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

SEVENTH CENTRAL CARIBBEAN WORKING GROUP MEETING

C/CAR WG/7

FINAL REPORT

MEXICO CITY, MEXICO, 13 TO 16 JULY 2009

Prepared by the Secretariat
July 2009

INDEX

CONTENT **PAGE**

HISTORICAL

ii.1 Place and Date of the Meeting

The Seventh Meeting of the Central Caribbean Working Group (C/CAR WG/7) was held at the ICAO NACC Mexico Office in Mexico City, from 13 to 16 July 2009.

ii.2 Opening Ceremony

Mr. Michiel Vreedenburgh, Deputy Regional Director opened the Meeting and welcomed the attendance of the participants. He began by giving an overview of the scope of the Meeting's agenda, pointing out that the C/CAR WG Working Group needs to continue its efforts towards the development of air navigation systems in the Central Caribbean and, then, formally began the Meeting.

ii.3 Organization of the Meeting

The Meeting was chaired by Mr. Fidel Ara Cruz of Cuba, President of the Central Caribbean Working Group. Mr. Raúl Martínez, Aeronautical Information Management Regional Officer acted as Secretary of the Meeting, assisted by the Regional Officers of the ICAO NACC Regional Office.

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

Agenda Item 1: Safety Management Issues

1.1 Follow-up on the outstanding and corrected deficiencies in the GREPECAS Air Navigation Deficiencies Database (GANDD) in the C/CAR Area
1.2 Actions taken to reduce the Large Height Deviation (LHD) reports.
1.3 Aerodromes certification

Agenda Item 2: Review of Air Navigation Matters

2.1 Global Air Navigation and CAR/SAM developments

2.2 NAM/CAR Regional Air Navigation Implementation Plan

2.3 Air Navigation specific activities:

2.3.1 Air Traffic Management (ATM)
2.3.2 Communications, Navigation and Surveillance (CNS)
2.3.3 Aerodromes and Ground Aids (AGA)
2.3.4 Aeronautical Meteorology (MET)
2.3.5 Aeronautical Information Services (AIS/MAP)

2.4 Human Resources and Training

Agenda Item 3: Follow-up on actions taken concerning valid Conclusions/Decisions of previous meetings and review of Terms of Reference (ToRs) and Work Programme

3.1 Review of the Conclusions/Decisions from the NACC/DCA/3, NACC/WG/2, C/CAR/DCA/9, C/CAR/WG/6 and GREPECAS/15 meetings.

3.2 Review of the C/CAR/WG Terms of Reference (ToRs) and Work Programme.

Agenda Item 4: Other business

4.1 Next meeting site, dates, and funding

ii.6 **Schedule and Work Mode**

The Meeting agreed to hold its daily sessions from 09:00 to 14:30 hours, with adequate breaks.

ii.7 **Attendance**

The Meeting was attended by 28 participants from 8 States/Territories of the Central Caribbean, 2 participants from one State of the SAM Region, and 5 participants from 3 International Organizations. The Meeting regretted the absence of the following States/Territories members of the C/CAR WG: Bahamas, Cayman Islands and Turks and Caicos Islands. A list of participants is shown in pages iii-1 to iii-8.

ii.8 **Conclusions and Decisions**

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

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

LIST OF DRAFT CONCLUSIONS ADOPTED BY THE C/CAR WG/7 MEETING

DRAFT CONCLUSION		
NUMBER	**NAME**	**PÁGE**
7/1	REVISION OF CAR REGION AIRSPACE WITH A PERFORMANCE-BASED APPROACH	2-6
7/2	SEMINAR ON AVIATION RADIO ELECTRIC SPECTRUM MANAGEMENT AND PREPARATION FOR THE WRC-2012	2-10
7/3	PROTECTION OF WAFS WORKSTATIONS	2-12
7/4	SUPPORT TO METEOROLOGISTS TO ATTEND THE ICAO SEMINAR/WORKSHOP ON THE DEVELOPMENT OF A QUALITY ASSURANCE SYSTEM TO ENHANCE THE AERONAUTICAL METEOROLOGICAL SERVICE	2-13
7/5	TERMS OF REFERENCE AND WORK PROGRAMME OF THE C/CAR WORKING GROUP	3-1

ii.9 List of Working Papers and Information Papers

WORKING PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
WP/01 ***Rev.***	---	Approval of the Draft Agenda and Meeting Work Schedule	28/05/09	Secretariat
WP/02	2.3.2	AMC Directory Services	24/06/09	Secretariat
WP/03	2.1	Air navigation Activities at the Global, Inter-Regional and Intra Regional Levels	24/06/09	Secretariat
WP/04 ***Rev.***	2.1	Air Navigation Performance Framework	16/06/09	Secretariat
WP/05 ***Rev.2***	2.2	NAM/CAR Performance Based Regional Air Navigation Implementation Plan	07/07/09	Secretariat
WP/06	---	***Cancelled***	---	---
WP/07 ***Rev.***	2.3.3	States Survey on Aeronautical Studies to Present Acceptable Means of Ensuring Safety of Aircraft Operations at Aerodromes	16/06/09	Secretariat
WP/08 ***Rev.***	2.3.3	Survey on Airport Demand/Capacity Approach and Apron Management Service	16/06/09	Secretariat
WP/09	2.3.5	Follow-up AIS/MAP – AIM Activities	03/06/09	Secretariat
WP/10	2.3.1	Improvements to RNAV Route Network	15/06/09	Secretariat
WP/11	2.3.2	Results of the ITU World Radiocommunication Conference (2007) (WRC- 2007) and Initial Position of ICAO for WRC-2011	27/03/09	Secretariat
WP/12	2.3.2	Digital Networks and MEVA REDDIG Interconnection	16/06/09	Secretariat
WP/13	2.3.2	Radio Frequency Assignment Lists for the CAR Region	02/04/09	Secretariat
WP/14	2.3.4	Aeronautical Meteorological Service in the Central Caribbean Region	28/05/09	Secretariat
WP/15	2.4	Guidelines for Human Resources and Training Planning	06/07/09	Secretariat
WP/16 ***Rev.***	1.1	Report on GANDD Operation for Classification of Deficiencies	18/06/09	Secretariat
WP/17	3.1	Valid Conclusions from previous C/CAR WG, NACC/WG, C/CAR/DCA, NACC/DCA and GREPECAS/15 Meetings	16/06/09	Secretariat

WP/18	3.2	C/CAR Working Group Terms of Reference	30/06/09	Secretariat
WP/19	2.2	Surveillance Status in Jamaica	06/04/09	Jamaica
WP/20	1.3	Implementation of Aerodrome Certification	01/07/09	Secretariat
WP/21	2.2	ATS Interfacility Data Communication	02/07/09	United States

INFORMATION PAPERS

Number	Agenda Item	Title	Date	Prepared and Presented by
IP/01 ***Rev.***	--	General Information	28/05/09	Secretariat
IP/02	--	List of Working and Information Papers	09/07/09	Secretariat
IP/03	2.2	Summary of the North American, Central American and Caribbean Working Group (NACC/WG) – Development and Results	27/03/09	Secretariat
IP/04	2.3.5	Roadmap for the Transition from AIS to AIM	15/06/09	Secretariat
IP/05 ***Rev.***	2.3.1	Report of activities for the implementation of Air Traffic Flow Management (ATFM)	18/06/09	United States
IP/06 ***Rev.***	2.3.1	Status of Performance Based Navigation (PBN) Implementation in the United States	18/06/09	United States
IP/07 ***Rev.***	2.3.1	Initial Discussions of a Project to Implement 50 NM Lateral Separation in the Gulf of Mexico	18/06/09	United States
IP/08 ***Rev.***	2.3.1	FAA Initiatives in Oceanic Airspace	18/06/09	United States
IP/09	2.1	Proposal for Amendment of the ICAO CAR/SAM ANP (Doc 8733), Volume I, (Serial No. NACC 08/03 – ATM)	15/06/09	Secretariat
IP/10	2.3.2	Current Status of the Federal Aviation Administration Telecommunications Programs	02/07/09	United States
IP/11	2.3.1	Nominations of 5LNC/Route Planner users for ICARD system	06/07/09	Secretariat
NI/12	2.3.2	Mejora de los Sistemas CNS/ ATM del Estado de Honduras – ***Available only in Spanish***	09/07/09	COCESNA

NI/13	2.3.2	Intercambio de Datos Radar entre COCESNA y MEXICO y entre COCESNA y CUBA – ***Available only in Spanish***	09/07/09	COCESNA
IP/14	4.1	Rotation Programme for Future C/CAR Working Group Meeting	14/07/09	Secretariat
Presentation		Global ATM System ~ Performance framework ~ H.V. SUDARSHAN, ICAO, Montreal	13/07/09	Secretariat

LIST OF PARTICIPANTS

Colombia

José Alexander Álvarez Estailes
Luis Carlos Hastamorir Patiño

Cuba

Fidel Ara Cruz

Dominican Republic/República Dominicana

Juan César Thomas Burgos
Julio César Mejía

Haiti

Wesner Excelhomme
Jacques Boursiquot

Jamaica

Evan Thompson
Kevin Miller
Noel Ellis

Mexico/México

Christian U. Cedillo
Jaime Zapiain
Mario Sánchez Hinojosa
Rodrigo Bruce Magallón

Netherlands Antilles/Antillas Neerlandesas

Ezzard Ignacio
Ingemar Stewart

United States/Estados Unidos

Barbara Cassidy
Dulce Maria Roses
Mark Rios
Michael Polchert
Susan Horn
Tim McHale
Robert L. Goodson

COCESNA

Juan Carlos Trabanino
Roger Alberto Pérez
Uriel Urbizo Fley

IFATCA

Alex Figuereo

WMO/OMM

Hugo Hidalgo

ICAO/OACI

Hindupur Sudarshan
Michiel Vreedenburgh
Raúl Martínez
Víctor Hernández
Julio Siú
Jaime Calderón
Enrique Camarillo
Adolfo Zavala

LIST OF PARTICIPANTS

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
COLOMBIA	
José Alexander Álvarez Estailes Controlador de Tránsito Aéreo	Unidad Administrativa Especial de Aeronáutica Civil (Centro de Aeronavegación del Caribe) Centro Nacional de Aeronavegación Aeropuerto Internacional El Dorado CNA Tel.: (571) 266 22 13 / 266 3913 Email: jose.alvarez@aerocivil.gov.co
Luis Carlos Hastamorir Patiño Coordinador ATS ACC Barranquilla	Unidad Administrativa Especial de Aeronáutica Civil Centro de Aeronavegación del Caribe Aeropuerto Ernesto Cortisoz Barranquilla Tel.: (575) 3348148 (Ofna) / 57 315 7220188 (móvil) Email: luis.hastamorir@aerocivil.gov.co
CUBA	
Fidel Ara Cruz Jefe Grupo ATM, Grupo Operacional Dirección Aeronavegación	IACC Calle 23 No. 64, esquina P. Vedado Plaza de la Revolución, Ciudad de La Habana, Cuba Tel. (537) 55 1146 Fax: (537) 83 44571 E-mail fidel.ara@iacc.avianet.cu
DOMINICAN REPUBLIC / REPÚBLICA DOMINICANA	
Juan César Thomas Burgos Encargado Sección de Tránsito Aéreo	Instituto Dominicano de Aviación Civil (IDAC) Aeropuerto Internacional de las Américas Dr. José Francisco Peña Gómez República Dominicana Tel.: 809 549 1310 Ext. 307 / 809 796 1932 Fax: 809 549 0314 Email: jthomas@idac.gov.do
Julio César Mejía A. Encargado División ATM	Instituto Dominicano de Aviación Civil (IDAC) Aeropuerto Internacional de las Américas Departamento Navegación Aérea Dr. José Francisco Peña Gómez República Dominicana Tel.: 809 549 1310 Ext. 236 Fax: 809 549 0314 Email: jmejia@idac.gov.do

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
HAITI/HAITÍ	
Wesner Excelhomme Director of Air Navigation	Office National de l'Aviation Civile (OFNAC) BP 13096, Port-au -Prince, Haiti 6110 Tel: +509 2250-0052 Fax: +509 2250 0098 Email: lpierre@ofnac.org
Jacques Boursiquot ICAO Coordinator	Office National de l'Aviation Civile (OFNAC) BP 13096, Port-au-Prince, Haiti 6110 Tel: +509 2250-0052 Fax: +509 2250-0998 Email: jboursiquot@ofnac.org / jboursiquot@comcast.net
JAMAICA	
Evan Thompson Head of the Weather Branch	Civil Aviation Authority Meteorological Service Jamaica, 65 ¾ Half Way Tree Road, Kingston 10, Jamaica Tel.: (876) 929 3694 / 92 93 700 Fax: (876) 929 7268 E-mail: metservice.wbh@jamweb.net
Keven Miller Aeronautical Information Officer	Civil Aviation Authority 4 Winchester Road Kingston to Jamaica Tel. : (876) 960 3965 / 960 3948 / 932 7193 Fax: (876) 926 1452; 920 0194 Email: c/o mais@jcaa.gov.jm / aismanley@yahoo.com
Noel Ellis Director	Civil Aviation Authority Air Navigation Services 4 Winchester Road Kingston 10 Jamaica Tel.: (876) 501 9508 / 960 3948 Fax: (876) 926 1452 / 960 8209 Email: nellis@jcaa.gov.jm
MEXICO/MÉXICO	
Christian Uriel Cedillo Jaime Subdirector de Seguridad Aérea	Dirección General Aeronáutica Civil Providencia No. 807, 4º. Piso, Col. Del Valle 07918, México, D.F. Tel.: +5723 9300, Ext. 18064 Email: ccedillo@sct.gob.mx

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
MEXICO/MÉXICO (CONT.)	
Jaime Zapiain Muñoz Jefe del Área de Planeación ATM	Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM) Av. 602, Núm. 161, Col. San Juan de Aragón 15620 México, D.F. Tel. +(5255) 5786 5514 Fax: +(5255) 2598 0065 E-mail: jzapiain@sct.gob.mx
Mario Sánchez Hinojosa Subdirector de Normas	Dirección General de Aeronáutica Civil Providencia No. 807, Piso 4 Col. Del Valle 03100 México, D.F. Tel.: 52 (55) 5723-9300 Ext. 18066 Email: msancheh@sct.gob.mx
Rodrigo Bruce Magallón Especialista de Tránsito Aéreo	Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM) Av. 602, Núm. 161, Col. San Juan de Aragón 15620, México, D.F. Tel.: +(5255) 5786 5513 Email: bruce.magallon@coctam.org.mx
NETHERLANDS ANTILLES/ANTILLAS NEERLANDESAS	
Ezzard Ignacio ATS/AD Inspector	Directorate of Civil Aviation Seru Mahuma z/n Willemstad, Curaçao Netherlands Antilles Tel.: 5999 839 3319 Fax: 5999 868 9924 Email: civilair@gov.an
Ingemar Stewart Supervisor ACC	Netherlands Antilles Air Traffic Control (NAATC NV) Seru Mahuma z/n Willemstad, Curaçao Netherlands Antilles Tel.: 5999 839 3506/ 5999 527 7628 Fax: 5999 868 3012 Email: i.stewart@naatc.an
UNITED STATES/ESTADOS UNIDOS	
Barbara Cassidy Performance Based Navigation (PBN) Implementation Specialist	FAA RNAV/RNP Group (AJR-37) Federal Aviation Administration 800 Independence Ave. SW Washington DC 20591, USA Tel.: 202 385 4626 Fax: 202 385 4691 Email: Barbara.cassidy@faa.gov

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
UNITED STATES/ESTADOS UNIDOS (CONT.)	
Dulce M. Roses Program Lead – International Telecommunications, Caribbean and South American	Telecommunications Services Group Federal Aviation Administration 5600 NW 36 Street, Suite 433 Miami, Florida, 33166, United States Tel. +(305) 716-1830 Fax +(305) 716-1831 E-mail dulce.roses@faa.gov
Mark Rios Staff Manager	Air Traffic Organization En Route and Oceanic Operations Miami Center Federal Aviation Administration Miami, Florida, 33166, United States Tel.: +(305) 716 1602 E-mail mark.rios@faa.gov
Mike Polchert Program Officer, Central America & Caribbean	Air Traffic Organization, International Office Federal Aviation Administration 800 Independence Ave. SW Washington DC 20591, USA Tel. +(202) 385 8759 E-mail Michael.polchert@faa.gov
Robert L. Goodson International Service Representantive	Global Aeronautical Division, NGA 3838 Vogel Rd. L-27, Arnold MO, USA 63010-6238 Tel.: +(314) 676 0575 Fax: 314 676 3044 E-mail: Robert.l.goodson@nga.mil
Susan Horn Specialist, Oceanic and Offshore Operation	Air Traffic Organization Oceanic and Offshore Operations (AJE-32) Federal Aviation Administration 800 Independence Ave. SW Washington, D.C. 20591, USA Tel.: +(202) 493 5458 E-mail susan.e.horn@faa.gov
Tim McHale Air Traffic Control System Command Center	FAA ATCSCC 13600 Eds Dr. Herndon, VA 20187 Tel.: 703 326 3973 Email: Timothy.mchale@faa.gov

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
COCESNA	
Juan Carlos Trabanino Director ACNA/COCESNA	Agencia Centroamericana Navegación Aérea ACNA/COCESNA 150 mts al sur Aeropuerto Internacional Toncontín, Tegucigalpa, Honduras Tel.: 504 234 3360 (Ext. 1511) Fax: 504 234 9786 Email: jtrabanino@cocesna.org / charlietangoatc@yahoo.com
Roger Alberto Pérez Gerente Estación Honduras	Corporación Centroamericana Servicios Navegación Aérea (COCESNA) 150 mts al sur Aeropuerto Internacional Toncontín, Tegucigalpa, Honduras Tel.: 504 234 3360 (Ext. 1461) Fax: 504 234 3682 Email: rperez@cocesna.org
Uriel Urbizo Coordinador ATM	Corporación Centroamericana Servicios Navegación Aérea (COCESNA) 150 mts al sur Aeropuerto Internacional Toncontin Apartado 660 Toncontín, Tegucigalpa, Honduras Tel.: 504 234 3360 (Ext. 1325) Fax: 504 234 9786
IFATCA	
Alex Figuereo M. Executive Vice President Americas	International Federation of Air Traffic Controllers Assocns (IFATCA) 1255 University Street, Suite 408, Montreal, Quebec Canada H3B 3B6 Tel.: 1809 224 1482 / 1 514 866 7040 Fax: 1 514 866 7612 Email: evpama@ifatca.org / alexfiguereo@hotmail.com
WMO/OMM	
Hugo Hidalgo Oficial de Programas	Organización Meteorológica Mundial (OMM) Apartado Postal 7-3350, 1000 San José, Costa Rica Tel: +506 2258 2370 Fax: +506 2256 8240 E-mail: Hhidalgo@wmo.int

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
ICAO/OACI	
Michiel Vreedenburgh Deputy Regional Director Director Regional Adjunto	ICAO/OACI North American, Central American and Caribbean Office Av. Presidente Masaryk 29 – 3rd Floor Col. Chapultepec Morales México D.F., 11570, México Tel: (5255) 5250 3211 Fax: (5255) 5203 2757 E-mail: icao_nacc@mexico.icao.int website: www.mexico.icao.int
Hindupur Sudarshan Technical Officer, ATM	ICAO 999 University Street Montréal, Quebec H3C 5H7, Canada Tel.: +1 514-954-8954 Fax.: +1 514-954-6077 E-mail: hsudarshan@icao.int
Raúl Martínez Regional Officer, Aeronautical Information Services Especialista Regional Servicios de Información Aeronáutica	ICAO/OACI North American, Central American and Caribbean Office Av. Presidente Masaryk 29 – 3rd Floor Col. Chapultepec Morales México D.F., 11570, México Tel: (5255) 5250 3211 Fax: (5255) 5203 2757 E-mail: rmartinez@mexico.icao.int icao_nacc@mexico.icao.int website: www.mexico.icao.int
Víctor Hernández Regional Officer, Air Traffic Management Especialista Regional, Gestión de Tránsito Aéreo	North American, Central American and Caribbean Office Av. Presidente Masaryk 29 – 3rd floor Col. Chapultepec Morales 11570 México D.F., México Tel: (5255) 5250 3211 Fax: (5255) 5203 2757 E-mail: vhernandez@mexico.icao.int icao_nacc@mexico.icao.int website: www.mexico.icao.int
Jaime Calderón Regional Officer, Aerodromes and Ground Aids Especialista Regional, Aeródromos y Ayudas Terrestres	North American, Central American and Caribbean Office Presidente Masaryk 29 – 3 Col. Chapultepec Morales México, D.F., 11570 Tel.+ 52 55 5250 3211 Fax + 52 55 5203 2757 E-mail jcalderon@mexico.icao.int website: www.mexico.icao.int

NAME/NOMBRE POSITION /TÍTULO	ADDRESS/DATOS
ICAO/OACI (CONT.)	
Julio Siu Regional Officer, Communications, Navigation and Surveillance Especialista Regional, Comunicaciones, Navegación y Vigilancia	North American, Central American and Caribbean Office Presidente Masaryk 29 – 3 Col. Chapultepec Morales México, D.F., 11570 Tel.+ 52 55 5250 3211 Fax + 52 55 5203 2757 E-mail jsiu@mexico.icao.int website: www.mexico.icao.int
Enrique Camarillo Regional Officer, Meteorology Especialista Regional, Meteorología	North American, Central American and Caribbean Office Presidente Masaryk 29 – 3 Col. Chapultepec Morales México, D.F., 11570 Tel.+ 52 55 5250 3211 Fax + 52 55 5203 2757 E-mail ecamarillo@mexico.icao.int website: www.mexico.icao.int
Adolfo Zavala Regional Officer, Air Traffic Management(2) Especialista Regional, Gestión de Tránsito Aéreo(2)	North American, Central American and Caribbean Office Presidente Masaryk 29 – 3 Col. Chapultepec Morales México, D.F., 11570 Tel.+ 52 55 5250 3211 Fax + 52 55 5203 2757 E-mail azavala@mexico.icao.int website: www.mexico.icao.int

Agenda Item 1: Safety management issues

1.1 Follow-up on outstanding and corrected deficiencies in the GREPECAS Air Navigation Deficiencies Database (GANDD)

1.1.1 The Secretariat presented the new GANDD application based on the requirements of the "Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies", which is divided into two parts consisting of the **"Desktop,"** which is the regional management application, and the **"Web,"** which is the interface for States/Territories to report amendments.

