Density Traffic Airport	
IFCN	Interfacility Communication Network	
IFPFP	Individual Flight Plan From this Point	Individual Flight Plan From this Point
IFSS	International Flight Service Station	
INATS	Interruption of Air Traffic Service	
JCAB	Japan Civil Aviation Bureau	Japan Civil Aviation Bureau
LAA	Local Airport Advisory	
LADP	Local Airport Deicing Plan	
LOA	Letter of Agreement	Letter of Agreement
MAP	Monitor Alert Parameter	
MARSA	Military Assumes Responsibility for Separation of Aircraft	Military Assumes Responsibility for Separation of Aircraft
MEL	Minimum Equipment List	
MINIT	Minutes in Trail	
MIT	Miles in Trail	
MOS	Military Operations Specialist	
MTSAT	Multi-functional Transport Satellite	Multi-functional Transport Satellite
MVFR	Marginal Visual Flight Rules	
NADIN	National Airspace Data Interchange Network	
NAS	National Airspace System	
NAVAID*	Navigational Aid	Navigation Aid
NFDC	National Flight Data Center	
NMCC	National Maintenance Coordination Center	
NOAA	National Oceanic and Atmospheric Administration	
NOM	National Operations Manager	
NOPAC	North Pacific	North Pacific
NOS	National Oceanographic Service	
NRP	National Route Program	
NTMO	National Traffic Management Officer	
NWS	National Weather Service	
OAG	Official Airline Guide	
ODP		Oceanic Air Traffic Control Data Processing System
OPSNET	Operations Network	
OTG		Oceanic Track Generator

	ATCSCC	ATMC
OTR		Oceanic Transition Route
PACMARF*	Pacific Military Altitude Reservation Facility	Pacific Military Altitude Reservation Function
PACOTS	Pacific Organized Track System	Pacific Organized Track System
PMTIC	Pacific Missile Test Center	
PO	Plan of Operation	
Pref Route	Preferential Route	
PT	Planning Team	
RA	Route Advisory	
RAA	Remote Airport Advisory	
ROT	Runway Occupancy Time	
SAA	Special Activity Airspace	
SOP	Standard Operating Procedure	
STMP	Special Traffic Management Program	
SUA	Special Use Airspace	
SVRW	Severe Weather	
SWAP	Severe Weather Avoidance Program	
TEC	Tower-Enroute Control	
TELCON	Telephone Conference	
TFM	Traffic Flow Management	
TIS	Traffic Information System	
TMC	Traffic Management Coordinator	Traffic Management Coordinator
TMCIC	Traffic Management Coordinator in Charge	
TMI	Traffic Management Initiative	
TMU	Traffic Management Unit	Traffic Management Unit
TSTM	Thunderstorm	
WSO	Weather Service Office	

APPENDIX G

**PROPOSED UPDATES TO FLIGHT OPERATING PROCEDURES
FOR HURRICANE HUNTER AIRCRAFT (TEAL & NOAA)**

1. Hurricane Hunter operations are a unique flight operation that presents challenges to both aircrew and Air Traffic Control Services. The information provided by these aircraft to the National Hurricane Center is vital to the development of the Tropical Storm and Hurricane weather forecasts. In the interest of conducting safe operations the Hurricane Hunters are requesting to update their operations procedures and conduct missions using continuous IFR procedures.

2. Due to safety concerns, the Hurricane Hunters can no longer fly “Due Regard/Operational” and are proposing to update their operational procedures to continuous IFR. Currently, the Federal Aviation Administration (FAA), the National Ocean and Atmospheric Administration (NOAA), and the U.S. Air Force are in the process of reviewing the proposed changes and will be updating the National Hurricane Operations Plan (NHOP) accordingly. As the Hurricane Hunters area of operation includes the Caribbean, Gulf of Mexico, Central and Eastern Pacific, and Western Atlantic, coordination is expected with North American, Central American, and Caribbean States.

2.2 The attached briefing entitled “The Hurricane Hunters - Flight Operations” contains the operational considerations and safety elements for continuous IFR.



The Hurricane Hunters ***Flight Operations***



53rd Weather Reconnaissance Squadron



Lt Col Dave Borsi
"Teal 27"

Integrity - Service - Excellence

Missions

Tropical Storm/Hurricane Ops
Low Level Investigation Flights
Research Missions

High Altitude Synoptic Tracks
Sea State Buoy Deployments

Search and Rescue Missions
Airlift – Disaster Relief Supplies

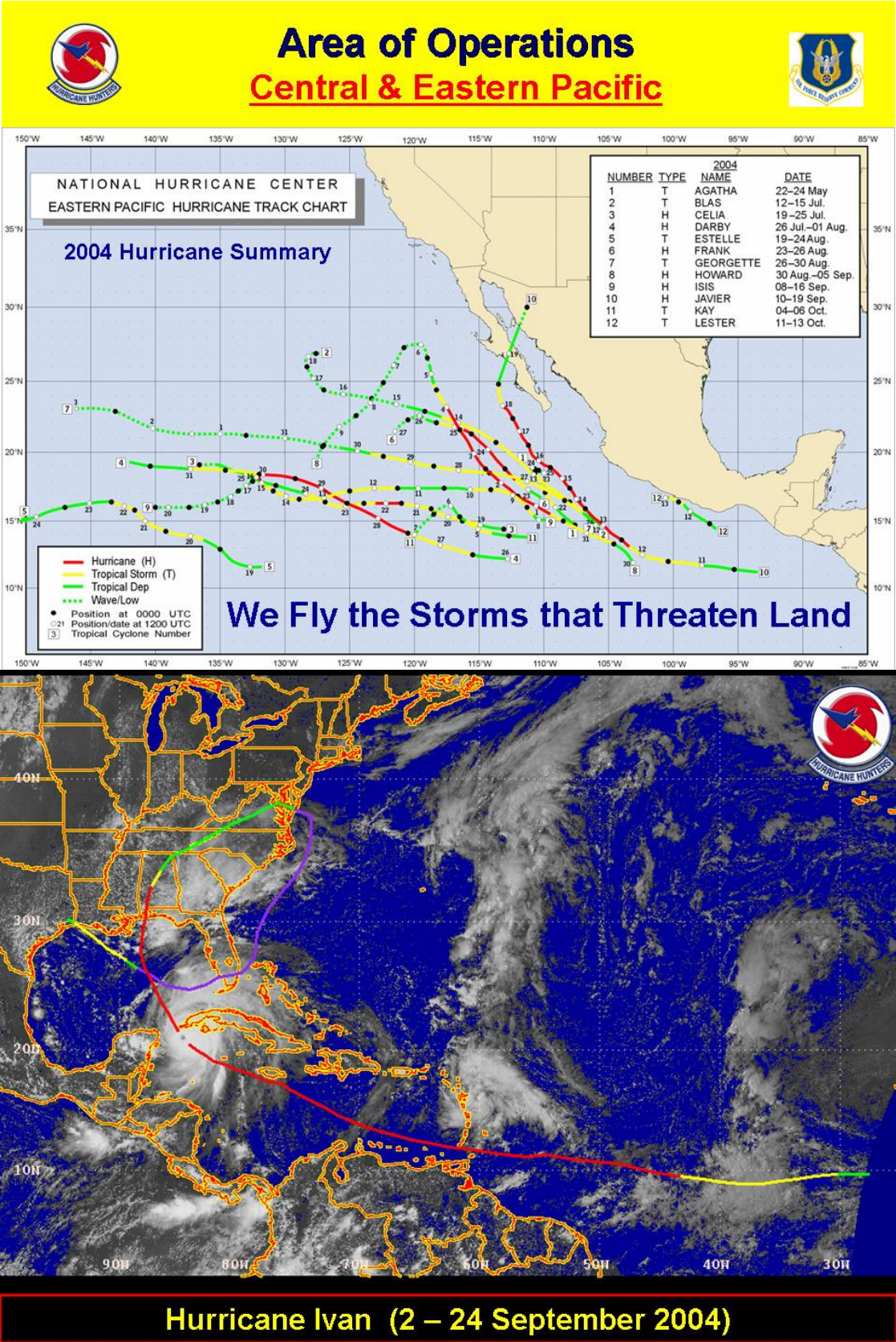


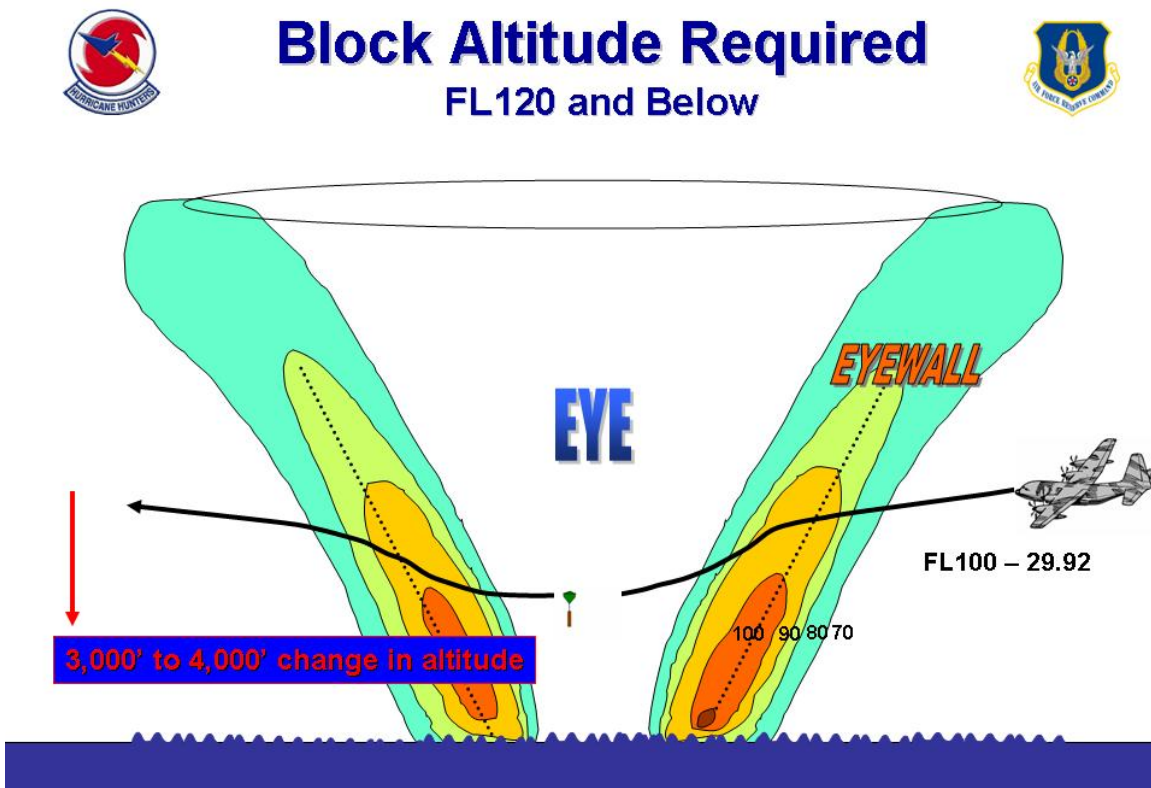
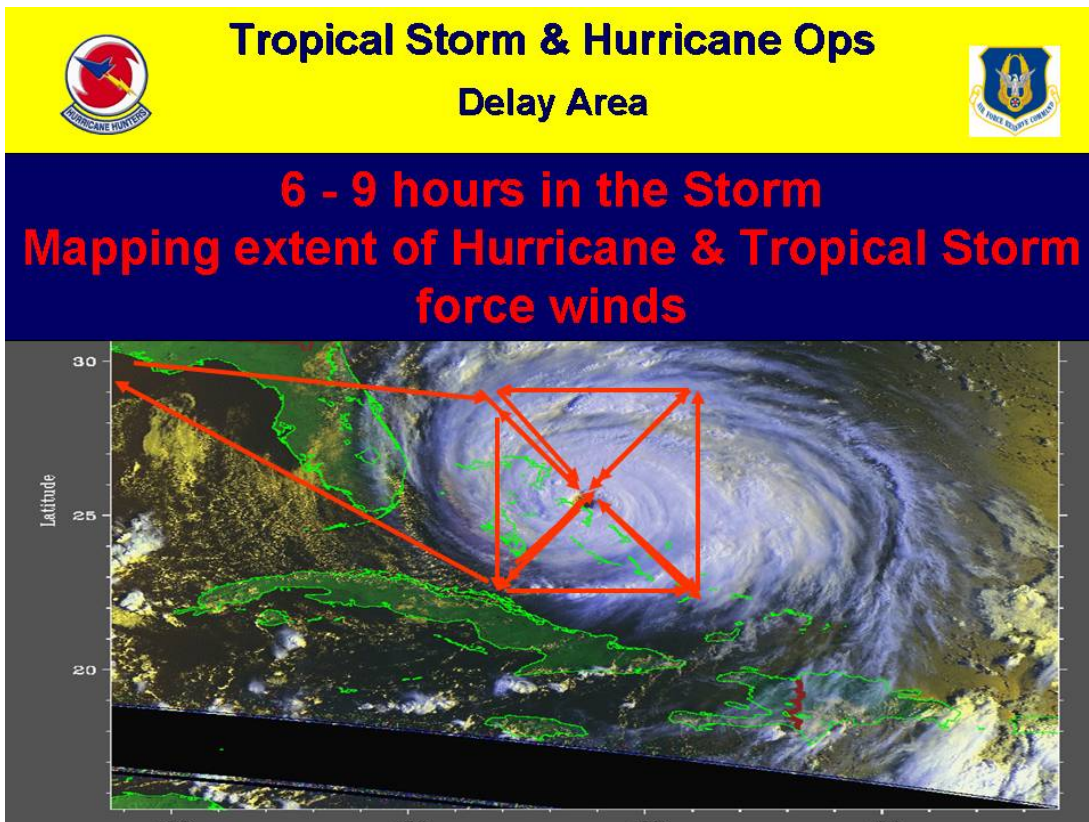


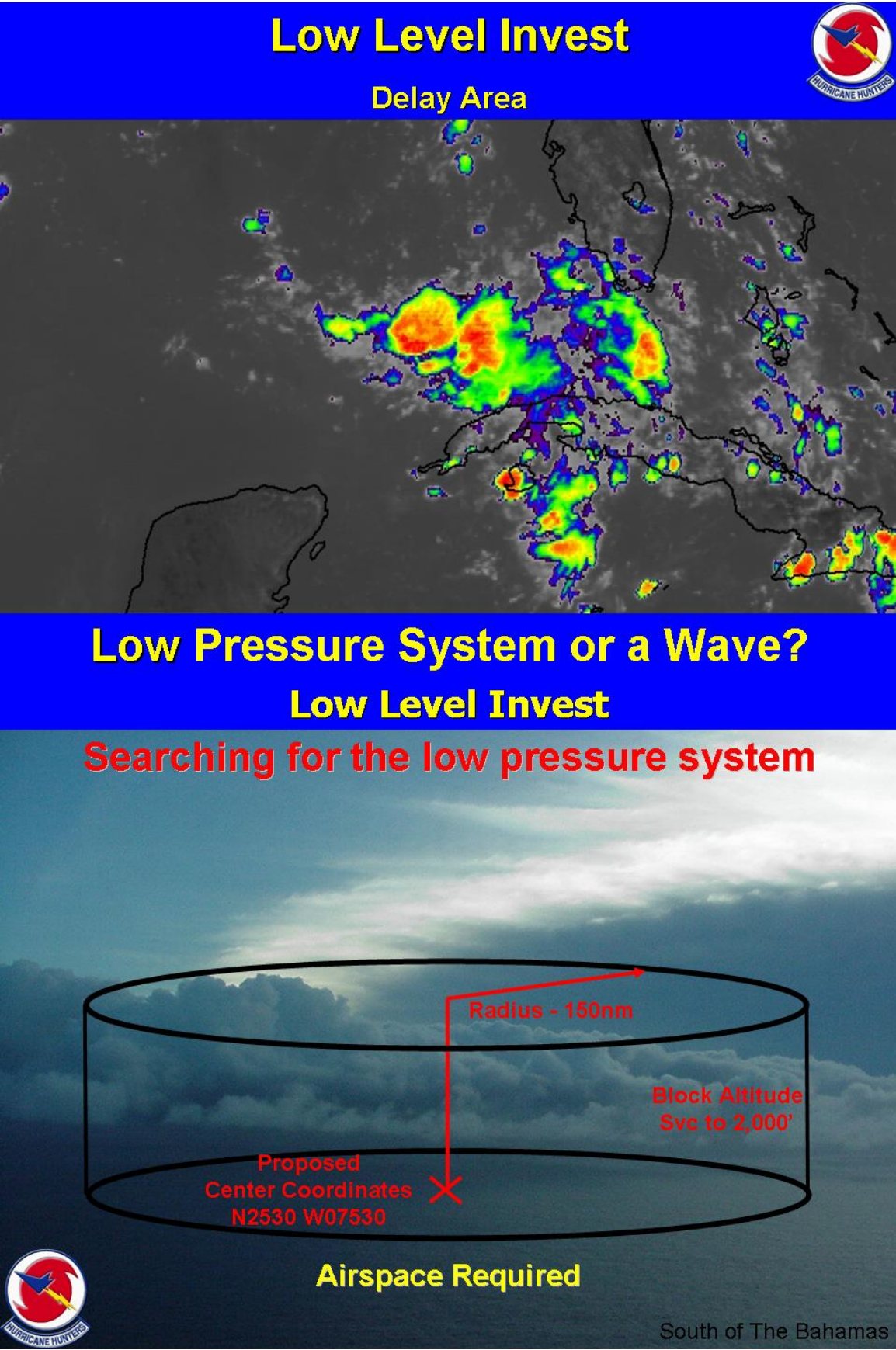
Today there is still no substitute for the onsite data collected and sent by the Aircraft to the National Hurricane Center.

Max Mayfield, Director NHC (retired)



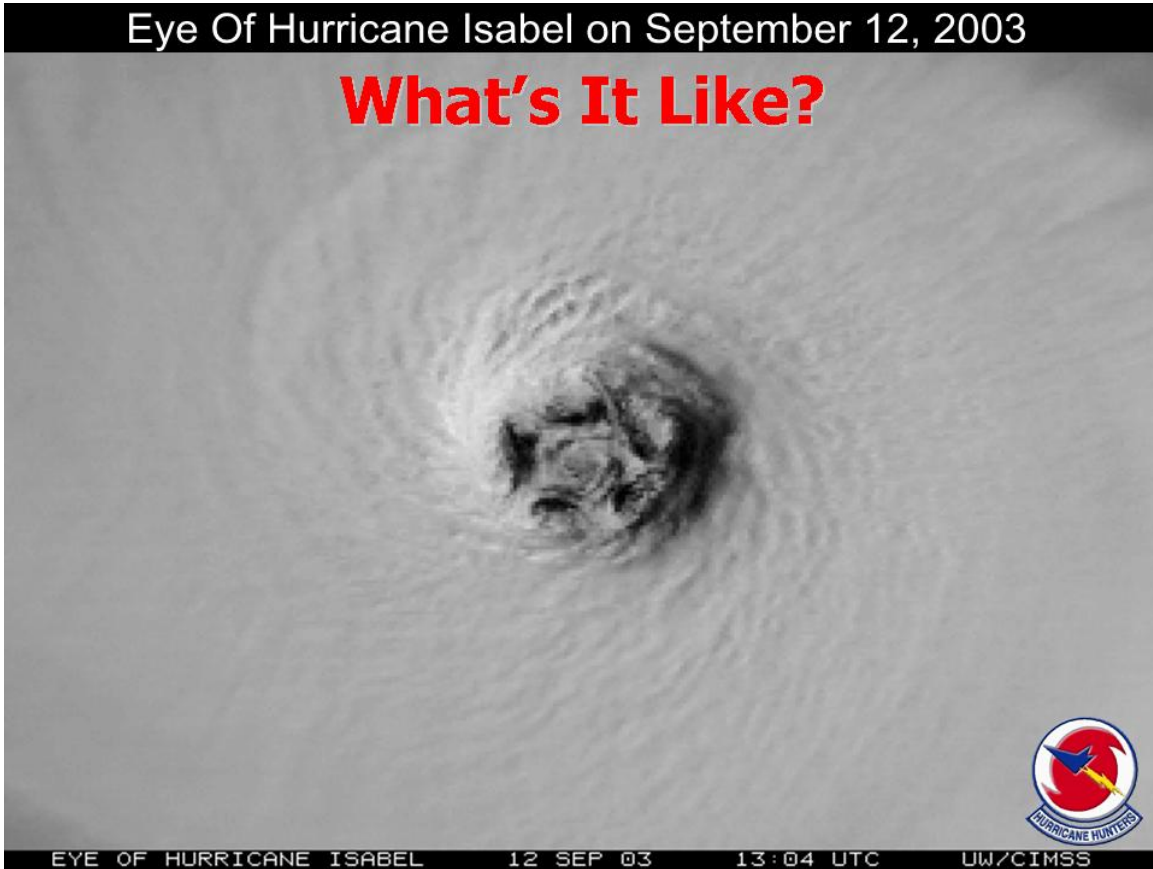






Eye Of Hurricane Isabel on September 12, 2003

What's It Like?



Challenges to Safe Flight Operations

Maintaining IFR Clearance with ATC Center

Flexibility to Change Delay Area as Storm Changes

De-conflicting with other Air Traffic (Planes & UAV)

Operating in "Warning" or "Restricted" Areas

Operating between 2 different Center's Airspace



IFR Operations

Cannot fly “Due Regard/Operational” anymore

Maintain continuous IFR operations in:

- Controlled Airspace (Class A – E)
- Uncontrolled Airspace (Class F or G)
- Night or Day (24/7 ops)
- IMC or VMC
- En route or in Delay Area



Normal ATC Services

Normal IFR Separation from “Other” Aircraft
and Traffic Advisories

- En route and Descent into Delay Area
- During Delay Operations
- Recovery and Climb out of Delay Area