1.1.2 Among the changes to the GANDD "Desktop" application, and taking into consideration the need for entering and storing information in the database and the revision to the reports to be presented at the ASB Meetings, these consolidated reports present only un-resolved deficiencies in a single format, and corrected deficiencies are kept in the database solely for statistical purposes.

1.1.3 In compliance with GREPECAS Decision 14/60, the new GANDD Version 2 encourages the States/Territories' Focal Points to report updates to their deficiencies through this tool; favorable feed-back has been received.

1.1.4 Using the "Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies" approved by the ICAO Council, GREPECAS Conclusion 14/59, and SMS Risk Assessment, it was noted that, through corrective measures coordinated during recent months, with the CAR Region States/Territories, several of the "U" deficiencies were eliminated and others were reclassified as "A".

1.1.5 As a result of the recent GANDD usage by States/Territories, identified problems and support requirements have been addressed in a timely manner by ICAO NACC Regional Office in Mexico.

1.2 Actions Taken to Reduce the Occurrence of Large Height Deviation (LHD) reports

1.2.1 Concerning the actions approved by GREPECAS Conclusion 15/36 to reduce the occurrence of LHD events caused by errors in coordination messages between ATC units, in order to achieve the accepted target level of safety (TLS), the Meeting noted that some States and International Organizations had completed followed-up actions.

1.2.2 The Meeting noted that, according to GREPECAS/15 report, the risk of vertical collision for the CAR Region is of 12.3×10^{-9}, which is above the Target Level of Safety (TLS) approved by GREPECAS, which is 5×10^{-9}. The Meeting was also informed that the ANC reiterated that all errors, including M and N, should be taken into account during the risk assessment of the occurrence of LHDs.

1.2.3 The Meeting noted that the last reports also show LHD events occuring below RVSM airspace. Notwithstanding, the trend of reporting these events is uncertain, and it is the States' responsibility to ensure safety in the airspace under its jurisdiction, and moreover, there are no GREPECAS guidelines in the sense that the CARSAMMA should carry out the function of monitoring airspace at/or below FL 290 or above FL410.

1.2.4 It was noted that the level of traffic continues to increase, although the growth during the last months is lower as compared to that obtained in the last several years. The following are among the most relevant actions to reduce LHDs that States should develop:

- foster SMS training, emphasizing risk assessment, for ATS providers;
- promote a just culture including a non-punitive report system;
- promote training ATC personnel in order to implement a normal operations survey system (NOSS) and LHDs;
- review the ATS Letters of Agreement (LOAs), in order to include the immediate coordination of LHD events among the persons responsible for Area Control Centres (ACCs);
- incorporate into LOAs; flight plans and transfers electronic coordination measures using automated systems, as set forth in Doc 4444;
- foster, together with aircraft operators, the coordination of flight plans in accordance with guidelines of Doc 4444;
- develop ATS safety oversight programmes for ATS providers, in line with ICAO guidelines on Threat and Error Management (TEM) in Air Traffic Control (Cir 314); and
- promote informal meetings to analyse LHD events in ATS units.

1.2.5 The Meeting recalled that Conclusion 6/2 of the C/CAR WG was approved by the C/CAR DCA/9 Meeting, and the actions indicated in it are still valid; therefore, States/Territories/International Organizations should comply with the tasks. Said Conclusion is transcribed here for ease of reference:

CONCLUSION 6/2 ESTABLISHMENT OF ATS SAFETY MANAGEMENT MEASURES

That the States and Territories of the Central Caribbean, in order to reduce ATC loop errors:

a) ensure that LHDs are promptly forwarded to CARSAMMA and copied to the ICAO Regional Office;

b) request to the ATS authorities to establish management measures to enhance monitoring of ATC operations through the application of ATS quality assurance mechanisms;

c) establish the maximum permitted levels as an objective of LHDs incidents and/or occurrence;

d) in compliance with Doc 9859, Safety Management System (SMS), establish for the identification of the main incident causes and for risk assessment;

e) foster coordination bilateral visits among their ATS quality assurance experts in order to exchange experiences and data on ATC Loop Errors and the actions taken to mitigate against recurrence;

f) as applicable, plan the early interconnectivity of their ATS automated system in accordance with GREPECAS regional guidelines; and

g) request the assistance of the ICAO NACC Regional Office where bilateral actions taken to address these errors prove insufficient.

1.2.6 Regarding ATS Quality Assurance programmes, it was recalled that GREPECAS guidelines for the implementation of these programmes were approved in 2001, and therefore it is necessary to update them in line with SMS implementation requirements by ATS providers.

1.2.7 Likewise, the Meeting noted that, according to SMS requirements, not all States have well-trained human resource staff nor have they implemented ATS safety programmes related with States' ATS safety oversight capacity.

1.2.8 The Meeting agreed on the need for ICAO to consider as part of its work programme, the organization of a training event during 2010 for States to train the human resource staff involved in ATS safety oversight.

1.2.9 Concerning actions recommended by GREPECAS on AIDC implementation, it was noted that only some States have implemented actions for ATS automated systems interface for flight plan data and radar data exchange.

1.2.10 The Meeting noted that States who have not implemented flight plan data exchange tasks by automated means show a higher LHD events occurrence trend, and therefore, they should develop an action plan with precise activities in order to finalize this task, in accordance with GREPECAS Conclusion 15/36.

1.2.11 The Meeting agreed that these actions should be incorporated in the performance based implementation plan and in work programmes of the C/CAR States/Territories/International Organizations.

1.3 Aerodromes certification

1.3.1 Regarding this Agenda Item, the discussion was directed towards the need to increase the level of consciousness from the States/Territories, at a regulation and operational level, related to the imminent need for aerodrome certification and to implement ICAO requirements defined in Annex 14 and the Air Navigation Plan. Also, the importance to update the information contained in Tables 1 and 2, in order to assist and monitor the implementation of aerodrome certification process was recognised. The Meeting was encouraged to review the mentioned Tables included in the **Appendix** to this part of the Report and submit them to this ICAO NACC Regional Office, not later than 30 September 2009.

APPENDIX

**PROGRESS ON CERTIFICATION OF AERODROMES INCLUDED IN DOC 8733/FASID (CAR REGION)/
AVANCE EN LA CERTIFICACIÓN DE AERÓDROMOS INCLUIDOS EN EL DOC 8733/FASID (REGIÓN CAR)**

STATE/ TERRITORY ESTADO/TERRITORIO	Nº OF AERODROMES Nº DE AERÓDROMOS	RESPONSIBLE BODY ÓRGANO RESPONSABLE	NUMBER OF CERTIFIED AERODROMES NÚMERO DE AERÓDROMOS CERTIFICADOS		
			Certified/ Certificados	On-going/ En proceso	Planned (date)/ Planificados (fecha)
Aruba	1	DCA	1		
Bahamas	11	DCA			
Cayman Islands/Islas Caimanes	2	CAD			
Cuba	7	IACC	5		2
Dominican Republic/ República Dominicana	7	DGAC		6	
Haiti	2	OFNAC			
Jamaica	2	JCAA	1		1
Mexico	42	DGAC			
Netherlands Antilles/Antillas Neerlandesas	5	CANA	5		
Turks and Caicos Islands/ Islas Turcas y Caicos	3	CAA			
United States/ Estados Unidos	7	FAA	7		
TOTAL	**89**		**15**	**6**	

SAFETY MANAGEMENT SYSTEM IMPLEMENTATION. / IMPLEMENTACIÓN DEL SISTEMA DE GESTIÓN DE LA SEGURIDAD OPERACIONAL

AERODROME / AERÓDROMO	AERODROMES WITH SMS IMPLEMENTED / AERÓDROMO CON SMS IMPLANTADO	SMS implementation / Implementación SMS				
		Finished / Terminado	Underway / En proceso		Planned / Planificado	
		Date of publication / Fecha de publicación	Dates / Fechas:		Dates / Fechas:	
			Beginning / Comienzo	Scheduled publication / Publicación programada	Beginning / Comienzo	End / Final
Aruba						
Bahamas						
Cayman Islands / Islas Caimanes						
Cuba / Ignacio Agramonte, Camaguey			1-09-2006	1-12-2007		
Cuba / Vilo Acuaña, Cayo Largo del Sur			1-09-2006	1-12-2007		
Cuba / José Marti, La Habana			1-09-2006	1-12-2007		
Cuba / Frank País, Holguín.			1-09-2006	1-12-2007		
Cuba / Antonio Maceo, Santiago de Cuba			1-09-2006	1-12-2007		
Cuba / Juan Gualberto Gómez, Varadero			1-09-2006	1-12-2007		
Dominican Republic / República Dominicana						
Haiti						
Jamaica	1					
Mexico						
Netherlands Antilles / Antillas Neerlandesas						

AERODROME / AERÓDROMO	AERODROMES WITH SMS IMPLEMENTED / AERÓDROMO CON SMS IMPLANTADO	SMS implementation / Implementación SMS				
		Finished / Terminado	Underway / En proceso		Planned / Planificado	
		Date of publication / Fecha de publicación	Dates / Fechas:		Dates / Fechas:	
			Beginning / Comienzo	Scheduled publication / Publicación programada	Beginning / Comienzo	End / Final
Turks and Caicos / Islas Turcas y Caicos						
United States / Estados Unidos						

Agenda Item 2: Review of air navigation matters

2.1 Global air navigation and CAR/SAM developments

2.1.1 The Meeting was informed of the efforts ICAO has made to guide the work carried out by States in the development of a Seamless Global ATM System under the Global Plan Initiatives (GPI's), performance-based planning and implementation approach, and the regional integration and transition process.

2.1.2 Likewise, the Meeting took note that the planning process will be facilitated by using planning tools such as the *Business Case Analyses for the Implementation of CNS/ATM Systems*; by using the air navigation planning electronic database, such as the Electronic Air Navigation Plan (eANP); and also project management techniques and software, and new methodologies for the presentation of reports.

2.1.3 The purpose of these initiatives is to harmonize the work programmes, improve the process to prepare and present reports, and help in guaranteeing the interoperability and transparency among the Regions, as well as to ensure the development and measurement of the performance objectives.

2.1.4 The Meeting took note that to support the initial operation and use of the eANP, as well as to continue with the planning and implementation activities of services and systems; in accordance with the air navigation performance requirements, an update is being carried out to the information contained in the CAR/SAM Air Navigation Plan (Doc 8733), Volume II – Facilities and Services Implementation Document (FASID). States/Territories/International Organizations need to take into account the updates and respond on time to the update proposals on the frequency assignment tables (List COM 1, List COM 2 and List COM 3), and on the registry and designation of the users for Global ICARD Database of five letter name code designators (5LNC).

2.1.5 The Meeting was informed about the forum on Integration and Harmonization of NextGen (Next Generation) and SESAR (the Single European Sky ATM Research Programme) into the Global ATM Framework. The main goal of the event was to facilitate greater understanding of the integration and harmonization of NextGen and SESAR, and the opportunity to clarify uncertainties and to detail the next steps within a global discussion.

2.1.6 The Meeting took note that the ICAO planning objective is to achieve a performance based global air traffic management (ATM) system through the implementation of air navigation systems and procedures in a progressive, cost-effective and cooperative manner. Here, the Global ATM Operational Concept is the vision, the Global Air Navigation Plan is the strategy to be followed and the regional and national State plans are considered to be the action plans. All these work plans should be based on performance. Performance objectives may change depending on the ATM system's evolution; therefore, throughout the implementation process, these should be coordinated with and be available to all interested parties.

2.1.7 The notion of Performance Based Approach (PBA) emanated from good industry practices and evolution of the aviation industry into a less regulated and more corporatized environment, with greater accountability. The PBA is based on three principles: a) Strong focus on desired/required results; b) Informed decision making, driven by desired/required results; and c) Reliance on facts and data for decision making.

2.1.8 The Meeting took note of the foreseen benefits of the PBA, the essential ingredients for its success and the long-term results with its implementation. WP/04 of this meeting details this information in depth.

2.1.9 In order to complement the understanding of the PBA, ICAO gave a presentation on the concepts within the performance framework and its application to draft plans. The presentation is available on the following address at the ICAO NACC Office Website: http://www.icao.int/nacc/meetings/2009/Workshop_DEV_NPF_AN_SYS/.

2.2 NAM/CAR Regional Air navigation Implementation Plan

2.2.1 The Meeting, as a follow-up to Decision 3/3 of the NACC/DCA Meeting, updated the NAM/CAR Based Performance Implementation Plan to ensure coordination among air navigation services, such as ATM, CNS, AGA, AIM and MET, toward a seamless ATM system in line with operational initiatives of the Global Air Navigation Plan (Doc 9750).

2.2.2 The Meeting also recognized that the work of all air navigation fields was being merged and that the work had to be addressed in a holistic and strategic way. Therefore, considering the ATM operational concept (Doc 9854), the ATM implementation had to be faced as a system requiring the support of all the fields that traditionally are considered in the air navigation system.

2.2.3 The Meeting updated the implementation plan with information from the following performance objectives:

1. OPTIMIZE THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE
2. OPTIMIZE THE ATS ROUTE STRUCTURE IN TERMINAL AIRSPACE
3. IMPLEMENT RNP APPROACHES
4. ENHANCE CIVIL/MILITARY COORDINATION AND CO-OPERATION
5. ALIGN UPPER AIRSPACE CLASSIFICATION
6. IMPROVE DEMAND AND CAPACITY BALANCING
7. IMPROVE ATM SITUATIONAL AWARENESS

2.2.4 Moreover, required implementation tasks were included in new performance objectives as follows:

8. ELIMINATION OF IDENTIFIED AOP DEFICIENCIES
9. IMPLEMENTATION OF AERODROME CERTIFICATION
10. PROTECTION AND OPTIMUM USAGE OF RADIOFREQUENCY SPECTRUM

11. OPTIMIZATION AND MODERNIZATION OF COMMUNICATION INFRASTRUCTURE
12. AIM PERFORMANCE OBJECTIVE
13. IMPLEMENTATION OF WGS-84 AND e-TOD
14. IMPROVE AVAILABILITY OF METEOROLOGICAL INFORMATION
15. IMPROVE SAR SYSTEM

2.2.5 The Meeting recognized that it is critical to align the C/CAR WG work programme within this regional implementation plan, considering the performance objectives and related action plans with detailed tasks, deadlines and ICAO periodic monitoring activities.

2.2.6 In order to comply with established goals, the C/CAR WG updated the tasks and action plans of the NAM/CAR Performance-Based Air Navigation Implementation Plan, as shown in **Appendix A** to this part of the report.

Transition to the new Flight Plan model

2.2.7 Following GREPECAS Conclusion 13/25, the Meeting decided to include in the implementation plan the Guidance Material for the New Flight Plan Model prepared by ICAO so States, Territories and International Organizations in the CAR/SAM Regions will initiate actions to implement the new flight plan model and associated ATS messages so as to ensure smooth transition at regional and national levels. This transition strategy will be developed in accordance with ICAO global guidelines and GREPECAS regional guidelines for a harmonised implementation on 12 November 2017.

2.2.8 When developing activities of the C/CAR States/Territories/International Organizations related with the transition strategy towards the new flight plan model, the tasks reflected in Conclusions 3/4 and 3/7 of the Third Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/3), should be considered, transcribed below for ease of reference:

CONCLUSION NACC/DCA/3/4 IMPLEMENTATION OF THE NEW FLIGHT PLAN FORMAT

That, considering the importance of Amendment 1 to Doc 4444 applicable in 2012, States/Territories/International Organizations develop a harmonized transition and implementation plan to the new ICAO Flight Plan format and ATS related messages in their automated systems, and present the results of this implementation no later than the NACC/DCA/4 Meeting.

CONCLUSION NACC/DCA/3/7 USE OF THE CURRENT FLIGHT PLAN (CPL) AND REVIEW OF AUTOMATED SYSTEM(S) CAPACITIES

That, as part of ATM automation implementation, taking into account the regional strategy for integrating ATM automated systems and the Interface Control Document (ICD) approved by GREPECAS, States/Territories and International Organizations:

a) consider the use of the Current Flight Plan (CPL) for the exchange of updated flight plan data;

b) study and review the ATM automation capacities/functionalities of their corresponding area control centres to meet future implementation requirements;

c) inform results of actions in a) and b) to the ICAO NACC Office ***not later than 31 September 2009****; and*

d) conduct CPL tests between adjacent area control centres where benefits related to this implementation could result, informing results to the ICAO NACC Office ***not later than February 2010.***

2.2.9 This harmonized approach to the work programme will allow the C/CAR WG to continue its own implementation tasks according to the particular needs of the involved FIRs. The establishment of new performance objectives in line with ICAO guidelines will allow the dynamic identification of needs and periodic follow-up of attained implementation results and the optimum assignment of resources by States/Territories/International Organizations.

2.3 Air navigation specific activities

2.3.1 Air Traffic Management (ATM)

2.3.1.1 In accordance with ICAO Assembly Resolution A36-23 and of GREPECAS, through Conclusions 14/51, 15/1 and 15/38, the Meeting reviewed PBN regional strategies to develop national action plans, according to the dates established in the PBN Roadmap approved by GREPECAS

2.3.1.2 Note was taken that much of the navigational progress enabled by PBN are compatible with the avionics technology currently installed in most of the major commercial aircraft fleets, meaning minimal or no new equipment requirements for major aircraft operators or Air Navigation Service Providers (ANSPs).

2.3.1.3 In order to support regional activities, the ICAO NACC Regional Office coordinated a PBN Design Course to assist CAR States to aggressively pursue activities moving forward with PBN implementation.

2.3.1.4 In the implementation of RNAV routes joining pairs of cities, difficulties in airspace organization and management were found in the flexibility of airspace use. With regard to restructuring ATS routes, various issues have been identified, among others:

a) the implementation of some routes has not complied with the expectations and therefore, have low utilization by operators; and

b) although some routes are duly implemented, operators prefer to use ATS routes which are not direct, which increases operational costs and, in some cases, less flexibility in airspace use.

2.3.1.5 The Meeting deemed convenient that States, depending on their own implementation needs, complete their action plan based on the CAR/SAM PBN road map during 2009, take measures to optimize the ATS routes network in the different FIRs. It is also required to issue navigation specifications to RNAV routes currently implemented, and regulations and operational procedures in the AIPs, so as to allow operational enhancements to the airspace capacity and benefits for aircraft operators in the short term. It was concluded that States will comply with PBN implementation in accordance with ICAO Assembly Resolution

2.3.1.6 The United States presented a summary of PBN (RNAV and RNP) implementation plans in the National Airspace System (NAS), which noted recently updated and newly published U.S. guidance material for PBN. The United States NAS infrastructure plans may be found at website. http://nas-architecture.faa.gov/nas/ . Relevant information on progress made is included in **Appendix B** to this part of the report.