Description of Delay Area

Defined by

- Center Coordinates
- Block Altitude
- Radius

Operation between 2 ARTCCs



Operating Procedures in Delay Area

Flexibility to Change or Move Delay Area

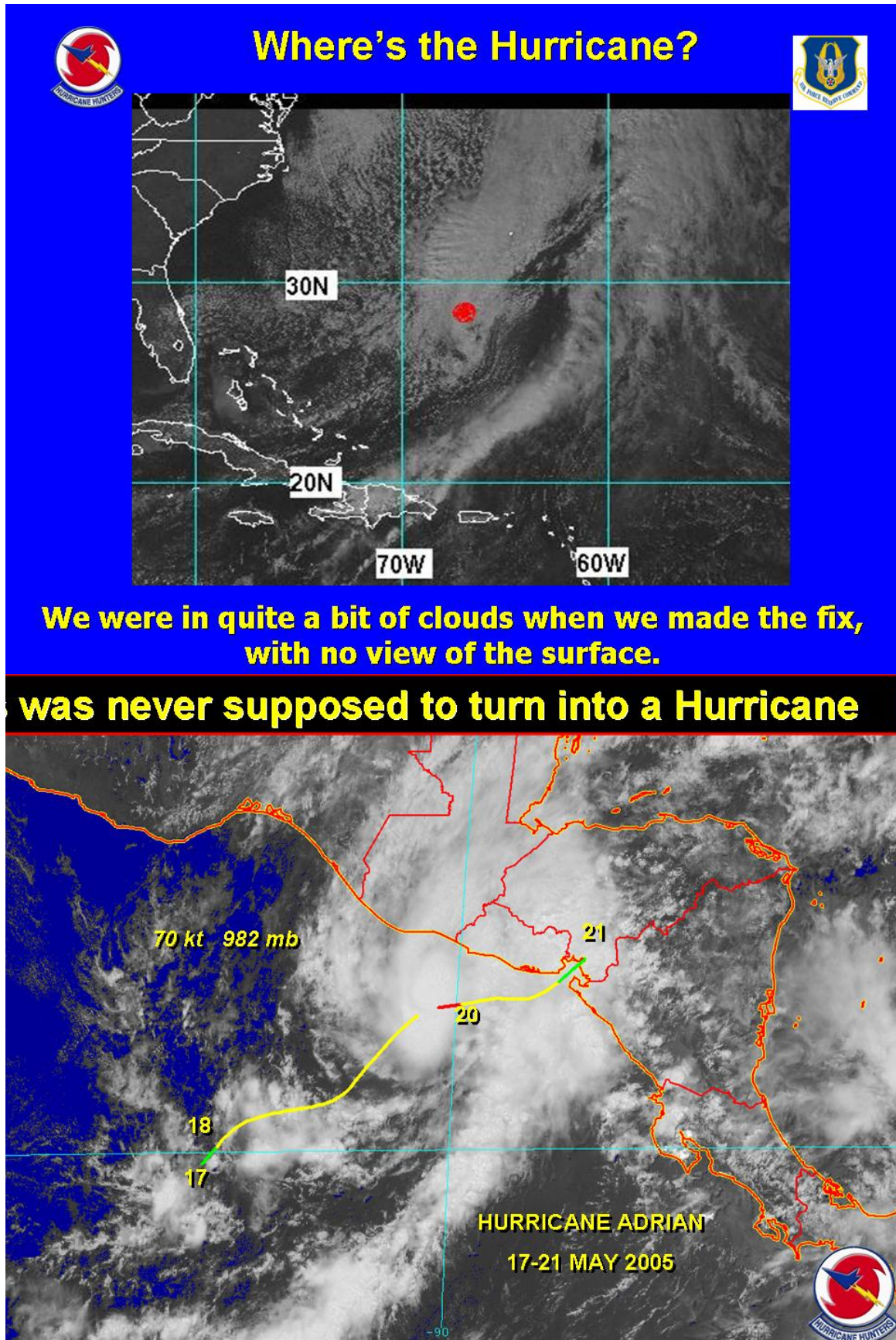
- Center Coordinates
- Block Altitude

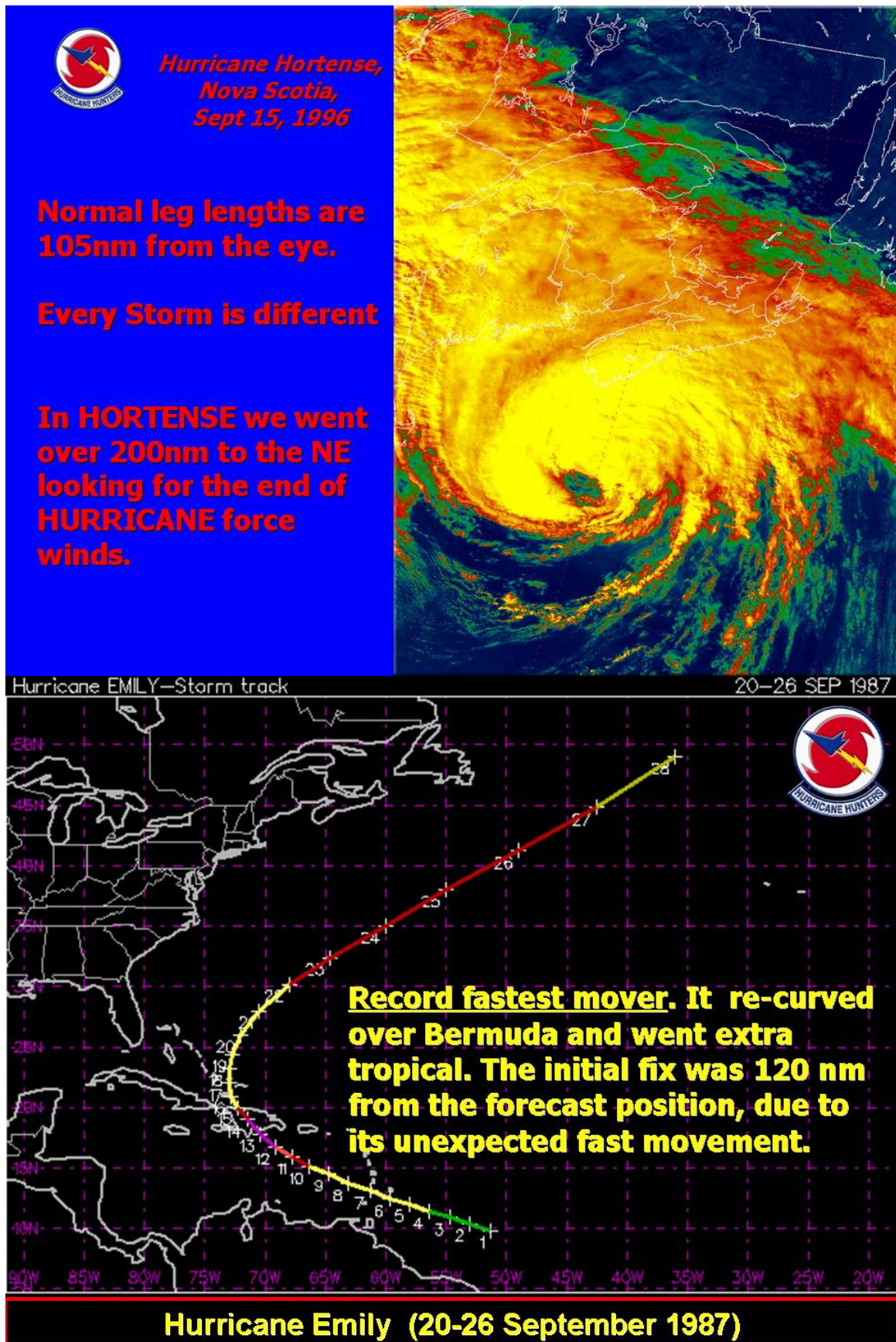
Receive ATC Clearance to Change Delay Area

No Position Reports but "Ops Normal" calls

Aircrews are responsible for Obstacle Clearance
when below Minimum IFR Altitude (MIA)







Operating Procedures in Delay Area

Flexibility to Change Delay Area

- Center Coordinates
- Block Altitude

TEAL and NOAA aircraft will

- Provide own separation from each other while in the Delay Area

Aircraft Separation between

- TEAL or NOAA aircraft and
- "Other" aircraft



Situational Awareness



Communication with ATC

Before Flight – Filing Flight Plan

Before Flight – Coordination with “Warning” or
“Restricted” Area Control Agencies

With ARTCCs while in Delay Area

- “Ops Normal” Calls
- VHF or Sat Phone
- HF direct or ARINC relay

With “Other” Aircraft transiting Delay Area



Hazards to Safe Flight Operations

“Other” Aircraft transiting Delay Area

“Warning” or “Restricted” Areas

Helicopter Operations around Oil Platforms



Goals:

Continuous IFR Operations

- Maintaining Active IFR flight plan
- Operating between 2 different Center's
Airspace (ex. Merida & CENAMER)

Continuous Communications with ATC

- VHF, Sat Phone, HF direct or ARINC relay

Flexibility to Change Delay Area

- Location, Radius, & Block Altitude

Reduce Hazards to Safe Flight operations

- De-conflicting with other Air Traffic
- Helicopter Operations (PEMEX)
- Warning & Restricted Areas
- Airways & Airports



***On Behalf of the Hurricane Hunters
Thank You***

Email: David.Borsi@Keesler.AF.MIL

www.HurricaneHunters.com



APPENDIX H

REGIONAL CARIBBEAN ATS CONTINGENCY PROCEDURES FOR HURRICANE – VOLCANIC ASH EVENTS

TABLE OF CONTENTS

1. Strategic Phase
2. Pre-Tactical Phase
3. Tactical Phase
4. Air Traffic Control Procedures
5. Air Traffic Flow Management Procedures
6. General Guidance for the Development of ATS Contingency Plans for Volcanic Ash



*This procedures are based in the
Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds
- Doc 9691.*

BACKGROUND

The CAR region is a huge area affected by annual hurricane season and eventual volcanic activity, which may have an effect on aircraft operations carried out in the airspace and airports of the Region.

There are more than 500 active volcanoes worldwide, some in CAR Region. The mechanism of explosive volcanic eruption is usually divided into three regimes: “*Gas Thrust*”; “*Convective Thrust*” and “*Umbrella Region*”. The Gas Thrust region is produced by the sudden decompression of superheated volatile constituents dissolved in the ascending mouth magma that produces a jet of fluids and pulverized rock material of extremely high kinetic energy at the mouth of volcano vent, which in extreme cases could exceed supersonic speed of 500 kt4.

Depending of the ambient conditions at the time, the extremely high kinetic energy at the exit vent means that such explosive eruption columns can reach jet aircraft cruises level of 10 to 14 (FL300 to FL450) in five to six minutes.

Considering that a commercial aircraft travel about 150 km (80 NM) in 10 minutes and that volcanic ash can rise to flight levels used by turbine-engine aircraft in half that time, timely response is essential to avoid a volcanic ash plume. It usually takes between 30 minutes and one hour to define danger or restricted area to the air operations.

All ATS units receiving information of an occurrence should carry out alerting actions for every volcanic event of significant pre-eruption volcanic activity, a volcanic eruption occurring, or a volcanic ash plume being reported in areas which might affect ATS routes, as appropriate. Contingency measures in CAR region, should consider that volcanic activities might affect adjacent flight information regions (FIR) in NAM and SAM regions.

Hurricane season occurs yearly between June and September. Based in Simpson-Saffir scale categories, each one event begins as tropical storm and can reach category of hurricane with 5 different levels of intensity. The categories 3, 4 and 5 are the most destructive hurricanes accounting for 80% of the economic and for hundreds of human being losses. It should be noted that the current global warming impacts the regional whether with varies on intensity and starting /ending dates of hurricane season.

During the last years the statistics have facilitated more detailed and reliable information of the Atlantic thermohaline circulation cycle proving a dramatically increased threat to the Caribbean Region and adjacent Regions; predictions set up that this trend will continue in the next two or three decades.

All parties concerned are committed to ensure the safety of flight operations through prompt response to hurricane or volcanic activity disseminating available information on the extent and severity of the event and to promulgate information as a matter of urgency.

The ultimate goal is improve regional contingency coordination based in predictive information of hurricanes and volcanic ash in order to mitigate disruptions to the international air operations and support flights assistance in case of catastrophic natural disaster.

This document set out guidelines for the alerting of aircraft when eruptions occur, and contingency measures to be followed by the area control centres (ACCs) when planning routings around hurricane or volcanic ash plume.

The ATS contingency plan should include those corresponding parts of this document to harmonize contingency measures between ATS units concerned. It is expected that these contingency measures will enhance regional collaborative decision making (CDM) and emergency management plans between all parties concerned.

Actions by the Meteorological Whether Office (MWO) posted in Miami and/or Volcanic Ash Activity Centre (VAAC) posted in Washington D. C are described in this document only for clarification. The air traffic flow management (ATFM) units, the WMO and/or VAAC will determine the coordination and communication on the basis of the agreements in force.

Upon received information on hurricane or volcanic activity from the ATFM units, the WMO or the VAAC should disseminate an immediate advisory, as appropriate.

1. STRATEGIC PHASE

This phase is characterised by initial available information on the extent and severity of the hurricane or volcanic event. Regardless of the extent of information available, the strategic phase actions should be carried out between 30 minutes and one hour for every event. The purpose is to ensure the safety of aircraft in flight and to promulgate urgent information on time.

During the Strategic Phase aircraft operations will be tactically rerouted to avoid the danger area. As this phase will only last for a short period, any ash cloud would be contained within a limited area and disruption to traffic should not be excessive.

ORIGINATING ACC ACTIONS (in flight information region concerned)

In the event of significant pre-eruption volcanic activity, a volcanic eruption occurring, or a volcanic ash plume being reported in areas which could affect ATS routes used by civil aviation, an ACC, upon receiving information of an occurrence, should carry out the following:

1. Define an initial danger/restricted area. *If the eruption has not commenced or if no information on upper winds is available, the circle should be centred on the estimated location of the volcanic activity. If an eruption has started and predicted upper wind information is available, the circle should be centred 60 NM downwind from the volcano. The size and location of the danger area are intended to ensure that air traffic remains clear of any contaminated area by a circle with a radius at least 111 km (60 NM). The purpose of this initial danger zone is to ensure safety in the absence of any prediction from a competent authority of the extent of contamination.*
2. Advise the associated agency (MWO and the VAAC) by telephone, unless initial notification was received from either of these entities. **The VAAC will then inform the Air Traffic Flow Management Unit (ATFMU) concerned, which will issue an air traffic flow management (ATFM) advice.**
3. Alert flights already within the danger zone and provide them vectors, upon request, to expedite evacuation out of the area. Also, aircraft that are close to the danger zone should be vectored clear of the area. Tactically re-clear flights which would penetrate the zone onto routes that will keep them clear. The ACC should immediately notify other affected centres of the event and the dimensions of the danger zone. It should also negotiate any re-routings necessary for flights already coordinated but still within adjacent flight information regions (FIRs). It is also

expected that adjacent ACCs will be asked to reroute flights not yet coordinated to keep them clear of the danger zone.

4. Issue a NOTAM. This must provide as precise information as is available regarding the activity of the hurricane-volcano. The name (where applicable), reference number and position of the hurricane -volcano should be included along with the date and time of the start of the eruption (if appropriate), levels and routes or portions of routes which could be affected and, as necessary, routes temporarily closed to air traffic. It is imperative that this information is disseminated as soon as possible. Some of the required information may not be available and alternative routes may yet have to be established.

In order to assist the staff in expediting the process of composing the NOTAM, a series of templates should be available for the activity. Should the eruption occur elsewhere, one of the templates can be used after being suitably modified.

An example NOTAM announcing pre-eruption activity in Soufrière Hills Volcano located in Montserrat, West Indies is shown below:

(A0001/02 NOTAMNQ) BIRD/QWWXX/IV/NBO/W/000/999/6359N16.72W62.18
A) BIRD
B) 0705281230
C) 0705291230 EST
E) INCREASED VOLCANIC ACTIVITY, POSSIBLY IMMINENT ERUPTION, REPORTED
FOR VOLCANO MONTSERRAT 1702-07 AT 16.72N62.18W. AIRCRAFT ARE ADVISED
TO REMAIN AT LEAST 120NM CLEAR OF VOLCANO AND MAINTAIN WATCH FOR
NOTAM/SIGMET FOR AREA.
F) GND G) FL999)

In addition to sending the NOTAM (and any subsequent NOTAM) to the normal distribution list, it will be sent to the relevant WMO / meteorological agencies.

ADJACENT ACC / ATFM UNITS ACTIONS

Aircraft will be tactically rerouted to avoid the danger area contained and disruptions to traffic should not be excessive. Adjacent ACCs should take the following action to assist:

1. When advised, re-clear flights which will be affected by the danger zone but are still under your control.
2. Unless otherwise instructed, continue normal operations except:
 - a) if one or more routes are affected by the danger zone, stop clearing aircraft on these routes and take steps to reroute onto routes clear of the area; and
 - b) initiate a running plot of the affected area.

2. PRE-TACTICAL PHASE

This phase will last until such time as strategic procedures can be adopted. The actions in this phase are designed to allow early intervention in the flight path of aircraft already airborne and the promulgation of a routing scheme taking account of the situation.

During this phase it is possible that the ash cloud may affect several FIRs. It is impossible to be prescriptive for every eventuality, thus the actions consider the 'worst case' scenario of a busy traffic flow affected by the ash cloud.

ORIGINATING ACC ACTIONS (within its own FIR)

This phase begins once aircraft under the control of the ACC have been tactically rerouted around the danger area. Aircraft for which the ACC have received an estimate from adjacent ACCs at the start of the Alerting Phase will be rerouted by those agencies and an initial NOTAM will have been issued. During this phase the ACC should:

1. Maintain close liaison with its associated MWO and the appropriate VAAC. The MWO should issue a SIGMET message on the forecast movement of the ash cloud at least every 3 hours, valid for 6 hours, with an outlook appended providing information on the trajectory of the cloud for up to 6 hours beyond the validity period. In the interest of expediency this outlook may be omitted from the initial SIGMET.
2. Based on these forecasts and in cooperation with the appropriate ATFM unit and adjacent ACCs, air traffic flow management measures should be devised and updated when necessary to ensure that aircraft are cleared from the perimeter of the forecast furthest extent of the danger area.
3. Issue a NOTAM. By this stage it will be possible to define the affected area based on a prediction from the MWO/VAAC. It is important that the content of the NOTAM is coordinated and agreed with adjacent ACCs.

Consideration should be given to including the following text in item E of the NOTAM:

"ATFM MEASURES LIABLE TO CHANGE SUBJECT TO THE PROGRESS OF THE ASH CLOUD. MAINTAIN WATCH FOR NOTAM/SIGMET FOR THE AREA"

4. Should the volcano revert to its dormant state during this phase and the airspace no longer is contaminated by volcanic ash, a NOTAMC cancelling the last active NOTAM shall be issued stating the cause for cancellation. Otherwise, begin planning for the Proactive Phase in conjunction with ATFMU and the affected ACCs.

ADJACENT ACC ACTIONS

During this phase the adjacent ACCs should take the following action:

1. Maintain close liaison with the appropriate ATFM unit and the originating ACC to design, implement and keep up to date ATFM measures which will ensure aircraft are cleared from the perimeter of the forecast furthest extent danger area

2. In the event that tactical measures additional to those issued by the appropriate ATFM unit are required, the air traffic control (ATC) should, in cooperation with the originating ACC, impose such measures. Details are included in the ATFM measures of this document.
3. Maintain a running plot of the affected area.
4. Begin planning actions for the Tactical Phase in conjunction with the appropriate ATFM unit and ACCs concerned.

3 TACTICAL PHASE

Following the Reactive Phase, standing procedures should be adopted to route traffic clear of the danger area. During this phase, when ash cloud affects any combination of airspace; may be impossible to prescribe all measures to be taken for any particular situation, nor is it possible to detail the actions to be taken by any particular ACC.

The following guidance actions may be used during the phase 3:

1. ACCs affected by the movement of the hurricane or ash cloud should continue to issue NOTAMs at appropriate intervals. ACCs concerned and the appropriate ATFM unit should continue to publish details on measures taken.
2. Should the ash cloud move wholly outside the originating ACC's airspace to affect adjacent or other FIRs only, the ACCs in charge of that airspace should take over responsibility for the promulgation of NOTAMs.
3. During this phase it may be possible to assess the vertical extent of the event. While operators cannot be prevented from flight planning routes predicted to be above the danger area, such routes should not be proposed by ATC. In the case of volcanic ash, operators should be aware of the risk of engine failure resulting in the inability to maintain level above such a cloud, especially where ETOPS aircraft are involved.
4. When the airspace is no longer contaminated by volcanic ash, a NOTAM cancelling the active NOTAM shall be promulgated.

4. AIR TRAFFIC CONTROL PROCEDURES FOR ACCS

If a volcanic ash cloud is reported or forecast in the FIR for which the ACC is responsible, the following procedures are recommended:

1. relay all available information immediately to pilots whose aircraft could be affected to ensure that they are aware of the ash cloud's position and the flight levels affected;
2. suggest appropriate rerouting to avoid area of known or forecast ash clouds;
3. remind pilots that volcanic ash clouds are not detected by airborne or air traffic radar systems. The pilot should assume that radar will not give them advanced warning of the location of the ash cloud;

4. if the ACC has been advised by an aircraft that it has entered a volcanic ash cloud and indicates that a distress situation exists:

- a) consider the aircraft to be in an emergency situation;
- b) do not initiate any climb clearances to turbine-powered aircraft until the aircraft has exited the ash cloud; and
- c) do not attempt to provide escape vectors without pilot concurrence.

Experience has shown that the recommended escape manoeuvre for an aircraft which has encountered an ash cloud is to reverse its course and begin a descent (if terrain permits). However, the final responsibility for this decision rests with the pilot.

The ATFM unit will also notify other Air Traffic Flow Management units, which will issue appropriate NOTAMs.

5. ATFM MEASURES

Upon reception of information on Hurricane or Volcanic activity from the WMO or VAAC, the ATFM unit will coordinate issue advice or NOTAM as appropriate.

In close coordination with ACCs concerned the appropriate ATFM unit may issue ATFM initiatives to ensure that aircraft are cleared from the perimeter of the forecast furthest extent of the thunderstorm or ash cloud. The measures should be reviewed and updated in coordination with respective ACCs on receipt of any forecast from the WMO or VAAC.

When ATFM initiatives are applied, the appropriate ATFM unit should coordinate issue of AIM or NOTAM as appropriate, explaining in plain language why the measures have been implemented. Operators should also be advised to maintain watch for NOTAMs and SIGMETs for the area.

Depending on the impact of the hurricane / volcanic ash event, the appropriate ATFM unit may take action to organise teleconferences to exchange latest information on the developments with the Air Navigation Service Providers (ANSPs), the VAACs and aircraft operators concerned.

6. GENERAL GUIDANCE FOR THE DEVELOPMENT OF ATS CONTINGENCY PLANS FOR VOLCANIC ASH CLOUDS

6.1 In an emergency plan relating to volcanic ash clouds certain steps need to be taken to provide a coordinated and controlled response for dealing with an event of this nature. Responsibilities should be clearly defined for the manager in charge, supervisors and air traffic controllers. The plan should also identify the officials who need to be contacted, the type of messages that are to be created, and how to conduct actions.

6.2 Controllers need to be trained and be made aware that aircraft which encounter a volcanic ash cloud can suffer a complete loss of power and that extreme caution needs to be taken to avoid entering an ash cloud. Since there is no means to detect the density of the ash cloud and size distribution of the particles, and their subsequent impact on engine performance and the integrity of the aircraft, controllers need to be aware of the serious consequences for an aircraft that may encounter an ash cloud.

6.3 Particular issues are:

- i) Volcanic ash clouds may extend for hundreds of miles horizontally and reach the stratosphere vertically, therefore pilots should not attempt to fly through or climb out of the cloud;
- ii) Volcanic ash may block the pitot-static system of an aircraft, resulting in unreliable airspeed indications; and
- iii) Braking conditions at airports where volcanic ash has recently been deposited on the runway will affect the braking ability of the aircraft. This is more pronounced on runways contaminated with wet ash. Pilots and controllers should be aware of the consequences of volcanic ash being ingested into the engines during landing and taxiing. For departure it is recommended that pilots avoid operating in visible airborne ash; instead they should allow sufficient time for the particles to settle before initiating a take-off roll, in order to avoid ingestion of ash particles into the engine. In addition, the movement area to be used should be carefully swept before any engine is started.

6.4 The ACC in conjunction with the appropriate ATFM unit serves as the critical communication link between the pilot, dispatcher and meteorologists during a volcanic eruption. During episodes of volcanic ash clouds within the FIR, the ACC has two major communication roles. First and of greatest importance is its ability to communicate directly with aircraft en route which may encounter the ash cloud. Based on the information provided in the volcanic ash SIGMET and volcanic ash advisory message and working with MWO meteorologists, the air traffic controllers should be able to provide the pilot with flight levels that are affected by the ash cloud and the projected trajectory and drift of the cloud. Through the use of radio communication, ACCs have the capability to coordinate with the pilot alternative routes which would keep the aircraft away from the volcanic ash cloud.

6.5 Similarly, through the issuance of a NOTAM for volcanic activity (or an ASHTAM) the ACC can disseminate information on the status and activity of a volcano even for pre-eruption increases in volcanic activity. NOTAM, (ASHTAM) and SIGMETs together with special air reports (AIREPs) are critical to dispatchers for flight planning purposes. Airlines need as much advance notification as possible on the status of a volcano for strategic planning of flights and the safety of the flying public. Dispatchers need to be in communication with pilots en route so that a coordinated decision can be made between the pilot, the dispatcher and air traffic control regarding alternative routes that are available. It cannot be presumed, however, that an aircraft which is projected to encounter an ash cloud will be provided with the most desirable route to avoid the cloud. Other considerations have to be taken into account such as existing traffic levels on other routes and the amount of fuel reserve available for flights which may have to be diverted to other routes to allow for the affected aircraft to divert.

6.6 The NOTAM for volcanic activity (and the ASHTAM) provides information on the status of activity of a volcano when a change in its activity is, or is expected to be, of operational significance. They are issued by the ACC through the respective international NOTAM office based on the information received from any one of the observing sources and/or advisory information provided by the associated VAAC. In addition to providing the status of activity of a volcano, the NOTAM (or ASHTAM) also provides information on the location, extent and movement of the ash cloud and the air routes and flight levels affected.

6.7 The NOTAM can also be used to close the airspace affected by the volcanic ash cloud. Complete guidance on the issuance of the NOTAM (and ASHTAM) is provided in Annex 15 — *Aeronautical Information Services*. Included in Annex 15 is a volcano level of activity colour code chart. The colour code chart alert may be used to provide information on the status of the volcano, with “red” being the most severe, i.e. volcanic eruption in progress with an ash column/cloud reported above flight level 250, and “green” at the other extreme being volcanic activity considered to have ceased and volcano reverted to its normal pre-eruption state. It is very important that NOTAM for volcanic ash (and ASHTAM) be cancelled as soon as the volcano has reverted to its normal pre-eruption status, no further eruptions are expected by vulcanologists and no ash cloud is detectable or reported from the FIR concerned.

6.8 It is essential that the procedures which the ACC personnel should follow during a volcanic eruption/ash cloud event described in the foregoing paragraphs are translated into the local staff instructions (adjusted as necessary to take account of local circumstances). It is also essential that these procedures/instructions form part of the basic training for all air traffic services personnel whose jobs would require them to take action in accordance with the procedures. Background information to assist the ACC or Flight Information Centre (FIC) in maintaining an awareness of the status of activity of volcanoes in their FIR(s) is provided in the monthly Scientific Event Alert Network Bulletin published by the U.S. Smithsonian Institution and sent free of charge to ACCs/FICs requesting it.

APPENDIX I

REGIONAL AGREEMENT ON AERONAUTICAL AND MARITIME SEARCH AND RESCUE FOR THE CENTRAL CARIBBEAN

1 INTRODUCTION

The present Regional SAR Agreement, subscribed by the Central Caribbean States as follows: Cuba, Dominican Republic, Haiti, Jamaica, Netherlands Antilles, United Kingdom and United States, and it is developed based on the principles and guidelines contemplated in the SAR Manuals and Documents of ICAO and of the IMO.

2 OBJECTIVES

This Agreement recognizes the SAR importance and its applicability in the Search and Rescue Region (SRR) of the Central Caribbean, and its objectives are the following:

- a. Ensure the compliance of the international principles supported by the Convention on International Civil Aviation signed in Chicago on December 7, 1944 (Chicago Convention), ICAO Annex 12, as well as other international instruments related to SAR;
- b. Through the coordination of efforts, establish an efficient use of all the resources available for the SAR service in the SRR of the Central Caribbean States;
- c. To assist in the SAR services provisions implementation, according to the Central Caribbean States laws and regulations;
- d. To direct and promote cooperation among the Parties of this agreement through its respective SAR Units (RCC and RSC), as well as other similar institutions which could help enhance the SAR response capabilities to whomever requires the service;
- e. Maintain the policies and procedures for the SAR coordination and operations.

3 RESPONSIBILITY AND ORGANIZATION OF THE SAR IN THE CENTRAL CARIBBEAN

- a) The Central Caribbean States through the Directors of Civil Aviation, are responsible for the Central Caribbean Aeronautical SAR service in the Region (SRR);
- b) Each Central Caribbean State assumes the responsibility to form a Rescue Coordination Centre (RCC) with the following functions:
 - i) Designate a SAR Mission Coordinator (SMC).
 - ii) Coordinate with the SMC the operative activities for the carrying out of SAR missions.
 - iii) Coordinate with the adjacent RCCs.
- c) The area of responsibility of the RCCs/RSCs is constituted by its territory and territorial waters and eventually, SAR service operations could cover outside areas;

- d) The RCCs/RSCs will maintain close cooperation with the Air, Maritime and ground SAR authorities, and encourage such authorities in the SAR planning to ensure that adequate mutual aid is available;
- e) The RCCs/RSCs should coordinate immediate assistance to all persons in distress and requiring SAR aid, regardless of their nationality, status or circumstance;
- f) As indicated in this agreement, each State should establish a SAR National Plan and guarantee the necessary resources for its coordination and execution.

4 POINT OF CONTACT AND EXCHANGE OF INFORMATION

- a) Each C/CAR State will designate a SAR Operational Point of Contact, mainly among the Supervisors of the Rescue Coordination Centres (RCCs);
- b) The Directors of Civil Aviation of the concern States, will coordinate the issues related to policies and/or this agreement's regulations;
- c) The objective of the SAR Points of Contact is to facilitate the direct operational coordination among the authorities or SAR facilities;
- d) The SAR Authorities of the interested Parties, will exchange all the appropriate information in support of this agreement without limiting to: address, telephone, fax, electronic mail of the point of contact, information on SAR operational plans and supporting facilities and the available radio frequencies.

5 GENERAL OPERATIONAL PROCEDURES

- a) For an emergency alert, the RCCs/RSCs will exchange information among them, and maintain mutually informed in a timely and efficiently manner during operations, using for this purpose all available means;
- b) Any SAR Centre (RCC/RSC) when receiving emergency information will take urgent measures to provide the appropriate aid;
- c) The RCCs/RSCs leading SAR operations will cooperate among them whenever necessary and will coordinate their actions focus to this purpose, mutual advise among them according to their capabilities;
- d) If doubts arises in respect to the main responsibilities of each RCCs/RSCs, as per the coordination of SAR operations, the SMCs of each RCCs/RSCs involved will coordinate in each case by consulting among them determining which of the SMC will have the main responsibility in the coordination of SAR operations;
- e) Each State exercises their territory sovereignty and will respect the sovereignty of the other State. The States have the humanitarian obligation to safeguard lives of individuals during disasters whenever possible and collaborate with neighbouring countries for this purpose. Therefore, the signatory States agreed to keep in harmony the areas that could be consider as sensitive in the following manner:
 - i) When there is an urgent need that the SAR units of one of the RCCs/RSCs enter in a territory or territorial waters of other RCCs/RSCs, with the purpose to carry out search and/or rescue

operations, the permits will be arranged through the diplomatic channels involved, which will proceed according to the correspondent authorization as expedite as possible;

- ii) To facilitate the coordination and execution of the SAR operations, the RCCs/RSCs involved should be timely and completely informed of all the expected relevant activities;
 - iii) Any SAR Unit receiving information in respect to a distress incident, will immediately take the correspondent actions to help as its capabilities allow or will alert other units that could help and notify the Rescue Coordination Centre or the Sub-centre located in the area of distress.
- f) To carry out the SAR operations in the SRR of the Central Caribbean, the RCCs/RSCs will implement a SAR Communications system according to the communications and equipment requirements established in the ICAO Document 9731 and in the IMO or other related Documents.;
- g) The SAR operation requirements should be contained in the National Plans and SAR Operative Procedures Manuals of the RCCs and of the RSCs as indicated by the IAMSAR.

6 MUTUAL COOPERATION

- a) The RCCs/RSCs will exchange additional information related to specific cases of the SAR service that could be used to improve the SAR operations efficiency. This type of information could include information on SAR units, description of available aerodromes, medical facilities, fuelling, as well as any other resource and useful information for the SAR Service.
- b) The parties agreed to collaborate in the SAR efforts by:
- mutual visits of the parties SAR personnel;
 - joint training exercises;
 - cooperate in the procedures formulation, techniques, equipments or SAR means;
 - exchange of the pertinent SAR information or communications; and
 - constitute one or more SAR committees as a mean of cooperation for the enhancement of the SAR efficiency.

7 GENERAL PROVISIONS

- a) None of the information contained in this Agreement will affect in any way some the rights and obligations derived from the international agreements or of the International Law;
- b) Each State will finance their correspondent activities emerged from this Agreement, unless the parties decide otherwise and, in any case, will not allow a manner of reimbursement of cost to delay response to persons in distress;
- c) The termination of this Agreement by any of the signatories, will come into effect only after a written advisement with one year in advance by the signatory to the other involved signatories, or, based on the date of execution of a new Agreement;

- d) The termination, according to para b) above, will not affect SAR operations already initiated, they will keep its course until completed, unless otherwise agreed by the signatories;
- e) This Agreement will continue applying after its termination in respect to any Administrative or judicial process emerged from measures taken according to this Agreement;
- f) All the agreements related to SAR between RCCs/RSCs, should be, as far as possible, in accordance with the provisions of this Agreement. The Regional SAR agreements signed previously to this one, will continue in force;
- g) This agreement enters in force from the signatories signatures.

SIGNED in _____ (State) _____ (date) with authentic texts in English and Spanish.

BY THE GOVERNMENTS OF BAHAMAS, CUBA, DOMINICAN REPUBLIC, HAITI, JAMAICA NETHERLANDS ANTILLES, UNITED KINGDOM AND UNITED STATES:

XXXX
Director of Civil Aviation of the United States

CNEL. TORRENCE LEWIS
Director of the Civil Aviation Authority of
Jamaica

XXXX
Director of Civil Aviation of the
United Kingdom

S. J. FRANCISCO
Director of Civil Aviation of the Netherlands
Antilles

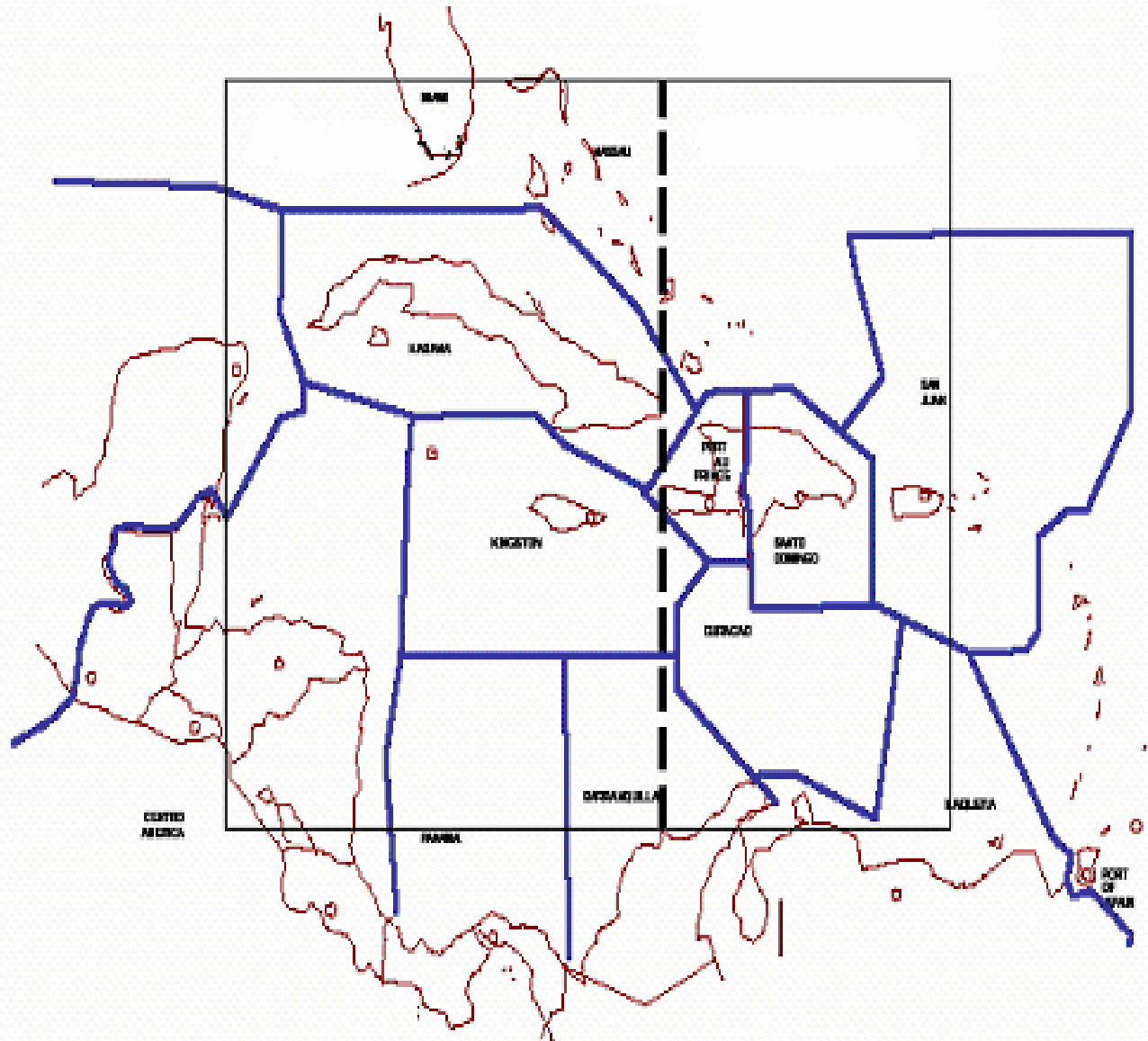
GRAL. ROGELIO ACEVEDO
President of the IACC of Cuba

LIC. NORGE BOTELLO
Director General of the Institution of Civil
Aviation of Dominican Republic

JEAN LEMERQUE PIERRE
Director of Civil Aviation of Haiti

CIRYL SAUNDERS
Director of Civil Aviation of Bahamas.

CENTRAL CARIBBEAN SEARCH AND RESCUE REGIONS



Agenda Item 3: CNS Developments

3.1 Follow-up on the status of the E/CAR AFS and MEVA II digital networks and their related inter and intra-regional interconnection/integration

3.1.1 The Meeting took note that as a result of the follow-up made to Conclusion 5/17 of the Fifth Meeting of the All Planning and Implementation Regional Group (ALLPIRG/5) / Advisory Group, held in Montreal, Canada, from 23 to 24 March 2006, ICAO prepared some guidelines on performance of VSAT networks to establish a basis for planning and basic system design of such network in support of aeronautical ground-ground communications. The information on these ICAO guidelines is contained in **Appendix A** to this part of the Report.

3.1.2 The Meeting followed-up on the development and interconnection/integration status of the Caribbean sub-regional and regional digital networks.

Development and interconnection of the MEVA II VSAT Network

3.1.3 **Appendix B** to this part of the Report presents a summary on the implementation and interconnection status of the MEVA II VSAT network with the South American digital network (REDDIG).

Development and interconnection of the E/CAR Digital Network

3.1.4 The Meeting recalled that at the 30th E/CAR/WG Meeting held in Castries, Saint Lucia (7th – 11th August 2006), Trinidad and Tobago presented IP/07 Eastern Caribbean Digital Network (AFS). This IP highlighted specific items of the network that were going to be addressed at a later date. These were as follows:

- The upgrading of the AFTN terminal (software and hardware) in each State;
This was completed in the first quarter of 2007.
The enhanced functionality for the terminals is expected to be installed by 2007.
- The installation of the REDDIG VSAT node at Piarco has resolved:
 1. The AFTN connectivity to the Caracas AFTN switch;
 2. Voice communication to Venezuela, Guyana, Cayenne, Suriname;
 3. Alternate AFTN data path to Atlanta.**This installation was completed in the fourth quarter of 2006.**

3.1.5 The Meeting noted that it was also stated that there were three possible solutions for the main backbone of the network:

1. Replace the current TSTT provided network with a modern network.
2. Switch to the existing frame relay network from Cable and Wireless.
3. Design a VSAT system for the region.

3.1.6 The Meeting also was informed by Trinidad and Tobago at the DGCA's meeting that it was decided that the E/CAR sub-region will pursue the VSAT solution. To achieve this goal, a feasibility survey was conducted in the first quarter of 2007. The delegate from Trinidad and Tobago indicated that they had started the process to procure a satellite system to be implemented in the Eastern Caribbean and that it is in the process of reviewing the performance specifications. He also expressed his concern regarding the management and maintenance of the network and informed that they are considering the possibility of having such duties performed by their personnel.

3.1.7 The existing E/CAR network continues to have problems. TTCAA has been working with the service provider (TSTT) to resolve them. However, as stated above, TTCAA will continue to pursue the VSAT network solution.

3.1.8 The AFTN connection to Atlanta is provided through an X.25 PAD at Piarco. This has caused problems in the past. The Meeting was informed, through WP/21 presented by the United States, that ongoing testing is being carried out with the Thales X.25 system to replace this PAD in Trinidad and Tobago.

3.1.9 The Secretariat agreed with the decision to update the Eastern Caribbean digital network through a VSAT network. However, concern was expressed regarding the establishment of an independent VSAT network in an area where the coverage of other VSAT networks exists. For instance, the VSAT MEVA II network provides aeronautical communication service to the rest of the CAR Region. In addition, it was noted that it would be more convenient to apply a VSAT solution integrated with the rest of the CAR Region to meet aeronautical communication requirements in the Eastern Caribbean with the CAR and NAM Regions. This would constitute a proliferation of VSAT networks, a situation that is not in accordance with the ICAO recommendations expressed in Appendix A to this part of the Report. It is recommended that the new E/CAR VSAT network be integrated/interconnected to the MEVA II network.

3.2 Development of voice and data air-ground communication

3.3 Development of ground-ground communications

Regional Plan for the implementation of air-ground data links

3.2.1 The Meeting took note of the Activities Plan and Regional Programme for the implementation of air – ground data links, which were adopted through GREPECAS Conclusion 13/72. Also, based on Table CNS 2A – *CAR/SAM Regional Plan of the Aeronautical Mobile Service (AMS) and Aeronautical Mobile Satellite Service (AMSS)* of the FASID, recently reviewed by the GREPECAS/14 Meeting, the CAR/WG/1 Meeting reviewed the CAR Region relevant parts of the Plan.

3.2.2 The Meeting reviewed and updated the Regional Plan for the implementation of air-ground data links and agreed on recommending the following amendments to the CAR/SAM FASID Table CNS 2A:

- a) Combine columns 4 (VHF data), 6 (HF data), 8 (Satellite data), and 9 (Mode S) into one column titled A/G data communication; and
- b) a completion date after 2015.

3.2.3 The results of the revision made by the Meeting to the CAR Region parts of the Table CNS 2A are presented in **Appendix C** to this part of the Report. Therefore, the Meeting drafted the following Draft Conclusion:

DRAFT

CONCLUSION 1/5

PROPOSAL FOR AMENDMENT TO THE FASID TABLE CNS 2A

That the ICAO NACC Regional Office forward the corresponding proposal for amendment of the FASID Table CNS 2A – AMS and AMSS related to,

- a) the relevant requirements to the CAR Region States/Territories, as included in Appendix C to this part of the Report; and
- b) modify the format of the FASID Table CNS 2A combining all the communication requirements' columns to only one column titled "A/G data".

SARPs development status and ICAO guidance material on ATN

3.2.4 The Meeting took note of the latest status of the ATN SARPs and ICAO guidance material that resulted from the First Meeting of the Aeronautical Communications Panel (ACP/1) held in Montreal, Canada, which ended on 18 May 2007. **Appendix D** presents a brief summary of this information.

Deployment of the ATN in the CAR Region

3.2.5 In accordance with world strategies and the regional strategy drafted by GREPECAS (Con. 13/78), and as a follow-up to GREPECAS Conclusions 13/75 and 13/79, the Meeting also noted that for the ATN ground-to-ground applications, the work on ADS-C and ADS-B will be reviewed by the GREPECAS Surveillance Task Force. ATN deployment completion should take place after 2015.

Initiatives for the implementation of ATN ground-ground applications

3.2.6 Based on the information available prior to GREPECAS/14, the Meeting proposed some updates on the information related to implementation initiatives for ground-ground applications in the CAR Region.

3.2.7 The Meeting reviewed and updated a table presented under Appendix F of WP/11 titled Table CNS 1BB – *ATN Ground-Ground Applications Plan*. In this respect, the delegate from Trinidad and Tobago indicated that the new completion date will be 2009 instead of 2007, as indicated in the table. Also the delegates from Cuba and Haiti indicated that their new completion date will be 2009 instead of 2008. The information updated by the Meeting is shown in **Appendix E** to this part of the Report.

AMHS implementation National Plans

3.2.8 The Meeting reviewed and updated the table that contains the AMHS National Implementation Overview in the CAR Region, which is presented in **Appendix F** to this part of the Report.

Preliminary regional approach for the implementation of the AMHS Internet Protocol

3.2.9 The CAR/SAM ATN Task Force of the GREPECAS mechanism, which met in Miami, United States, in November 2006, prepared a preliminary regional approach for the implementation of the Internet protocol for AMHS. This approach proposed using the Internet Protocol Version 6 (IPv6) as the network protocol. Further analysis, however, indicates that the AMHS applications do not yet support IPv6 internally in their communication stacks. Since many Member States have either procured or implemented the AMHS, initial use of the Internet Protocol Version 4 (IPv4) to expedite the implementation of AMHS service in the Region is recommended.

3.2.10 IPv4 is recommended during the initial period within the CAR/SAM Regions and IPv6 is recommended for inter-regional connectivity. A transition phase is proposed using a dual stack transition mechanism where both IPv4 and IPv6 are implemented in all of the routers and incrementally in hosts (i.e., AMHS systems). This will lead to an eventual all-IPv6 network where all routers and hosts are only IPv6 based and IPv4 is disabled. **Appendix G** to this part of the Report shows the aforementioned preliminary approach.

3.2.11 The preliminary approach was presented in the GREPECAS/14 Meeting, but it will have to be reviewed by the Sixth Meeting of the CNS Committee of the GREPECAS ATM/CNS Subgroup scheduled to be held in June 2008, and is expected to be adopted by the fifteenth meeting of the GREPECAS scheduled for October 2008. Regarding this, the Meeting agreed that this approach could be adopted for the Region in an interim manner until the results of the review and the adoption of the GREPECAS mechanism. Therefore, the Meeting prepared the following Draft Conclusion:

DRAFT

CONCLUSION 1/6

**PRELIMINARY REGIONAL APPROACH FOR THE
IMPLEMENTATION OF THE INTERNET PROTOCOL FOR
AMHS**

That when States/Territories/International Organisations plan and implement their respective AMHS systems, they take into account, in the interim, the “*Preliminary Regional approach for the implementation of the Internet Protocol for AMHS*,” which is presented in Appendix G to this part of the Report, until the GREPECAS considerations on this topic are issued.

Action Plan for the follow-up and implementation of air-ground and ground-ground communications

3.2.12 Based on the background and analysis expressed in the previous paragraphs, the Meeting reviewed and recommended the execution of the Action Plan for the implementation of voice communications and ground-ground and air-ground data presented in **Appendix H** to this part of the Report. Regarding this issue, the Meeting drafted the following Draft Conclusion:

DRAFT

CONCLUSION 1/7

**ESTABLISHMENT AND IMPLEMENTATION OF AN ACTION
PLAN FOR THE IMPLEMENTATION OF REQUIRED
GROUND-GROUND AND AIR-GROUND VOICE AND DATA
COMMUNICATIONS**

That States/Territories/International Organisations:

- a) review, complete and implement their respective action plan for the implementation of ground-ground and air-ground voice and data communications, based on the format presented in Appendix H to this part of the Report; and
- b) forward the Plan mentioned in a) to the ICAO NACC Regional Office no later than **29 February 2008**.

3.4 GNSS Implementation

SARPs and ICAO guidelines for the progressive implementation of GNSS elements

3.4.1 The Meeting took note that the Global Air Navigation Plan (Doc 9750), through strategy GPI-21 – *Navigation Systems*, establishes the strategy to enable the introduction and development of performance-based navigation supported by a robust navigation infrastructure providing an accurate, reliable and seamless global positioning capacity. **Appendix I** to this part of the Report shows the aforementioned GPI-21 strategy.

3.4.2 The Meeting noted that ICAO guidance for the introduction of new GNSS navigation services maintains that a State should evaluate navigation systems against four essential criteria: accuracy, integrity (including time-to-alert), continuity of service, and availability of service. Chapter 4 of the Global Navigation Satellite System (GNSS) Manual, Doc 9849, clearly explains the provision of services with GNSS, including the performance characteristics and the operational potential of GNSS augmentation systems. Chapter 5 of the mentioned manual provides guidance on aspects related to the GNSS implementation.

3.4.3 The PANS-OPS, Doc 8168, Volumes I and II, has produced criteria for GNSS terminal, non-precision approach and departure operations that have been developed in line with avionics performance obtained using a basic GNSS receiver.

3.4.4 In accordance with paragraph 3.7.2 of Annex 10, Volume I, the GNSS navigation service will provide position and time information to the aircraft using various combinations of the following elements installed on the ground, on satellites and/or on board the aircraft:

- a) Global Positioning System (GPS) that provides Standard Positioning Service (SPS);
- b) Global Navigation Satellite System (GLONASS) that provides the Channel of Standard Accuracy (CSA) navigation signal;
- c) aircraft-based augmentation system (ABAS);
- d) satellite-based augmentation system (SBAS);
- e) ground-based augmentation system (GBAS);
- f) ground-based regional augmentation system (GRAS); and
- g) aircraft GNSS receiver.

3.4.5 Additionally, the Meeting also took note that among other provisions, the Table 3.7.2.4-1 of Annex 10, Volume I, establishes the signal-in-space performance requirements for the following typical operations:

- a) En-route (oceanic/continental low density)
- b) En-route (continental)
- c) En-route, Terminal
- d) Initial approach, Intermediate approach, Non-precision approach (NPA), Departure
- e) Approach operations with vertical guidance (APV-I)
- f) Approach operations with vertical guidance (APV-II)
- g) Category I precision approach

3.4.6 The *Global Navigation Satellite System (GNSS) Manual* also provides information on the implementation aspects of GNSS in order to assist States in the introduction of GNSS operations. The Manual is therefore aimed at air navigation service providers responsible for fielding and operating GNSS elements and at regulatory agencies responsible for approving the use of GNSS for flight operations. The Manual is to be used in conjunction with the relevant provisions in Annex 10, Volume I.

3.4.7 Furthermore, the *Manual on Testing of Radio Navigation Aids* Doc 8071, Volume II — *Testing of Satellite-based Radio Navigation Systems* contains guidance on testing of satellite-based radio navigation systems including in-flight inspections of the augmentation systems. Additionally, Annexes 11 and 15 now contain provisions related to the GNSS.

3.4.8 The Meeting took note that recently, ICAO issued the Conclusions of the study of cost-allocation for global navigation satellite systems (GNSS). The results of this study were reported by the ICAO Secretary General as “provisional policy guidance on GNSS cost allocation,” through State letter Ref: EC 2/84-07/41, dated 20 July 2007, which is attached in **Appendix J** to this part of the Report. In addition, the Meeting took note of a proposal for amendment to the SARPs related to GNSS implementation and development. Information on these aspects is presented in IP/04 of this Meeting. ICAO is also expected to update the SBAS SARPs in 2008.

Implementation and updating of the Regional Navigation Plan

3.4.9 The Meeting agreed that according to its development, GNSS implementation should be carried out in accordance with the GPI-21 strategy established in the Global Air Navigation Plan, GREPECAS guidelines, and the Air Navigation Plan for the Caribbean and South American Regions (Doc 8733), Volume II, FASID, Table CNS 3 that represents the regional plan for navigation systems. The Meeting analysed Table CNS 3 and noted that the requirements for GNSS, GBAS and SBAS augmentation are included within this plan. As GNSS is introduced, the progressive deactivation of NDB and VOR stations would occur, but in the short-term a combination of GNSS, autonomous systems and conventional ground radio aids would be utilised.

3.4.10 When reviewing Table CNS 3 of the FASID, the Meeting agreed that the table should be modified to reflect the following

- Column 10 should be changed to Basic GNSS only
- Column 11 should be changed to GNSS with Augmentation

Preparation of a progressive deactivation plan of NDB stations

3.4.11 The Meeting took note that GREPECAS drafted Conclusion 14/56 – *Progressive Deactivation of NDB Stations*, which urged States, Territories, International Organisations and airspace users to analyse the service provided by each NDB station, its function, procedural existence with other aids such as VOR/DME, GNSS-RNAV, as well as aircraft capability/development that operate in the concerned airspace in order to develop a progressive deactivation plan for NDB stations without affecting safety. For this purpose, **Appendix K** to this part of the Report presents the GREPECAS recommended format. It is expected that States, Territories, International Organisations and airspace users provide to develop this task by analysing the service provided by each NDB station, its function, the existence of procedures with other aids such as VOR/DME and GNSS-RNAV, as well as aircraft capability/development that operate in the concerned airspace.