2.3.1.7 The FAA's Nav Evolution Plan (Jan 09) is currently in revision. The new version is expected to be online in late 2009.

2.3.1.8 The Meeting was briefed on the proposed implementation project of 50 NM Lateral Separation in the of Gulf of Mexico, whose initial objectives cover the following:

a) reduce lateral separation in the Gulf from 100 NM to 50 NM between aircraft authorized Required Navigation Performance 10 (RNP 10) or RNP 4;
b) implement a redesigned RNAV route structure based on a minimum 50 NM track spacing;
c) harmonize the proposed RNAV route structure with adjacent ATS providers;
d) have 90% or more of Gulf flights conducted by operators/aircraft authorized RNP 10 or RNP 4; and
e) accommodate the operation of a small percentage of operators/aircraft not authorized RNP 10 or RNP 4.

2.3.1.9 The implementation of 50 NM track spacing will enable additional routes to be established in the Gulf of Mexico to enhance operations for air traffic operating between North America and South America. The additional routes may provide the potential to do the following:

a) increase airspace capacity;
b) add more direct, cost efficient routes; and
c) reduce delays during periods of heavy traffic volume.

2.3.1.10 During initial meetings between Mexico and United States, the following Project Planning Documents were reviewed:

a) a draft Concept of Operations to start the discussion of policies and procedures necessary to apply 50 NM lateral separation between aircraft authorized RNP 10 or RNP 4;
b) a draft Summary Task List to begin planning for the completion of the tasks necessary to meet the project objectives; and

c) a first draft RNAV Route design to start the process of locating RNAV routes and associated waypoints in the affected Flight Information Regions (FIRs).

2.3.1.11 Bearing in mind that this project will impact international operations of the adjacent FIRs, the Meeting agreed that other States from the CAR Region should be invited to the next meeting tentatively scheduled for 25 July 2009, in Mexico City, Mexico.

2.3.1.12 The Meeting deemed convenient that, from the results of RNP implementation in the Gulf of Mexico, it would be beneficial to expand these benefits to the rest of the CAR Region through the study of a new airspace concept, in order to increase efficiency and capacity of the ATM system. To this aim, the Meeting adopted the following:

DRAFT
CONCLUSION 7/1 REVIEW OF THE CAR REGION AIRSPACE WITH A PERFORMANCE-BASED APPROACH

That, taking into account the results of RNP implementation in the Gulf of Mexico airspace,

a) the States/Territories of the C/CAR develop their respective work programmes with a performance-based approach for the review of the airspace for the CAR Region, and provide ICAO a report on the progress achieved during the second half of 2010; and

b) ICAO provide the required assistance for developing a new seamless airspace in the CAR Region and follow-up the developed tasks.

2.3.1.13 The Secretariat presented information related to the proposal for amendment for the ICAO CAR/SAM Air Navigation Plan, NACC 08/03-ATM, approved by the President of the Council, on 11 May 2009, which will be incorporated to the next consolidated amendment to be issued to the Doc 8733. The meeting noted that the amendment highlights a good example of an implementation task list and performance measurement.

2.3.1.14 The Meeting followed-up GREPECAS Conclusion 14/51, on a Demand Capacity Balancing Strategy for the CAR/SAM Regions. It considered that ATFM implementation requires:

a) obtaining and completing information on the status of ATFM implementation by the States/Territories/International Organizations; and

b) information on electronic databases required for the evolutionary phases of the ATFM system.

2.3.1.15 The work related to these tasks requires that States/Territories/International Organizations complete the ATFM Questionnaire included in **Appendix C** to this part of the report, and send it to the NACC Regional Office by **31 October 2009**. Another document directly related to ATFM implementation Strategy is an ATFM Manual, included in **Appendix D** to this part of the report, that may be used by States, Territories and Organizations to develop ATFM operational procedures in the C/CAR.

2.3.2 Communications, Navigation and Surveillance (CNS)

2.3.2.1 The Meeting took note of the VSAT networks available in the CAR Region and the ALLPIRG Conclusion 5/16 – *Implementation of very small aperture terminals (VSATs)* that urges the PIRGs to discourage the proliferation of where one/some of the existing VSATs can be expanded to serve the new areas of interest, work towards integrated regional/inter-regional digital communication networks with a single (centralized) operational control and preferably based on the Internet Protocol (IP).

2.3.2.2 In this respect, the Meeting was informed of the MEVA network development and its satisfactory operation during the last several years. Also discussed were the agreements achieved during the last MEVA TMG meeting, during which, new requirements such as AMHS and radar data sharing for the network were highlighted.

2.3.2.3 Likewise, progress in the inter-connectivity activities of the MEVA II/REDDIG networks was achieved. The final phase of the inter-connection is planned for September 2009, and new initial requirements related to the MEVA II/REDDIG interconnection were also discussed. The Meeting was informed that MEVA and REDDIG network administrations will develop a preliminary action plan to complete the study for network integration. This integration will be carried out after a five years period, once the inter-connection of both networks begins operating.

2.3.2.4 United States provided a briefing of its telecommunications programs for FAA National Airspace Data Interchange (NADIN) Message Switch Network (MSN) and Air Traffic Services (ATS) Message Handling System (AMHS) Programs:

- The FAA provided a briefing on it's fully functional replacement of the NADIN I Switches, called NADIN MSN Rehost (NMR) and its capability to support X.25 and TCP/IP. The legacy equipment is to be decommissioned by June 2009, user migration from the Legacy to NMR started in early 2008. In addition, the NMR System will provide AFTN services over IP-based solutions utilizing the FTI IP network. This will enable new users to connect to NADIN via IP, and allow existing X.25 users to migrate to the IP services. The NMR system also enables AFTN traffic to be sent from an X.25-based user to an IP-based user, and vice versa.

- As a long-term solution the FAA is working closely with all Regions and will enhance AMHS in the NADIN Network to support OSI for upper layers and TCP-IP using RFC 1006 for lower layers in the fall of 2009.

- The intent of this project is to integrate the AMHS Gateway function into the NADIN-I Message Switch Network (MSN) Rehost (NMR) system.

2.3.2.5 COCESNA informed the Meeting of the different activities and investments contained under the project "CNS/ATM System Improvement for Honduras", for the implementation, replacement and maintenance of several CNS/ATM components of the international airports of Honduras. The project includes assistance with different ATM operational aspects, aimed at the reorganization of Honduras airspace and service improvements through the different ATC facilities. The detail of this information was presented in IP/12 of this Meeting.

2.3.2.6 The Secretary presented the short–to-medium term agreement between EUROCONTROL and ICAO for the coordination of the allocation and management of AMHS addresses, Directory Services, and the training offered to users for the ATS Messaging Management Centre (AMC) Operations. In this respect the following was highlighted:

- the agreed procedures for minor and major changes in the management of the addresses and the role of the States, ICAO and EUROCONTROL;

- the invitation to States to designate representatives to register as AMC users, urging all States and/or ANSPs, operating international COM Centres, who have the intention of implementing AMHS in the foreseeable future, should engage themselves into the AMHS address coordination process;

- the registration procedure by the user and the accreditation of the registration through the CNS Regional Officer of the corresponding ICAO Office;

- the training given by EUROCONTROL for the AMC and the scheduled AMC training together with the ICAO Seminar on the Implementation of ATN Ground/Ground and Air/Ground Applications scheduled to be held in Dominican Republic in November 2009.

2.3.2.7 The Meeting took note of the latest actions and results regarding the update made to the radio frequency assignment lists for the CAR Region, as part of the preparation of information for its inclusion within the electronic Air Navigation Plan (eANP). This action is part of the GANP initiative, GPI-23 – Aeronautical Radio Spectrum, which calls for the timely and continuous availability of adequate radio spectrum, on a global basis, to provide viable air navigation services (communication, navigation and surveillance).

2.3.2.8 Similarly the Meeting was informed of the efforts made by ICAO in the implementation of several electronic applications within the eANP environment. Frequency Planning being one of these applications will allow the coordination and management of frequency assignments between States and ICAO in a more agile and coordinated manner by releasing updated information in the least amount of time. Since this application is at a prototype level (version 2.11) and with the goal of improvement, the Secretary has facilitated this version and requested comments and observations to Dominican Republic, Jamaica and COCESNA.

2.3.2.9 The Secretary requested the Meeting to submit their replies, no later than August 2009, to the observations included in the updated frequency assignment lists that are available on the ICAO NACC Regional Office website (http://www.mexico.icao.int/) under e-Documents / CNS / Radio Frequency Assignment Lists – CAR Region.

2.3.2.10 The availability of the necessary radio frequency spectrum continues to be a prerequisite for civil aviation safety and for the effective implementation of communication, navigation and surveillance/air traffic management (CNS/ATM) systems. However, given the constant growth of spectrum demand by non-aviation users, aviation is facing rising competition for the limited spectrum available, in particular from commercial telecommunications services. Advanced systems used in modern avionics for communications, radio navigation, automatic positioning reporting system and data links could not work without accessing the radio electric spectrum.

2.3.2.11 Therefore, it is essential for all ICAO Contracting States to fully support aeronautical radio frequency spectrum requirements in all international forums where the issue of radio spectrum allotments is discussed, in order to make sure that all vital aviation safety service requirements are duly presented and understood.

2.3.2.12 Based on the experience gained by ICAO, in preparation for the CMR-2007, the main factors for implementation success were the following:

- early development and dissemination of the ICAO preliminary position by the Secretariat and the Air Navigation Commission, assisted by the ACP and the NSP;
- active participation by ICAO experts in preparations for the ITU;
- increased participation of ICAO experts in meetings of regional telecommunication organizations (APT, CEPT, CITEL, and ATU). The participation of Regional Offices, with the assistance of Headquarters when needed, was important for supporting the development by regional telecommunication organizations of proposals for the conference, which were aligned with the ICAO position;
- organization of meetings of ACP working groups and ICAO radio frequency seminars in the Regions;
- active participation in the conference itself by the ICAO delegation.

2.3.2.13 The Secretariat informed that ICAO’s position had already been reviewed and was sent on 30 June 2009, so that States may initiate appropriate coordination.

2.3.2.14 ICAO has requested States, Territories and International Organizations to designate their points-of-contact to carry out this support. This point-of-contact will be in communication with ICAO and with the national authority of the radiofrequency spectrum management in order to coordinate issues related with WRC-11. In addition, the point-of-contact should continue to actively participate in CITEL Meetings of the Organization of American States (OAS) on the preparatory work for WRC-11, as well as to participate in meetings and seminars convened by ICAO to explain and analyze the organization's position for WRC-11 and to actively participate in WRC-1 supporting the ICAO position. During the Meeting the Dominican Republic and COCESNA provided ICAO with their points of contact.

2.3.2.15 Based on the lessons learned and aware of the need to follow-up and have active participation by States and International Organisations, beginning at the review stage of the initial position for WRC-11 up to their participation in WRC-11, it is essential to communicate and understand the ICAO position to receive support from States/Territories and International Organizations. Therefore, the Meeting deemed appropriate that a seminar on radio electric spectrum management could be beneficial for this support. In this sense, the Meeting agreed on the following draft Conclusion:

DRAFT
CONCLUSION 7/2 SEMINAR ON AVIATION RADIO ELECTRIC SPECTRUM MANAGEMENT AND PREPARATION FOR THE WRC-2011

That, in view of the preparation and support for the ICAO position for the ITU World Radiocommunication Conference 2011 (WRC-11):

a) the ICAO NACC Regional Office request headquarters to organize in the NACC Office by the first semester of 2010, a bilingual Seminar for the CAR Region on Aviation Radio Electric Spectrum Management, in which all the necessary topics are included to prepare States to understand and support the ICAO position for the ITU WRC-2011; and,

b) States/Territories/International Organizations facilitate the participation of their experts in this seminar, as well as inform the designated point-of-contact to support the ICAO position.

2.3.2.16 COCESNA informed the Meeting of the advances in its activities on radar data sharing with several states in the region, for increasing the availability, reliability and coverage of the surveillance service among the FIRs of Mexico/Merida, La Habana and Central America:

- Mexico (SENEAM) – COCESNA: Agreement signed since 2008, Cancun radar data exchange for use in CENAMER Control Center, and Mexico (SENEAM) receives radar data from Belize/ COCESNA for its use in Merida Control Center. The communication mean is the CAMSAT network and ground circuits leased with the PTTs of Mexico and Guatemala.

- Cuba – COCESNA: Agreement in progress, exchange of COCESNA radar data in Gran Cayman with radar data from San Julian. The planned communication mean will be the MEVA network.

2.3.2.17 United States discussed their experience in radar data sharing between Miami and Bahamas and the importance of the establishing responsibilities between the parties involved in radar exchange agreements. USA offered a sample of a Memorandum of Understanding (MOU) for consideration to the States.

2.3.2.18 In this respect, the Secretary commented that during the NACC/WG/02 meeting held last year in Jamaica, information was provided regarding radar data exchange agreements, analysis of data integrity, explanation of the current ASTERIX protocol, among the other necessary topics for achieving this type of agreement.

2.3.2.19 Similarly, the Meeting was informed about the Air Surveillance Regional System (SRVA), which is an initiative for the implementation of a regional coordination centre that will support the civil aviation operations in the Central America FIR, Panama FIR and Santo Domingo FIR with representatives of civil aviation, Military forces and/or security. The SRVA tasks include SAR missions, humanitarian assistance, support for natural disasters, security and surveillance, among others. The SRVA also looks for building a technical compatible platform with a common interface for radar data sharing with the adjacent FIR radar systems.

2.3.2.20 Jamaica informed the Meeting of its implementation plans for Surveillance systems, which includes radar data sharing with adjacent FIRs and assessment of new technologies with a view towards implementation. On this issue, the Meeting agreed that this information should be incorporated within the NAM/CAR Regional Implementation Plan on activities related to the performance objectives to improve situational awareness and actions referred to in the surveillance systems.

2.3.3. Aerodromes and Ground Aids (AGA)

2.3.3.1 A State questionnaire regarding the use of aeronautical studies to present acceptable means of ensuring safety of aircraft operations at aerodromes was carried out last February, in order to support the GREPECAS AGA/AOP Subgroup Task Force on aeronautical studies.

2.3.3.2 The objective of the survey was to consult with States/Territories regarding the level of compliance of ICAO standards and recommended practices by airport operators as well as from the relevant aeronautical authority. An aeronautical study may be carried out when aerodrome standards cannot be met as a result of development. Such a study is most frequently undertaken during the planning of a new airport or during the certification of an existing aerodrome.

2.3.3.3 A survey on airport demand/capacity for States, Civil Aviation Authorities and airport operators was carried out in order to support the GREPECAS AGA/AOP Subgroup Task Force on airport demand/capacity last February.

2.3.3.4 The objective of the survey was to consult with States/Territories regarding the level of compliance of ICAO SARP's by airport operators as well as regulations coming up from the relevant aeronautical authority regarding apron congestion, implementation of SMS, apron accidents/incidents statistics and so on. The results of the questionnaire will permit the Task Force to analyse problems that are facing States/Territories and will generate contributions to improve its management.

2.3.3.5 Considering the above-mentioned, the States/Territories that have not yet sent their respective questionnaires, are invited to submit them to the ICAO NACC Regional Office, not later than September 30, 2009. See **Appendix E** to this part of the report**.**

2.3.4 Aeronautical Meteorology (MET)

2.3.4.1 The meeting took note that aircraft operations are vulnerable to adverse meteorological conditions and volcanic ash clouds that can cause accidents, incidents and delays and that the meteorological service in the Central Caribbean Region is of crucial importance for the safety and efficiency of air transport operations.

2.3.4.2 The meeting was aware that the Global Air Navigation Plan demands immediate access to high-quality OPMET data (METAR, TAF, SIGMET, etc.) that is required to assist Air Traffic Management in tactical decision-making for aircraft surveillance, air traffic flow management and flexible and dynamic aircraft routing that will contribute to the optimization in the use of airspace. The Meeting also took note that the ICAO NACC Office has provided assistance to States so that meteorological reports (METAR) and aerodrome forecasts (TAF) from all NAM and CAR States and Territories are currently available at OPMET data banks and that there is a need for improvements in the preparation and dissemination of SIGMET messages on hazardous meteorological conditions and volcanic ash clouds.

2.3.4.3 The Meeting was invited to review Conclusions 15/4 to 15/18 of the Final Report of GREPECAS 15 and take appropriate actions.

2.3.4.4 The meeting was informed that the WAFS workstations are very important for OPMET data exchange and that several WAFS workstations in the CAR are out of order due to damage caused by lightning strikes. In this regard, the meeting adopted the following Conclusion:

DRAFT
CONCLUSION 7/3 PROTECTION OF WAFS WORKSTATIONS

That the Civil Aviation Authorities of States/Territories, in coordination with the Meteorological Authorities, adopt the necessary measures to protect their WAFS workstations against lightning strikes, current surges and voltage spikes in the electrical power supply.

Quality Management System in Meteorology

2.3.4.5 The meeting was informed that in support of SMS (Safety Management System), the establishment of a Quality Assurance System for the meteorological service provided to the users will be mandatory by November 2010. In this regard, the meeting adopted the following Conclusion:

DRAFT
CONCLUSION 7/4 **SUPPORT TO METEOROLOGISTS TO ATTEND THE ICAO SEMINAR/WORKSHOP ON THE DEVELOPMENT OF A QUALITY ASSURANCE SYSTEM TO ENHANCE THE AERONAUTICAL METEOROLOGICAL SERVICE**

That the States' Civil Aviation Authorities, in coordination with the Meteorological Authorities, make their best effort to ensure that aeronautical meteorologists of their States participate in the ICAO Seminar / Workshop on the Development of a Quality Assurance to enhance the Aeronautical Meteorological Service, to be held in Jamaica, 25-27 November 2009.

2.3.5 Aeronautical Information Services (AIS/MAP)

2.3.5.1 In dealing with the Agenda Item, the table of pending tasks was discussed for its urgent action, coordinating actions among Air Navigation areas that allow to implement relevant tasks to support ATM projects, so the Secretariat requested C/CAR States to report to the NACC Regional Office the updated implementation status of AIS/MAP (AIM) issues, as well as to report the difficulties such as processing and digital producton of integrated documentation package (IAIP): AIP, AMDs, SUP to AIP, AIC, PIB, NOTAM (checklists), aeronautical cartography, planning and creation of Geographic Information System (GIS), the Quality Management Systems (QMS) programmes, and surveying and publication of obstacles data in the WGS84 system and Electronic Terrain and Obstacle Data (e-TOD), that a Performance Objective has been integrated on WGS84 and e-TOD within the Regional Plan.

2.3.5.2 Furthermore, States/Territories and International Organizations were requested to inform to ICAO NACC Regional Office on the developments in this issue through the email: icao_nacc@mexico.icao.int, as well as on the updating of the differences regarding Annexes 15 and 4 to SARPS and to present resolution plans of the Deficiencies.

2.3.5.3 In this regard, the Roadmap for AIS Transition to AIM was presented developed by the AIM-AIM/SG Study Group in its First Meeting in ICAO Headquarters in December 2008, shown in **Appendix F** to this part of the report. This Roadmap details the requirements, implementation phases and its respective times.

2.3.5.4 The Meeting took note that Jamaica initiated an important training process that included Air Navigation Area. On the other hand, Dominican Republic commented that it would be necessary for ICAO to send a letter to States requesting to be informed of the implementation status of the pending tasks discussed in this Meeting.

2.4 Human resources and training

2.4.1 In accordance with NACC/DCA/3 Conclusion 3/11, the Secretariat presented general guidelines for developing a regional human resource and training planning strategy.

2.4.2 In accordance with USOAP results, it was recalled that many findings are related to insufficient qualified and experienced personnel, inadequate training, certification and licensing systems, and with authorities overseeing performance proficiency and regulating service providers.

2.4.3 The Meeting recognised that the objective of human resource planning is to ensure that States guarantee the availability of qualified personnel through a human resource planning process in accordance with requirements to provide an efficient air navigation service.

2.4.4 Each organization should develop a current organizational structure analysis in order to determine shortcomings and maintain a training programme that ensures personnel are trained and competent to perform their duties. To design effective training, programmes should be dependent upon the level of specialisation, of new technology, new procedures and practices, the effectiveness of human and machine interaction and a segment on inter-cultural communication. In **Appendix G** to this part of the report, strategic guidelines to develop a regional training programme are included.