3.4.12 The Meeting discussed at length the deactivation of NDB stations resulting in the following Draft Conclusion:

DRAFT

CONCLUSION 1/8

DEACTIVATION OF NDB STATIONS IN THE EASTERN CARIBBEAN

That,

- a) States/Territories and airspace users should move towards implementing GNSS so that NDB stations can be gradually removed;
- b) the E/CAR sub-region use the same time line for deactivation of NDB stations based on GREPECAS Conclusion 14/56; and
- c) 2018 be considered the date for completion of NDB station deactivation by all E/CAR States/Territories.

3.4.13 The Cuban delegate informed that his administration is preparing a deactivation plan for NDB stations.

3.4.14 Regarding the review of FASID Table CNS 3, the Meeting agreed on the following recommendations:

DRAFT

CONCLUSION 1/9

**E/CAR POINT-OF-CONTACT FOR UPDATING FASID TABLE
CNS 3**

That,

- a) Eastern Caribbean States/Territories should provide a point-of-contact for the provision of information for updating FASID Table CNS 3 – Radionavigation Aids Table;
- b) the ICAO NACC Office send a letter to the E/CAR States/Territories requesting a point-of-contact to be in charge of national coordination to propose amendments to the FASID Table CNS 3 as needed; and
- c) E/CAR States/Territories send the ICAO NACC Office its proposals for amendment to the FASID Table CNS 3.

Follow-up to the amendments, the new GNSS-related SARPs, and ICAO guidelines

3.4.15 The Meeting noted that it is extremely important that GNSS implementation along with its development and performance-based navigation are carried out in accordance with the strategy established by the Global Air Navigation Plan and ICAO SARPs and guidance.

3.4.16 Taking into account GREPECAS Conclusion 13/85, as well as ICAO guidance on provisional policies regarding GNSS cost-allocation, States/Territories/International Organisations should implement available GNSS basic services; promote GNSS use in various sectors of their respective country; and disseminate the results of the studies for the implementation of GNSS augmentation solutions in order to obtain the benefits and contribute to future understanding for the need to share costs among all the users of a State.

Follow-up to the studies, trials and results of the regional projects related with the GNSS, RLA/00/009 and RLA/03/902

3.4.17 The Meeting noted the importance of following-up on the studies and results of regional projects RLA/00/009 and RLA/03/902, as well as the experiences obtained by States and other regions on the implementation of GNSS. The website of Project RLA/03/902 is: www.rlasaccsa.com The Report of the RLA/00/009 Project is contained in Appendix 2B to the Report of the Fifth Meeting of the CNS Committee of the GREPECAS ATM/CNS Subgroup, and it is expected that the results of the RLA/00/009 Project Course held in Washington D.C., United States, from 9 to 13 July 2007, will be published soon.

3.4.18 The Meeting agreed to the following Draft Conclusion:

DRAFT

CONCLUSION 1/10

FOLLOW-UP ON GNSS ACTIVITIES – CYCLE 2007-2008

That, the States/Territories/International Organisations:

- a) follow-up on the GNSS-related SARPs, GNSS related ICAO guidelines and policies, and GREPECAS conclusions;
- b) review and begin action to continue implementation of GNSS basic services;
- c) follow-up on regional studies, trials, activities and results of projects RLA/00/009 and RLA/03/902, which are related to the solution for the SBAS implementation and other GNSS augmentation systems.

Action Plan for the follow-up of the GNSS implementation

3.4.19 Based on the information and analysis contained in the previous paragraphs, the Meeting reviewed and recommended the implementation of the GNSS Action Plan contained in **Appendix L** to this part of the Report. Therefore the Meeting drafted the following draft conclusion:

DRAFT

CONCLUSION 1/11

ESTABLISHMENT AND IMPLEMENTATION OF AN ACTION PLAN FOR GNSS IMPLEMENTATION

That States/Territories/International Organisations,

- a) review, complete and implement their respective action plan for GNSS implementation based on the Plan shown in Appendix F to this part of the Report; and
- b) forward the plan mentioned in a) above to the ICAO NACC Regional Office in order to be received before **29 November 2008**.

3.5 Review of the planning and implementation of surveillance systems.

3.6 Radar data sharing among neighbouring ATS units

Global Air Navigation Plan on data-based surveillance and ICAO SARPs and guidance

3.5.1 The Meeting noted that the Global Air Navigation Plan (Doc 9750 – AN/963), established Global Plan Initiative GPI-09 – *Situational Awareness*, which is presented in **Appendix M** to this part of the Report. This strategy guides the application of data-based surveillance (ADS-C, ADS-B and SSR in Mode S).

3.5.2 Furthermore, the Meeting noted the status of SARPs and ICAO guidelines on surveillance systems that were explained at the Surveillance Seminar carried out jointly with this Meeting; also, it agreed on the importance to follow-up on the development of SARPs and ICAO guidelines on these systems.

Follow-up to the Preliminary Regional strategy for the ADS-C and ADS-B deployment

3.5.3 As a follow-up to the work performed by the GREPECAS mechanism on guidelines for ADS-B and ADS-C deployment, which is based on the guidelines set forth in the Global Air Navigation Plan, specifically GPI-09, the Meeting noted the Preliminary CAR/SAM Regional Strategy for ADS-C and ADS-B Systems Implementation in the short, medium and long terms adopted by GREPECAS and presented in **Appendix N** to this paper.

ADS-B, ADS-C and other surveillance systems Implementation Initiatives

3.5.4 The Meeting, after considering GREPECAS Conclusion 13/87, and as a result of the First Meeting of the Surveillance Task Force of the CNS Committee of the GREPECAS mechanism, which was jointly held with this Meeting, noted the initiatives to conduct ADS-C ADS-B trials and multilateration in the CAR Region.

3.5.5 The Meeting reviewed the ADS-C and ADS-B deployment initiatives table presented under Appendix C of WP-13 and agreed to propose the following changes:

- delete the word ADS on column 4 and ADS-B on column 6;
- Cuba indicated they are studying implementation and mentioned that column 5 should be changed to S/P;
- the delegate from Trinidad and Tobago informed that they are planning to perform multilateration studies in the near future. He also indicated that ADS-B trials are planned between Trinidad and Tobago and the United States and that this information should be included under column 8.

3.5.6 The delegate from Trinidad and Tobago also informed that his State and the United States had already agreed to carry out ADS-B trials; other CAR/SAM States/Territories/International Organisations are invited to participate. In addition, the delegate from Cuba indicated that they also continue to carry out ADS-B trials and that they are preparing for surface multilateration trials at the Havana International Airport.

3.5.7 In addition, the delegate from Colombia informed that his State would study the feasibility of implementing ADS-C in the Pacific oceanic portions of the Bogota FIR and the Caribbean portion of the Barranquilla FIR. Furthermore, he informed that they will carry out an ADS-B implementation study in the Colombia FIRs and a multilateration study in Magdalena Medio.

3.5.7 The IATA representative informed on the results of the survey made by his organisation on “On Board Navigation, Surveillance and Communication Equipment in the Region,” which is presented in **Appendix O** to this part of the Report.

3.5.8 Regarding trials, the Meeting formulated the following Draft Conclusions:

DRAFT

CONCLUSION 1/12

ADS-C TRIALS IN THE CAR REGION

That, Trinidad and Tobago be urged to conduct ADS-C trials with the following tentative programme:

- i. trials in the Piarco FIR;
- ii. the data and other results be provided to the ICAO NACC Office to be analysed and coordinated through the GREPECAS CNS/SUR Task Force; and
- iii. an initial report on the analysis of the trials be presented before **31 July 2008**, in order to enable ICAO and the GREPECAS mechanism to present the results at the GREPECAS/15 Meeting tentatively scheduled for October 2008.

DRAFT

CONCLUSION 1/13

APPLICATION OF MULTILATERATION SYSTEM AS A SURVEILLANCE OPTION

That:

- a) States/Territories/International Organisations consider multilateration as a viable option to provide immediate surveillance coverage in geographical areas where secondary radar cannot be effectively deployed and in order to provide an effective transition to ADS-B when all aircraft are correctly equipped; and
- b) Trinidad and Tobago be urged to conduct trials in multilateration along similar guidelines used for the ADS-C trials as a transition path to ADS-B in the medium term.

DRAFT

CONCLUSION 1/14 ADS-B TRIALS

To urge,

- a) Cuba to continue its ADS-B trials in the Havana FIR;
- b) Trinidad and Tobago and the United States to establish and implement an ADS-B trials project in the Piarco FIR;
- c) States/Territories/International Organisations from the CAR region be invited to participate in the Project mentioned in b) above, expanding the trials in other airspaces and follow-up on the execution and results of the projects mentioned in a) and b), as well as other initiatives; and

- d) all States/Territories/International Organisations who conduct trials and other ADS-B related activities, inform the ICAO NACC Office before **31 July 2008**, on the status of implementation and results of their activities to facilitate analysis and coordination through the GREPECAS CNS/SUR Task Force.

Updating of the Surveillance Regional Plan

3.5.9 Considering the implementation initiatives for ADS-C, ADS-B and multilateration systems, as well as the results of the study on the Regional Implementation of SSR in Mode S and other surveillance systems, the Meeting took note of **Appendix P** to this part of the Report, which includes Table CNS 4A of the FASID, with updated information through the GREPECAS/14 Meeting.

Radar data sharing

3.5.10 Regarding radar data sharing, the Meeting took note of the following information:

- There has not been a meeting of the E/CAR Data Sharing Task Force for the last two years; however, there were time lines presented at the last E/CAR WG and work is on-going;
- Trinidad and Tobago indicated they have signed an agreement with Barbados and the French Territories for remoting of their radar data; and
- Cuba indicated that they are coordinating some trials and still working on signing a bilateral agreement with Jamaica.

Action Plan for the surveillance systems implementation follow-up

3.5.11 The Meeting recommended the review, adoption and execution of the Action Plan for the Implementation of Surveillance Systems presented in **Appendix Q** to this part of the Report. Therefore, the Meeting agreed to the following Draft Conclusion:

DRAFT

CONCLUSION 1/15

**ESTABLISHMENT AND IMPLEMENTATION OF AN ACTION
PLAN FOR SURVEILLANCE SYSTEMS IMPLEMENTATION**

That States/Territories/International Organisations:

- a) review, complete the information and execute their corresponding action plan for implementation of surveillance systems, considering Appendix P to this part of the Report; and
- b) forward the plan mentioned in a) above to the ICAO NACC Regional Office for receipt before **29 February 2008**.

3.7 Support for the ICAO position for the ITU WRC-2007

3.7.1 The Meeting recalled that on 14 June 2005, the Council (C-DEC 175/14) approved the ICAO position on issues of critical concern to aviation which are on the agenda of the International Telecommunication Union (ITU) World Radiocommunication Conference (2007) (WRC-07), scheduled for 22 October to 16 November 2007 in Geneva, Switzerland. The approved position was transmitted to States and international organisations through State letter E 3/5 05/85, dated 12 August 2005.

3.7.2 Also, the GREPECAS/13 Meeting held in Santiago, Chile, from 14 to 18 November 2005, followed-up on the preparation and support to CAR/SAM Region States and International Organisations for ICAO's Position for the WRC-07; the Meeting also recalled GREPECAS Conclusion 12/33 – *CAR/SAM Regional Action for the preparation and Support of ICAO's Position for WRC-07*. In addition, GREPECAS/13 drafted Conclusion 13/89 – *Support of States in the CAR/SAM Regions to the ICAO Position for the ITU WRC-2007*, which recommended Civil Aviation Administrations to actively participate in preparing support to the aforementioned ICAO position in several forums. In the Inter-American Telecommunication Commission (CITEL) meetings of the Organization of American States (OAS), through the proper authority of radiofrequency spectrum management; in meetings scheduled by ICAO; and integrating national delegations to attend the WRC-07.

3.7.3 The Meeting noted that recently the Air Navigation Commission, with the support of the Aeronautical Communication Panel (ACP) and the Navigation System Panel (NSP), has prepared an updated ICAO position proposal for the WRC-2007, which was reviewed by the Commission (174-7) on 20 February 2007. The new text of the ICAO position complements and updates the original position and reflects the latest results of studies completed within ICAO and ITU. In this regard, the ICAO Secretary General issued State Letter Ref. E 3/5-07/49, dated 22 June 2007, whose attachment presents the updated position. This position is also available on the ICAO public website (www.icao.int).

3.7.4 Additionally, the Meeting noted that several regional telecommunication organisations are finalising their regional positions for the WRC-2007. The preparation of common inter-American positions for the WRC-2007 is being developed by CITEL's Permanent Consultative Committee (CCP.II).

3.7.5 The IX Meeting of CCP.II held in San Salvador, El Salvador, from 17 to 20 April 2007 reviewed documents presented by ICAO on some issues of particular interest for aviation that will be dealt with at the WRC-2007. The next CITEL Meeting, which is the X Meeting of CCP.II, will be held in Orlando, Florida, United States, from July 31 to August 3, 2007, and is expected to finalise the inter-American position for WRC-2007.

3.7.6 Taking into account the background and the recent developments mentioned in the preceding paragraphs, it was agreed that there was a need and importance to finalise regional preparation and support the updated ICAO position for the ITU WRC-2007. Therefore, the following Draft Conclusion was prepared:

DRAFT

CONCLUSION 1/16

**FINALISING THE REGIONAL PREPARATION AND SUPPORT
TO THE UPDATED ICAO POSITION FOR THE WRC-2007**

States and International Organisations:

- a) are urged to take note of the updated ICAO position for the WRC-2007 presented in Appendix Q and incorporate it into the positions of their own administrations who will participate at the WRC-2007;
- b) who are CITEL Member States are urged to participate in the preparation of common inter-American positions for the WRC-2007, which is being developed by CITEL's Permanent Consultative Committee (CCP.II), supporting the updated ICAO position for the WRC-2007; and
- c) are urged to participate in the WRC-2007 in order to support the updated ICAO position in order to guarantee the availability and protection of the aeronautical radio frequency spectrum, which is essential to meet civil aviation demands in a safe, efficient and cost-effective manner.

APPENDIX A

ICAO GUIDELINES ON PERFORMANCE OF VSAT NETWORKS

1. Introduction

1.1 The Fifth Meeting of the All Planning and Implementation Regional Group (ALLPIRG) / Advisory Group, held in Montreal, Canada, from 23 to 24 March 2006, agreed the Conclusion 5/16 – *Implementation of very small aperture terminals (VSATs)* that urged the PIRGs to discourage the proliferation of VSAT networks where one/some of the existing ones can be expanded to serve the new areas of interest, work towards integrated regional/interregional digital communication networks with a single (centralized) operational control and preferably based on the Internet Protocol (IP) and give due consideration to managed network services (e.g. a virtual private network [VPN]), subject to availability and cost-effectiveness; and the Conclusion 5/17 - *Provisions for digital communication networks*, urged the ICAO initiate the development of provisions governing the end-to-end performance of digital communication networks, irrespective of the technologies and protocols utilized therein.

2. ICAO Guidelines on Performance of VSAT Network

2.1 As part of the aforementioned work and following the Conclusion 5/17 of the ALLPIRG/5 Meeting, some guidelines on performance of VSAT networks have been prepared by ICAO to establish a basis for planning and basic system design of such network in support of aeronautical ground-ground communications. These guidelines are shown in the following pages.

GUIDELINES ON PERFORMANCE OF VSAT NETWORKS

1. Introduction

1.1 Digital communication networks based on very small aperture terminal (VSAT) are being increasingly used in the provision of aeronautical ground-ground communications in areas where terrestrial communication systems are unavailable, unreliable or uneconomical. VSAT networks are generally flexible, scalable, versatile, easy to implement/operate and cost-effective in certain areas, terrains or conditions.

1.2 On the other hand, a wide variety of often incompatible architectures, configurations, access techniques, management, operation schemes and protocols are used in different VSAT networks. Moreover, almost all VSAT networks available in the market employ some proprietary products. As a result, in general, non-identical VSAT networks are not interoperable.

1.3 There are no international standards specifically governing VSAT networks. A number of International Telecommunication Union (ITU) Recommendations relating to radio frequency or other aspects of communication systems are applicable to VSATs and are often complied with by VSAT vendors. Such compliance should not, however, be interpreted as an indication of compatibility with other products.

1.4 ICAO has not standardized the physical layer of communications, therefore there are no provisions for VSATs, nor for terrestrial-based systems-like cable, microwave relay system or optical fibre.

1.5 Noting the above, States or organizations that plan to implement VSAT networks for the provisions of aeronautical ground-ground communications, are advised to:

- a) ascertain that VSAT is in fact the preferred and most cost-effective means of communications in the geographical area(s) of interest;
- b) take into consideration Conclusion 5/16 of ALLPIRG/5; and
- c) use the performance requirements stated in the ensuing paragraph as a guide to planning, system design and evaluation activities.

2. Performance requirements

2.1 Many factors influence the architecture, configuration and system design of a VSAT network. The end user is however mainly interested in the quality or performance of the communication service that is being provided and not so much in the technical details. As such, the user should state the desired basic performance requirements at the very early stage of planning to enable VSAT system design to proceed accordingly. Such performance requirements, once agreed upon by all parties concerned, would be used as a basis for further evaluation and continuing monitoring of the network.

2.2 In general, there is a direct relationship between performance and cost. This is particularly important for VSAT networks and there are also many parameters involved in achieving a given performance level. For example, insisting on higher availability implies duplicate terminals using different satellites. Similarly, a very low bit error rate requires large earth station antennas, high power transmitters and large satellite transponder bandwidth. All those directly translate to significantly higher acquisition and operation costs.

2.3 The minimum performance targets state below are generally suitable for aeronautical ground-ground communication and can be achieved with “reasonable” resources and cost. The state performance parameters apply to the overall communication service as seen by the end user of a digital VSAT network.

Availability $\geq 99.8\%$
(See note 1)

Bit error rate (BER) ≤ 1 in 10^7
(See note 2)

One-way latency (for voice communications) < 400 ms
(See note 3)

Call blocking probability $\leq 2.5 \times 10^{-3}$ (or in 400 attempts)
(See note 4)

Call set-up time ≤ 2 s

Note 1. The above shows the required overall availability of the communication service to the end user. It includes the consideration of all scheduled/non-scheduled maintenance and sun outages.

Note 2. BER is applicable to the physical layer of communications. Forward error correction (FEC) may be employed to achieve this figure.

Note 3. The above implies that for voice communications, only a single satellite hop should be used. The major contributor to the latency is the propagation delay of approximately 240 ms (a single hop). Voice compression and encoding also introduce additional delays.

Note 4. The above applies to a normal switched voice communications environment. In certain operational scenarios, it may be necessary to guarantee the availability of a voice circuit upon demand by employing priority/pre-emption techniques or dedicated satellite resources.

Suggested readings

Maral, G. (2003) *VSAT Networks*, 2nd edition, John Wiley & Sons.

(1994) *Handbook on Satellite Communications, Supplement No. 3 “VSAT Systems and Earth Stations”*, International Telecommunications Union (ITU).

APPENDIX B

SUMMARY ON THE IMPLEMENTATION STATUS OF THE MEVA II VSAT NETWORK IN THE CENTRAL CARIBBEAN AND THE PROCESS FOR ITS INTERCONNECTION WITH THE SOUTH AMERICAN VSAT NETWORK (REDDIG)

1. The MEVA VSAT network was developed and implemented since 1996 mainly in the Central Caribbean, providing voice and data communications of the Aeronautical Fixed Services (AFS) between fifteen VSAT-equipped nodes in the Central Caribbean and neighbouring zones. MEVA operates in the 4-6 GHz C-band on the PAS-1R satellite and uses SCPC/DAMA technology for bandwidth-on-demand communications and circuit management. This network has made possible to implement and improve the AFTN and ATS speech circuits required for this area in the Air Navigation Plan.
2. The States, Territories and International Organizations Members MEVA¹, considering the SARPs contained in Annex 10, Vol. III, Chapter 3, as well as the ICAO guidance related to the need, not only to satisfy the AFS communications requirements, but also aimed at supporting the communications, navigation, surveillance and air traffic management services; that is, to facilitate the introduction of aeronautical telecommunications network (ATN), recognized the need to update the MEVA Network, to facilitate the adoption of protocols and services with common interfaces equipment based on the reference model for the open systems interconnection (OSI) of the International Standardization Organization (ISO), and the MEVA Network interconnection/interoperability achievement with other regional and sub-regional digital networks, Such as the South American Digital Network (REDDIG). This initiative is called “MEVA II Network”.
3. The MEVA Technical Management Group, integrated by experts from States, Territories and an International Organization, studied in detail the MEVA update aspects toward the MEVA II Network implementation, such work represented the basis for the Request for Information (RFI) and subsequently the Request for Proposals (RFP) for the MEVA II and so the evaluation and selection of the best proposal. This stage process culminated with the MEVA/10 Meeting, held in Mexico City, 13 – 15 December 2004, in which the level of Civil Aviation Directors approved the Service Provider for the MEVA II Network, as well as the updated Document of Agreement (DOA) for the MEVA II Network, which has been approved through the signatures of Directors of Civil Aviation.
4. The MEVA II Network has been conceived with a satellite technology access VSAT/TDMA/Frame Relay type, through a “Full Mesh” network topology, the use of PAS 1R satellite with beam directed over United States / Latin America, operation frequencies in the C band, and vertical linear polarization. All of this contributes with the objectives to satisfy the AFS communications required at present, contribute and ease the ATN subnetworks implementation and to achieve interoperability between the MEVA II network and the REDDIG and other CAR Region subregional networks, contributing with the implementation of the new CNS/ATM systems, including the new ATM integrated global system.
5. During the first months of 2005, the MEVA II TMG finalized Annex I of the MEVA II Document of Agreement, which is a technical document describing the network. Likewise, the transition plan of MEVA to MEVA II was developed. Based on these documents and in accordance with the corresponding national laws, the MEVA II Members arranged their contracts with the MEVA II Service Provider. Cuba and Panama established their MEVA contracts through the ICAO Technical Co-operation Bureau.

6. The implementation of the following MEVA II nodes was completed in November 2006:

- | | |
|----------------------------------|-------------------------------------|
| • Aruba, Aruba | • Dominican Republic, Santo Domingo |
| • Bahamas, Freeport | • Haiti, Port-au-Prince |
| • Bahamas, Nassau | • Jamaica, Kingston |
| • Cayman Islands, Grand Cayman | • USA, Miami, FL |
| • Cuba, Havana | • Panama, Panama |
| • Netherlands Antilles, Curacao | • USA, Puerto Rico, San Juan |
| • COCESNA, Honduras, Tegucigalpa | |

7. Regarding the interconnection of the MEVA II with the VSAT REDDIG, the Fourth MEVA II / REDDIG Coordination Meeting (MR/4) held in Lima, Peru, from 7 to 9 March 2007, reviewed all technical-operational aspects for the implementation of the interconnection solution in the Bogota and Caracas REDDIG nodes; in the Tegucigalpa COCESNA MEVA II node; as well as the impact that the interconnection would have in the Aruba, Curaçao, Kingston, Miami, San Juan and Panama MEVA II nodes; and in the Guayaquil, Lima and Manaus REDDIG nodes. Additionally, it elaborated the communication service requirements through interconnection and the required premises, equipment and devices for the interconnection.

8. In addition, a MEVA II / REDDIG Memorandum of Understanding (MoU), an Action Plan and a technical-economical request for proposal (RFP) for the MEVA II / REDDIG interconnection were elaborated. These documents have been sent to the members of both networks for review and approval.

APPENDIX C

Table CNS 2A / Tableau CNS 2A / Tabla CNS 2A

**AERONAUTICAL MOBILE SERVICE AND AMSS
SERVICE MOBILE AÉRONAUTIQUE ET SMAS
SERVICIO MÓVIL AERONÁUTICO Y SMAS**

EXPLANATION OF THE TABLE

Column

- 1 The name of the State and the locations within the same where the service is provided.
- 2 The required services or functions are provided. Suitable abbreviations for these services or functions are listed below.

ACC-L	Area control service for flights up to FL 250.
ACC-SR-I	Area radar control service up to FL 250.
ACC-SR-U	Area radar control service up to FL 450.
ACC-U	Area control service up to FL 450.
AFIS	Aerodrome flight information service.
APP-L	Approach control services below FL 120.
APP-I	Approach control service below FL 250.
APP-PAR	Precision approach radar service up to FL 40.
APP-SR-I	Surveillance radar approach control service up to FL 250.
APP-SR-L	Surveillance radar approach control service up to FL 120.
APP-SR-U	Surveillance radar approach control service up to FL 450.
APP-U	Approach control service below FL 450.
ATIS	Automatic terminal information service.
D-ATIS	Data link-automatic terminal information service.
CLRD	Clearance delivery.
FIS	Flight information service.
VHF-ER	VHF C Extended range.
GP	Facility providing VHF or HF en-route general purpose system (GPS) communication. These facilities provide air-ground radiotelephony for all categories of messages listed in Annex 10, Volume II, 5.1.8. This system of communication is normally indirect, i.e. exchanged through the intermediary of a third person who is usually a communicator at an aeronautical station.

- | | |
|--------|---|
| SMC | Surface movement control up to limits of aerodrome. |
| TWR | Aerodrome control service. |
| VOLMET | VOLMET broadcast. |
- 3 Number of voice VHF channels for the corresponding services indicated in column 2. The number of implemented channels is shown in parentheses.
 - 4 Number of VHF channels for data communication for the corresponding services indicated in column 2. The implementation date (month/year) is shown in parentheses.
 - 5 HF network designators for the corresponding services indicated in column 2. The number of implemented frequencies is shown in parentheses.
 - 6 Requirement for HF data link (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.
 - 7 Requirement for satellite voice communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.
 - 8 Requirement for satellite data communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.
 - 9 Requirement for Mode S data communications (x) for the corresponding services indicated in column 2. The implementation date (month/year) of the service is shown in parentheses.
 - 10 Remarks.