2.4.5 Training development should include a well-documented process to identify new training requirements and a validation process that measures its effectiveness. Likewise, training should be delivered by persons with appropriate knowledge, skills and experience in air navigation services.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN REGIONAL OFFICE

PERFORMANCE BASED AIR NAVIGATION IMPLEMENTATION PLAN

FOR THE NAM/CAR REGIONS

1. INTRODUCTION

1.1 The Global Plan describes a strategy aimed at achieving near and medium term ATM benefits on the basis of available and foreseen aircraft capabilities and ATM infrastructure. It contains guidance on ATM improvements necessary to support a uniform transition to the ATM system envisioned in the global ATM operational concept (Doc 9854). The operational concept presents the ICAO vision of an integrated, harmonized and globally interoperable ATM system.

1.2 The Strategic Vision is "*To foster implementation of a seamless, global air traffic management system that will enable aircraft operators to meet their planned times of departure and arrival and adhere to their preferred flight profiles with minimum constraints and without compromising agreed levels of safety.*"

1.3 This vision is refined in the Mission of Implementation as follows:

To develop a seamless, globally coordinated system of air navigation services that will cope with worldwide growth in air traffic demand while:

- *improving upon the present levels of safety;*
- *improving upon the present levels of regularity;*
- *improving upon the overall efficiency and capacity of airspace and airports;*
- *improving operations allowing for capacity increase while minimizing fuel consumption and aircraft engine emissions;*
- *increasing the availability of user-preferred flight schedules and profiles; and*
- *minimizing differing equipment carriage requirements between regions.*

1.4 Having a strategic geographical location at the confluence of ATS routes connecting the major destinations, the airspace has become a vital link to the smooth flow of traffic between major airspace in NAM and CAR Regions.

1.5 The complexities of Caribbean airspace are unique in nature. Based on the topography, various types of aircraft from Helicopter to bigger type of jet aircraft are being operated in various sectors. Restricted airspace for Military flying and the mixed type of aircraft with unmatching capabilities occupy the airspace and their conflicting demands need to be accommodated.

1.6 Civil commercial, Military, general Aviation, Space research, hobby and adventure flying, flying training, helicopter flying have been constantly increasing and thereby the airspace has been getting congested day by day. Technological innovations provide more simple and flexible solutions not only for transportation needs but also for national security and economic development.

1.7 Entry of Low Cost carriers with attractive flying schemes has boosted traffic in the recent past and the air transport industry is in the upswing with more and more air operations. These carriers have not only become a potential competitors to the currently established airlines but also potential challengers to the ATM system as the airspace/ airports are getting more and more congested and leading to delay and holding resulting in burning of extra fuel.

1.8 Military flying activities with frequent airspace and airport closures implies additional civil flight operations and workload on the capacity and air traffic management point of view.

1.9 Recently the rate of traffic growth is at an average of 3.3% with the advent of new routes and airlines commencing operations as Caribbean destinations have become more popular for international tourist and commercial interest. The total operations at the main airports of the CAR Region in the period 2002 to 2005 reflected a positive trend of 1.92%, the global trend is 6%. The main rates of traffic growing were:

Cuba	6.41%
Dominican Republic	5.74%
Belize	4.77%
El Salvador	3.06%
México	2.57%
U. S. (P. R) (V. I)	2.51%
Guatemala	2.51%
Costa Rica	2.42%

1.10 What is reflected in the following tables is continuing growth for the next several years:

Total (international and domestic) services of airlines of ICAO contracting States (NACC States - Percentage of world traffic 2008)

Aircraft Kilometers (millions)	Aircraft Departures (thousands)	Passengers Carried (thousands)	Passenger-Kilometers Performed (millions)	Passenger load factor (%)	Tonne-kilometres Performed		Tonne Kilometers available (millions)	Weight Load Factor (%)
					Freight (millions)	Total (millions)		
13,523	10,652	782,200	1,434,423	80	41,279	17,3977	28,3610	61

International services of airlines of ICAO contracting States - NACC States - Percentage of world traffic 2008

Aircraft Kilometers (millions)	Aircraft Departures (thousands)	Passengers Carried (thousands)	Passenger-Kilometers Performed (millions)	Passenger load factor (%)	Tonne-kilometres performed		Tonne Kilometers available (millions)	Weight Load Factor (%)
					Freight (millions)	Total (millions)		
3,489	1,244	118,805	488,219	79	24,028	69,577	115,130	60

1.11 The regional distribution of scheduled traffic 2008 by aircraft departures and by passengers carried is depicted in the following Tables 1 and 2.

Regional Distribution of Scheduled Traffic – 2008

NAM/CAR Aircraft Departures 10.7 Million

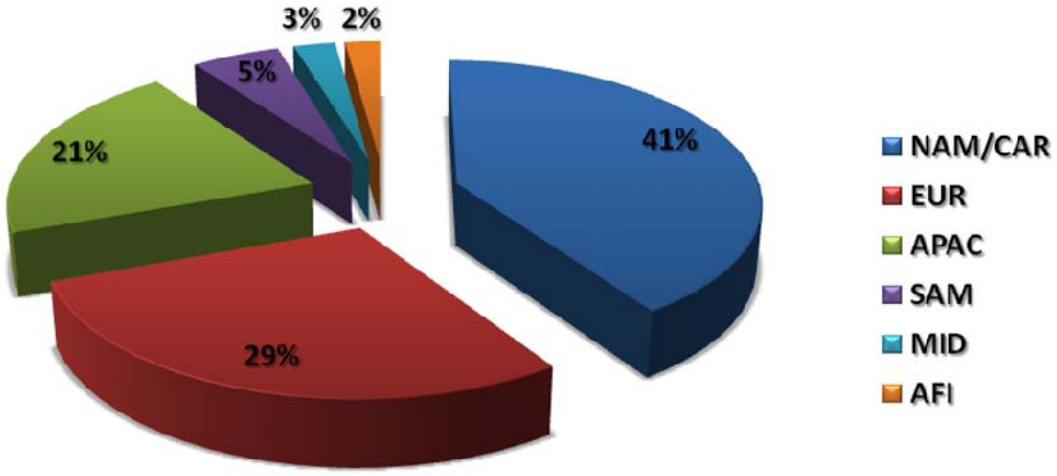


Table 1

Regional Distribution of Scheduled Traffic – 2008

NAM/CAR Passengers carried 782.2 Million

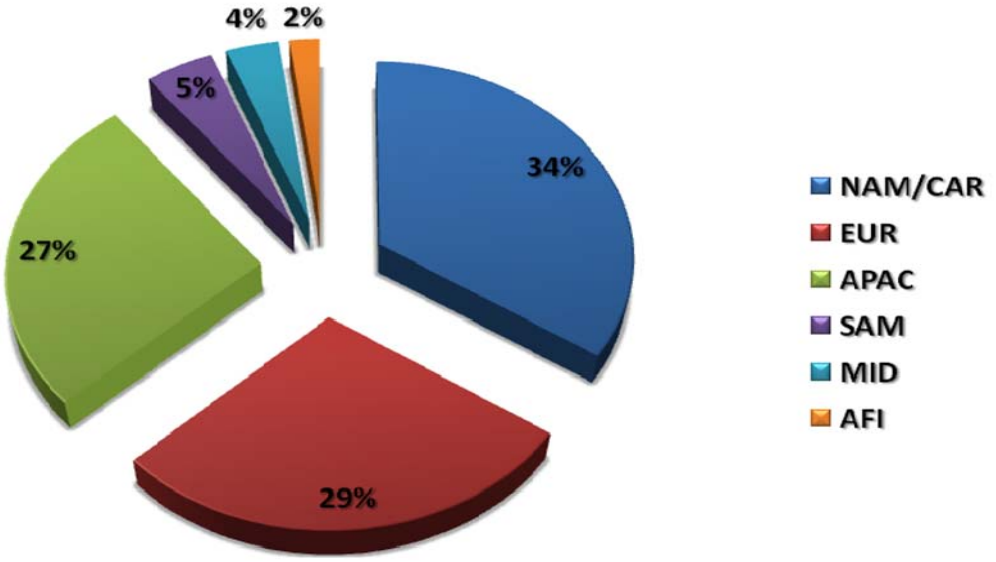


Table 2

1.12 More challenges are in the horizon for ATM seamless system in CAR and NAM Regions. The expectation is more and more air operations among CAR and NAM Regions which will require gradual operational developments of ATM system to ensure an optimum air traffic flow towards among certain areas or through them, during periods in which the demand exceeds or is foreseen to exceed the available capacity.

1.13 New aircraft are capable of extremely accurate navigation during all phases of flight and many are equipped with satellite-based communication. Aircraft operations growth also has resulted in a relatively young airline fleet, most equipped with some or all of enhanced capabilities.

1.14 Implementation programmes are required to be addressed with a performance-based approach, in order to achieve improvements to the air navigation system and environmental benefits, thus preventing costly implementation processes.

2. REGIONAL PLANNING PROCESS

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

2.2 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.

2.3 Planning should be developed through performance objectives with clearly defined implementation requirements. 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**.**

3. PERFORMANCE OBJECTIVES

3.1 The performance objectives should be developed using a performance approach to reflect the necessary activities needed to support regional ATM system implementation.

3.2 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.

3.3 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

3.4 Each performance objective should establish a group of common benefits for all stakeholders and be achieved through the strategies, the operational and technical activities planned. These benefits should be in accordance with the ICAO strategic objectives, and the ATM community expectations.

Strategy

3.5 The air navigation system evolution requires a progressive strategy with tasks and actions that best represent the national and regional implementation in accordance with the global planning framework. The final goal is to achieve harmonized regional implementation on a continuous evolution towards a global seamless ATM system.

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

3.7 The implementation 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.

3.8 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.

3.9 The following principles should be considered when developing implementation 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 implementation 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 to align the regional work with the fundamental objective of achieving interoperability and seamlessness to the highest level.

- The implementation tasks should encourage human resources optimization, as well as promote the use of electronic communications means such as internet, videoconference, teleconference, phone and fax. It should be ensured that all the resources will be used efficiently, avoiding any duplication or unnecessary work.

- It should be ensured 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.

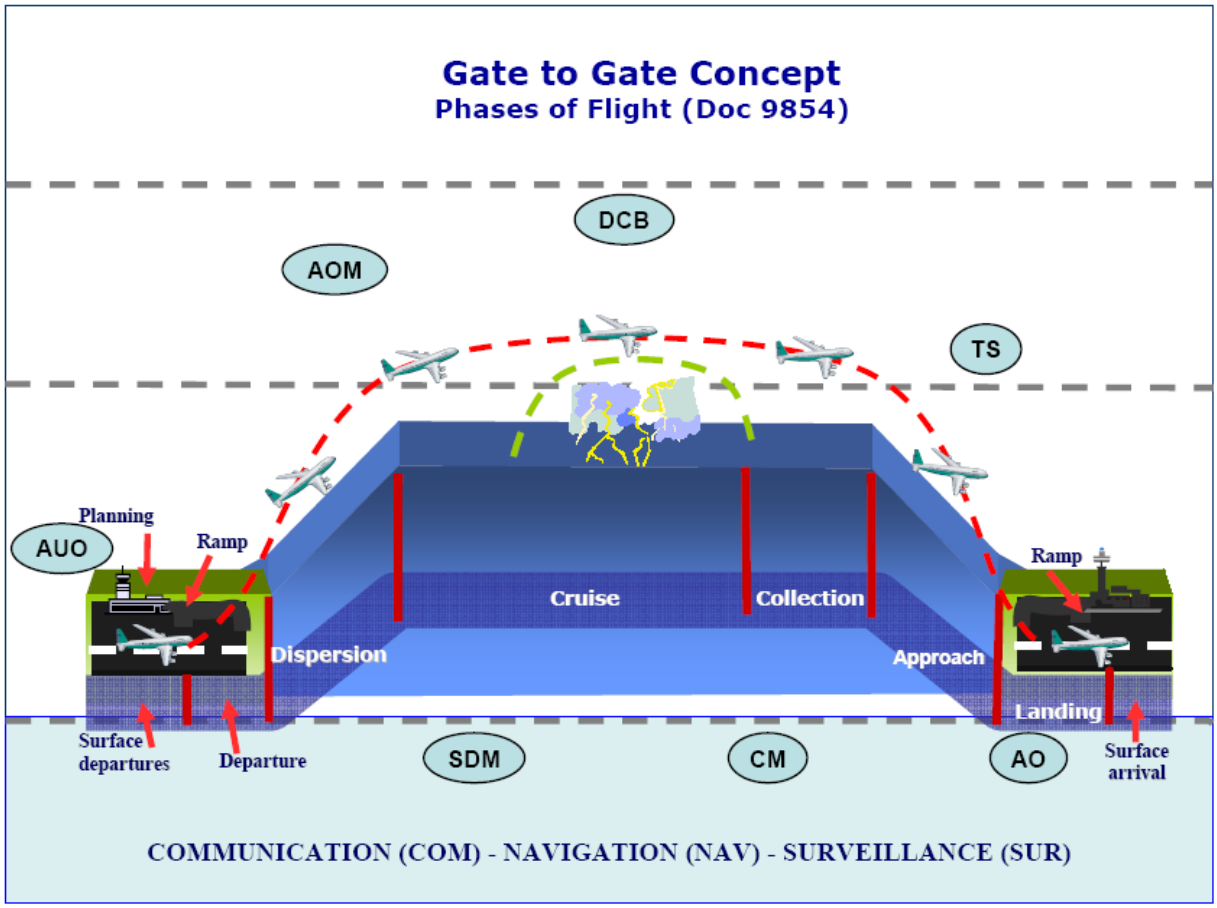
Identification of tasks

3.10 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

3.11 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.

3.12 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:



3.13 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.

3.14 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

3.15 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 programmes.

3.16 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

4 NATIONAL ACTION PLAN

4.1 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.

4.2 The strategic 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.

4.3 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 implementation process.

4.4 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.

4.5 For the development of a national action plan, the following subjects, as a minimum, should be analysed and properly documented:

a) Characteristics of the industry

Enumerate the current and projected growth of Air Traffic in your state and also identify, if any, the efficiency challenges in your State.

. b) The air navigation service provider

Describe briefly the organization providing the air navigation services in your State including its institutional format, capital structure, principal shareholders and the management.

c) Major stakeholders/partners

Identify the major stakeholders/partners such as the air navigation service providers, the airspace users (the commercial airlines using the airspace, business aviation, general aviation, military, etc.) and the potential funding sources.

d) Risks and Limitations

Enumerate the limitations of the current conventional air navigation systems that may arise and which solution would depend on the State/Territory/International Organization.

e) Risk Management

What are the identified risks and briefly describe the risk mitigation plans/techniques.

f. National Performance-based Air Navigation Plan

i) Define the geographical scope of the National Air Navigation Plan and determine the major traffic flows.
ii) Explain briefly the vision of your State/Territory/International Organization for achieving a seamless Global ATM system in accordance with ICAO Doc 9854.
iii) Determine the current air navigation infrastructure and services.
iv) Through gap analysis define near and medium term operational improvements.
v) Using a standard Performance framework form (PFF), develop different national performance objectives by determining relevant tasks and ensure the linkage to ATM components and Global Plan Initiatives (GPIs).

CAR/NAM REGIONS PERFORMANCE OBJECTIVES

1. OPTIMIZE THE ATS ROUTE STRUCTURE EN-ROUTE AIRSPACE				
Benefits				
Environment **Efficiency**	• reductions in fuel consumption; • ability of aircraft to conduct flight more closely to preferred trajectories; • increase in airspace capacity; • facilitate the utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency.			
Strategy ***(2008 - 2015)***				
ATM OC Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
AOM	a) Develop regional action plan	2007	GREPECAS	Completed
	b) Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement a trunk route network, connecting major city pairs in the upper airspace and for transit to/from aerodromes, on the basis of PBN and, in particular, RNAV/5, taking into account interregional harmonization	2010	States	Valid
	c) Develop performance measurement plan	2010	States	Valid
	d) Formulate safety plan	2010	States	Valid
	e) Establish collaborative decision making (CDM) process	2010	States	Valid
	f) Publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010	States	Valid
	g) Identify training needs and develop corresponding guidelines	2010	States	Valid
	h) Implementation of ATS routes enroutes	2010	States	Valid
	i) Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan	On going	GREPECAS	Valid
GPIs	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			

2. OPTIMIZE THE ATS ROUTE STRUCTURE IN TERMINAL AREA AIRSPACE				
Benefits				
Environment **Efficiency**	• reductions in fuel consumption; • ability of aircraft to conduct flight more closely to preferred trajectories; • increase in airspace capacity; • facilitate utilization of advanced technologies (e.g., FMS based arrivals) and ATC decision support tools (e.g., metering and sequencing), thereby increasing efficiency.			
Strategy ***(2008 - 2016)***				
ATM OC Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
AOM	a) Develop regional PBN implementation plan	2007	GREPECAS	Completed
	b) Develop State PBN implementation plan	2010	States	Valid
	c) Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement optimized standard instrument departures (SIDs), standard instrument arrivals (STARs), instrument flight procedures, holding, approach and associated procedures, on the basis of PBN and, in particular RNAV-1 and Basic-RNP1	2011	States	Valid
	d) Develop performance measurement plan	2010	States	Valid
	e) Formulate safety plan	2010	States	Valid
	f) Establish collaborative decision making (CDM) process	2010	States	Valid
	g) Publish national regulations for aircraft and operators approval using PBN manual as guidance material	2010	States	Valid
	h) Identify training needs and develop corresponding guidelines	2010	States	Valid
	i) Develop system performance monitoring plan	2010	States	Valid
	j) Develop a regional strategy and work programme for implementation of SIDs and STARs	2011	States	Valid
	k) Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan	On going	GREPECAS	Valid
GPIs	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.			

3. IMPLEMENT RNP APPROACHES				
Benefits				
Efficiency **Safety**	• Improvements in capacity and efficiency at aerodromes. • Improvements in safety at aerodromes.			
Strategy (2008-2016)				
ATM Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
AOM	a) Develop State PBN implementation plan.	2009	States	Valid
	b) Develop Airspace Concept based in CAR /SAM PBN Roadmap, in order to design and implement RNP APCH with Baro-VNAV in accordance with assembly resolution A36-23, and RNP AR APCH where beneficial	2010	States	Valid
	c) Develop performance measurement plan	2010	States	Valid
	d) Formulate safety plan	2010	States	Valid
	e) Establish collaborative decision making (CDM) process	2010	States	Valid
	f) Publish national regulations for aircraft and operators approval using PBN manual as guidance material.	2010	States	Valid
	g) Identify training needs and develop corresponding guidelines	2010	States	Valid
	h) Implementation of APV procedures	2016	States	Valid
	i) Formulate system performance monitoring plan	2011	States	Valid
	j) Monitor implementation progress in accordance with CAR/SAM PBN implementation roadmap and State implementation plan	On going	GREPECAS	Valid
GPIs	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.			

4. 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)				
ATM Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
AOM	a) Develop guidance material on civil/military coordination and co-operation to be used by States/Territories to develop national policies, procedures and rules.	2007	ICAO	Completed
	b) Establish civil/military coordination bodies.	2008 – 2012	States	Valid
	c) Arrange for permanent liaison and close cooperation between civil ATS units and appropriate air defence units.	2008 – 2012	States	Valid
	d) Conduct a regional review of special use airspace.	2008 – 2012	GREPECAS	Valid
	e) Develop a regional strategy and work programme for implementation of flexible use of airspace in a phased approach for dynamic sharing of restricted airspace	2008 – 2010	States	Valid
	f) full integration of civil and military aviation activities by 2012.	2008 – 2012	States	Valid
	g) Monitor implementation progress.	On going	GREPECAS	Valid
GPIs	GPI/1: flexible use of airspace.			

5. 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

ATM Component	TASK DESCRIPTION	START-END	RESPON-SIBLE	STATUS
	a) Develop a regional implementation strategy and work programme for the implementation of ICAO Annex 11 airspace Class A above FL 195.	2007	GREPECAS	Completed
	b) Identify key stakeholders, ATCOs, pilots, and relevant international organisations for coordination and cooperation on changes for new airspace organization, using a CDM process.	2008 – 2010	States	Valid
	c) Develop new national airspace organization in accordance with ICAO provisions, as needed.	2008 – 2010	States	Valid
AOM	d) Coordinate changes for regional and national documents; • Doc 8733, CAR/SAM ANP; • AIP; and, • ATS letters of agreement.	2008 – 2012	ICAO - States	Valid
	e) Carry out improvements in ground systems to support new airspace organization configurations, as necessary.	2008 – 2012	States	Valid
	f) Publish national regulatory material for implementation of new rules and procedures to reflect airspace organizational changes.	2008 – 2010	States	Valid
	g) Train ATCOs and pilots in new procedures, including all civil and military airspace users, as required;	2008 – 2012	States	Valid
	h) Monitor implementation progress.	On going	GREPECAS	Valid
GPIs	GPI/4: align upper airspace classification.			