Note.C The implementation year for the data links and satellite voice communication are indicated by two digits.

EXPLICATION DU TABLEAU

Colonne

- 1 Nom de l'État et des emplacements de cet État où le service est assuré.
- 2 Services ou fonctions requis assurés. Les abréviations utilisées ont les significations suivantes:

ACC-L	Contrôle régional jusqu'au FL 250
ACC-SR-I	Contrôle radar régional jusqu'au FL 250
ACC-SR-U	Contrôle radar régional jusqu'au FL 450
ACC-U	Contrôle régional jusqu'au FL 450
AFIS	Service d'information de vol d'aérodrome
APP-L	Contrôle d'approche au-dessous du FL 120
APP-I	Contrôle d'approche au-dessous du FL 250
APP-PAR	Radar d'approche de précision jusqu'au FL 40

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APP-SR-I	Contrôle d=approche au radar de surveillance jusqu=au FL 250
APP-SR-L	Contrôle d=approche au radar de surveillance jusqu=au FL 120
APP-SR-U	Contrôle d=approche au radar de surveillance jusqu=au FL 450
APP-U	Contrôle d=approche au-dessous du FL 450
ATIS	Service automatique d=information de région terminale
D-ATIS	Service automatique d=information de région terminale par liaison de données
CLRD	Délivrance des autorisations
FIS	Service d=information de vol
VHF-ER	VHF à portée étendue
GP	Installation de communications VHF ou HF en route d=emploi général (GP). Permet des communications radiotéléphoniques air-sol pour toutes les catégories de messages énumérées dans l=Annexe 10, Volume II, 5.1.8. Système normalement indirect, c=est-à-dire dans lequel les communications se font par l=intermédiaire d=un tiers, généralement un opérateur de télécommunications situé dans une station aéronautique.
SMC	Contrôle des mouvements à la surface jusqu=aux limites de l=aérodrome
TWR	Contrôle d=aérodrome
VOLMET	Émissions VOLMET
3	Nombre de canaux vocaux VHF pour les services indiqués dans la colonne 2. Le nombre des canaux mis en œuvre est indiqué entre parenthèses.
4	Nombre de canaux VHF pour les communications de données des services indiqués dans la colonne 2. La date de mise en œuvre (mois/année) est indiquée entre parenthèses.
5	Identification du réseau HF pour les services indiqués dans la colonne 2. Le nombre de fréquences utilisées est indiqué entre parenthèses.
6	Besoin d=une liaison de données HF (X) pour les services indiqués dans la colonne 2. La date de mise œuvre (mois/année) est indiquée entre parenthèses.
7	Besoin de communications vocales par satellite (X) pour les services indiqués dans la colonne 2. La date de mise en œuvre (mois/année) est indiquée entre parenthèses.
8	Besoin de communications de données par satellite (X) pour les services indiqués dans la colonne 2. La date de mise en œuvre (mois/année) est indiquée entre parenthèses.
9	Besoin de communications de données mode S (X) pour les services indiqués dans la colonne 2. La date de mise en œuvre (mois/année) est indiquée entre parenthèses.
10	Remarques

Note. C L=année de mise en œuvre des liaisons de données et des communications vocales par satellite est indiquée par deux chiffres.

EXPLICACIÓN DE LA TABLA

Columna

- 1 El nombre del Estado y de las localidades dentro del mismo donde se proporciona el servicio.
- 2 Se proporcionan los servicios o funciones que se requieren. Se enumeran a continuación las abreviaturas correspondientes a estos servicios o funciones.

ACC-L	Servicio de control de área hasta el FL 250
ACC-SR-I	Servicio de control de área radar hasta el FL 250
ACC-SR-U	Servicio de control de área radar hasta el FL 450
ACC-U	Servicio de control de área hasta el FL 450
AFIS	Servicio de información de vuelo de aeródromo
APP-L	Servicio de control de aproximación por debajo del FL 120
APP-I	Servicio de control de aproximación por debajo del FL 250
APP-PAR	Servicio radar para la aproximación de precisión hasta el FL 40
APP-SR-I	Servicio de aproximación de control con radar de vigilancia hasta el FL 250
APP-SR-L	Servicio de aproximación de control con radar de vigilancia hasta el FL 120
APP-SR-U	Servicio de aproximación de control con radar de vigilancia hasta el FL 450
APP-U	Servicio de control de aproximación por debajo del FL 450
ATIS	Servicio automático de información terminal
D-ATIS	Servicio automático de información terminal por enlace de datos
CLRD	Servicio de entrega de autorización de tránsito
FIS	Servicio de información de vuelo
VHF-ER	VHF CAlcance ampliado
GP	Instalación que proporciona comunicaciones VHF o HF en ruta para fines generales (GPS). Estas instalaciones suministran transmisión radiotelefónica aeroterrestre en todas las categorías de mensajes citadas en el Anexo 10, Vol II, 5.1.8. En este sistema las comunicaciones son normalmente indirectas, es decir, que son intercambiadas por intermedio de un tercero que habitualmente es un operador de comunicaciones de una estación aeronáutica.
SMC	Control del movimiento en la superficie hasta los límites del aeródromo.
TWR	Servicio de control de aeródromo.
VOLMET	Radiodifusiones VOLMET.

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- 3 Número de canales VHF para comunicaciones orales para los correspondientes servicios indicados en la Columna 2. El número de canales implantados se indica entre paréntesis.
- 4 Número de canales VHF para comunicaciones en datos para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) se indica entre paréntesis.
- 5 Designadores de red HF para comunicaciones orales para los correspondientes servicios indicados en la Columna 2. El número de frecuencias implantados se indica entre paréntesis.
- 6 Requisito para enlace de datos HF (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.
- 7 Requisito para comunicaciones orales por satélite (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.
- 8 Requisito para comunicaciones de datos por satélite (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.
- 9 Requisito para comunicaciones de datos en Modo S (x) para los correspondientes servicios indicados en la Columna 2. La fecha de implantación (mes/año) del servicio se indica entre paréntesis.
- 10 Observaciones.

Nota.C El año de implementación para los enlaces de datos y comunicaciones orales por satélite se indican en dos dígitos.

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
ANGUILLA (United Kingdom)									
TQPF THE VALLEY/Wall Blake, Anguilla I.	TWR	(1) 1							
ANTIGUA AND BARBUDA									
TAPA SAINT JOHNS/ V.C. Bird Antigua I.	APP TWR SMC APP-SR-I <u>D-ATIS</u>	1 (1) 1 (1) 1 (1) 1 <u>1</u>							
ARUBA (Netherlands)									
TNCA ORANJESTAD/ Reina Beatriz, Aruba I.	APP-SR-L APP-L TWR SMC <u>D-ATIS</u>	1 (1) 1 (1) 1 (1) 1 (1) 1 (1)							
BAHAMAS									
MYBS ALICE TOWN/ South Bimini, Bimini I.	TWR	1							
MYSM COCKBURN TOWN/ San Salvador I.	TWR	1							
MYGF FREEPORT/Intl., Grand Bahama I.	APP-U APP-L TWR SMC	1 1 1 1							
MYEG GEORGETOWN/ Georgetown, Exuma Intl.	APP-L TWR	1 1							
MYEM GOVERNOR=S HARBOUR/ Governor=s Harbour, Eleuthera I.	APP-L TWR	1 1							
MYNA NASSAU	ACC-U GP ACC-L	3 1 1							
MYNN NASSAU/Intl., New Providence I.	APP-I TWR SMC APP-SR-I <u>D-ATIS</u>	1 1 1 1 <u>1</u>							
MYEH NORTH ELEUTHERA/ New Providence I.	TWR	1 1							
MYLS STELLA MARIS/Long Island I.	TWR	1							
MYAT TREASURE CAY/ Treasure Cay, Abaco I.	TWR APP-L	1 1							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MYGW WEST END/West End, Grand Bahama I.	TWR	1							
BARBADOS									
TBPB BRIDGETOWN/ Grantley Adams Intl.	APP-U APP-I TWR SMC APP-SR-U <u>D-ATIS</u>	1 5 1 1 1 <u>1</u>							
BELIZE									
MZBZ BELIZE/Intl.	APP-I APP-I TWR SMC <u>D-ATIS</u>	1 1 1 1 <u>1</u>							
CAYMAN ISLANDS (United Kingdom)									
MWCB CAYMAN BRAC/ Gerrard Smith Intl.	TWR SMC	1 (1) 1							
MWCR GEORGETOWN/ Owen Roberts Intl.	APP-I TWR SMC <u>D-ATIS</u>	1 -1 1 1 (1)							
COSTA RICA									
MROC ALAJUELA/ Juan Santamaria Intl.	APP-SR-I TWR SMC <u>D-ATIS</u> GP	2 (1) 1 (1) 1 (1) 1 (1) 1 (1)							
MRLB LIBERIA/Tomás Guardia Intl.	APP-I TWR SMC	1 (1) 1 (1) 1 (1)							
MRLM LIMON/Limón Intl.	AFIS	1 (1)							
MRPV PAVAS/Tobías Bolaños Intl.	TWR SMC	1 (1) 1 (1)							
CUBA									
MUCM CAMAGUEY/ Ignacio Agramonte	APP-SR-L TWR	1 1 (1)							
MUCL CAYO LARGO DEL SUR/Viño Acuña	APP-L TWR	1 (1) 1 (1)							
MUCA CIEGO DE AVILA/ Máximo Gómez	APP-L TWR	1 1 (1)							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MUHA HABANA	ACC-SR-U ACC-SR-I GP-U	5 (4)-ER 3 (1)-ER 2 (1)	2 (06/08)	CAR-A (6)	X (06/08)				
MUHA HABANA/José Martí	APP-SR-L APP-SR-I TWR SMC <u>D-ATIS</u>	1 1 (1) 1 (1) 1 (1) 1 (1)							<u>2008</u>
MUHG HOLGUIN/Frank País	APP-SR-L TWR	1 1(1)							
MUCU SANTIAGO DE CUBA/ Antonio Maceo	APP-SR-I TWR SMC	1 (1) 1 (1) 1							
MUVR VARADERO/Juan Gualberto Gomez	APP-SR-L TWR SMC <u>D-ATIS</u>	1 1 (1) 1 <u>1</u>							<u>2008</u>
DOMINICA									
TDPB MELVILLE HALL/ Dominica	TWR	1 (1)							
TDPR ROSEAU/Canefield	TWR	1 (1)							
DOMINICAN REPUBLIC									
MDBH BARAHONA/ Maria Montes Intl.	TWR	1 (1)							
<u>MDCY EL CATEY/ El Catey Intl.</u>	<u>TWR</u> <u>APP</u> <u>SMC</u> <u>D-ATIS</u>	<u>2</u> <u>1</u> <u>1</u> <u>1</u>							
<u>MDHE HERRERA/ Herrera Intl.</u>	<u>TWR</u>	<u>1 (1)</u>							
<u>MDEH EL HIGÜERO/ Dr. Joaquín Balaguer Intl.</u>	<u>TWR</u> <u>APP</u> <u>SMC</u>	<u>2</u> <u>1</u> <u>1</u>							
MDLR LA ROMANA/ La Romana Intl.	APP-L TWR	1 (1) 1 (1)							
MDPP PUERTO PLATA/ Gregorio Luperon	APP-SR-I TWR SMC	1 (1) 1 (1) 1 (1)							
MDPC PUNTA CANA/Punta Cana Intl.	APP-L TWR	1 1 (1)							
MDST SANTIAGO/Cibao Santiago Intl.	APP-L TWR	1 1 (1)							

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IV-CNS 2A-9

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MDCS SANTO DOMINGO	ACC-U ACC-SR-U GP	4 1 (1) 1	1 (06/08)						
MDSD SANTO DOMINGO/ De las Américas Intl.	APP-SR-I TWR SMC <u>D</u> -ATIS CLRD	2 (1) 1 (1) 1 (1) 1 (1) 1							
EL SALVADOR									
MSLP SAN SALVADOR/ El Salvador Intl.	APP-I APP-I APP-SR-I TWR SMC GP <u>D</u> -ATIS	1 1 1 (1) 1 (1) 1 (1) 1 (1) 1 (1)							
MSSS SAN SALVADOR/ Ilopango Intl.	APP-I TWR TWR SMC	1 (1) 1 (1) 1 (1) 1 (1)							
FRENCH ANTILLES (France)									
TFFF FORT-DE-FRANCE Le Lamentin, Martinique	APP-U APP-I TWR APP-SR-I <u>D</u> -ATIS SMC	1 1 1 (1) 1 (1) 1 (1) 1 (1)							
TFFR POINTE-A-PITRE/ Le Raizet, Guadeloupe	APP-U APP-I TWR APP-SR-I <u>D</u> -ATIS SMC	1 2 1 (1) 1 (1) 1 (1) 1							
TFFJ SAINT-BARTHELEMY/ Saint-Barthelemy	AFIS	1							
TFFG SAINT MARTIN/ Grand Case, Guadeloupe	AFIS	1							
GRENADA									
TGPZ LAURISTON/ Carriacou	TWR	1							
TGPY SAINT GEORGES/ Point Salines	APP-L TWR SMC	1 (1) 1 (1) 1 (1)							
GUATEMALA									
MGFL FLORES/Flores	APP-L TWR	1 1							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MGGT GUATEMALA/ La Aurora	APP-SR-I TWR SMC <u>D</u> -ATIS GP	1 1 1 1 1							
MGPB PUERTO BARRIOS/ Puerto Barrios	TWR	1 (1)							
MGSJ SAN JOSE/San José	TWR	1 (1)							
HAITI									
MTCH CAP HAITIEN/Intl.	APP-L TWR	1 1 (1)							
MTEG PORT-AU-PRINCE	ACC-SR-U GP	~~1~~ -2(1) 1	1 (06/08)						
MTPP PORT-AU-PRINCE/Intl.	APP-SR-I APP-I TWR SMC <u>D</u> -ATIS	1 1 (1) 1 (1) 1 <u>1</u>							
HONDURAS									
MHLC LA CEIBA/ Golosón Intl.	APP-L TWR SMC	1 1 (1) 1							
MHRO COXEN HOLE/Juan Manuel Gálvez Intl.	TWR SMC	1 (1) 1 (1)							
MHLM SAN PEDRO SULA/ La Mesa Intl.	APP-I TWR SMC GP <u>D</u> -ATIS	1 (1) 1 (1) 1 (1) 1 (1) 1 (1)							
MHTG TEGUCIGALPA (CENAMER)	ACC-SR-U GP	7 (4) 1	3 (06/08)	CAR-A (6) SAM-1 (2)	X (06/08)	X (06/08)	X (06/08)		
MHTG TEGUCIGALPA/ Toncontin	APP-I TWR SMC GP <u>D</u> -ATIS	1 (1) 1 (1) 1 (1) 1 (1) 1 (1)							
JAMAICA									
MKJK KINGSTON	ACC-SR-U ACC-U GP	1 5 (2) 1	2 (06/068)		X (06/068)	X (06/068)	X (06/068)		
MKJP KINGSTON/Norman Manley Intl.	APP-SR-1 APP-I TWR SMC <u>D</u> -ATIS	1 1 (1) 1 1 (1) <u>1</u>							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MKJS MONTEGO BAY/ Sangster Intl.	APP-SR-I APP-I TWR SMC <u>D-ATIS</u>	1 1 1 (1) 1 (1) <u>1</u>							
MEXICO									
MMAA ACAPULCO/Gral. Juan Alvarez Intl.	APP-SR-I APP-SR-L <u>D-ATIS</u> SMC TWR GP	1 (1) 1 (1) 1 1 1 (1) 1							
MMBT BAHIAS DE HUATULCO/ Bahías de Huatulco	TWR	1 (1)							
MMCP CAMPECHE/Ignacio Alberto Acuña Ongay Intl.	TWR	1 (1)							
MMUN CANCUN/Cancún Intl.	APP-L APP-I SMC TWR <u>D-ATIS</u> CLRD GP	1 (1) 1 (1) 1 1 (1) 1 1 1							
MMCM CHETUMAL/ Chetumal Intl.	TWR	1 (1)							
MMCU CHIHUAHUA/Gral. Roberto Fierro Villalobos Intl.	APP-I TWR <u>D-ATIS</u> GP	1 (1) 1 (1) 1 1							
MMMC CIUDAD ACUÑA/Intl.	AFIS	1 (1)							
MMCS CIUDAD JUAREZ/ Abraham González Intl.	APP-I TWR	1 1 (1)							
MMCZ COZUMELCozumel/ Intl.	TWR	1 (1)							
MMCL CULIACAN/Fidel Bachigualato	APP-I TWR GP	1 (1) 1 (1) 1							
MMDO DURANGO/Pte. Guadalupe Victoria, Intl.	TWR	1 (1)							
MMGL GUADALAJARA/ Don Miguel Hidalgo y Costilla Intl.	APP-SR-I APP-SR-L <u>D-ATIS</u> SMC TWR CLRD GP	1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1 1							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MMGM GUAYMAS/Gral. José María Yáñez Intl.	TWR	1 (1)							
MMHO HERMOSILLO/Gral. Ignacio Pesqueira Garcia Intl.	APP-I D-ATIS TWR SMC	1 (1) 1 (1) 1 (1) 1							
MMZH IXTAPA- ZIHUATANEJO/ Ixtapa-Zihuatanejo Intl.	APP-I TWR	1 (1) 1 (1)							
MMLP LA PAZ/Gral. Manuel Márquez de León Intl.	APP-I TWR	1 (1) 1 (1)							
MMLO LEON/Guanajuato	APP-L TWR	1 1 (1)							
MLLT LORETO/Loreto Intl.	TWR	1 (1)							
MMZO MANZANILLO/Playa de Oro Intl.	APP-L TWR	1 1 (1)							
MMMA MATAMOROS/Gral. Servando Canales	APP-L TWR	1 1 (1)							
MMMZ MAZATLAN/Gral. Rafael Buelna Intl.	ACC-SR-L ACC-SR-U APP-I SMC TWR D-ATIS GP	4 4 (5) 1 (1) 1 1 (1) 1 (1) 1	5 (06/08)		X (06/08)	X (06/08)	X (06/08)		
MMMD MÉRIDA/Lic. Manuel Crescencio Rejón Intl.	ACC-SR-L ACC-SR-U APP-I D-ATIS GP TWR	3 4 (4) 1 (1) 1 1 (1) 1 (1)	3 (06/08)	CAR-A (5)	X (06/08)	X (06/08)	X (06/08)		
MMML MEXICALI/Gral. Rodolfo Sánchez Taboada Intl.	APP-I TWR	1 1 (1)							
MMMX MEXICO/Lic. Benito Juárez Intl.	ACC-SR-L ACC-SR-U APP-SR-I APP-SR-L D-ATIS GP SMC TWR CLRD	5 5 (7) 1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1 (1)	3 (06/08)		X (06/08)	X (06/08)	X (06/08)		
MMAN MONTERREY/ Aeropuerto Del Norte Intl.	TWR	1 (1)							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
MMMY MONTERREY/Gral. Mariano Escobedo Intl.	ACC-SR-L ACC-SR-U APP-SR-I APP-SR-L ~~D~~ -ATIS GP SMC TWR	2 2 (3) 1 (1) 1 (1) 1 (1) 1 1 (1) 1 (1)	3 (06/08)		X (06/08)	X (06/08)	X (06/08)		
MMMM MORELIA/ Gral. Francisco Mujica Intl.	APP-L TWR	1 1 (1)							
MMNG NOGALES/Nogales Intl.	AFIS	1							
MMNL NUEVO LAREDO/ Quetzalcoatl Intl.	APP-L TWR	1 1 (1)							
MMPG PIEDRAS NEGRAS/Intl.	~~D~~ -ATIS	1 (1)							
MMPR PUERTO VALLARTA/ Lic. Gustavo Díaz Ordaz Intl.	APP-SR-I APP-SR-L ~~D~~ -ATIS SMC TWR	1 (1) 1 (1) 1 1 1 (1)							
MMRX REYNOSA/Gral. Lucio Blanco Intl.	APP-L TWR	1 1 (1)							
MMSF SAN FELIPE/ San Felipe Intl.	AFIS	1 (1)							
MMSD SAN JOSE DEL CABO/San José del Cabo Intl.	APP-I TWR GP	1 1 (1) 1							
MMTM TAMPICO/Gral. Francisco Javier Mina Intl.	APP-I TWR GP	1 (1) 1 (1) 1							
MMTP TAPACHULA/ Tapachula Intl.	TWR	1 (1)							
MMTJ TIJUANA/ Gral. Abelardo L. Rodríguez Intl.	APP-SR-I APP-SR-L ~~D~~ -ATIS GP TWR SMC	1 (1) 1 (1) 1 (1) 1 (1) 1 (1) 1							
MMTO/TOLUCA/Lic. Adolfo Lopez Mateos	TWR GP	1 (1) 1							
MMTC TORREON/Torreón Intl.	APP-L TWR	1 (1) 1 (1)							
MMVR VERACRUZ/Gral. Heriberto Jara Intl.	APP-L TWR	1 (1) 1 (1)							
MMVA VILLAHERMOSA/	APP-L	1							

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
C.P.A. Carlos Rovirosa	TWR	1 (1)							
MMZC ZACATECAS/Gral. Leobardo Ruíz Intl.	APP-I TWR	1 1 (1)							
MONTERRAT (United Kingdom)									
TRPM PLYMOUTH/ Blackburne, Montserrat I.	APP-L TWR	1 1							
NETHERLANDS ANTILLES (Netherlands)									
TNCF CURACAO	ACC-U GP	3 (2)-ER 1 (1)	2 (06/08)		X (06/08)	X (06/08)	X (06/08)		
TNCB KRALENDIJK/ Flamingo, Bonaire I.	APP-I TWR	1 1 (1)							
TNCE ORANJESTAD/ F.D. Rossevelt, St. Eustacius I.	TWR	1							
TNCM PHILIPSBURG/Prinses Juliana, St. Maarten I.	APP-I TWR SMC	1 1 1							
TNCC WILLEMSTAD/Hato, Curacao I.	APP-I TWR SMC APP-SR-I <u>D-ATIS</u>	1 1 (1) 1 1 (1) <u>1</u>							
NICARAGUA									
MNMG MANAGUA/Augusto César Sandino Intl.	APP-I TWR SMC GP <u>D-ATIS</u>	1 (1) 1 (1) 1 (1) 1 (1) <u>1</u>							
MNPC PUERTO CABEZAS/ Puerto Cabezas	TWR	1							
PUERTO RICO (United States)									
TJBQ AGUADILLA/Rafael Hernández Intl.	TWR	1 (1)							
TJFA FAJARDO/Diego Jiménez Torres	TWR	1 (1)							
TJMZ MAYAGUEZ/Mayaguez	SMC TWR	1 1							
TJPS PONCE/Mercedita	TWR SMC APP-L	1 1							
TJZS SAN JUAN	ACC-U GP-U	11	4 (06/08)	CAR-A (6) CAR-B (1)	X (06/08)	X (06/08)	X (06/08)		

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Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
TJSJ SAN JUAN, PUERTO RICO/Luis Muñoz Marín Intl.	D-ATIS TWR SMC APP-SR-I	1 (1) 2 (1) 1 (1) 2 (2)		NAT-A (5)					
TJVQ VIEQUES/Antonio Rivera	TWR	1 (1)							
SAINT KITTS AND NEVIS									
TKPK BASSETERRE/Golden Rock, Saint Kitts I.	APP-L TWR	1 (1) 1 (1)							
TKPN CHARLESTOWN/ Newcastle, Nevis I.	TWR	1							
SAINT LUCIA									
TLPC CASTRIES/Vigie	TWR SMC	1 (1) 1 (1)							
TLPL VIEUX-FORT/ Hewanorra Intl.	APP-L TWR SMC	1 (1) 1 (1) 1 (1)							
SAINT VINCENT AND THE GRENADINES									
TVSV BEQUIA/J. F. Mitchel	TWR	1 (1)							
TVSC CANOUAN/Canouan	TWR	1 (1)							
TVSV KINGSTOWNE/ E.T. Joshua	APP-L TWR	1 (1) 1 (1)							
TVSM MUSTIQUE/Mustique	TWR	1 (1)							
TVSU UNION ISLAND/ Union Island	TWR	1							
TRINIDAD AND TOBAGO									
TTZP PIARCO	ACC-SR-U ACC-U GP	3 4 (2) 1 (1)	2 (06/08)	CAR-A (3) CAR-B (1) SAM-2 (2)	X (06/08)	X (06/08)	X (06/08)		
TPPP PORT OF SPAIN/ Piarco Intl., Trinidad I.	APP-I APP-SR-I TWR SMC ATIS	1 2 (1) 1 (1) 1 (1) 1 (1)							
TTCP SCARBOROUGH/ Crown Point, Tobago I.	APP-I TWR SMC	1 (1) 1 (1) 1 (1)							

CAR/WG/1
Appendix C to the Report on Agenda Item 3

3C-16

CAR/SAM FASID

IV-CNS 2A-16

Country and location Pays et emplacement País y localidad	Service or function Service ou fonction Servicio o función	VHF voice Voix VHF Voz VHF	VHF data Données VHF Datos VHF	HF voice Voix HF Voz HF	HF data Données HF Datos HF	Satellite voice Voix satellite Voz por satélite	Satellite data Données satellite Datos por satélite	Mode S Modo S	Remarks Remarques Observaciones
1	2	3	4	5	6	7	8	9	10
TURKS AND CAICOS ISLANDS (United Kingdom)									
MBGT GRAND TURK/ Grand Turk Intl.	APP-L TWR	1 1 (1)							
MBPV PROVIDENCIALES/ Intl.	APP-L TWR	1 (1) 1 (1)							
MBSC SOUTH CAICOS/Intl.	APP-L TWR	1 1 (1)							
UNITED STATES									
KZWW NEW YORK	GP-U	1-ER	1 (06/08)	CAR-A CAR-B	X (06/08)	X (06/08)	X (06/08)		
VIRGIN ISLANDS (United Kingdom)									
TUPJ ROADTOWN/ Beef Island	APP-L TWR	1 1 (1)							
TUPW VIRGIN GORDA/ Virgin Gorda	TWR	1							
VIRGIN ISLANDS (United States)									
TISX SAINT CROIX/Henry E. Rohlsen, St. Croix	APP-I TWR SMC	1 (1) 1 (1) 1 (1)							
TIST SAINT THOMAS/ Cyril E. King	APP-I TWR SMC D-ATIS	1 (1) 1 (1) 1 (1) 1 (1)							

APPENDIX D

SARPS DEVELOPMENT STATUS AND ICAO GUIDANCE MATERIAL ON ATN

1. The First Meeting of the Aeronautical Communications Panel closed on 18 May 2007. The Meeting completed the Communications Operating Concept and Requirements (COCR) for future air-ground communication systems and a document containing a common set of performance requirements, including evaluation scenarios. This material is essential for the further technology investigations the panel is continuing to pursue, with a completion of this work by end 2007. The meeting also agreed to the new manual for the Aeronautical Mobile Satellite (R) Service, which is scheduled to be approved by ICAO by November 2007, when the new AMS(R)S SARPs become applicable.
2. Also, the Meeting recommended ICAO to amend the ATN SARPs which will introduce in the ATN modern communication protocols using the Internet Protocol Suite (IPS) as developed by the Internet Engineering Task Force. IPS will be introduced in both the ground-ground as well as the air-ground elements of the ATN. Work on detailed technical specifications for the ATN/IPS is ongoing and will be completed by the end of 2008 at which time the amended ATN SARPs are expected to become applicable.
3. The ACP/1 Meeting also addressed the feasibility of using Voice over IP (VoIP) in ground-ground voice communications. Particular attention was given to address issues surrounding the potential use of mobile phones on-board aircraft using pico-cell systems.
4. The ACP is considering as the goal for the use of ATN, version 6 of the IPS (IPv6), taking into account that it provides several advantages: increase of Internet protocol address space, improvement of the service quality parameters, improvement of end-to-end safety, a more robust system management and other advantages.
5. Following the approval of Part I of Doc 9880 (CM and CPDLC) in December 2006, Part IIA (AIDC) has been approved in April 2007. The relevant sections of Doc 9705 have been replaced with the material in Doc 9880. Part IIB (ATSMHS) and Part III (ULCS) are expected to follow shortly.
6. Additionally, the ACP/1 Meeting prepared proposals for amendment to Annex 10, Volume III, Part I, Chapter 1 (Definitions) and Chapter 3 (Aeronautical Telecommunication Network). Also, it developed the *Manual on Detailed Technical Specifications for the ATN/IPS*, proposing its distribution to States. The Air Navigation Commission will review the report of the ACP/1 on 7 June 2007, therefore, it is expected that after this review, later this month, a State Letter will be sent. The Report of the ACP/1 Meeting is published in the following website <http://www.icao.int/anb/panels/acp/>.

APPENDIX E

**TABLE CNS 1BB – ATN GROUND-GROUND APPLICATIONS PLAN / TABLA CNS1 BB – PLAN DE APLICACIONES TIERRA-TIERRA ATN
(CAR REGION / REGIÓN CAR)**

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Connected with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
ARUBA, Aruba	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
BAHAMAS, Nassau,	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
CAYMAN ISLANDS, Grand Cayman ISLAS CAIMANES , Gran Caimán	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
CUBA, Havana CUBA, La Habana	AMHS	FAA-Atlanta	ATN	2009	
	AIDC	TBD/Por determinar	ATN	TBD/Por determinar	
DOMINICAN REPUBLIC, Santo Domingo/ REPÚBLICA DOMINICANA, Santo Domingo	AMHS	FAA-Atlanta	ATN	2008	
	AIDC	TBD/Por determinar	ATN	TBD/Por determinar	
HAITI, Port-au-Prince/ HAITÍ, Puerto Príncipe,	AMHS	FAA-Atlanta	ATN	2009	
HONDURAS, Tegucigalpa (COCESNA)	AMHS	FAA-Atlanta	ATN	2008	
	AIDC	TBD/Por determinar	ATN	TBD/Por determinar	
JAMAICA, Kingston	AMHS	FAA-Atlanta	ATN	2008	
	AIDC	TBD/Por determinar	ATN	TBD/Por determinar	

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Connected with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
MEXICO, Mexico City MÉXICO, Ciudad de México	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
	AIDC	FAA- TBD/Por determinar	ATN	TBD/Por determinar	
	AIDC	TBD/Por determinar	ATN	TBD/Por determinar	
NETHERLANDS ANTILLES (Curacao) / ANTILLAS NEERLANDESAS (Curazao)	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
PANAMA, Panama City/ PANAMÁ, Ciudad de Panamá	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
TRINIDAD AND TOBAGO, Piarco	AMHS	FAA-Atlanta	ATN	TBD/Por determinar	
	AIDC	TBD/Por determinar	ATN	TBD/Por determinar	
UNITED STATES, Atlanta ESTADOS UNIDOS, Atlanta	AMHS	Aruba	ATN	TBD/Por determinar	03 2007 - USA Availability to connect to the CAR/SAM Regions/ Disponibilidad de conectar con las Regiones CAR/SAM
	AMHS	Bahamas Nassau,		TBD/Por determinar	
	AMHS	Cayman Islands, Grand Cayman Islas Caimanes , Gran Caimán		TBD/Por determinar	
	AMHS	Cuba, Havana Cuba, La Habana		2009	
	AMHS	Dominican Republic, Santo Domingo/ República Dominicana, Santo Domingo		2008	
	AMHS	Haiti, Port-au-Prince/ Haití, Puerto Príncipe,		2008	

ATN GROUND-GROUND APPLICATIONS PLAN / PLAN DE APLICACIONES TIERRA-TIERRA					
Administration and Location/ Administración y localidad	Application Type/ Tipo de Aplicación	Connected with Administration & Location of/ Conectada con Administración y Localidad de	Used Standard / Norma usada	Implementation Date/ Fecha de Implementación	Remarks/ Observaciones
1	2	3	4	5	6
	AMHS	Honduras, Tegucigalpa (COCESNA)		2008	
	AMHS	Jamaica, Kingston		2008	
	AMHS	Mexico, Mexico		TBD/Por determinar	
	AMHS	Netherlands Antilles (Curacao) / Antillas Neerlandesas (Curazao)		TBD/Por determinar	
	AMHS	Panama, Panama City/ Panamá, Ciudad de Panamá		TBD/Por determinar	
	AMHS	Peru, Lima		TBD/Por determinar	
	AMHS	Trinidad and Tobago, Piarco		2009	
	AMHS	Venezuela, Maiquetía		2009	
UNITED STATES, TBD ESTADOS UNIDOS, Por determinar	AIDC	MEXICO, Por determinar		TBD/Por determinar	
	AIDC	TBD/Por determinar		TBD/Por determinar	

APPENDIX F

AMHS IMPLEMENTATION PLANS IN THE CAR REGION

AMHS Implementation Plans in the CAR Region	
Date	Management
Implemented	COCESNA and Central American States
2007	Atlanta (United States) and Puerto Rico
2008	Jamaica and Dominican Republic
2009	Cuba, Haiti, Trinidad and Tobago and others

APPENDIX G

DRAFT CAR/SAM IP IMPLEMENTATION APPROACH

1. Introduction

1.1 The CAR/SAM ATN Task Force, which met in November 2006, presented an AMHS Implementation Plan to the CNS/ATM SG. The AMHS Implementation Plan proposed using the Internet Protocol Version 6 (IPv6) as the network protocol. Further analysis, however, indicates that the AMHS applications do not yet support IPv6 internally in their communication stacks. Since many Member States have either procured or implemented the AMHS, the ATN Task Force recommends initial use of the Internet Protocol Version 4 (IPv4) to expedite the implementation of AMHS service in the region.

1.2 IPv4 is recommended during the initial period within the CAR/SAM region and IPv6 is recommended for inter-regional connectivity. A transition phase is proposed using a dual stack transition mechanism where both IPv4 and IPv6 are implemented in all of the Routers and incrementally in Hosts (i.e., AMHS systems). This will lead to an eventual all-IPv6 network where all Routers and Hosts are only IPv6 based and IPv4 is disabled.

2. Considerations

- The Technical Manual for the IPS will not be finalized by the Aeronautical Communication Panel (ACP) before 2008.
- The associated Guidance Material has not been developed by the ACP
- Initial implementations in the ICAO European Region are using AMHS over IPv4 in separate sub-regions. Two of these sub-regions are interconnected via IPv6 using a network address and protocol translation technique whereby IPv4 messages are converted to IPv6 across the interface and then back to IPv4.
- The aeronautical communication industry (i.e., AMHS system providers) has not fully developed the MTA to support IPv6.
- Many CAR/SAM Member States have either already implemented the AMHS or will need to replace the AFTN service in the near future.

3. Discussion

3.1 Protocol Stacks for Current AMHS Applications

3.1.1 Figure 3.1 shows the protocol stacks that are supported in current AMHS applications. These applications support a full OSI stack with the OSI upper layers (application, session, and presentation) over the OSI Class 4 Transport Protocol (TP4), which in turn runs over the OSI Connectionless Network Layer Protocol (CLNP). The current applications will also run over the Transport Control Protocol (TCP) and IPv4. In this case a method is needed to converge the upper layers over TCP. This is accomplished using RFC 1006. RFC 1006 defines a method for adapting an OSI transport protocol (i.e., the Class 0 Transport Protocol (TP0)) to run over TCP in an IPv4 environment.

AMHS APPLICATION (Message Transfer Agent)	
Presentation Layer	
Session Layer	
TP4	TP0
	RFC 1006
	TCP
CLNP	IPv4

Figure 3.1 Protocol Stacks for Current AMHS Applications

3.2 Initial Implementation of IP

3.2.1 Figure 3.2 depicts the proposed initial implementation of IP for CAR/SAM.

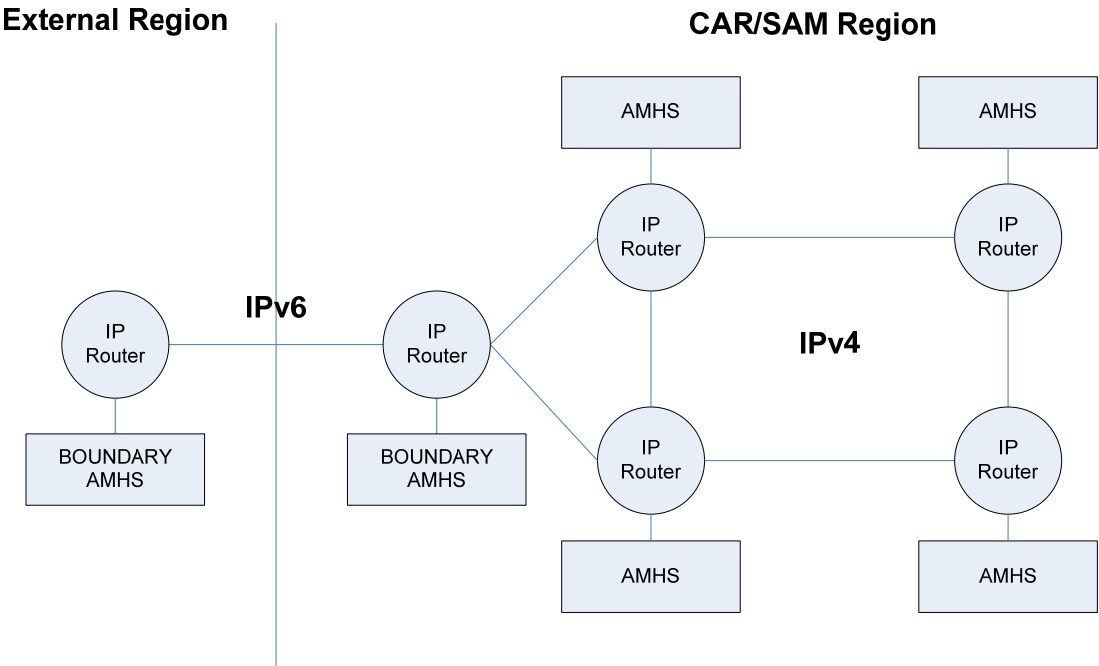


**Figure 3.2 Initial Phase
IPv4 Intra-Regional and IPv6 to External ICAO Regions**

3.2.3 Figure 3.2 depicts a “Boundary AMHS” system. This AMHS system provides gateway MTA access to external regions. It is anticipated that other AMHS systems in the region will not connect directly to AMHS systems in other regions, but rather will forward message traffic to the Boundary AMHS, which in turn will forward message traffic to a corresponding Boundary AMHS in the external region.

3.3.1 Figure 3.3 depicts the transition phase implementation of IP for CAR/SAM.



3.3.2 In this phase it is proposed that AMHS applications support dual stack operation with both IPv4 and IPv6 as depicted in Figure 3.4. Note that RFC 2126 is now invoked since it defines a method for adapting an OSI transport protocol to run over TCP in an IPv6 environment.

AMHS APPLICATION (Message Transfer Agent)	
Presentation Layer	
Session Layer	
TP0	TP0
RFC 1006	RFC 2126
TCP	TCP
IPv4	IPv6

Figure 3.4 Protocol Stacks for Transition-Phase AMHS Applications

3.3.3 Routers within the region will operate both IPv4 and IPv6, thereby providing “dual IP layer operation” described in RFC 4213, Basic IPv6 Transition Mechanisms. AMHS systems within the region will be incrementally updated to support dual IP layer operation.

3.3.4 For interfacing to external regions it is expected that message traffic will continue to pass through the Boundary AMHS system and IPv6 communication will be maintained at the network layer. However, once the Boundary AMHS is updated to dual stack, NAT-PT may be removed and IPv6 used without translation.

3.4 End State full IPv6 within CAR/SAM

3.4.1 Figure 3.5 depicts the end-state implementation of IP for CAR/SAM. Once all of the AMHS systems have been upgraded, IPv4 operation may be disabled leaving just IPv6 operation in the region.

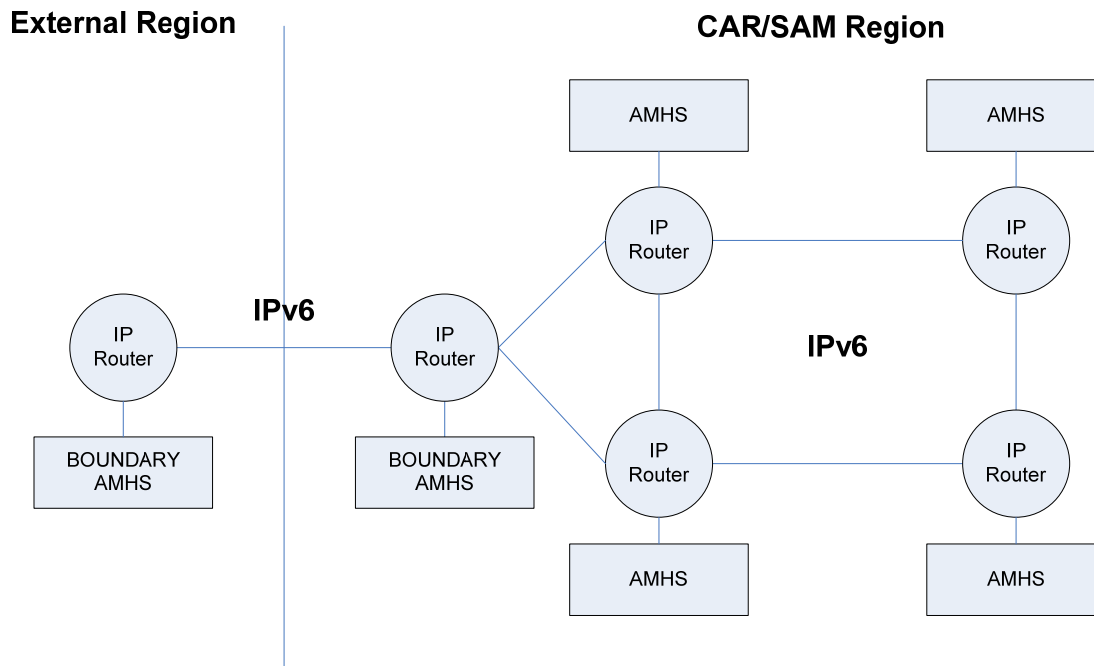


**Figure 3.5 End State
IPv6 for Intra-region and Inter-region**

4. Conclusion

4.1 This paper has outlined an IPv6 transition strategy for the Caribbean and South American regions. The goal is for the regions to fully implement IPv6 in accordance with the ICAO ACP specification once it is adopted. The implementation will be for both intra-regional and inter-regional communication when the IPv6-based applications become available. CAR/SAM States are invited to review this approach and plan their individual implementation accordingly.

Appendix H to the Report on Agenda Item 3

ACTION PLAN FOR THE FOLLOW-UP AND IMPLEMENTATION OF AIR-GROUND AND GROUND-GROUND COMMUNICATIONS

State/Organization:

Date:

No.	Strategic Objective/ Objetivo	Global Plan/ Plan Mundial - GPI	GREPECAS No. Con/Dec/Pa	Target Activity/ Actividad Meta	Follow-up Action/ Acción de seguimiento	To be developed by/ A ser desarrollado por	Deliverable/ Entregable	Target date/ Fecha límite	Remarks/ Observaciones
1	2	3	4	5	6	7	8	9	10
1	A, D	GPI-17	13/71 a)	Improve or mitigate the VHF and HF/SMA (R) coverage		States and International Organizations.	Compliance with the required coverage	2007	
2	A, D	GPI-17	13/71 b)	Implement required satellite voice communications		States and International Organizations.	Implement the required voice communications	2009	
3	A, D	GPI-17	13/71 b)	Review and proposal for amendment corresponding to the FASID Table CNS 2A, according to the results of action 13/71 a).		States and International Organizations.	Proposal for amendment	2007	
4	A, D	GPI-17	13/71 c)	Inform the ICAO NACC Regional Office regarding the progress on actions a) and b) of Con. 13/71		States and International Organizations.	Information sent	2008	
5	A, D	GPI-17	13/72 a)	Prepare an execution Plan of the progressive air-ground data links, based on the Plan of activities and the Implementation Programme presented in Appendixes AW and AX to Agenda Item 3 of the GREPECAS/13 Report.		States and International Organizations.	Prepared Plan	2009	
6	A, D	GPI-17	13/72 b)	Review and proposal for amendment corresponding to the FASID Table CNS 2A, according to the results of action 13/72 a).		States and International Organizations.	Proposal for amendment	2008	
7	A, D	GPI-17	13/72 c)	Inform the ICAO NACC Regional Office regarding the progress on actions a) and b) of Con. 13/72		States and International Organizations.	Information sent	2008	
8	A, D	GPI-17	13/74	Forward the proposal for amendment to the ATN Regional Plan format.		ICAO	Proposal for amendment forwarded	2008	
9	A, D	GPI-17	13/75 a)	Analyze requirements and prepare plans to implement ATN ground-ground applications, such as AMHS and AIDC.		States and International Organizations.	Prepared Plan	2008	

Appendix H to the Report on Agenda Item 3

No.	Strategic Objective/ Objetivo	Global Plan/ Plan Mundial - GPI	GREPECAS No. Con/Dec/Pa	Target Activity/ Actividad Meta	Follow-up Action/ Acción de seguimiento	To be developed by/ A ser desarrollado por	Deliverable/ Entregable	Target date/ Fecha límite	Remarks/ Observaciones
1	2	3	4	5	6	7	8	9	10
10	A, D	GPI-17	13/75 a)	Inform the ICAO NACC Regional Office regarding the results of action a) of Con. 13/75.		States and International Organizations.	Information sent	2008	
11	A, D	GPI-17	13/78	Carry out activities for the deployment of the ATN and its applications according to the deadlines and strategies presented in Appendix BA to Agenda Item 3 of the GREPECAS/13 Report.		States and International Organizations.	Deployment of the ATN according to planned dates.	2009	
12	A, D	GPI-17	13/79	Develop national plans for the implementation of the AMHS and the AIDC, contributing to the development of the ATM automation.		States and International Organizations.	Prepared Plan	2009	
13	A, D	GPI-17	14/53	Forward the proposal for amendment of the FASID Table CNS 2A that was reviewed by the GREPECAS/14.		ICAO	Proposal for amendment forwarded	2007	
14	A, D	GPI-17	GRP14 pa. 3.6.3.17	Forward the Table format proposal for the ATN air-ground applications regional plan, presented in Appendix AD to the Report on Agenda Item 3 of the GREPECAS/14 Report.		ICAO	Proposal for amendment forwarded	2008	

APPENDIX I

(Extract from Chapter 1 of the Global Air Navigation Plan, Doc 9750 AN/968)

(GPI-21) NAVIGATION SYSTEMS

Scope: Enable the introduction and evolution of performance-based navigation supported by a robust navigation infrastructure providing an accurate, reliable and seamless global positioning capability.

Related ATM objectives: WGS-84; NPA; Precision approach; Required navigation performance

Description of strategy

1.90 Airspace users need a globally interoperable navigational infrastructure that delivers benefits in safety, efficiency and capacity. Aircraft navigation should be straight-forward and conducted to the highest level of accuracy supported by the infrastructure.

1.91 To meet those needs, the progressive introduction of performance-based navigation must be supported by an appropriate navigation infrastructure consisting of an appropriate combination of global navigation satellite systems (GNSS), self-contained navigation systems (inertial navigation system) and conventional ground-based navigation aids.

1.92 GNSS provides standardised positioning information to the aircraft systems to support precise navigation globally. One global navigation system will help support a standardisation of procedures and cockpit displays coupled with a minimum set of avionics, maintenance and training requirements. Thus, the ultimate goal is a transition to GNSS that would eliminate the requirement for ground-based aids, although the vulnerability of GNSS to interference may require the retention of some ground aids in specific areas.

1.93 GNSS-centered performance-based navigation enables a seamless, harmonised and cost effective navigational service from departure to final approach that will provide benefits in safety, efficiency and capacity.

1.94 GNSS implementation will be carried out in an evolutionary manner, allowing gradual system improvements to be introduced. Near-term applications of GNSS are intended to enable the early introduction of satellite-based area navigation without any infrastructure investment, using the core satellite constellations and integrated multisensor airborne systems. The use of these systems already allows for increased reliability of non-precision approach operations at some airports.

1.95 Medium/longer term applications will make use of existing and future satellite navigation systems with some type of augmentation, or combination of augmentations required for operation in a particular phase of flight.

APPENDIX J



International
Civil Aviation
Organization

Organisation
de l'aviation civile
internationale

Organización
de Aviación Civil
Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
المدني الدولي

国际民用
航空组织

Tel.: +1 (514) 954-6122

Ref.: EC 2/84-07/41

20 July 2007

Subject: Conclusions of the study on Global Navigation
Satellite System (GNSS) cost allocation

Action required: To consider the provisional policy
guidance on GNSS cost allocation in discussions and
negotiations with all interested parties

Sir/Madam,

1. I have the honour to invite your attention to the conclusions of the Secretariat's study on Global Navigation Satellite System (GNSS) cost allocation. The request for the study originates from the World-wide CNS/ATM Systems Implementation Conference (held in Rio de Janeiro in May 1998), which called on ICAO to address the issue of cost allocation amongst all users of GNSS, including allocation between civil aviation and other user categories. The study has since been considered by several fora, including the Conference on the Economics of Airports and Air Navigation Services (ANSCONF 2000, June 2000), the Eleventh Air Navigation Conference (AN-CONF/11, September 2003) and three meetings of the Air Navigation Services Economics Panel (ANSEP).

2. The Council reviewed the study during its 180th Session in February 2007. The following five conclusions of the study were accepted by the Council as "provisional" policy guidance on the allocation of the incremental costs of more advanced GNSS services:

- a) basic GNSS services will be provided free of charge as a common good to a multiple number of user categories, while more advanced GNSS services (including augmentation services) requiring a higher quality of service and hence higher costs will have to be paid for by all their users in most cases;
- b) the incremental costs for more advanced GNSS services should be allocated amongst all the users who can actually derive benefits from them. Such cost allocation should take place at the regional level and take into account the requirements of different

- 2 -

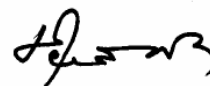
user categories, where the service level can be adjusted to satisfy different requirements;

- c) before any costs are recovered from civil aviation, cost allocation amongst all users should be discussed and agreed upon through transparent negotiations and consultations between a GNSS service provider and representatives of civil aviation as well as other user categories;
- d) any cost allocation and resultant cost recovery should be consistent with ICAO's policies on air navigation services charges in order to ensure that civil aviation is requested to pay only its fair share of the relevant costs according to sound accounting principles and that international civil aviation is not discriminated against compared to other modes of international transport and other user groups; and
- e) once the civil aviation's share has been determined, the allocation among participating States (or air navigation services providers (ANSPs)) and on the different phases of flights should be performed according to existing ICAO policy and guidance. ANSPs could then recover the costs from the users within their existing charging systems.

3. I would like you to consider the use, as far as possible, of this provisional policy guidance in your discussions and negotiations with GNSS service providers, responsible authorities and other interested parties. This provisional guidance could serve as a tool for the civil aviation community to ensure an equitable treatment of all users.