6. IMPROVE DEMAND AND CAPACITY BALANCING

Benefits

Environment	• reduction in weather- and traffic-induced holding, leading to reduced fuel consumption and emissions;
Efficiency	• 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
Safety	• improved safety management.

Strategy

ATM Component	TASK DESCRIPTION	START-END	RESPON-SIBLE	STATUS
DCB	a) 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.	2008	GREPECAS	Valid
	b) Identify and analyse traffic flow problems and develop methods for improving efficiencies on a gradual basis, as needed, through enhancements in current: i. airspace organization and management (AOM) and ATS routes structure (unidirectional routes) and SID and STARS; ii. communication, navigation and surveillance systems; iii. aerodrome capacity; iv. ATS capacity; v. training for pilots and Controllers; and vi. ATS letters of agreement.	2008 – 2012	GREPECAS	Valid
	c) Define common elements of situational awareness between FMUs; i. common traffic displays, ii. common weather displays (Internet), iii. communications (teleconferences, web), and, iv. daily teleconference/messages methodology advisories.	2010 – 2012	GREPECAS	Valid
	d) Develop methods to establish demand/capacity forecasting;	2007 – 2012	GREPECAS	Valid
	e) Develop a regional strategy and work programme for harmonized implementation of ATFM service.	2007	GREPECAS	Completed

Medium term				
DCB	f) Develop a regional strategy for the implementation of flexible use of airspace (FUA); i. assess use of airspace management processes; ii. improve current national airspace management to adjust dynamic changes in tactical stage to traffic flows; iii. introduce improvements in ground support systems and associated procedures for the extension of FUA with dynamic airspace management processes; and iv. 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.	2008 – 2010	GREPECAS States	Valid
	g) Define common electronic information and minimum databases required for decision support and alerting systems for interoperable situational awareness between Centralized ATFM units.	2008 – 2014	GREPECAS States	Valid
	h) Develop regional procedures for efficient and optimum use of aerodrome and runway capacity.	2008 – 2012	GREPECAS	Valid
	i) Develop a regional ATFM procedural manual to manage demand/capacity balancing.	2008 – 2010	GREPECAS	Valid
	j) Develop a regional strategy and framework for the implementation of a Centralized ATFM unit.	2008 – 2012	GREPECAS	Valid
	k) Develop operational agreements between Centralized ATFM units for interregional demand/capacity balancing.	2008 – 2015	GREPECAS	Valid
	l) Monitor implementation progress.	On going	GREPECAS	Valid
GPIs	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.			

7. IMPROVE ATM SITUATIONAL AWARENESS				
Benefits				
Efficiency **Safety**	• 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; • 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***				
ATM Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
SDM	a) Identify parties concerned.	2009	GREPECAS	Completed
	b) Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing i. operational architecture design, ii. characteristics and attributes for interoperability, iii. data bases and software, and iv. technical requirements.	2008 – 2010	States	Valid
	c) Improve ATS interfacility communication.	2008 – 2015	States	Valid
	d) Implement flight plan data processing system and electronic transmission tools.	2008 – 2012	States	Valid
	e) Implement radar data sharing programs where benefits can be obtained.	2008 – 2012	States	Valid
	f) Develop situational awareness training programmes for pilots and controllers.	2008 – 2012	States	Valid
	g) Implement ATM surveillance systems for situational traffic information and associated procedures.	2010 – 2015	States	Valid
	h) Implement ATS automated message exchanges, as required i) FPL, CPL, CNL, DLA, etc.	2008 – 2012	GREPECAS States	Valid

	j) Implement automated radar handovers, where able.	2008 – 2014	States	Valid
	k) Implement ground and air electronic warnings, as needed i. Conflict prediction ii. Terrain proximity iii. MSAW iv. DAIW v. Surveillance system for surface movement.	2008 – 2012	States	Valid
	l) Implement data link surveillance technologies and applications: ADS, CPDLC, AIDC, as required.		States	Valid
Medium term				
ATM Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
	m) Implement additional/advanced automation support tools to increase sharing of aeronautical information i. ETMS or similar ii. MET information iii. AIS/NOTAM dissemination iv. Surveillance tools to identify airspace sector constraints v. A-SMGC in specific aerodromes, as required.	2010 – 2012	States	Valid
	n) Implement teleconferences with ATM stakeholders.	2008 - 2014	States	Valid
	o) Monitor implementation progress	On going	GREPECAS	Valid
GPIs	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.			

8. ELIMINATION OF IDENTIFIED AOP DEFICIENCIES (wildlife and bird hazard reduction, rescue and fire fighting services and aerodrome emergency planning)				
Benefits				
Safety **Efficiency**	• Strengthen States´ safety oversight responsibility on aerodrome operations • Enhanced safety, efficiency and regularity of aerodrome operations in the States. • Uniform implementation of the relevant ICAO SARPs and/or applicable national regulations in the CAR States/Territories.			
Strategy ***Short Term (2010)*** ***Medium term***				
ATM COMPONENT	**TASKS DESCRIPTION**	**START – END**	**RESPON-SIBLE**	**STATUS**
AO	a) to carry out a survey to States to determine the current level of implementation with respect to the three major deficiencies in the NAM/CAR Regions.	August 2009 – December 2009	Regional Office	Valid
	b) to evaluate training needs in the CAR Region, if any; and coordinate these with the training needs for aerodrome certification	August 2009 – December 2009.	States/ Regional Office	Valid
	c) to identify in coordination with States specific technical assistance needs, if any	August 2009 – December 2009.	States / Regional Office	Valid
	d) to develop and implement an action plan to meet the identified training needs in coordination with those for aerodrome certification	August 2009 – December 2009	States	Valid
	e) to develop and implement an action plan for technical assistance needs in coordination with the respective States and TCB	August 2009 – December 2009	States /	Valid
	f) States to develop and implement an action plan to remove the three major deficiencies	December 2009 – March 2010.	States	Valid
	g) To develop and implement an efficient monitoring system for correcting the three major deficiencies in the respective CAR States/Territories.	December 2009 – June 2010.	States	Valid
GPIs	GPI/13: Aerodrome operations.			

9. IMPLEMENTATION OF AERODROME CERTIFICATION

Benefits

Efficiency	• Ensure aerodrome operators comply with relevant ICAO SARPs and/or applicable national regulations. • Continued provision of safe and efficient aircraft operations at aerodromes
Safety	• Strengthen States´ safety oversight responsibility on aerodrome operations

Strategy
Short Term (2010)
Medium term

ATM COMPONENTS	TASK DESCRIPTION	START – END	RESPON-SIBLE	STATUS
AO	a) States to analyze Annex 14, Volume I provisions on aerodrome certification vis-avis national legislations and regulations	August 2009 – December 2009.	States	Valid
	b) States to analyze guidance in the Manual on Certification of Aerodromes (Doc 9774) vis-avis national regulations	August 2009 – December 2009	States	Valid
	c) States to develop and/or complete national regulations on aerodrome certification as necessary; and training of aerodrome inspectors	August 2009 – December 2009	States/Regional Office	Valid
	d) States to develop an action plan for certifying all remaining aerodromes used for international operations, including implementation of SMS	On going	States	Valid
	e) States to implement the action plan; to provide yearly feedback to NACC Regional Office regarding the status of the implementation of aerodrome certification	On going	States	Valid
GPIs	GPI/13: aerodrome design and management; GPI/14: runway operations.			

10. PROTECTION AND OPTIMUM USAGE OF RADIOFREQUENCY SPECTRUM				
Benefits				
Efficiency • Efficient use of aviation radio spectrum • Ensure availability of frequencies for services and aeronautical systems **Safety** • Assurance of aviation spectrum				
Strategy ***Near term (2012)***				
ATM Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
AOM, DCB, AO, TS, CM, AUO, SDM	a) Ensure Regional coordination for the protection of the aviation spectrum at WRC-11, and beyond	2009-2011	S/T/O, ICAO	Valid
	b) Ensure Participation of Civil Aviation Experts in State's delegation to ITU WRC Meetings	2009-2010	S/T/O	Valid
	c) Disseminate ICAO policy statements of requirements for aeronautical radio frequency spectrum	2009-2010	ICAO	Valid
	d) Implement frequency spectrum management	2009-2011	S/T/O	Valid
	e) Support ICAO Position during WRC-11	2012	S/T/O	Valid
	f) Monitor the understanding of radio spectrum management and support on WRC-2011	2009-2012	ICAO	Valid
GPIs	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/14: runway operations; GPI-21: Navigation Systems, GPI-22: Communications Infrastructure and GPI-23: Aeronautical radio spectrum.			

11. OPTIMIZATION AND MODERNIZATION OF COMMUNICATION INFRASTRUCTURE

Benefits

Efficiency	• Improvements in coordinations • Increase availability of communications • Avoid misunderstandings in communications • Facilitate the utilization of advanced technologies
Continuity	• improvement of airspace interoperability and seamlessness; and • ensure the provision of positive air traffic control services to all aircraft operations.
Safety	• Improvement in safety in airspaces and aerodromes

Strategy
Near Term (2012)

ATM Component	TASK DESCRIPTION	START-END	RESPON-SIBLE	STATUS
AO, TS, CM, AUO AOM, SDM	a) Review the status of performance of current AFS Services and identify deficiencies or improvements (AFTN, oral ATS services, A/G communications)	2009	WGs	Valid
	b) Analysis and formulation of plans for implementing improvement or solving deficiencies	2009-2010	WG	Valid
	c) Develop Regional ATN Planning documents	2009-2012	CNS/ATM/SG	Valid
	d) Coordination and testing of ATN G-G Application implementation aspects	2009-2012	WGs	Valid
	e) Planning and trial activities for A-G Application implementation	2010-2011	WGs	Valid
	f) Technical review of Regional Telecommunication networks for ATN implementation	2009-2010	MEVA TMG, WGs	Valid
	g) Implement available technologies in to facilitate ground and airborne applications (CPDLC, ADS-C, ADS-B)	2009-2012	States , user	Valid
	h) Monitor the implementation and improvement of the telecommunications and ATN applications issues.	2009-2012	States, WGs, CNS/ATM/SG, OACI	Valid
GPIs	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/14: runway operations; GP1-17: Data Link Application, GPI-21: Navigation Systems and GPI-22: Communications Infrastructure			

12. IMPLEMENTATION OF WGS-84 AND e-TOD

Benefits

Efficiency	• implementation of WGS-84 is a requirement for the performance based navigation, benefits are described in the PBN performance objectives • . support to the approach and departure procedures design • . improve aircraft operating limitations analysis • . support aeronautical chart production and on-board databases (FMS)
Safety	• improve situational awareness • . improve electronic terrain and obstacle data in display cockpit • CFIT reduction • . support technologies such as ground proximity and minimum safe altitude warning systems (GPWS) • observe the benefits described in the PBM performance objectives

Strategy
Short term (2010)
Medium term (2011 - 2015)

ATM Component	TASK DESCRIPTION	START-END	RESPON-SIBLE	STATUS
SDM-CM	***Electronic terrain and obstacle data (eTOD)*** a) Share experience and resources in the implementation of e-TOD through the establishment of an e-TOD Regional working group.	2011-2015	GREPECAS States	Valid
	b) Technical requirements	2010-2015	GREPECAS States	
	c) Report requirements and monitor implementation status of e-TOD using electronic media to ICAO NACC Regional Office.	2010-2011	States	
	d) Develop a high level policy for the management of a national eTOD programme.	2010-2011	States	
AUO	e) Establish WGS-84 implementation goals in coordination with the national PBN implementation.	2010-2012	GREPECAS States	Valid
	f) Technical requirements.	2010-2011	GREPECAS States	
	g) Requirements report and monitor implementation status of WGS-84 using the AIS-5 Table of the FASID and take remedial action if required.	On going	GREPECAS States	
GPIs	GPI-5: Performance-based navigation; GPI-9: Situational awareness; GPI-11: RNP and RNAV SIDs and STARs; GPI-18: Aeronautical Information; GPI-20: WGS-84; GPI-21: Navigation systems			

13. IMPROVE AVAILABILITY OF METEOROLOGICAL INFORMATION				
Benefits				
Efficiency **Operational safety**	• Assist ATM in tactical decision making for aircraft surveillance, air traffic flow management and flexible and dynamic routing of aircraft • improve aerodrome and air space capacity • improve situational awareness of pilots • reduce unnecessary consumption of fuel and prevent unnecessary delays due to minimal meteorological conditions at the airports • improve planning of flight itineraries • Increase the number of flights in areas of fair weather conditions and prevent or reduce flights in areas of unfavorable meteorological conditions and volcanic ash clouds • prevent landing operations at aerodromes under minimal meteorological conditions			
Strategy ***Short Term (2010)***				
ATM Component	**TASK DESCRIPTION**	**START - END**	**RESPONSIBLE**	**STATUS**
AOM, DCB, AO, TS, AUO	a) Increase and protect facilities to disseminate and Exchange aeronautical meteorological information • i) Increase AFTN, WAFS and internet facilities to disseminate OPMET data at meteorological offices and stations. • .ii) Increase AFTN communications facilities to relay aircraft special reports from the air traffic control units to the meteorological offices • iii) Implement lightning and other protection systems for the AFTN and WAFS facilities used for OPMET exchange • iv) Maintain and expand the number of workstations used to receive meteorological products of the World Area Forecast System	2009 - 2010	States and Territories	Valid
AOM,DCB, AO, TS, AUO	b) Increase availability, timeliness and quality of OPMET data • i) Improve the use of the METAR and TAF codes/templates used to disseminate meteorological reports and aerodrome forecasts • ii) Enhance preparation and availability of SIGMET information on hazardous meteorological conditions and volcanic ash clouds • iii) Enhance the availability of landing forecasts, TREND, considering user (IATA) requirements	2009 - 2010	States and Territories	Valid
AOM, DCB, AO, TS, AUO	c) Establish contingency procedures to disseminate OPMET data, via Internet, in case of failure of the AFTN and WAFS facilities	2009 - 2010	States and Territories ICAO NACC	Valid

AO	d) Improve the quality of data, provided by meteorological sensors, used in meteorological reports • Establish verification and calibration programmes of data provided by meteorological instruments and automated weather systems at the aerodromes	2009 - 2010	States and Territories	Valid
AUO	e) Monitor availability and quality of OPMET data issued by CAR States and Territories and Territories and provide assistance if required	2009 - 2010	States and Territories	Valid
AUO	f) Monitor participation of States and Territories in the International Airways Volcano Watch and provide assistance if necessary	2009 - 2010	ICAO NACC Washington VAAC	Valid
AUO	g) Monitor participation of States and Territories in the International Tropical Cyclone Watch and provide assistance if necessary	2009 - 2010	ICAO NACC Miami TCAC	Valid
AOM, DCB,AO, TS, AUO	h) Establish Quality Assurance Systems provided to the aeronautical users	2010	States and Territories	Valid
AUO	i) Conduct, every year, update seminars and courses on relevant operational aeronautical meteorological matters	2009-2010	States and Territories ICAO NACC, WMO AR IV	Valid
AUO	j) Consider standards and recommendations ICAO and WMO for the training and recruitment of aeronautical meteorological personnel	2009 - 2010	States and Territories	Valid
Mid Term (2015)				
AUO	k) Establish cost recovery schemes for the aeronautical meteorological services o	2010 - 2015	States and Territories	Valid
AO, TS	l) Increase the number of automated weather systems at the aerodromes o	2010 - 2015	States and Territories	Valid
AO, TS	m) Implement meteorological data downlinks at the MET and ATS units	2012-2015	States and Territories	Valid
AO, TS	n) Implement meteorological data uplinks from the automated weather systems, ATS and meteorological units	2012-2015	States and Territories	Valid
AUO	o) Prepare hourly-monthly climatological tables of the aerodromes for itinerary planning	2010 - 2015	States and Territories	Valid
GPIs	GPI/6 air traffic flow management, GPI/7 flexible/dynamic ATS route management, GPI/9 situational awareness, GPI/14 runway operations, GPI/17 implementation of datalink applications, GPI/18. aeronautical information, GPI 19. Meteorological systems.			

14. IMPROVE SAR SYSTEM				
Benefits				
Efficiency **Safety**	• enhanced traffic surveillance; • enhanced collaboration between stakeholders; • improved operational efficiency; • improved implementation on a cost-effective basis; • improved safety management.			
Strategy ***Near term (2010)***				
ATM Component	**TASK DESCRIPTION**	**START-END**	**RESPON-SIBLE**	**STATUS**
SDM	a) Develop regional strategy to improve SAR System	End 2009	ICAO	Completed
	b) Identify parties concerned	End 2009	ICAO	Completed
	c) Conduct comprehensive analysis of SAR requirements based on risk assessment and quality assurance principles	2009 - 2010	States, ICAO	Valid
	d) Foster the harmonization of policies, regulations, practices and procedures of the aeronautical/maritime SAR services, in accordance with ICAO Standards and Recommended Methods.	2009 - 2012	States, ICAO	Valid
	e) Develop, update and ratify SAR agreements with RCCs of adjacent States.	2009 - 2012	States	Valid
	f) Develop, update and ratify SAR agreements with SAR service International agencies.	2009 - 2012	States	Valid
	g) Foster the establishment of joint aeronautical/maritime SAR Committees, including the integration of voluntary SAR organizations, as well as the development of agreements between all the stakeholders of the national SAR service	2009 - 2012	States, ICAO	Valid
	h) Develop a human resources and training planning strategy in line with ICAO SAR guidelines and the regional agreements reached.	2009 - 2012	States, ICAO	Valid
	i) Monitor implementation progress	2009 - 2012	ICAO	Valid
GPIs	GPI/6: air traffic flow management; and GPI/9: Situational awareness;			

ATS Routes Optimization Action Plan			
1 Airspace Concept	**Start**	**End**	**Remarks**
1.1 Establish and prioritize Strategic Objectives (Safety, Capacity, Environment, etc)			
1.2 Collect air traffic data to understand airspace traffic flows in a particular airspace.			
1.3 Analyse navigation capability of the fleet			
1.4 Analyse communication, ground navigation (VOR, DME) and surveillance for navigation specification and reversionary mode compliance.			
1.5 Optimise the airspace structure, by reorganising the network or implementing new routes based on the strategic objective of the airspace concept. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc.			
2 Develop Performance Measurement Plan			
2.1 Prepare Performance Measurement Plan, including gas emission, safety, efficiency, etc.			
2.2 Conduct Performance Measurement Plan			
3 Airspace safety assessment			
3.1 Determine which methodology shall be used to evaluate airspace safety and ATS routes spacing, depending on the navigation specification. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc.			
3.2 Prepare a data collection programme for airspace safety assessment			
3.3 Prepare preliminary airspace safety assessment			
3.4 Prepare final airspace safety assessment			
4 Establish collaboration decision making (CDM) process			
4.1 Coordinate planning and implementation needs with Air Navigation Service Providers, Regulators, Users, aircraft operators and military authorities			
4.2 Establish implementation date			

ATS Routes Optimization Action Plan			
4.3 Establish the documentation format of CAR/SAM RNAV/RNP Website			
4.4 Report planning and implementation progress to the corresponding Regional Office			
5 ATC Automated Systems			
5.1 Evaluate the PBN implementation in the ATC Automated Systems, considering the Amendment 1 to the PANS/ATM (FPLSG).			
5.2 Implement the necessary changes in the ATC Automated Systems			
6 Aircraft and operators approval			
6.1 Be aware of the national implementation programme and of the required navigation specifications			
6.2 Analyse aircraft approval requirements, aircrew and operator approval requirements for the navigation specifications to be implemented, as contained in the ICAO PBN Manual			
6.3 Publish the national regulations to implement the required ICAO navigation specifications			
6.4 Approval of aircraft and operators for each type of procedure and navigation specification			
6.5 Establish and keep updated a record of approved aircraft and operators			
6.6 Verify operations with a continuing monitoring programme			
7 Standards and Procedures			
7.1 Evaluate regulations for GNSS use, and if such were the case, proceed to its publication.			
7.2 Finalize implementation of WGS-84			
7.3 Develop and publish AIC notifying PBN implementation planning			
7.4 Publish AIP Supplement including applicable standards and procedures			
7.5 Review Procedural Manuals of the ATS units involved			
7.6 Update Letters of Agreement between ATS units			