4. In view of the importance of the subject addressed by the study, the Council requested me to continue to monitor developments, and collect relevant information to make an inventory of GNSS applications, and to further coordinate technical, legal and economic aspects associated with GNSS cost allocation. Once a consensus has been reached on the definition of basic services and liabilities of GNSS service providers, this provisional guidance is to be redrafted with appropriate wording for inclusion in *ICAO's Policies on Charges for Airports and Air Navigation Services* (Doc 9082).

Accept, Sir/Madam, the assurances of my highest consideration.



Taïeb Chérif
Secretary General

(Appendix AF to the Report on Agenda Item 3 of the GREPECAS/14 Meeting Report)

[illegible]

Appendix L to the Report on Agenda Item 3

ACTION PLAN FOR THE GNSS IMPLEMENTATION FOLLOW-UP - CAR REGION

State/Organization:

Estado/Organización:

Date/Fecha:

No.	Strategic Objective/ Objetivo	AN-Conf/11	Global Plan/ Plan Mundial - GPI	Regional Plan / Plan Regional - FASID	GREPECAS No. Con/Dec/Pa	Target Activity / Actividad Meta	Follow-up Action / Acción de seguimiento	To be developed by / A ser desarrollado por	Deliverable / Entregable	Target date / Fecha límite	Remarks / Observaciones
1	2		3		4	5	6	7	8	9	10
1	A, D	Rec 6/1 b)	GPI-21			<u>Recommendations of the AN-Conf/11 for the transition to satellite-based air navigation</u> Adopt measures to achieve, as soon as possible, worldwide navigation capability to at least APV I performance.		States and air navigation services Providers	Adopted measures	2009	
2	A, D	Rec 6/1 c)	GPI-21			Take note of the available and upcoming SBAS navigation services providing for APV operations.		States and air navigation services Providers	Take note	2007	
3	A, D	Rec 6/1 c)	GPI-21			Take the necessary steps towards installation and certification of SBAS capable avionics.		States and airspace users	Installed and certified avionics	2009	
4	A, D		GPI-21		12/45 a)	<u>New guidelines and regional strategy for the GNSS transition</u> Take into account the "Regional Guidelines for the transition to the GNSS" and the "Regional strategy for the introduction and application of non visual aids to approach, landing and departure"		States and International Organizations	Guidelines and Strategy applied	2009	
5	A, D		GPI-21	Tabla CNS 3	13/84 a)	<u>Studies for a CAR/SAM Regional SBAS solution</u> Continue introducing the GNSS in an evolutionary and coordinated manner, according to the ICAO Global Plan.		States and International Organizations	Introduce GNSS	2009	

Appendix L to the Report on Agenda Item 3

No.	Strategic Objective/ Objetivo	AN-Conf/11	Global Plan/ Plan Mundial - GPI	Regional Plan / Plan Regional - FASID	GREPECAS No. Con/Dec/Pa	Target Activity / Actividad Meta	Follow-up Action / Acción de seguimiento	To be developed by / A ser desarrollado por	Deliverable / Entregable	Target date / Fecha límite	Remarks / Observaciones
1	2		3		4	5	6	7	8	9	10
6	A, D		GPI-21	Tabla CNS 3	13/84 a)	Conducting the studies for a CAR/SAM regional SBAS solution; and applying other augmentations, also taking into account that added benefits should help to justify the cost of reaching the ultimate goal of migrating to the GNSS once ground-based aids are dismantled.		States and International Organizations	Studies carried out	2008	
7	A, D		GPI-21		13/84 d)	Interested parties in participating in the Project RLA/03/902 should consider the revised rates to join this project.		States and International Organizations	Participation in the Project	2007	
8	A, D		GPI-21		13/85	Foster the use of GNSS in diverse sectors of their respective States and disseminate the results of the studies on the solution of SBAS augmentation.		States and International Organizations		2009	
9	A, D		GPI-21		GRP14 3.6.3.2 0 to 28	Follow-up to the studies and results of the regional projects RLA/00/009 and RLA/03/902 on the SBAS augmentation solution in the CAR/SAM Regions.		States and International Organizations	Consider the results of the studies	2008	
10	A, D		GPI-21		14/55	Take note that the SBAS solutions proposed for the CAR/SAM Regions should be oriented to achieve at least APV I capability.		States and International Organizations	Proposed SBAS solution to at least APV I performance	2008	
11	A, D		GPI-21			<u>Follow-up to the SARPs and ICAO guidelines and policies on GNSS</u> Reply State Letter Ref.: AN 7/1.3.91-07/31 dated 11 May 2007.				24-08-07	
12	A, D		GPI-21		GRP13 pa. 3.6.3.6 1	Follow-up and implement GNSS in accordance to the SARPs and ICAO guidelines.		States and International Organizations	Take note and issue comments	2009	

APPENDIX M

(GPI-9) SITUATIONAL AWARENESS

Scope: Operational implementation of data link-based surveillance. The implementation of equipment to allow traffic information to be displayed in aircraft supporting implementation of conflict prediction and collaboration between flight crew and the ATM system. Improve situational awareness in the cockpit by making available electronic terrain and obstacle data of required quality.

Related ATM objectives: application of data link; Functional integration of ground systems with airborne; ADS; ADS-B; SSR Mode S

Description of strategy

1.49 The further implementation of enhanced surveillance techniques (ADS-C or ADS-B) will allow reductions in separation minima and an enhancement of safety, increase in capacity, improved flight efficiency, all on a cost-effective basis. These benefits may be achieved by bringing surveillance to areas where there is no primary or secondary radar, when cost-benefit models warrant it. In airspaces where radar is used, enhanced surveillance can bring a further reduction in aircraft separation minima and improve, in high traffic density areas, the quality of surveillance information both on the ground and in the air, thereby increasing safety levels. The implementation of sets of quality assured electronic terrain and obstacle data necessary to support the ground proximity warning systems with forward looking terrain avoidance function as well as minimum safe altitude warning (MSAW) system will benefit safety substantially.

1.50 Implementation of surveillance systems for surface movement at aerodromes where weather conditions and capacity warrant will also enhance safety and efficiency while implementation of cockpit display of traffic information and associated procedures will enable pilot participation in the ATM system and improve safety through greater situational awareness.

1.51 In remote and oceanic airspace where ADS-C is used, FANS capabilities exist on many air transport aircraft and could be added to business aircraft. ADS-B can be used to enhance traffic surveillance in domestic airspace. In this respect, it should be noted that 1090 extended squitter is both available and should be accepted as the global choice for the ADS-B data link.

1.52 At terminal areas and at aerodromes surrounded by significant terrain and obstacles, the availability of quality assured terrain and obstacle databases containing digital sets of data representing terrain surface in the form of continuous elevation values and digital sets of obstacle data of features, having vertical significance in relation to adjacent and surrounding features considered hazardous to air navigation, will improve situational awareness and contribute to the overall reduction of the number of controlled flight into terrain related accidents.

APPENDIX N

CAR/SAM Regional Strategy for the ADS-C and ADS-B Systems Implementation

Near-Term (until 2011)

1. The ADS-C surveillance implementation is used in oceanic and remote airspace associated with FANS capacities. The ADS-B surveillance implementation should be prioritize in the continental airspaces where there is no radar surveillance available, taking into consideration the density of traffic, the operational requirements and aircrafts capability. Also, consideration should be given to the potentialities to complement or replace the SSR in a scarcely to medium traffic density area, for route surveillance, in terminal areas, for surface movement control (ADS-B) and other applications.
2. Each State/Territory/International Organization needs to evaluate the: maximum density traffic nowadays and expected for the year 2015. The useful life of their radars and the potentiality for their replacement with ADS-B, the locations of potential ADS-C or ADS-B ground station sites, and the capabilities of existing and planned ATC automation systems to support the ADS-C or ADS-B.
3. The proportions of equipped aircrafts are also critical for the ADS-C and ADS-B deployment, for which it is required to periodically provide, al least, the following information: number of equipped aircrafts operating in the concern airspace, number and name of the airlines that have equipped aircrafts for ADS-C and ADS-B, type of equipped aircrafts, categorization of the accuracy/integrity data available in the aircrafts.
4. The ADS-B deployment should be associated at early stages in coordination with the States/Territory/International Organizations responsible for the control of adjacent areas, and the correspondent ICAO Regional Office, establishing a plan in the potential areas of ADS-B data sharing, aimed at a coordinated, harmonious and interoperable implementation.
5. Each State/Territory/Organization should investigate and report their own Administration's policy in respect to the ADS-B data sharing with their neighbours and from cooperative goals.
6. The ADS-B data sharing plan should be based selecting centres by pairs and analyzing the benefits and formulating proposals for the ADS-B use for each pair of centre/city with the purpose to improve the surveillance capacity.
7. Likewise, it is necessary to consider implementing surveillance solutions for surface movement control by the implementation of ADS-B.
8. To support the ADS-C and ADS-B regional plan, the States/Territories/International organizations, as well as the entity representing the airspace users, should organized and provide the following information; a focal point of contact, its respective implementation plan, including a time-table, and information on its air-ground communications and automation systems.
9. The ADS-B data links technology that will be use for the Mode S 1,090 MHz extended squitter to (1090 ES). Likewise, al the end of the medium term the introduction of ADS-B data sharing could be initiated and be approved by ICAO for its use in a long-term to satisfy the new requirements of the global ATM system.
10. The implementation would be in conformity with the SARPs, ICAO guidelines and the GREPECAS conclusions.

Medium-Term (2011 – 2015)

11. Continuation of the ADS-B use with the 1090 ES technique and the planning initiation for the ADS-B implementation by new data links to satisfy the ATM global system requirements.

Longer-Term (From 2015 to 2025)

12. The planning and implementation would be carried out according to the ADS and ADS-B evolution, with the associated technology developments, in conformity with the global ATM systems, with the new SARPs and ICAO guidance.



IATA SURVEY

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Airline	Airplane type	NAVIGATION																	SURVEILLANCE					COMMUNICATIONS					COMMENTS	
		1 + FMS	2 + FMS	GNSS STAND ALONE	GNSS COUPLED TO FMS	IRU	RNAV DME/DME	RNAV DME/DME/IRU	RNAV GNSS	RNP 10	RNP 4 Oceanic	RNAV 5	RNAV 1	RNP 1.0	RNP .3	RNP <3	SBAS	GBAS	FANS	ADS	ADS-B	Mode S	Mode S Enhanc	HF	HF DATA LINK	ACARS	VDL 2	SATCOM		
Air Canada	A319		Y		Y	Y	Y	Y	Y	Y																Y				
	A320		Y		Y	Y	Y	Y	Y	Y																Y				
	A330		Y		Y	Y	Y	Y	Y	Y	Y	Y							Y	Y	Y			Y	Y		Y			
	A340		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y	Y			Y	Y		Y			
	B767		Y		Y	Y	Y	Y	Y	Y	Y	Y								Y	Y	Y			Y		Y*	*15 of 40 have SATCOM		
Air Europa	A330-200				Y	Y		Y		Y	Y	Y		Y					Y	Y			Y	Y	Y	Y	Y	Y		
	B737-800	Y			Y	Y		Y				Y			Y					Y			Y	Y	Y	Y	Y			
	B767-300		Y		Y	Y		Y		Y	Y	Y	Y		Y							Y		Y						
Air France	A320		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y							Y	Y	Y	Y	Y	Y				ADS-B OUT capable but not certified (1 a/c testing in Caribbean)
	A330		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y	Y	Y		Y			ADS-B OUT capable but not certified
	A340		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y	Y	Y		Y			ADS-B OUT capable but not certified
	B747-200F		Y		Y	Y	Y		Y	Y	Y	Y	Y	Y	Y							Y	Y	Y	Y		Y			
	B747-400/400ERF		Y		Y	Y		Y		Y	Y	Y	Y	Y	Y				Y	Y		Y	Y	Y	Y		Y*	Y		*only 8 VDL2 equipped airplanes
	B777-200ER/300ER		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y		Y	Y	Y	Y		Y		Y	
Brithish Airways	A319		Y		Y	Y		Y	Y		Y	Y	Y	Y	Y						Y	Y	Y			Y				
	A320		Y*		Y*	Y		Y	Y*			Y	Y	Y	Y						Y	Y	Y	Y		Y				* except older A320s
	B737-400	Y				Y		Y				Y	Y	Y							Y	Y	Y	Y		Y				
	B747-400		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y					Y	Y	Y	Y		Y		Y		
	B767-300		Y	Y		Y		Y		Y		Y	Y									Y	Y	Y		Y				
Caribbean Airlines	B777		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y		Y		Y	
	B737-800		Y		Y	Y		Y	Y		Y				Y							Y		Y		Y				
Continental Airlines	737-300	Y																				Y				Y				
	737-500		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y							Y				Y				
	737-700		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y							Y		Y		Y			
	737-800		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y							Y		Y		Y			
	737-900		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y							Y		Y		Y			
	757-200		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y						Y	Y	Y	Y	Y				Mode S Enhanced in work to meet European mandate
	757-300		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y						Y		Y	Y	Y	Y			
	767-200		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y				Y		Y	Y	Y	Y	Y	Y	Y		Mode S Enhanced in work to meet European mandate
	767-400		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y				Y		Y	Y	Y	Y	Y	Y	Y		Mode S Enhanced in work to meet European mandate
	777-200		Y		Y	Y		Y	Y	Y		Y	Y	Y	Y	Y				Y		Y	Y	Y	Y	Y	Y	Y		Mode S Enhanced in work to meet European mandate
COPA	B737-700		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y		Y	Y	Y		Y		
	B737-800		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y		Y	Y	Y				
	ERJ-190		Y		Y	Y	Y	Y	Y	Y	Y											Y		Y		Y				
Emirates	A310F		Y		Y	Y	Y	Y	Y	Y		Y	Y	Y								Y	Y	Y		Y				
	A330-200		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
	A340-300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y	Y	Y	Y		Y		
	A340-500		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
	B777-200/300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
	B777-300ER		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y		Y		Y	
FedEx	A300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y	Y			Y	Y			
	A310		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y	Y			Y	Y			
	B727			Y*							Y																			* approx. 20% of fleet has GPS
	MD-10		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y	Y	Y	Y	Y	Y			
	MD-11		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y	Y	Y		
Iberia	A319		Y		Y	Y	Y	Y	Y			Y										Y	Y	Y		Y				
	A320		Y		Y	Y	Y	Y	Y			Y	Y									Y	Y	Y		Y				
	A340		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y									Y	Y	Y		Y			Y	
KLM	A330-200		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y	Y	Y	Y		Y		
	B747-400		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y									Y	Y	Y		Y		Y		
	B747-400F		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y	Y		Y		Y		
	B777-200		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y						Y	Y		Y	Y	Y		Y		Y		
	MD-11		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y									Y	Y	Y		Y		Y		
A319-100		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y			Y								Y		Y					



IATA SURVEY
ON BOARD NAVIGATION, SURVEILLANCE AND COMMUNICATION EQUIPMENT IN THE REGION

Airline	Airplane type	NAVIGATION																		SURVEILLANCE				COMMUNICATIONS					COMMENTS
		1 x FMS	2 x FMS	GNSS STAND ALONE	GNSS COUPLED TO FMS	IRU	RNAV DME/DME	RNAV DME/DME/IRU	RNAV GNSS	RNP 10	RNP 4 Oceanic	RNAV 5	RNAV 1	RNP 1.0	RNP 3	RNP <3	SBAS	GBAS	FANS	ADS	ADS-B	Mode S	Mode S Enhan	HF	HF DATA LINK	ACARS	VOL 2	SATCOM	
LAN	A320-200		Y		Y	Y	Y	Y	Y			Y	Y			Y								Y	Y	Y			
	A340-300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y			Y	Y		Y		Y		
	B767-300		Y		Y*	Y	Y	Y	Y			Y	Y										Y	Y*	Y			*10 of 29 B767s have GPS. Non-GPS 767s have HF datalink	
Lufthansa	A340-300		Y		Y	Y		Y	Y			Y	Y					Y				Y	Y	Y		Y	Y		
	A340-600				Y	Y		Y	Y				Y					Y				Y	Y	Y		Y	Y		
	B747-400		Y		Y	Y		Y	Y				Y					Y				Y	Y	Y		Y	Y		
Mexicana	A318		Y			Y		Y							Y							Y				Y			
	A319		Y			Y		Y							Y							Y		Y*		Y		* 3 of 16 have HF	
	A320		Y			Y		Y							Y							Y		Y*		Y		* 20 of 30 have HF	
	B757		Y			Y		Y					Y									Y				Y			
	B767		Y			Y		Y					Y									Y				Y			
Northwest	A319		Y			Y		Y					Y									Y				Y			
	A320		Y			Y		Y					Y									Y				Y			
	A330-200/300		Y			Y		Y				Y	Y		Y			Y	Y		Y	Y	Y		Y	Y	Y		
	B747-200					Y						Y										Y		Y					
	B747-400		Y			Y		Y				Y	Y									Y	Y	Y	Y	Y			
	B757-200/300		Y		Y*	Y		Y				Y	Y									Y	Y	Y*		Y		* part of the fleet only	
Pluna	B767-300		Y			Y	Y	Y		Y	Y	Y									Y		Y		Y				
SAA	A319		Y			Y				Y	Y	Y	Y	Y	Y									Y	Y	Y			
	A340-200		Y			Y				Y	Y	Y	Y	Y	Y								Y		Y		Y		
	A340-300		Y			Y				Y	Y	Y	Y	Y	Y			Y	Y	Y			Y	Y	Y		Y		
	A340-600		Y			Y				Y	Y	Y	Y	Y	Y				Y	Y	Y			Y	Y	Y	Y		
	B737-800		Y			Y				Y		Y											Y	Y*	Y			* 6 of 21 have HF datalink	
	B747-400		Y	Y*	Y	Y				Y	Y	Y							Y*				Y	Y	Y	Y*		* some aircraft only. Only 4 aircraft have SATCOM.	
TACA	A319		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y		Y		Y			
	A320		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y		Y		Y			
	A321		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y		Y		Y			
TAM	A319		Y		Y	Y	Y	Y		Y		Y	Y		Y							Y		Y		Y		Y	
	A320		Y		Y	Y	Y	Y		Y		Y	Y		Y							Y		Y		Y		Y	
	A330-200		Y		Y	Y	Y	Y		Y		Y	Y	Y	Y			Y				Y	Y	Y		Y		Y	
	F100		Y			Y	Y	Y														Y		Y					
	MD-11		Y			Y	Y	Y		Y			Y									Y		Y					
UPS	A300		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y	Y	Y	Y		Y			
	B727			Y						Y		Y										Y	Y			Y			
	B747-100/200		Y			Y	Y	Y		Y	Y	Y									Y	Y	Y	Y	Y				
	B757		Y			Y	Y	Y		Y	Y	Y	Y								Y	Y	Y	Y*	Y*	Y		* HF and HFDL on 20 out of 75 airplanes	
	B767		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y							Y	Y	Y	Y	Y	Y			
	DC-8					Y	Y	Y		Y		Y										Y	Y			Y			
	MD-11		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y	Y	Y	Y	Y		

Appendix P to the Report on Agenda Item 3

APPENDIX/APENDICE P**Table CNS 4A - SURVEILLANCE SYSTEMS (Updated)****Tabla CNS 4A - SISTEMAS DE VIGILANCIA (Actualizada)**

State(Territory)/Location Estado(Territorio)/Ubicación	ATS Unite Served Unidad ATS Servida	PSR			SSR				ADS		Remarks Observaciones
		Funtion Función	Coverage Cobertura (NM)	Status Impl. Estado	Funtion Función	Modes Modos (A,C& S)	Coverage Cobertura (NM)	Status Impl. Estado	Type Tipo	Status Impl. Estado	
		4	5	6	7	8	9	10	11	12	
1	3	4	5	6	7	8	9	10	11	12	13
ANGUILA (UK)								NP			
ANTIGUA & BARBUDA											
Airport (4 NM North)	V.C. Bird APP				T	A/C	180	I*			* MSSR
ARUBA (Kingdom of the Netherlands)											
Reina Beatrix APP		T	80	I	T	A/C	256	I*			*MSSR
BAHAMAS											
Nassau	Miami ACC Nassau APP	E/T		I	E/T	A/C		I			
BARBADOS											
Aiport	Adams APP				T	A/C	250	I*			*MSSR
BELIZE											
Belize APP								NP			
COSTA RICA											
El Coco	El Coco APP	E/T		I	E/T	A/C	245	I*			*MSSR
CUBA											
Camagüey	Habana ACC Camagüey APP				E/T	A/C	200	I/P*			*MSSR
Habana	Habana TMA Habana APP	T		P	T	A/C	200	I/P*			*MSSR
Holguín	Habana ACC Santiago de Cuba TMA				E/T	A/C	200	I/P*			*MSSR
Menocal	Holguín APP Habana ACC Habana TMA Habana APP Varadero APP				E/T	A/C	200	I*			*MSSR
San Julián	Habana ACC				E	A/C	200	I/P*			*MSSR
Sta. Clara	Habana ACC				E	A/C	200	I/P*			*MSSR
DOMINICA				NP				NP			
DOMINICAN REPUBLIC											
Barahona	Barahona APP	T	70	I							
Puerto Plata	Puerto Plata APP	T	70	I							
Punta Cana	Santo Domingo ACC Punta Cana APP	T	70	P	E/T	A/C	250	P*			*MSSR

Appendix P to the Report on Agenda Item 3

[illegible]

Appendix Q to the Report on Agenda Item 3

ACTION PLAN FOR THE FOLLOW-UP AND IMPLEMENTATION OF SURVEILLANCE SYSTEMS - CAR REGION

State/Organization:

Estado/Organización:

Date/Fecha:

No.	Strategic Objective/ Objetivo	Global Plan/ Plan Mundial - GPI	Regional Plan / Plan Regional - FASID	GREPECAS No. Con/Dec/Pa	Target Activity / Actividad Meta	Follow-up Action/ Acción de seguimiento	To be developed by/ A ser desarrollado por	Deliverable/ Entregable	Target date/ Fecha límite	Remarks/ Observaciones
1	2	3	4	5	6	7	8	9	10	11
1	A, D	GPI-09		GRP14 pa 3.6.3.4 3	<u>Global Plan Strategy GPI-09 - Situational Awareness</u> Take note of GPI-09 - Situational awareness as a global strategy for data-based surveillance implementation. (Appendix A)		States and International Organizations	Knowledge of GPI-09 from the Global air navigation Plan	2007	
2	A, D	GPI-09			<u>ICAO SARPs and guidelines on Surveillance Systems</u> Take into account and follow-up the Surveillance Systems SARPs and ICAO guidelines		States and International Organizations	Knowledge and application of the Surveillance SARPs	2008	
3	A, D	GPI-09		GRP14 pa 3.6.3.4 4	<u>Preliminary Regional Strategy for the deployment of ADS-B and ADS-C</u> Take into account the "Preliminary Regional Strategy for the Deployment of ADS-C and ADS-B" and follow-up GREPECAS guidelines regarding the consolidation of this strategy into a Surveillance Systems Regional Unified Strategy." (Appendix B)		States and International Organizations	Preliminary regional strategy used to plan and deploy ADS. Follow-up to the evolution	2009	
4	A, D	GPI-09		13/87	<u>Initiatives for the implementation of ADS-B, ADS-C as well as other Surveillance Systems</u> Assess the convenience to establish and implement ADS-B trials, as well as other surveillance systems.		States and International Organizations	ADS-B Trials	2008	
5	A, D	GPI-09	Tabla CNS 4A	GRP14 pa 3.6.3.4 4	Continue the adoption of initiatives for the ADS-B, ADS-C and other surveillance systems planning and implementation, according to operational requirements. (Appendix C)		States and International Organizations	Established initiatives	2008	

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No.	Strategic Objective/ Objetivo	Global Plan/ Plan Mundial - GPI	Regional Plan / Plan Regional - FASID	GREPECAS No. Con/Dec/Pa	Target Activity / Actividad Meta	Follow-up Action/ Acción de seguimiento	To be developed by/ A ser desarrollado por	Deliverable/ Entregable	Target date/ Fecha límite	Remarks/ Observaciones
1	2	3	4	5	6	7	8	9	10	11
6	A, D	GPI-09	Tabla CNS 4A	GRP14 pa 3.6.3.5 1	<u>Update of the Surveillance Systems Regional Plan</u> Considering the results of the previous actions and the development of the Surveillance Systems, to review and propose amendments to Table CNS 4A - Surveillance Systems of the FASID.		States and International Organizations	Amendment to Table CNS4A, FASID	2009	
7	A, D	GPI-09		11/47 12/48 12/49 13/88	<u>Radar data exchange</u> Establish and implement bilateral/multilateral agreements for radar data exchange.		States and International Organizations	Radar data exchange established	2008	

Agenda Item 4: Establishment of interfaces for ATM automated systems between adjacent ATS units

4.1 The Meeting took note of GREPECAS Conclusion 12/31 – *Regional strategy for the integration of ATM Automated Systems*, which basically encouraged States/Territories/International Organisations to define an action plan for the integration of ATM automated systems using the CAR/SAM Regional strategy described in **Appendix A** to this part of the Report.

4.2 Likewise, the Meeting noted that GREPECAS considered that there is at present a high automation level in the control centres; therefore, the States/Territories/International Organisations should continue working according to the Regional Strategy for the Integration of Automated Systems including related activities such as: the integration of automation systems, use of an Interface Control Document (ICD), encouraging the planning and development of human resources and establishing coordination between States/Territories/International Organisations.

4.3 Also, the Meeting noted that the GREPECAS mechanism finalised the revision of the ICD offered by Canada, United States and Mexico to obtain uniform application material for the CAR/SAM Regions, aimed at achieving evolutionary integration and harmonised interoperability of the ATM automated systems in the NAM, CAR and SAM Regions. In this respect, GREPECAS drafted Conclusion 14/43 – *Agreements for ATM Automated Systems Interface*, through which States/Territories/International Organisations were encouraged to take into account technical feasibility studies and operational benefits, and coordinate the establishment of bilateral and multilateral agreements to interface automated systems between adjacent units and use guidance material specified as the “*Interface Control Document for Data Communications between ATS Units in the Caribbean and South American Regions (CAR/SAM ICD)*”. The ICD is published on the ICAO NACC webpage under “eDocuments.”

4.4 Additionally, the Meeting took note that GREPECAS adopted Conclusion 14/44 – *Establishment of an Action Plan for the Interface of ATM Automated Systems*, in which States/Territories/International Organisations are encouraged to formulate an action plan for the interface of ATM automated systems using the Table of ATS Operational Requirements for Automated Systems. This table is presented in **Appendix B** to this part of the Report.

4.5 Taking into account the terms contained in the above paragraphs and the regional guidance developed by the GREPECAS mechanism presented in Appendices A and B to this part of the Report, as well as the referenced ICD the Meeting reviewed and recommended the execution of an action plan for interface implementation to establish ATM automated systems among ATS adjacent units, utilising the plan presented in **Appendix C** to this part of the Report. Therefore, the Meeting formulated the following Draft Conclusion:

DRAFT

CONCLUSION 1/17

**ESTABLISHMENT OF AN ACTION PLAN FOR INTERFACE
IMPLEMENTATION TO ESTABLISH ATM AUTOMATED
SYSTEMS AMONG ATS ADJACENT UNITS**

That States/Territories/International Organisations:

- a) review, complete and execute their respective action plan for interface implementation to establish ATM automated systems between adjacent units utilising Appendix C to this part of the Report; and
- b) forward the plan mentioned in a) above to the ICAO NACC Regional Office by **29 February 2007**.

APPENDIX A

GUIDELINES FOR STRATEGY OPERATIONAL INTEGRATION OF THE ATM AUTOMATED SYSTEMS OF THE CAR/SAM REGIONS

Objective: Through a committed participation of the States, users and ATS providers of the CAR/SAM Regions,

- 1) to cooperate jointly in the integration of technologies for ATM automation, in accordance with ICAO guidelines available, considering the best regional and global alternatives;
- 2) develop a strategy for the integration of ATM automated systems with a safe, gradual, evolutionary and interoperable vision that facilitates the information exchange and the collaborative decision-making of all the components of the ATM system for a seamless, flexible, optimum and dynamic management of airspace and international aerodromes, and at the same time that it increases the required operational safety levels.
- 3) take into account the data processing and network environment, taking into consideration the use of ground and space segments for an interactive ATS information process, under the criteria of integrity, quality and real time.

FRAMEWORK

- a) identify homogeneous areas on the basis of traffic flows operating in the different airspace and international aerodromes;
- b) analyze the operational environment scenarios of the air traffic services currently provided and those that are planned;
- c) determine the scope, architecture design, characteristics and attributes of the operational requirements for the short-term integration of the current automated systems of the ATS units depending on the current provided service levels, as well as other operational requirements that respond to future expectations of the components of the ATM system, considering:
 - i) arranging the requirements in logical sequence, through the following stages.

Stage	Function
Stage I	- Flight plan processing (FDPS/Flight Data Processing System)
Stage II	- Radar data processing and ATS surveillance (RDPS/Radar Data Processing System, ADS and exchange of radar information); - Monoradar ; - Multiradar ; - Radar data sharing .
Stage III	- Automated digital communications (radar control transfer/automated traffic hand off, AIDC/CPDLC, etc.).

Stage	Function
Stage IV	- Implementation of CDM (Collaborative Decision Making) for other ATM requirements (AOM [Airspace Organization and Management], CM [conflict management], DCB [Demand/Capacity Balancing], AO [Aerodrome Operation], TS [Traffic Synchronization], AUO [Airspace User Operation], ASDM [ATM Service Demand Management], AIS, Meteorology, Statistics, etc.);

NOTE: SAR should be taken into consideration in all the lower airspace stages.

- ii) identify the automation level required according to ATS functions defined in States' classification of airspace and international aerodromes, as follows:

ATS Operational functions required in the automated systems (ATC, FIS, SAR)							
APPLICABLE ATS FUNCTIONS	ATS Airspace						
	A	B	C	D	E	F	G
Identification							
Separation							
Navigation guide							
Surveillance							
Transfer							
Coordination							
Information of flight plans in real time							
Visualization of the geographical position of the aircraft (longitude, latitude, history)							
Statistical data of flight plans (past and forecasted information).							
Radar data processing system (RDPS)							
Flight data processing system (FDPS)							
ATS inter-facility data communications (AIDC)							
Controller-pilot data link communications (CPDLC)							
Flight profile information (altitude, vertical speed, offset speed, predictive vector, turn angle, etc.)							
Automatic alerts (STCA, MSAW, DIAW, emergency, communication failure, unlawful interference, etc.)							
AIS Interface							
Meteorological information							

- iii) define the incoming and outgoing data, and functional interfaces data applicable to functions and sub-functions of the service;
- iv) define from the highest to lowest level the functional decompositions for all the ATM components;
- v) successively determine the different operational applications from the functional level or lowest interface to the upper interface;

-
- vi) define the current and future operational applications needs;
 - vii) determine the short-term operational requirements; and
 - viii) determine the future operational requirements.
-
- d) determine the existing facilities and technological equipments in the CAR/SAM Regions, especially in adjacent States/Territories/Organizaitons, as well as the inter-operability technical requirements, data bases, equipped aircraft, software tools, etc., required that ease the integration of automated systems;
 - e) develop a cost-benefit analysis for the integrated implementation of ATM automated systems;
 - f) establish bilateral and multilateral agreements as appropriate, among States/Territories/International Organizations of adjacent airspace and regions for trials and the operational implementation/integration of ATS automated systems;
 - g) develop standards, procedures and guidance material required (as *the Interphase Control Document (ICD) for data communications and common coordination between ATM centres, based on ICAO SARPS*) for the functional operation of ATS automated systems, including critical contingency cases, so as to serve as an aid to users;
 - h) take the necessary measures for human resources training on a national and regional basis and allowing the facilitation of the implementation/integration of ATS automated systems;
 - i) identify other potential benefits for the ATM community that may be obtained in the long-term; and
 - j) document an action plan permitting the interoperable implementation of ATS automated systems.

APPENDIX B

(Based on Appendix K to the Report on Agenda Item 3 of the GREPECAS/12 Meeting Report)

States should develop automation architecture requirements according to the level of service required for each ATS airspace classification and international aerodrome, as follows:

ATS Operational requirements for automated systems (ATC, FIS, SAR)							
APPLICABLE /NEED ATS REQUIREMENTS	ATS Airspace Classification						
	A	B	C	D	E	F	G
Identification of aircraft							
Separation							
Navigation guidance							
Surveillance							
Transfer							
Coordination							
Information of flight plans in real time							
Visualization of the geographical position of the aircraft (latitude, longitude, history)							
Statistical data of flight plans (past, current and future information).							
Surveillance data processing system (i.e. RDPS or ADS) a. considering future expansion capability; and b. considering format compatibility							
Flight data processing system (FDPS)							
ATS inter-facility data communications (AIDC)							
Controller-pilot data link communications (CPDLC)							
Flight track profile information (altitude, vertical speed, offset speed, predictive vector, turn angle, etc.)							
Alerting systems (STCA, MSAW, DIAW, emergency, communication failure, unlawful interference, etc.)							
Aeronautical Information Services (AIS) Interface							
Meteorological information							

- a) successively determine the different operational applications from the functional level or lowest interface to the upper interface;
- b) define the current and future operational applications needs; and
- c) determine the short-term and future operational requirements.

Appendix C to the Report on Agenda Item 4

APPENDIX C

ACTION PLAN FOR THE IMPROVEMENT AND DEVELOPMENT OF ATM SITUATIONAL AWARENESS - CAR REGION

Organization:

Date

Jun-07

No.	Strategic Objective/ 2	Global Plan/ GPI 3	Regional Plan / FASID	GREPECAS No. Con/Dec/Pa 4	Target Activity 5	Follow-up Action 6	To be developed by 7	Deliverable 8	Target date 9	Remarks 10
1	2	3		4	5	6	7	8	9	10
					<i>Near term (2010)</i>					
1	D	GPI-9		14/43 a)	Identify the feasibility to establish the bilateral/multilateral agreements for ATM automated systems.	Valid	E/T/OI	Agreements for ATS automated systems		
2	D	GPI-9		14/44	Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing: - operational architecture design, - characteristics and attributes for interoperability, - data bases and software, and - technical requirements	Valid	E/T/OI	Requirements for ATM surveillance		
3	D	GPI-7	Tables CNS1A CNS1C	12/37	Improve ATS voice and data interfacility communication.	Valid	E/T/OI	Implementation of FASID Table 1-A, and identify other ATS comms. requirements		
4	D	GPI-9		13/79	Implement flight plan data processing system and electronic transmission tools.	Valid	OACI	Improve ATM surveillance		
5	D	GPI-9	Table CNS 4A	14/48	Implement radar data sharing programs where benefits can be obtained.	Valid	E/T/OI	Improve ATM surveillance		
6	D	GPI-9		14/44	Develop situational awareness training programmes for pilots and controllers.	Valid	E/T/OI	ATM situational awareness training programmes		

Appendix C to the Report on Agenda Item 4

No.	Strategic Objective/ 1	Global Plan/ GPI 3	Regional Plan / FASID 4	GREPCAS No. Con/Dec/Pa 4	Target Activity 5	Follow-up Action 6	To be developed by 7	Deliverable 8	Target date 9	Remarks 10
7	D	GPI-9	Table CNS 4A	14/44	Implement ATM surveillance systems for situational traffic information and associated procedures.	Valid	E/T/OI	Improve ATM capacity		
8	D	GPI-9		12/31	Implement ATS automated message exchanges, as required - FPL, CPL, CNL, DLA, etc.	Valid	E/T/OI	AIDC		
9	D	GPI-9		12/31	Implement automated radar handovers, where able.	Valid	E/T/OI	Improve ATM capacity		
10	A, D	GPI-16		12/31	Implement ground and air electronic warnings, as needed -Conflict prediction -Terrain proximity -MSAW -DAIW -Surveillance system for surface movement	Valid	E/T/OI	Improve ATM safety management		
11	D	GPI-17	Tables CNS4A, CNS1B	13/72	Implement data link surveillance technologies and ATN applications: ADS, CPDLC, AIDC, as required.	Valid	E/T/OI	Improve ATM surveillance		
					Medium term (2015)					
12	D	GPI-18/19		12/31 14/44	Implement additional/advanced automation support tools to increase sharing of aeronautical information -ETMS or similar -MET information -AIS/NOTAM dissemination -Surveillance tools to identify airspace sector constraints. -A-SMGC in specific aerodromes, as required.	Valid	E/T/OI	Improve ATM surveillance		
13	D	GPI-6		14/44	Implement teleconferences with ATM stakeholders.	Valid	E/T/OI	Improve CDM Process		

Agenda Item 5 Other air navigation matters

Human resources and training planning

5.1 The Meeting recalled that the NACC/DCA/2 adopted Conclusion 2/27 – *Human Resources and Training Planning*, through which States, Territories and International Organisations were invited to urgently consider the need to plan human resources for the next five years within the air navigation service provider units, including a training programme related to the new CNS/ATM systems.

5.2 It was recalled that, according to the Chicago Convention, air navigation services should be provided in a safe, regular and efficient manner; the main objective of the requirements established in Annex 1 is that the air navigation services have competent personnel to perform their tasks in an efficient manner.

5.3 Human resource and training planning is aimed at determining regional needs in terms of human resources and training in the different aeronautical areas. The outcome of the discussions is shown in **Appendix A** to this part of the Report.

5.4 The Meeting also recognised the important steps on this subject taken by the CAR Region. In particular those of Cuba, Barbados, Jamaica, and Trinidad and Tobago stand out. Some of the elements to be considered when developing a human resource action plan are:

- audit the existing levels of personnel;
- project personnel requirements (all categories);
- plan for required human resources in the different services;
- draft a forecast for personnel requirements in all the categories
- determine the impact of automation in the new systems;
- plan human resource projects for transition and implementation of the new systems;
- plan human resource training focused on quality assurance (QA);
- review selection criteria and personnel qualifications;
- plan the preparation of new training programmes;
- plan instructor training in new techniques;
- review current personnel training and plan future personnel training;
- review, if necessary, the organisational structure and adjust them to new requirements;
- review the tasks and functions of aeronautical technical personnel; and
- determine if the new systems will create new work disciplines.

5.5 It was recalled that the lack of personnel affects service capability; therefore, having an adverse impact on safety and efficiency. The operational capacity deficiencies caused by a lack of human resources will be incorporated into the GANDD in due course.

Review of the AIS/MAP – AIM activities

5.6 Based on the GREPECAS AIS/MAP-AIM Conclusions and Decisions and the results of follow-up by previous meetings in the CAR Region dealing with these issues, the Meeting reviewed the activities related to the CAR Region States/Territories/International Organisations regarding the main tasks that are still pending. As a result of this follow-up, the Meeting prepared the AIS/MAP-AIM Action Plan, which is presented in **Appendix B** to this part of the Report.

5.7 The Meeting recommended that CAR States/Territories should follow-up on the work programme as soon as possible. Updated information should be sent to the NACC Regional Office by e-mail (icao_nacc@mexico.icao.int).

5.8 Furthermore, the Meeting agreed on the importance of training AIS/MAP experts from States/Territories/International Organisations. Regarding this issue, the Secretariat informed that in accordance with the ICAO NACC Regional Office Meeting and Seminars Programme, a Seminar on Terrain and Obstacles Electronic Data (e-TOD) has been scheduled in the Dominican Republic for the week of 22 October 2007.

5.9 The Barbados delegate informed that based on a meeting held between AIS experts of Barbados and Trinidad and Tobago, it is very important to take note that AIS is experiencing a global growth and that it is migrating to AIM. In spite of the development and growth in other air navigation areas in the E/CAR, AIS has not been able to keep pace with ICAO's progress in the field. Therefore, it is of utmost importance to identify challenges and to come up with solutions to resolve these challenges as soon as possible.

5.10 An informal assessment of AIS units in the E/CAR confirm:

1) **Organisational Structure and Functionality of an AIS Unit**

- Staffing may be inappropriate to meet the objectives and functional requirements of some States.
- The absence of dedicated AIS Staff.
- Limited technical expertise, especially in smaller States.

2) **AIRAC Cycle**

- Limited adherence to AIRAC cycles impacts aeronautical user operations e.g., airlines and charting companies, etc. As an example, aeronautical users require information in a timely manner for their FMS.

3) **Existence of Flight Planning Errors**

- The Piarco Flight Planning Office found it necessary for all filed flight plan (FPL) to be sent to the Piarco FPL System for validation prior to dissemination in order to reduce errors during the critical Cricket World Cup period.

4) **Quality Assurance (QA)**

- Although mandated by ICAO, issues of organisational structure, technical expertise and limited utilisation of documentation tools (ICAO website), deficiencies in QA continue to affect AIS performance.

5) **Use of Technology**

- Automation in E/CAR AIS has been a recurring issue. In movement toward AIM, accessing information from leaders such as Eurocontrol, Australia, etc. is vital. A basic means to access this information is via internet. In the E/CAR AIS units this access is at best limited. The internet is fast becoming a necessary tool even in terms of contingency for dissemination of flight plans, NOTAMs, etc.

5.11 Likewise, the delegate from Barbados proposed convening an AIS/MAP Meeting to perform follow-up on these subjects, especially to assist with adoption of action plans to solve several outstanding deficiencies in the AIS/MAP field. She requested ICAO participation at the Meeting, who in turn proposed that the Meeting be held in Trinidad and Tobago during the second quarter of 2008.

5.12 The Secretariat congratulated Barbados and Trinidad and Tobago for the aforementioned initiative and proposed that in order to find and apply solutions, to AIS deficiencies as soon as possible, and conserve State and ICAO resources, it would be prudent to convene a joint seminar and meeting in the same venue and during the same week. Additionally, the Secretariat expressed that taking into account the successful convening of this Meeting together with the Surveillance Seminar, it would be advisable to continue organisation of events in this manner.

5.13 The proposal to hold a joint AIS Seminar and Meeting received unanimous support by the Meeting. However, Barbados and Saint Lucia expressed difficulty in attending these events in November in Dominican Republic. Nevertheless, Barbados stated that they would make every effort to attend. However, most of the attendees mentioned that they had already programmed to attend, or estimated they had no problem in participating at the joint AIS Seminar and Meeting in Dominican Republic in October 2007.

5.14 As a result of the follow-up to these AIS/MAP issues, the Meeting formulated the following draft conclusion:

DRAFT

CONCLUSION 1/18

**IMPLEMENTATION OF AN AIS/MAP AIM ACTION PLAN AND
PARTICIPATION OF OFFICERS IN THE SEMINAR ON
TERRAIN AND OBSTACLES ELECTRONIC DATA (e-TOD)
AND THE FOLLOW-UP MEETING**

That States/Territories/International Organisations,

- a) follow-up and execute the AIS/MAP-AIM Action Plan presented in Appendix B to this part of the Report, and inform the ICAO NACC Regional Office on the results of implementation of their respective tasks by **27 September 2007**;
- b) consider the designation and participation of AIS/MAP officers in the Seminar on Terrain and Obstacles Electronic Data (e-TOD), and in the combined AIS follow-up Meeting in their training plans scheduled as a first alternative in the Dominican Republic the week of 22 October 2007; and
- c) the ICAO Regional Office consider as a second option to hold the combined Seminar/Meeting in Trinidad and Tobago in the second trimester of 2008, in view of the importance to provide support for the implementation of the ATM system.

APPENDIX A

TRAINING NEEDS-CAR REGION STATES (PERIOD 2005-2009)

State/Territory/Organisation _____

(Please indicate in each column the estimated total number of personnel to be trained each year locally or abroad and by specialty)

AREA	CATEGORY/SPECIALTY	LOCAL INSTRUCTION					EXTERNAL INSTRUCTION					Total HR required	
		2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	Local	E x t.
AIG	Officer - Accident Investigation and Prevention												
AIR	Inspector - Shop Specialist												
	Inspector - Fixed wing												
	Inspector - Helicopter												
	Specialist - Avionics												
	Inspector - Airworthiness certification												
	Specialist - RVSM												
AIS	Directorate/Supervisor AIS												
	AIS Officer												
	Aeronautical Cartography (MAP)												
	Specialist Data Base/Automation and Quality Assurance AIS												

- NOTE:**
- 1) The information required in the blank columns will be provided by the Administrations
 - 2) Useful information for the Administration's training programmes planning
 - 3) Information considered by the CATCs, GREPECAS and ICAO's for the programming of courses, seminars, etc.

AREA	CATEGORY/SPECIALTY	LOCAL INSTRUCTION					EXTERNAL INSTRUCTION					Total HR required	
		2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	Local	Ext.
AGA	Supervision/Certification/Aerodrome Regulations												
	Aerodromes Inspector/Auditor												
	Officer – Airport Operations												
	Officer Airport Security												
	Trainer – Aerodrome Emergencies												
	Fire fighter - Rescue												
	Control – Natural resources												
	Maintenance - Pavements and drainage - Civil Engineer												
	Electric maintenance (lighting, markings, power generators) – Electric engineer												
	Inspector –Obstacle control												
	Inspector-environment control												
ATM	Air Traffic Controller - TWR												
	Air Traffic Controller - APP												
	Air Traffic Controller -Area												
	Air Traffic Controller-Radar/Area												
	Air Traffic Controller - Radar/APP												
	Supervisor – Air Traffic Control												
	ATC/OJT Instructor												
	ATS Airspace Planner												
	ATS Regulations Officer												
	Specialist – ATS Quality Assurance												
	Safety Officer												
	ATM Internal Audit Officer												
	Specialist – Search and Rescue SAR for RCC or RSC												

AREA	CATEGORY/SPECIALTY	LOCAL INSTRUCTION					EXTERNAL INSTRUCTION					Total HR required	
		2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	Local	E x t.
AVSEC	Administrator AVSEC												
	Control Officer AVSEC												
CNS	Specialist - Communications												
	Specialist - Navigation												
	Specialist –ADS and Radar Systems												
	Digital communication system specialization course												
MET	Technician Meteorologist/Observer												
	Professional Meteorologist/Forecaster												
OPS	Inspector – Flight checks - Large airplanes												
	Inspector – flight checks – General aviation												
	Inspector – flight checks - Helicopter												
	Specialist – Regulatory compliance												
	Inspector OPS Certification												
	Inspector – Cabin safety												
	Inspector- Dangerous goods												
	Inspector – Ramp safety												
PEL	Specialist - Licensing												
	Examiner/Inspector – Flight schools												
GENERAL	Introduction to CNS/ATM Systems												
	CNS/ATM - Implementation systems global												
MANA-GEMENT	Management – Civil Aviation												
	Management – Aeronautical Operations												
	Management – AIS Services												
	Management – ATM Services												

AREA	CATEGORY/SPECIALTY	LOCAL INSTRUCTION					EXTERNAL INSTRUCTION					Total HR required	
		2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	Local	E x t.
PLNG	Human Resources Planning												
Q.A.	Specialist – Quality Assurance												
TRNG	Instructors training -TRAINAIR												

- END -

APPENDIX B

REVIEW OF THE AIS/MAP-RELATED PENDING TASKS

Task No. 1. Resolve, under the ICAO NACC Office coordination, the discrepancies of the WGS-84 coordinates of common points in the adjacent FIRs, published in the AIPs of the States/Territories of the Caribbean and their adjacent regions.

To date, no information in the Regional Office indicates that these discrepancies in the area have been resolved. The NACC Regional Office should be informed on the progress attained with regard to WGS-84 coordinates publication agreements.

Task No. 2. Contribute to the coordination and follow-up of the total implementation of WGS-84 in the Caribbean States/Territories.

The harmonization of the bordering FIRs coordinates for the CAR Region is still pending. The NACC Regional Office should be informed on the progress attained with regard to WGS-84 coordinates publication agreements in the respective AIPs.

Task No. 3. Carry out the coordination, assistance and follow-up of the implementation of a standard AIS/MAP Quality Assurance System in the Caribbean States/Territories.

As stated in the report of the GREPECAS/14 Meeting, this is a priority task for AIM services (AIS/MAP), therefore, the ICAO NACC Office should be informed on the status of implementation of the quality management system of the States/Territories.

Recently, the GREPECAS/14 approved a conclusion on the adoption of part 4 of the *Guidance Manual for the Implementation of an AIS/MAP Quality System in the CAR/SAM Regions*.

Task No. 4. Promote, with the assistance of the ICAO NACC Office, training actions related with the correct application and effective compliance with the quality requirements of the aeronautical data established in the ICAO Annexes 15, 11 and 14, in support of the AIS/MAP Quality Management System as referenced in Doc 9881 (Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information).

The ICAO Council approved a Special Implementation Project (SIP) aimed at training, through a *Seminar on the new standards derived from the amendments to Annexes 4 and 15 according to the development of CNS/ATM systems in the CAR/SAM Regions on e-TOD*, where the importance of holding a training event on the understanding and interpretation of the tables of quality requirement of aeronautical and electronic data on terrain and obstacles will be reviewed.

The “E-TOD Seminar” will be held in November in Dominican Republic. The civil aviation authorities of the Region should seriously consider the participation of AIS/MAP experts at this important event.

Task No. 5. Recommend the necessary actions to develop and assist States/Territories with implementing the AIS Automation Plan approved for the Caribbean developing the relevant databases.

ICAO Council informed on assistance to formalize a regional co-operation project to help solving the AIS deficiencies among which the following stand out:

Digital development of aeronautical charts for visual or instrumental navigation

Quality assurance

Automation

Diffusion of AIPs by electronic means

Implementation and harmonization of WGS-84 coordinates

During the GREPECAS/14 Meeting, it was reported that ICAO would have the Global Model for the Exchange of Aeronautical Information/Data (AIXM) ready by end 2007, and therefore, ICAO was urged to define the corresponding guidelines as soon as possible.

Task No. 6. Review, propose actions and follow-up on the implementation of AIS/MAP requirements established in the CAR/SAM ANP and in GREPECAS conclusions

The Table of Deficiencies controls the follow-up of the implementation of AIS/MAP requirements established in the ANP. In most cases, the table is not updated. The NACC Regional Office should be notified on the action plans to resolve the AIS/MAP deficiencies.

Task No. 7. Study the elements of human factors applied to the AIS/MAP, in accordance with the AIS/MAP/SG/10 Meeting results.

GREPECAS/14 Meeting reviewed the *Application of human factors principles to Aeronautical Information Management (AIM)*, considering that the AIS/MAP Subgroup changes its name as AIM Subgroup. The Subgroup will begin the necessary actions for the development of the principles of human factors in aeronautical information management and their application. The need for developing a Manual containing guidelines on human factors and a plan for their implementation was also posed, including the activities aimed at guiding human factors within the air navigation systems. The AIS/MAP Quality Management Task Force of the GREPECAS AIM Subgroup, in its new Terms of Reference and Work Programme has foreseen the development of relevant guidelines for determining the proficiency of AIS/MAP personnel, in compliance with the requirements established in Standard ISO:9001:2000 concerning human resources management.