ATS Routes Optimization Action Plan			
7.7 Develop amendment to the regional documentation, if necessary			
7.8 Provide procedures to accommodate non-approved RNAV/RNP aircraft, when applicable			
7.9 Identify transition areas and procedures, if necessary			
7.10 Conduct ATC simulations to identify the workload/operational factors, if necessary, and report the simulations activities to the ATM Committee			
8 Training			
8.1 Develop a training programme and documentation for operators (pilots, dispatchers and maintenance)			
8.2 Develop training programme and documentation for Air Traffic Controllers and AIS Operators			
8.3 Develop training programme to regulators (aviation safety inspectors)			
8.4 Conduct training programmes			
8.5 Hold seminars oriented to operators, indicating the plans and the operational and financial benefits expected			
9 Decision for implementation			
9.1 Evaluate operational documentation availability (ATS, OPS/AIR)			
9.2 Evaluate the percentage of approved aircraft and operations (mixed equipage concerns)			
9.3 Review safety assessment results			
10 System Performance Monitoring			
10.1 Develop post-implementation en-route operations monitoring programme			
10.2 Execute post-implementation en-route operations monitoring programme			
Pre operational implementation date			

ATS Routes Optimization Action Plan			
Definitive implementation date			

PBN TMA and Approach Action Plan			
1 Airspace Concept	**Start**	**End**	**Remarks**
1.1 Establish and prioritize Strategic Objectives (Safety, Capacity, Environment, etc)			
1.2 Collect air traffic data to understand airspace traffic flows in the TMA.			
1.3 Analyse aircraft fleet navigation capacity operating in the TMA			
1.4 Analyse communication, ground navigation (VOR, DME) and surveillance for navigation specification and reversionary mode compliance			
1.5 Optimise the airspace structure, by implementing new SID and STARS, based on the strategic objective of the airspace concept. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc.			
2. Develop Performance Measurement Plan			
2.1 Prepare Performance Measurement Plan, including gas emission, safety, efficiency, etc.			
2.2 Conduct Performance Measurement Plan			
3 Airspace safety assessment			
3.1 Determine which methodology shall be used to evaluate airspace safety and routes spacing, depending on the navigation specification. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc.			
3.2 Prepare a data collection programme for airspace safety assessment			
3.3 Prepare preliminary airspace safety assessment			
3.4 Prepare final airspace safety assessment			
4 Establish collaboration decision making (CDM) process			
4.1 Coordinate planning and implementation needs with Air Navigation Service Providers, Regulators, Users, aircraft operators and military authorities			
4.2 Establish implementation date			
4.3 Establish the documentation format of CAR/SAM RNAV/RNP Website			
4.4 Report planning and implementation progress to the corresponding Regional Office			

PBN TMA and Approach Action Plan			
5 ATC Automated Systems			
5.1 Evaluate the PBN implementation in the ATC Automated Systems, considering the Amendment 1 to the PANS/ATM (FPLSG).			
5.2 Implement the necessary changes in the ATC Automated Systems			
6 Aircraft and operator approval			
6.1 Be aware of the national implementation programme and of the required navigation specifications			
6.2 Analyse aircraft approval requirements, aircrew and operator approval requirements for the navigation specifications to be implemented, as contained in the ICAO PBN Manual			
6.3 Publish the national regulations to implement the required ICAO navigation specifications			
6.4 Approval of aircraft and operators for each type of procedure and navigation specification			
6.5 Establish and keep updated a record of approved aircraft and operators			
6.6 Verify operations with a continuing monitoring programme			
7 Standards and Procedures			
7.1 Evaluate regulations for GNSS use, and if such were the case, proceed to its publication.			
7.2 Develop and publish AIC notifying PBN implementation planning			
7.3 Publish AIP Supplement including applicable standards and procedures			
7.4 Review Procedural Manuals of the ATS units involved			
7.5 SID and/or STAR Ground Validation and Flight Inspection/Flight Validation			
7.6 Data Base Validation Requirements/Procedures			
7.5 Update Letters of Agreement between ATS units			
7.6 Provide procedures to accommodate non-approved RNAV/RNP aircraft, when applicable			

PBN TMA and Approach Action Plan			
7.7 Conduct ATC simulations to identify the workload/operational factors, if necessary.			
8 Training			
8.1 Develop a training programme and documentation for operators (pilots, dispatchers and maintenance)			
8.2 Develop training programme and documentation for Air Traffic Controllers and AIS Operators			
8.3 Develop training programme to regulators (aviation safety inspectors)			
8.4 Conduct training programmes			
8.5 Hold seminars oriented to operators, indicating the plans and the operational and financial benefits expected			
9 Decision for implementation			
9.1 Evaluate operational documentation availability (ATS, OPS/AIR)			
9.2 Evaluate the percentage of approved aircraft and operations (mixed equipage concerns)			
9.3 Review safety assessment results			
10 System Performance Monitoring			
10.1 Develop post-implementation TMA operations monitoring programme			
10.2 Execute post-implementation TMA operations monitoring programme			
Pre operational implementation date			
Definitive implementation date			

PBN RNP APP Action Plan			
1 Airspace Concept	**Start**	**End**	**Remarks**
1.1 Establish and prioritize Strategic Objectives (Safety, Capacity, Environment, etc)			
1.2 Analyse aircraft fleet navigation capacity operating in the Airport			
1.3 Analyse communication, ground navigation (VOR, DME) and surveillance for navigation specification and reversionary mode compliance			
1.4 Design Instrument Approach Procedure (RNP APCH/APV Baro-VNAV or RNP AR), based on the strategic objective of the airspace concept. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc.			
2 Develop Performance Measurement Plan			
2.1 Prepare Performance Measurement Plan, including gas emission, safety, efficiency, etc.			
2.2 Conduct Performance Measurement Plan			
3 Procedure safety assessment			
3.1 Determine which methodology shall be used to evaluate procedure safety, depending on the navigation specification. Consider Airspace Modelling, ATC simulations (fast time and/or real time), Live Trials, etc.			
3.2 Prepare a data collection programme for airspace safety assessment			
3.3 Prepare preliminary procedure (s) safety assessment			
3.4 Prepare final procedure (s) safety assessment			
4 Establish collaboration decision making (CDM) process			
4.1 Coordinate planning and implementation needs with Air Navigation Service Providers, Regulators, Users, aircraft operators and military authorities			
4.2 Establish implementation date			
4.3 Establish the documentation format of CAR/SAM RNAV/RNP Website			
4.4 Report planning and implementation progress to the corresponding Regional Office			

PBN RNP APP Action Plan			
5 ATC Automated Systems			
5.1 Evaluate the PBN implementation in the ATC Automated Systems, considering the Amendment 1 to the PANS/ATM (FPLSG).			
5.2 Implement the necessary changes in the ATC Automated Systems			
6 Aircraft and operator approval			
6.1 Be aware of the national implementation programme and of the required navigation specifications			
6.2 Analyse aircraft approval requirements, aircrew and operator approval requirements for the navigation specifications to be implemented, as contained in the ICAO PBN Manual			
6.3 Publish the national regulations to implement the required ICAO navigation specifications			
6.4 Approval of aircraft and operators for each type of procedure and navigation specification			
6.5 Establish and keep updated a record of approved aircraft and operators			
6.6 Verify operations with a continuing monitoring programme			
7 Standards and procedures			
7.1 Evaluate regulations for GNSS use, and if such were the case, proceed to its publication.			
7.2 Develop and publish AIC notifying PBN implementation planning			
7.3 Publish AIP Supplement including applicable standards and procedures			
7.4 Review Procedural Manuals of the ATS units involved			
7.5 Update Letters of Agreement between ATS units, if necessary			
7.6 Provide procedures to accommodate non-approved RNAV/RNP aircraft, when applicable			
7.7 Conduct ATC simulations to identify the workload/operational factors, if necessary.			

PBN RNP APP Action Plan			
8 Training			
8.1 Develop a training programme and documentation for operators (pilots, dispatchers and maintenance)			
8.2 Develop training programme and documentation for Air Traffic Controllers and AIS Operators			
8.3 Develop training programme to regulators (aviation safety inspectors)			
8.4 Conduct training programmes			
8.5 Hold seminars oriented to operators, indicating the plans and the operational and financial benefits expected			
9 Decision for implementation			
9.1 Evaluate operational documentation availability (ATS, OPS/AIR)			
9.2 Evaluate the percentage of approved aircraft and operations (mixed equipage concerns)			
9.3 Review safety assessment results			
10 System Performance Monitoring			
10.1 Develop post-implementation APP operations monitoring programme			
10.2 Execute post-implementation APP operations monitoring programme			
Pre operational implementation date			
Definitive implementation date			

2009-2014
FOLLOW-UP AND IMPLEMENTATION ACTION PLAN
AIR-GROUND AND GROUND-GROUND COMMUNICATIONS

No.	Performance Objective Task	Action Description	Responsible	Begin date	End date	Deliverables	Observations
1	2	3	4	5	6	7	8
1	11 a), 11 b)	Improve VHF and HF/AMS (R) coverages and mitigate deficiencies	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2009	•Deficiencies Identification and • Corresponding corrective action plan	References to CNS tables 2A and 2B
2	11 a), 11 b)	Improve AFTN communications and ATS direct communications and mitigate deficiencies	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2009	•Deficiencies Identification and • Corresponding corrective action plan	References to CNS tables 1A and 1C
3	1 b)	Evaluation of required communication infrastructure to satisfy the navigation requirements based on PBN.	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2010	Analysis of communication infrastructure	
4	7 l)	Adoption of an "equipment modernization/DATIS Service implementation plan for international airports" in compliance to the ATM requirements.	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2012	DATIS Modernization and Implementation Plan	
5	11 c)	Elaborate Air-ground datalink progressive execution Plan based on CAR/SAM Activities Plan and Datalink implementation programme (Appendix AW and AX of Agenda 3 of GREPECAS/13).	CNS/ATM/SG (ATN TF)	June2009.	Dec 2010	Initial Transition Plan for ATN Air-ground applications	References to CNS table 1Bc
6	11 c)	Elaborate ATN AIDC Implementation Plan	CNS/ATM/SG (ATN TF)	June2009.	Dec 2010	Initial Transition Plan for ATN ground-ground Applications (AIDC)	
7	11 c)	Update the ATN Routers Regional Plan	CNS/ATM/SG (ATN TF)	June2009.	June 2010	CNS Table 1Ba Updated proposal	References to CNS table 1Ba
8	11 d)	Preliminary review of ATN Routers Regional Plan	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2009	Comments to current version of CNS Table 1Ba	References to CNS table 1Ba
9	11 d)	Evaluation of AMHS CAAS addresses proposal	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Oct 2009	Comments to AMHS CAAS addresses proposal	CAR AMHS CAAS Addresses Proposal
10	11 d)	Technical evaluation of communications and interfaces for AIDC implementation over the AFTN.	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	June 2010	Technical recommendations for AIDC implementation over the AFTN	
		Perform activities for the implementation of the ATN and its applications according to the CAR/SAM Regional strategy for the implementation of the ATN and its applications.					

No.	Performance Objective Task	Action Description	Responsible	Begin date	End date	Deliverables	Observations
1	2	3	4	5	6	7	8
		(Appendix BA of Agenda 3 of GREPECAS/13 Report).:					
11	11 d)	i. Perform AMHS operation trials	USA, Dominican Republic, COCESNA, Jamaica	Oct 2009	Jul 2010	Trial results	
12	11 e), 7c)	ii. Evaluation of regional networks to support ATN Applications	MEVA TMG	Jul 2009	May 2010	Trial results	
13	11 d)	iii. Update of Regional Plan for ATN ground-ground applications	States/ Territories and COCESNA coordinated by C/CAR/WG	Julio 2009	June 2010	Updates to Regional Plan for ATN ground-ground applications	References to CNS table 1Bb
14	11 e)	iv. Review of CAR/SAM Regional Program for the implementation of the air – ground data links	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Nov 2009	Comments to this Regional Program	Reference: CAR/SAM Regional Program for the implementation of the air – ground data links
15	11 e), 11 g)	v. A-G Applications trial Plans	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Nov 2010	Trial Plans for A-G Applications	
16	11 d), 11 e)	vi. Participate on training seminars and events	States/ Territories and international organizations	July 2009	Nov 2011	Participation on events	
17	11 a), 11 b)	MEVA II REDDIG Networks Interconnection	COCESNA, Jamaica, Netherland Antilles	July 2009	Oct 2009	MEVA II/ REDDIG Networks Interconnection	
18	11 a), 11 b)	MEVA II – REDDIG Integration	MEVA TMG	July 2009	2014	Study to accomplish integration	
19	11 c)	Procure the application of management and coordination of frequency assignments and the implementation of tools for this goal.	ICAO	Jul 2009	Dec 2010	Frequency Management and coordination tools	
20	11 c)	Implement management and coordination of frequencies with ICAO	States/ Territories and COCESNA coordinated by C/CAR/WG	Jul 2009	Dec 2009	Comments to ICAO reviewed frequency assignment lists	
21	11 c)	Comments to management frequency tools provided by ICAO	Dominican Republic, COCESNA, Jamaica,	Sep 2009	Dec 2009	Comments and evaluation of tools	
22	10 a)	Promote and coordinate diffusion of ICAO position for WRC-2012	ICAO	Jul 2009	Dec 2011	Promote ICAO position	
23	10 b), 10 e)	Participate and coordinate with their national spectrum regulation entities the support to ICAO position for the WRC-2012	States/ Territories and COCESNA coordinated by C/CAR/WG	Jul 2009	Dec 2011	Support ICAO position in WRC-2012 related meetings	

2009-2014
FOLLOW-UP AND IMPLEMENTATION ACTION PLAN
NAVIGATION SYSTEMS

No.	Performance Objective Task	Action Description	Responsible	Begin date	End date	Deliverables	Observations
1	2	3	4	5	6	7	8
1	1 b)	Evaluation of required navigation infrastructure to satisfy the PBN based navigation requirements, identifying improvements and deficiencies	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2010	1. Analysis of required navigation infrastructure for example: DME-DME coverages for selected ATS routes for RNAV 5 2. Identification of deficiencies 3. Corresponding corrective Action plan	Reference to CNS table 3
2	1 b), 2c), 3 b)	Development of a regional strategy for the implementation of navigation systems	CNS/ATM/SG	Sep 2009	Dec 2009	Regional Strategy for Navigation Systems	Navigation Infrastructure alternatives for PBN
3	1 b), 2c), 3 b)	Develop recommendations for training in GNSS elements	CNS/ATM/SG	Sep 2009	Dec 2009	recommendations for training in GNSS elements	Navigation Infrastructure alternatives for PBN
4	1 b), 2c), 3 b)	Plans on GNSS systems (SBAS y GBAS) and trial conduction.	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2014	GNSS trial plan	Navigation Infrastructure alternatives for PBN

2009-2011
FOLLOW-UP AND IMPLEMENTATION ACTION PLAN
SURVEILLANCE SYSTEMS

No.	Performance Objective Task	Action Description	Responsible	Begin date	End date	Deliverables	Observations
1	2	3	4	5	6	7	8
1	7 e)	Evaluation of radar coverage and identification of improvements to satisfy operative requirements.	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2009	•Identification of improvements and • Respective Action Plan	Reference to CNS table 4A
2	7 e)	Radar Data Sharing implementation	Cuba, Jamaica, Netherland Antilles, Haiti, Cayman Islands, USA	July 2009	Dec 2010	Agreements and implementation of radar data sharing	
3	1 b)	Evaluation of surveillance infrastructure to satisfy navigation requirements for PBN	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2010	Analysis of surveillance infrastructure	
4	7 k)	Implementation of 24 bits Address registry	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2010	24 bits Address registry	
5	11 g), 7 k)	ADS-B, ADS-C and MLAT trials	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2010	Trials on ADS-B, MLAT and ADS-C	
6	7e), 7 k)	*Development of a regional strategy for surveillance systems*	CNS/ATM/SG	July 2009	Oct 2009	Regional Strategy for Surveillance Systems	
7	7 k)	Mode S radar implementation and update to Regional Plan on Surveillance Systems	States/ Territories and COCESNA coordinated by C/CAR/WG	July 2009	Dec 2011	Information on Mode S Radar implementation and updates to Regional Plan	Reference to CNS table 4A

GUIDANCE FOR IMPLEMENTATION OF FLIGHT PLAN INFORMATION TO SUPPORT AMENDMENT 1 TO PANS-ATM, DOC 4444, FIFTEENTH EDITION

1. INTRODUCTION

1.1. The guidance contained herein is provided to assist airspace users and Air Navigation Service Providers (ANSP) implement the flight planning changes incorporated by Amendment 1 to Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) Fifteenth Edition.

1.2. This guidance do not change any provision in Annex 2 or PANS-ATM regarding completion and acceptance of a flight plan.

1.3. The changes were announced by ICAO on the 25 June 2008 in State Letter 50/2008 and will become applicable on 15 November 2012.

1.4. The changes have considerable consequences on ANSP flight data processing systems. Changes are required to ANSP flight data processing systems that check and accept flight plans and related messages, use flight plan data in displays for controller reference, use data in ANSP automation and affect information that is communicated between ANSPs as the flight progresses. Preparation for the changes should therefore be made well in advance of 15 November 2012.

1.5. The changes also have consequences for airspace users. If a flight plan with new content is sent to an ANSP that has not yet changed to accept the new content then it is likely that some information will be lost, misinterpreted or cause a rejection of the flight plan.

1.6. No start date has been given for implementation of the changes to commence, however one reason for the ICAO State Letter on 25 June 2008 was to allow recipients "to begin updating your flight plan data processing systems". The transition period for the changes is therefore from 25 June 2008 until 15 November 2012.

1.7. It is recognized that changes will be implemented by airspace users and ANSPs on individual schedules due to individual needs, however some coordination will occur.

1.8. It is essential to the success of this implementation that all airspace users and ANSPs be able to submit and process flight information in accordance with Amendment 1 to PANS-ATM (Doc 4444) Fifteenth Edition by 15 November 2012, as processing via present methods is not assured after that date.

2. OBJECTIVE

2.1. The purpose of the guidance contained herein is to support a coordinated global effort during the transition period so that a successful transition is achieved by the applicable date of 15 November 2012.

3. APPLICABILITY

3.1. This guidance applies to airspace users, ANSPs, Planning and Implementation Regional Groups (PIRG). Note that flight planning services and related organizations involved in the processing of flight plans are considered part of the airspace user community and, as such, are covered under this guidance.

3.2. This document presents guidelines which should be considered when developing implementation plans for this Amendment. Adherence to these guidelines will mitigate risks associated with the technical challenges inherent during the transition period and assure that users are able to meet flight planning requirements as individual ANSPs implement changes.

3.3. This document applies with immediate effect and continues until the complete implementation of Amendment 1 to PANS-ATM Fifteenth Edition.

4. SCOPE

4.1. This guidance is limited to transitioning to flight planning and Air Traffic Services (ATS) message changes defined in Amendment 1 to PANS-ATM Fifteenth Edition, including message content and submission instructions.

5. FLIGHT PLANNING ENVIRONMENT

5.1. In order to allow performance case considerations to drive individual airspace user and ANSP implementation schedules, the ATM system will need to simultaneously support both present and new flight plan information and content for a period of time.

5.2. Amendment 1 to PANS-ATM Fifteenth Edition contains changes to length and content of items. The changes to content are:

- Change the way aircraft equipage and capabilities are communicated to provide more detail;
- Provide additional means of describing route way points (specifically bearing and distance from points other than navigation aids); and,
- Permit specification of the date of flight in a standardised manner.

5.3. The existing flight planning environment supports a variety of means of filing flight plans. For example flight plans can be filed directly by the airspace user to each ANSP individually or flight plans can be filed by the airspace user at one location and then the ATM system distributes the flight plan. Amendment 1 does not specifically change these options; however the means of transitioning to Amendment 1 may impose some requirements during the transition.

5.4. The existing ATM system supports a variety of means of ANSPs communicating flight plan data between ANSP systems, for example use of coordination messages where Amendment 1 implies changes of content.

6. IMPLEMENTATION GUIDELINES

6.1. PRESENT is defined as the present flight planning and ATS message formats as defined in the current version of PANS-ATM (Doc 4444) Fifteenth Edition.

6.2. NEW is defined as the flight planning and ATS message formats as specified in Amendment 1 to PANS-ATM (Doc 4444) Fifteenth Edition.

6.3. The transition period is from 25 June 2008 until the applicability date of 15 November 2012.

6.4. These guidelines have been developed to facilitate concurrent use of both PRESENT and NEW formats by airspace user and ANSP flight data processing systems during the transition period.

6.5. **Guideline 1**: As each ANSP transitions to NEW content, it is essential that they also support present content until the applicability date of 15 November 2012.

6.5.1. There is no requirement for ANSPs to accept and process PRESENT after the applicability date, unless specified by the appropriate authority.

6.5.2. This guideline relates directly to the transition environment in which a segment of airspace users (and ANSPs) do not amend their flight planning systems until the end of the transition period.

6.6. **Guideline 2**: PIRGs are encouraged to plan and publish regional implementations sufficiently in advance of the applicability date so that airspace users and ANSPs can respond to and resolve any unforeseen operational issues.

6.6.1. It is anticipated that implementation will occur progressively as each PIRG works with their member States/International Organizations and airspace users to coordinate a regional transition prior to 15 November 2012.

6.6.2. Transition plans should encourage all ANSPs transition to NEW a period of time before 15 November 2012 to allow airspace users a transition period to NEW before the applicability date.

6.6.3. Transition plans should take into account that the airspace user may not be able to make use of the new opportunities provided by NEW content until an ANSP has transitioned. Even then, use of NEW content may be restricted in its application if the flight still involves ANSPs who have not transitioned.

6.7. **Guideline 3**: During the transition period and after an ANSP has advised that they can accept NEW flight plans, the determination to file NEW content or PRESENT content with that ANSP is the choice of the airspace user.

6.7.1. It is expected that airspace users will make the decision on what format to file based on performance gains which may be achieved through capability information in Items 10 and/or 18 of the NEW flight plan form.

6.7.2. It is intended that all airspace users will file NEW from the applicability date forward, as using PRESENT is not assured after that date.

Note: The following guidelines apply only to situations where ANSPs affected by a flight have not all transitioned to NEW.

6.8. **Guideline 4**: During the transition period when not all ANSPs affected by a flight have transitioned to NEW, the airspace user must ensure that PRESENT flight plan information is filed with ANSPs who have not transitioned.

6.8.1. This can be achieved by the airspace user filing only PRESENT information with all ANSPs (as ANSPs supporting NEW will also support PRESENT during transition).

6.8.2. ANSPs using PRESENT may misinterpret, and may reject, flight plan information that is filed more than 24 hours in advance of flight. Filing more than 24 hours in advance of flight cannot be used if one or more ANSPs affected by a flight have not transitioned (unless those ANSPs already support filing more than 24 hours in advance of flight). Although ANSPs using NEW could accept the flight plan they may not be able to pass essential coordination to ANSPs using PRESENT.

6.8.3. The airspace user may choose to file NEW to ANSPs that have transitioned and PRESENT to ANSPs that have not transitioned. However without special transitional procedures, a situation can occur where the NEW information would only be useable until the first ANSP along route of flight using PRESENT. This is because the ANSP using NEW will not be able to coordinate NEW information with ANSPs using PRESENT.

6.9. **Guideline 5**: To facilitate user decisions on whether to file PRESENT, NEW or a combination of PRESENT/NEW, ICAO will maintain a repository of information on the ICAO website regarding the ability of each ANSP to accept PRESENT or NEW.

6.9.1. This information which will be publicly available is in addition to the normal methods of communication between an ANSP and its airspace users.

6.9.2. Each ANSP will communicate, via State and ICAO Regional Offices, their ability to accept NEW to ICAO as soon as possible so that ICAO can ensure that complete and updated information is posted. An ANSP advising NEW will mean that they can not only receive and process the new information but also coordinate with other ANSPs who have transitioned to NEW.

6.10. **Guideline 6**: During the transition period, ANSPs who accept NEW may need to convert flight information to PRESENT format for coordination with adjacent ANSPs who have not transitioned.

6.10.1. It is strongly suggested for consistency that all ANSPs utilize the conversion table provided below so airspace users and ANSPs have a common understanding of how NEW will be converted to PRESENT.

6.10.2. PIRGSs, States and ANSPs should be aware that valuable planning information may be lost during the conversion process, as shown in the conversion table.

6.10.3. There is no intent for PRESENT to be converted to NEW during the transition period.

CONVERSION OF NEW ITEMS 10 AND 18 TO PRESENT

It is strongly suggested that all ANSPs utilize the table below to convert NEW flight information in Items 10 and 18 to the PRESENT format for coordination with adjacent ANSPs which only accept PRESENT.

- Modified agreements may be worked between ANSPs for Item 18 information if the conversion would cause the message to be rejected by an ANSP which only accepts PRESENT.

- CAUTION: Some capability information will be lost during conversion.

	NEW data in these columns		Converts to PRESENT data in these columns	
	Item 10	**Item 18**	**Item 10**	**Item 18**
Com-Nav	N		N	
	S		VOL	
	SF		S	
	A		Z	NAV/GBAS
	B		Z	NAV/LPV
	C		C	
	D		D	
	E1		J	DAT/
	E2		J	DAT/
	E3		J	DAT/
	F		F	
	G	NAV/	G	
	H		H	
	I		I	
	J1		J	DAT/V
	J2		J	DAT/H
	J3		J	DAT/V
	J4		J	DAT/V
	J5		J	DAT/S
	J6		J	DAT/S
	J7		J	DAT/S
	K		K	
	L		L	
	M1		Z	COM/INMARSAT
	M2		Z	COM/MTSAT
	M3		Z	COM/IRIDIUM
	O		O	
	P1-P9 (Reserved)			
	R	PBN/	R	
	T		T	
	U		U	
	V		V	

Com-Nav	**NEW** data in these columns		Converts to **PRESENT** data in these columns	
	Item 10	**Item 18**	**Item 10**	**Item 18**
	W		When prescribed by ATS	
	X		When prescribed by ATS	
	Y		When prescribed by ATS	
	Z	COM/NAV/DAT	Z	COM/ NAV
Surveillance	N		N	
	A		A	
	C		C	
	E			
	H		S	
	I		I	
	L		S	
	P		P	
	S		S	
	X		X	
	B1			
	B2			
	U1			
	U2			
	V1			
	V2			
	D1		D	
	G1		D	

APPENDIX B
STATUS OF PERFORMANCE BASED NAVIGATION (PBN) IMPLEMENTATION IN THE UNITED STATES

1. Introduction: PBN Planning in the U.S.

1.1 Performance Based Navigation (PBN) is considered a foundational technology of the U.S. Next Generation Air Transportation System (NextGen), which is a group of programs that will enable the U.S. National Airspace System (NAS) to meet the increased capacity needs of 2025.

1.2 U.S. PBN planning is a cooperative effort by the FAA with aviation industry stakeholders. Planning at a strategic level is primarily conducted through a government-industry forum, the Performance Based Operations Aviation Rulemaking Committee (PARC), which is chartered by the FAA Administrator. The PARC has several working groups that enable the technical expertise of aviation industry stakeholders to contribute to the framing and resolution of complex technical issues. PARC recommendations on PBN implementation priorities and FAA technical/operational guidance are submitted to the Associate Administrator for Safety, for use by FAA Flight Standards Service, Aircraft Certification Service, and Air Traffic Organization offices as appropriate.

1.3 Initial implementation plans for PBN (both RNAV and RNP applications) were contained in the *FAA Roadmap for Performance Based Navigation*, published in July 2003 and revised in August 2006. Since then, PBN planning has been incorporated into the Next Generation Air Transportation System (NextGen) planning documents, including the *NAS Enterprise Architecture.* Therefore, no further editions of the FAA PBN Roadmap are planned. Yearly implementation targets for RNAV and RNP routes and procedures are contained in the annual *FAA Flight Plan.*

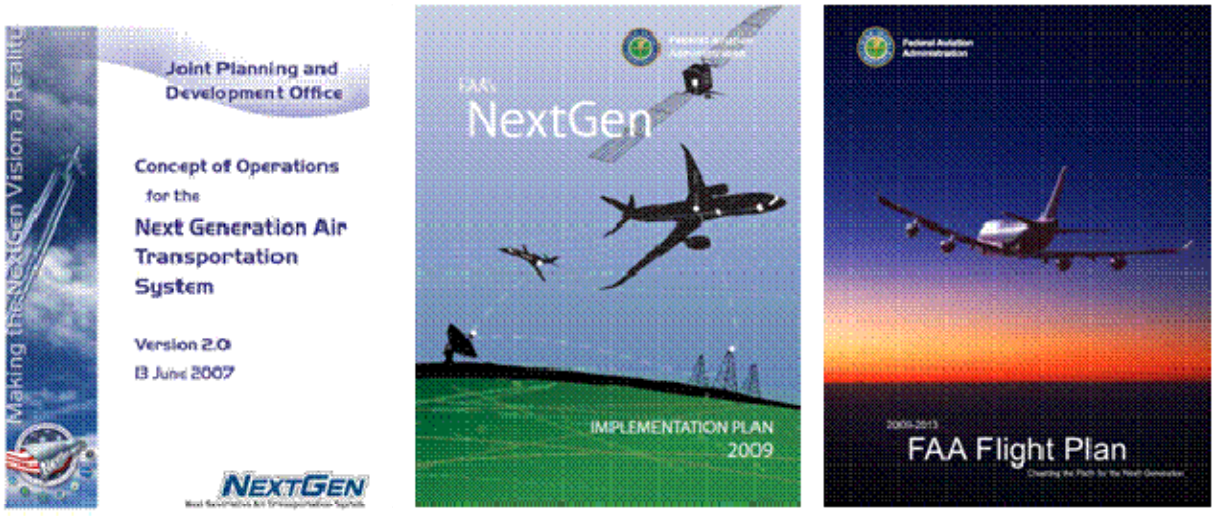


Figure 1 U.S. PBN Planning Documents

2. Current PBN Implementation in U.S. Domestic Airspace

2.1 Enroute

2.1.1 The U.S. has implemented RNAV 2 in the enroute domain. RNAV 2 routes above FL 180 are designated Q routes (e.g. Q5, Q13 etc). Almost every Q route can be flown either with GNSS or DME/DME/IRU. Routes below 18,000' are designated T routes (e.g. T213); GNSS is required. Additionally, the U.S. assesses conventional routes for lower Minimum Enroute Altitudes (MEA) enabled by GNSS.

2.1.2 As of March 2009 the U.S. has a total of 137 Q/T/GNSS MEA routes implemented. Twelve implementations are planned for Fiscal Year (FY) 2009 (1 Oct 2008 – 30 Sept 2009), mainly in Alaska. Q-42 will accommodate westbound departures from Philadelphia and New York.

2.1.3 Generally, the main focus of Q route implementation has been in creating efficient routes that do not depend on ground-based navaids (e.g. over the Gulf of Mexico) and on reducing flight distances (e.g. avoiding Special Use Airspace). In the near future, Q route development and implementation will focus on increasing system efficiencies, concentrating east of the Mississippi river. Routes implemented from 2010-2012 will focus in five geographic corridors: Upper Midwest to New York area, North-South routes along Atlantic Coast, Southwest to Northeast/Mid-Atlantic, Midwest to Florida, and Western Corridor airspace.

2.2 Terminal

2.2.1 The U.S. has implemented RNAV 1 Standard Instrument Departure (SID) procedures and Standard Terminal Arrival Routes (STAR) in this domain. All RNAV SIDs/STARs can be flown using GNSS. Almost all have also been authorized for DME/DME/IRU operation.

2.2.2 As of March 2009, the U.S. has published over 350 RNAV SIDs and STARs. In FY 2009, the FAA plans to implement 50 RNAV SIDs/STARs, and another 50 in FY 2010.

2.3. Approach

2.3.1 There are 5,271 instrument runway ends in the U.S. NAS that potentially qualify for a vertically guided procedure. It must be noted that a final determination of the suitability of a specific runway end to support a vertically guided procedure is dependent on factors (e.g. penetration of Glideslope Qualification Surface (GQS)) that are assessed when an initial PANS OPS (U.S. –TERPS) design is developed.

2.3.2 The U.S. implements RNAV (GPS) procedures that are consistent with the ICAO PBN Manual Vol II navigation specification RNP APCH. Baro-VNAV provides vertical guidance. These are also referred to as LNAV/VNAV procedures. As of March 2009, the U.S. has published over 1600 of these procedures. Approximately 450 procedures are planned for FY 2009 and 2010.

2.3.3 The U.S. has published over 130 public RNP Special Aircraft and Aircrew Authorization Required (SAAAR) approaches. 50 procedures are planned for FY 2009 and another 50 in FY 2010.
Note: RNP SAAAR is the U.S. term for ICAO RNP Authorization Required (AR) procedures. The next version of the applicable FAA Advisory Circular, AC 90-101(), will change the U.S. term to AR.

3. Role of GPS Space Based Augmentation Systems (SBAS) in U.S. PBN implementation

3.1 At present, the ICAO PBN Manual does not include the LPV operation that is enabled by SBAS, such as the U.S. Wide Area Augmentation System (WAAS)**.** However, SBAS is considered to be a sensor input for PBN applications. SBAS receiver (TSO 145/146)-equipped aircraft with appropriate functionality can fly all U.S. RNAV 2, RNAV 1 routes/SIDs/STARs.They can fly the LNAV/VNAV minima line in all RNAV (GPS) procedures without the need for an approach-certified baro-VNAV capability. Some receiver models may also provide a descent angle on RNAV (GPS) LNAV-only procedures.

3.2 ICAO Assembly Resolution A36-23 includes "augmented GNSS" as an acceptable implementation of the goal of an APV procedure to all instrument runway ends by 2016. As of March 2009, the U.S. has over 1500 LPV procedures published. The FAA plans to implement approximately 500 LPV minima procedures in FY 2009 and 2010.

4. Recent FAA Guidance Documents for PBN

4.1. The FAA has recently published updated guidance material for PBN implementation:

- FAA Order 8260.54A (Dec 2007) *United States Standard for RNAV Procedures* provides procedure design guidance for RNAV approaches (equivalent ICAO RNP APCH).

  Note: The U.S. uses the U.S. Standard for Instrument Procedure Design (TERPS) series of document, not ICAO PANS OPS. Design criteria are harmonized to the maximum extent possible.

- FAA Advisory Circular 90-105 (Jan 2009) *Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System* provides airworthiness and operational approval guidance for the conduct of baro-VNAV RNP approaches with LNAV/VNAV minima, Basic-RNP 1 SIDs and STARs, and will also support RNP 2 operations when the ICAO PBN Manual navigation specification is developed.

4.2 The above paragraph addresses only two of the extensive series of guidance documents (Orders and ACs) relating to RNAV and RNP operations that is published by the FAA. The FAA makes all its guidance documents available at **www.rgl.faa.gov.**

APPENDIX C

ATFM QUESTIONNAIRE

The objective of this survey is to obtain information in order to learn about the current status in the participating States and Organizations with respect to:

a) The methods for estimating airport and ATC capacity; and

b) ATFM procedures for the following phases:

1) Airport strategic
2) Airport tactical
3) Airspace strategic
4) Airspace tactical

This information will allow the ATFM Implementation to fulfil GREPECAS planning and harmonizing objectives.

Mark with an "X" the corresponding answer. Please include your comments, if you deem pertinent. If necessary, use additional sheets. As applicable, send copies of requested electronic documents to icao_nacc@mexico.icao.int

1. Does your administration currently have a method, whether basic or complex, for calculating airport capacity? If yes, please send an electronic copy of the methodology to icao_nacc@mexico.icao.int

☐ YES ☐ NO

If yes, please provide any available airport capacity data for your main airports in the following table. Please note that for this table:

Total Capacity = Airport Acceptance Rate (AAR) + Airport Departure Rate (ADR).

Airport Name	Runway configuration	Airport Acceptance Rate (AAR) VFR	MVFR	IFR	Airport Departure Rate (ADR)	Total Capacity

Table 1

Comments

2. Does your administration currently have a method, whether basic or complex, for calculating en-route sector capacity? If yes, please send an electronic copy of the methodology to icao_nacc@mexico.icao.int

☐ YES ☐ NO

If yes, please provide any available airport capacity data for your main airports in the following table. Under the "Time Increments" column, please indicate if the sector capacity is computed by 15-minute increments, 60-minute increments, or some other increment.

ACC	Sector Name	Sector Altitudes	Sector Capacity	Time Increments

Table 2

Comments

3. Does your administration currently have procedures in place to support the following phases of ATFM?

a) Airport Strategic

☐ YES ☐ NO

b) Airport Tactical

☐ YES ☐ NO

c) Airspace Strategic

☐ YES ☐ NO

d) Airspace Tactical

☐ YES ☐ NO

Comments

ATFM DATABASES

a)Flow management data processing and display:

1. Does your administration have a system to receive, process, and display flight plan data (FPL, RPL, etc.)?

☐ YES ☐ NO

2. Does your administration have a database that includes airspace information (for example, ACC boundary coordinates, sector boundary coordinates, NAVAIDS, airways, special use airspace) and airport information (for example, runway and taxiway layout, ramp layout, parking gate information)?

☐ YES ☐ NO

3. Does your administration have an electronic ATFM system that displays airborne traffic?

☐ YES ☐ NO

4. Does your administration have a communication system that allows automated or manual exchange of messages to support ATFM decision making (for example, SLOT assignment messages, SLOT adjustment messages, delay reporting messages, alternate route messages)?

☐ YES ☐ NO

5. Does your administration have a system to monitor the status of the air navigation infrastructure?

☐ YES ☐ NO

6. Does your administration have a system to monitor and display the airport acceptance rates (AAR) at the main airports?

☐ YES ☐ NO

7. Does your administration have a system to monitor and display enroute sector capacity?

☐ YES ☐ NO

8. Does your administration have a system to monitor and display the mix of aircraft using the airspace or airports?

☐ YES ☐ NO

b) Surveillance systems:

1. On the following table, list the type of surveillance systems in use in your administration's airspace structure.

ACC Surveillance System	TMA Surveillance System	Other Surveillance System

Table 3

c) AIS/MAP:

1. On the following lines, list the AIS and map databases that your administration has available to support ATFM.

2. Are they available in an electronic format?

☐ YES ☐ NO

3. What is the AIS database update cycle?

☐ 28-DAY UPDATE ☐ 56-DAY UPDATE

d) Meteorological information:

1. On the following lines, list the specific meteorological products and/or websites that your administration has available to support ATFM.

e) Data for historical and statistical analysis:

1. On the following lines, list the type of databases your administration maintains to support the analysis of air traffic operations and meteorological activities.

f) Communication systems and processes in support of CDM and inter-facility coordination:

1. List the types of communication systems your operational units have with:

(a) other centralized ATFM organizations

(b) other FMUs, FMPs, and/or ATS units

(c) operators and airspace users

(d) airport authorities

(e) meteorological authorities

(f) aeronautical information services

(g) the transmission of radar and ADS data to the ATFM center

APPENDIX D

DRAFT

Caribbean/South American Air Traffic Flow Management Manual (CAR/SAM ATFM Manual)

Draft Version	**1.0**
Date	**July 2009**

FOREWORD

The *Caribbean/South American (CAR/SAM) ATFM Manual* is published by the ATM/CNS Subgroup of the Caribbean/South American Regional Planning and Implementation Group (GREPECAS). It describes air traffic flow management practices and procedures to be applied in the CAR/SAM Regions.

The GREPECAS and its contributory bodies will issue revised editions of the Document as required to reflect ongoing implementation activities.
Copies of the *CAR/SAM ATFM Manual* can be obtained by contacting:

ICAO North American, Central American and Caribbean Office

Av. Presidente Masaryk 29 – 3rd floor
Col. Chapultepec Morales
11570 México D.F., México
Postal Address: Apartado Postal 5-377
06500 México, D.F., MÉXICO
Tel: (5255) 5250 3211
Fax: (5255) 5203 2757
E-mail: vhernandez@mexico.icao.int
icao_nacc@mexico.icao.int

ICAO South American Office Lima, Peru

E-mail : mail@lima.icao.int
Web site : www.lima.icao.int
Fax : +511 575-0974 / 575-1479
Mail : P. O. Box 4127, Lima 100, Peru
Point of contact
E-mail : jf@lima.icao.int
ao@lima.icao.int

The present edition (Draft Version 1.0) includes all revisions and modifications until July 2009.

Table of Contents

Page

1. Background

1.1 ICAO CNS/ATM Systems received support from the Tenth Air Navigation Conference held in 1991 at ICAO Headquarters in Montreal, Canada. The same year, the CAR/SAM Regional Planning and Implementation Group (GREPECAS) started to work towards a regional application of this new air navigation services concept.

1.2 Further, at the Eleventh Air Navigation Conference (AN-Conf/11, Montreal September 2003), States supported and approved the new ICAO ATM Global Operational Concept, which encourages the implementation of a services management system which enables an operationally continuous regional airspace through the application of a series of ATM functions.

1.3 As per the guidance principles established by ICAO Council with regard to the facilitation of the inter-regional harmonization, the regional plans for CNS/ATM systems implementation in the regions should be prepared in accordance to the general profiles defined in the Global Air Navigation Plan for CNS/ATM Systems. After a careful analysis of the guidance principles of this Global Plan, GREPECAS adopted them and incorporated characteristics inherent to the CAR/SAM Regions, using as a basis the definitions of Homogeneous Areas and Main Traffic Flows. Homogeneous areas are those airspace portions with ATM requirements and similar complexity degrees, while main air traffic flows are airspaces where a significant amount of air traffic exists.

1.4 From the analysis carried out by ICAO/UNDP Project RLA/98/003, it may be inferred that while in general terms in the CAR/SAM Regions environment, currently no traffic congestions are registered requiring a complex flow management, they have been identified in some airports and airspace sectors, mainly in special periods and specific hours, where some congestions are already produced, which should be avoided.

1.5 In view of the above, GREPECAS considered that the early implementation of the ATFM shall ensure an optimum air traffic flow towards some areas or through them, during periods in which the demand exceeds or is foreseen to exceed the available capacity of the ATC system. Therefore, an ATFM system should reduce aircraft delays both in flight and ground and avoid system overloading. The ATFM system shall assist the ATC to comply with its objectives and achieve a more effective utilization of the airspace and airports available capacity. ATFM should also ensure that air operations safety is not compromised in case unacceptable levels of air traffic congestion occur and at the same time ensure that air traffic is effectively administered without applying unnecessary restrictions to flow.

1.6 The ATFM/TF/5 Meeting examined the draft ATFM Manual to be applied by the CAR/SAM Region FMU/FMP, which contained guidelines related with ATFM implementation, such as demand and capacity, traffic management tools, traffic Management initiatives (TMI), Communications and coordination, organization and structure, system performance measurement, collaborative decision-making, common ATFM terminology whose aim was to provide orientation in ATFM management.

1.7 The document was in its initial stage and the Meeting agreed that it would be convenient to continue with its development. Subsequently, States that participated in ATFM/TF/5 reviewed the document and brought the work forward to its current version.

Overview of Changes Made to Draft ATFM Manual

The objective was to review and enhance the draft ATFM Manual that resulted from the Fifth Air Traffic Flow Management Task Force Meeting (ATFM/TF/5) held in Armenia, Colombia 8-12 June 2009.

1. Document reformatted, chapters 1-6 renamed and re-sequenced for continuity

2. History of document was included with background information

3. ATFM Stages updated and examples provided

4. Included was "Centralized ATFM strategy for CAR/SAM Regions"

5. "Concepts to consider" incorporated

6. Chapter 1, Organization and Structure enhanced

7. Chapter 2, Demand, Capacity and Impact Analysis: "Guidelines for application of a methodology for calculation of airport and ATC sector airspace capacity for the CAR/SAM Regions." Also, added was a paragraph regarding pre/post event actions/analyses.

8. Chapter 3, Traffic Management Initiatives (TMIs); purpose, description of TMIs, explanation of approval authority, and processing added

9. Chapter 4, Collaborative Decision Making Process (CDM); reorganized and" enhanced

10. Chapter 5, Coordination; enhanced to depict model and explanation 11. Chapter 6, Common ATFM Message Terminology; enhanced to include examples

11. The following appendices were included:

- Trinidad and Tobago ATFM organizational structure
- Flow Chart ATFM Analyses
- Screen-shots of ATFM tools; i.e., SYNCHOMAX, PROSAT and TFMS
- International Operations Planning Teleconference

2. Purpose

2.1 Implementation of Air Traffic Flow Management (ATFM) in CAR/SAM Regions

The purpose of this document shall be to assist the States/Territories of the CAR/SAM Regions to establish a common understanding of the roles of each party interested in the effective provision of the flow management service, capacity to air traffic services, and to aircraft operators.

The intent of this document is to function as an introduction and not as an all inclusive body of knowledge. It is implied that this will be considered a living document that will be modified as needed to reflect the growth, future needs and harmonization of the CAR/SAM Regions.

2.2 ATFM Implementation Strategy

2.2.1 The operational concept establishes a simple implementation strategy. It is recommended that this strategy be developed in phases, so as to ensure maximum utilization of the available capacity and enable all concerned parties to obtain sufficient experience.

2.2.2 The experience acquired in other Regions and by some States in the CAR/SAM Regions permits States/Territories and International Organizations to apply basic operational ATFM procedures in airports, without the immediate need for a Regional ATFM Center. A Regional ATFM Center shall demand ample studies to define operational concepts, requirements of systems and agreements between ATFM centralized units for their implementation in the CAR/SAM Regions.

> **Note:** For additional details, see Caribbean/South America Air Traffic Flow Management Operation (CAR/SAM ATFM CONOPS).

2.3 Centralized ATFM strategy for CAR/SAM Regions

2.3.1 GREPECAS/13 was of the opinion that two CAR and SAM scenarios should be taken into account, but that they could be modified insofar as the operational concept development and the implementation plans progress. The strategy is to develop a harmonized planning of a CAR and SAM interregional ATFM system.

2.3.2 In the future, in order to maximize terminal and regional efficiency, consideration should be given to the establishment of Centralized ATFM facilities that would have oversight responsibility for providing ATFM service.

2.3.3 It was also considered necessary that the procedures during all the implementation process be developed in a harmonious manner among the ATFM units to avoid risking operational safety. This entails establishing a regional and interregional strategy to facilitate and harmonize all the implementation process.

2.4 **ATFM stages**

2.4.1 Initially ATFM initiatives may only be required during certain periods when aerodromes and ATC sectors experience delays due to demand and capacity related issues. In order to maximize the use of all resources available in the regions, either from personnel, equipment, facilities and/or automated systems, the ATFM implementation process should be established, planned and developed in phases (airport and airspace), according to the following sequence.

> ***Note:*** Doc 9854, Global Air Traffic Management Operation Concept defines the ATFM stages.

2.4.2 **Strategic stage.** At the strategic stage, demand and capacity balancing will respond to the fluctuations in schedules and demands, seasonal changes of weather and major weather phenomena, and special traffic management events such as Carnival. This takes place seven days or more prior to the day of operation and includes research, planning and coordination activities. This phase consists of analyzing the evolution of the forecast demand and the identification of potential new problems and in evaluating possible solutions. The outputs of this phase are the capacity plan for the following year, the Route Allocation Plans and sets of other plans that can be activated as necessary during the next phases. Through collaborative decision making, assets will be optimized in order to maximize throughput, thus providing a basis for predictable scheduling.

2.4.2.1 For example: The ATFM service provider in anticipation of an event would gather statistical data and discuss this with stakeholders for the development of an action plan. This plan should take into consideration both scheduled and non-scheduled FPLs.

2.4.2.2 This could include a special traffic management event such as a sporting event, or a planned outage that would impact airport/airspace capacities. The integral part of the strategic phase is to mitigate impact as much as possible through advance planning.

2.4.3 **Pre-tactical stage.** Applied six days prior to the day of operation and includes revisiting the strategic phase. It analyses and decides the best way to manage the available capacity resources and the need for the adjustment of TMIs. For example, this may include demand and capacity balancing, evaluation of the current capabilities of the ATC service provider, airspace user and aerodrome operator assets.

2.4.3.1 In the pre-tactical phase, you are required to revisit the strategic plan and make appropriate adjustments as needed based upon newly received/changed information.

2.4.4 **Tactical stage.** At the tactical stage, demand and capacity balancing will focus more closely on demand management to adjust imbalances. It will consider weather conditions, infrastructure status, resource allocations, and disruptions in schedules that would cause an imbalance. Through collaborative decision making, these actions will include dynamic adjustments to the organization of airspace to balance capacity, dynamic changes to the entry/exit times for aerodromes and airspace volumes, and adjustments to the schedules by users.

2.4.4.1 Tactical stage includes making appropriate real time adjustments based upon unanticipated factors and informing stakeholders of these changes.

2.5 **Concepts for Consideration**

2.5.1 ATFM shall be established with a view to optimizing the use of available airspace and airport capacity, and to enhance air traffic flow management processes. It shall be based on transparency and efficiency, ensuring that capacity is provided in a flexible and timely manner, consistent with the guidelines issued by ICAO.

2.5.1.1 Implementation shall support cooperation between air navigation service providers, airport operators and airspace users and shall cover the following areas:

a. flight planning
b. use of available airspace capacity during all flight phases
c. Issuing guideline initiatives for the optimization for the flow of air traffic

2.5.2 Implementation shall seek to balance the financial benefits for stakeholders with the expected operational safety improvements by the relevant parties and operational and technical benefits, taking into account the requirements for ATM global interoperability;

2.5.3 The following operations shall be excluded from the implementation of ATFM initiatives:

a. State aircraft (Special military missions)
b. Emergency/priority aircraft
c. ambulance flights
d. humanitarian flights (ambulance flights)
e. Search and rescue missions
f. Transport of human organs

***Note**:* For additional details, see Caribbean/South America Air Traffic Flow Management Operation (CAR/SAM ATFM CONOPS).

2.5.4 It shall be recognized that airspace and airports are resources shared by all user categories with fairness and transparency, taking into account the operational safety needs of States and the commitments of international organizations.

2.5.5 Air traffic flow management should be based on principles of partnership to meet ATM expectations, by means of collaborative decision-making between:

a. Central units for air traffic flow management (ATFMC)
b. Flow Management Units (FMU/FMP)
c. Airspace users – general aviation, air carriers, the military
d. Aerodrome community

2.5.6 Air navigation service providers and air operators should share data when coordination agreement has been established. Examples include SYNCHROMAX, PROSAT, and TFMS (formerly ETMS)

2.5.7 ATFM shall apply within CAR/SAM States airspace and airports to:

a. all flights intended to operate or operating in accordance with instrument flight rules (IFR) and visual flight rules (VFR) except as noted in paragraph 2.5.3 above.

b. all phases of those flights.

2.5.8 ATFM shall apply to each of the following parties, or to anyone acting on their behalf who may be involved in air traffic flow management activities:

a. aircraft operators
b. air traffic service providers
c. units involved in airspace management
d. airport operators
e. the central unit entrusted by Member States with the provision of air traffic flow management services.

Chapter 1: Organization and structure

It is understood that each State and/or service provider will develop an organizational structure that will meet the needs of the aviation system community. These needs at a minimum should address management and oversight of the following:

a. Air Traffic Flow Management System
b. Coordination/exchange of information both internal and external
c. Provide line authority as to how decisions are implemented
d. Ensure that mission requirements are met

Each organization may establish a Line of Authority that will support the mission of ATFM. This may include the following positions of responsibilities:

a. Manager of Traffic Flow Management System
b. Flow management unit that provides oversight for a specific geographic region and/or facilities
c. Flow management positions that are responsible for the day-to-day activities of traffic flow management

Note: See Appendix A for an example of the Trinidad and Tobago Civil Aviation Authority Flow Diagram of Piarco Flow Management Unit

Flow Management Unit (FMU)

FMUs monitor and balance traffic flows within their areas of responsibility in accordance with traffic management directives. The FMU is delegated the authority to direct traffic flows and implement approved traffic management initiatives (TMIs) in conjunction with, or as directed by, the oversight authority.

Personnel requirements for FMU/FMP ATFM

Personnel working in a Centralized ATFM function as well as regional FMU/FMP functions shall require standardized and recurrent training in order to keep pace with an ever changing and fluid environment. A detailed plan of ATFM training in advance shall ensure the optimization of personnel achieving operational efficiency in their respective FMUs/FMPs. This will allow them to successfully face the important changes in their operational environments and allow them to provide the highest achievable level of customer service.

FMP Duties may include:

a. Create and distribute plan of action after consultation with designated facilities and customers
b. Gather all relevant information such as weather, delays, NAVAID/radar shutdowns, runway closures, TELCO outages, computer malfunctions, and procedural changes affecting air traffic facilities. This may be accomplished through various means available; e.g., teleconference, email, internet.
c. Analyze and distribute all data.
d. Record in a designated log a full description of all TMIs (e.g., ground delay programs, ground stops, miles-in-trail) which may include, but not limited to, start and stop times, facilities/operations affected, and justification.
e. Coordinate procedures with all stakeholders.
f. Create a structure for dissemination of information; e.g., ATFM webpage.
g. Conduct daily teleconferences as needed.
h. Monitor/review the flow management system, make adjustments where necessary, and cancel when no longer required.

Chapter 2: Demand, Capacity and Impact Analysis

Planning Process

In order to balance demand with capacity, it is necessary to determine the airport and airspace capacity. Once these capacities are established, steps can be taken to monitor and evaluate air traffic demand and implement measures (traffic management initiatives /TMIs) for achieving equilibrium in the system.

The following example provides a general concept of the steps involved regarding ATFM pre-event planning/actions and post-event analysis. (See Appendix B ATFM flow chart analysis.)

a. Determine Capacities
Review/assess airport/ATC sector capacities for accuracy.
Note: See Guidelines for the Calculation of Airport and ATC Sectors for the CAR/SAM Regions.

b. Assess Demand
Determine what forecasted demand will be for a specified time frame, 15-minute period(s), hour(s), shift, etc.

c. Analyze and Compare
Analyze and compare demand and capacity levels and time frames where demand is projected to exceed declared capacity.

Tool/technology for the analysis process
Manual computation or automated methodologies such as SYNCHROMAX, TFMS, PROSAT can be used to facilitate the demand/capacity analysis process. (See Appendix D)

d. Communicate situational information
Communicate situational information to facilities/stakeholders via available means utilizing Collaborative Decision Making (CDM) methodology. (See Appendix E regarding a model for CDM structure).

e. Determine the action required to mitigate demand imbalance
After gathering information and soliciting input, determine appropriate TMI needed for situation.

f. Disseminate TMI information
Inform stakeholders of TMI planned to mitigate the situation. This can be accomplished via telephone and/or automation.

g. Monitor the situation
Examine the situation periodically in order to ensure the applied TMIs are mitigating the situation. If necessary, re-evaluate and make the appropriate adjustments.

h. Conduct post analysis of event
Afterwards, perform post-event analysis to determine the effectiveness of the TMIs and catalog best working practices.

Chapter 3: Traffic Management Initiatives (TMI)

TMIs are techniques used to manage air traffic demand according to system capacity. Some TMIs must be considered as control instructions or procedures. The determination is based on the size of the event, the coordination process, and the event duration.

Purpose

TMIs are important techniques for managing the air traffic system when they are coordinated and applied properly. TMIs are applicable when it is necessary to manage fluctuations in the air traffic demand, but they do cause an impact to the customers. It is important to consider this impact and implement only the initiatives that are necessary for maintaining the integrity of the system. Therefore, traffic management personnel should employ the least restrictive methods available in order to minimize delays.

Note: In certain instances it may be necessary to apply combinations of TMIs in order to maintain system integrity and still employ the least restrictive measures; e.g., miles-in-trail with holding in lieu of ground stopping aircraft.

Types of TMIs

Name	Description
Airborne holding	Holding of aircraft is a commonly utilized TMI especially when anticipated due to volume, weather, outages etc. When airborne holding is forecasted, AT facilities and customers can make appropriate adjustments and alert personnel as to the reasons and length of holding. Airborne holding is normally done when the operating environment supports holding and the conditions are expected to improve shortly; this ensures aircraft are available to fill the capacity at the airport.
Altitude	Utilized to segregate different flows of traffic, or to distribute the number of aircraft requesting access to a specified geographic region. **a. Capping**: Term to indicate aircraft will be cleared to an altitude lower than their requested altitude until they are clear of a particular airspace. Capping may apply to the initial segment of the flight or for the entire flight. **b. Tunneling**: Term to indicate traffic will be descended prior to the normal descent point at the arrival airport to remain clear of an airspace situation; e.g., holding. Capping and Tunneling are techniques commonly used to keep aircraft from entering busy and complex sectors and still permitting them to depart with minimal delays.
Fix balancing	Assigning an aircraft a fix other than that in the filed flight plan in the arrival or departure phase of flight to equitably distribute demand.
Ground delay programs (GDP)	A GDP is a TM process administered by the FMU; when aircraft are held on the ground in order to manage capacity and demand at a specific location, by assigning arrival slots. The purpose of the program is to support the TM mission and limit airborne holding. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

Name	Description
Ground stops (GS)	GS is a process that requires aircraft that meet specific criteria to remain on the ground. Since this is one of the most restrictive methods of traffic management, alternative initiatives should be explored and implemented if appropriate. GSs should be used: **a.** In severely reduced capacity situations (below most user arrival minimums, airport/runway closed for snow removal, or aircraft accidents/incidents); **b**. To preclude extended periods of airborne holding; **c**. To preclude sector/center reaching near saturation levels or airport grid lock; **d**. In the event a facility is unable or partially unable to provide ATC services due to unforeseen circumstances; and **e**. When routings are unavailable due to severe weather or catastrophic events.
Miles-in-trail (MIT)	The number of miles required between aircraft that meet a specific criteria. The criteria may be separation, airport, fix, altitude, sector, or route specific. MIT are used to apportion traffic into manageable flows, as well as to provide space for additional traffic (merging or departing) to enter the flow of traffic.
Minutes-in-trail (MINIT)	The number of minutes required between successive aircraft. It is normally used in a non-radar environment, or when transitioning to a non-radar environment, or when additional spacing is required due to aircraft deviating around weather.
Reroutes	Reroutes are ATC routings other than the filed flight plan. They are issued to: **a.** Ensure aircraft operate with the "flow" of traffic. **b.** Remain clear of special use airspace. **c.** Avoid congested airspace. **d.** Avoid areas of known weather where aircraft are deviating or refusing to fly.
Sequencing programs	These programs are designed to achieve a specified interval between aircraft; they may be software generated or determined by ATFM personnel. Different types of programs accommodate different phases of flight. **1. Departure Sequencing Program (DSP)** - Assigns a departure time to achieve a constant flow of traffic over a common point. Normally, this involves departures from multiple airports. **2. En route Sequencing Program (ESP)** - Assigns a departure time that will facilitate integration in the en route stream. This is accomplished by instructing an air traffic control tower to call the traffic management unit for release -- "Call For Release." **3. Arrival Sequencing Program (ASP)** - Assigns fix crossing times to aircraft destined to the same airport.

TMI approval authority

The designated FMU/FMP for each Service provider and/or State is the approval authority for all TMIs that impact their airports, TMAs, and en route airspace system.

TMI processing

Prior to implementation, the FMU/FMP responsible for ATFM oversight must identify the need for a TMI, examine alternative options, and develop a justification for the TMI. The FMP must be prepared to discuss and coordinate the proposed TMI with the receiving facility prior to implementation. FMPs must continuously monitor and evaluate the TMI and make the necessary adjustments, including cancellation and notification in a timely and effective manner.

Chapter 4: COLLABORATIVE DECISION MAKING PROCESS (CDM)

CDM has evolved into a philosophy or a collaborative approach of how to conduct business. It brings together operators, government, private industry, military, and academia, for the purpose of

improving ATFM decision making through enhanced information exchange, data sharing, and improved automated decision support tools.

As the aviation community continues to evolve, States and/or service providers will be required to keep pace with increasing demand levels, expanding capacities, and technological advances. As a result of these challenges, a new sense of partnership will be required by all stakeholders who either directly or indirectly contribute to the overall well being and success of the aviation industry.

This new partnership will combine the talents and experiences of all individuals which will facilitate the harmonization and globalization of the world's airspace system.

Collaborative decision making (CDM) is a methodology that brings service providers and system stakeholders together for the purpose of improving air traffic flow management decisions.

CDM is a key element to maximizing airport and air operations because it considers all coordination elements between air navigation service providers such as flow management units (FMUs) and recipients of these services such as aircraft and airport operators. CDM includes stakeholders participating in the planning process by sharing information such as aircraft position, predictions, weather forecast, traffic forecast, and in general anything that would contribute to the efficient operation of a regional air space system.

CDM Objectives

The CDM concept seeks to improve air traffic flow and airport capacity management by reducing delays and foreseeing events through improved resource management.

These objectives include but are not limited to:

a. Providing up-to-date information in real time to all stakeholders, thus ensuring a more accurate prediction of events and better capacity utilization, supported by a collaborative decision-making process.

b. Transferring information for decision-making between stakeholders.

c. Requiring that all system stakeholders function in an equitable manner for the betterment of the system.

d. Exchanging information among the relevant parties in charge of aircraft flight planning and operations to increase system capacity, and thus improving:
   1. Operations quality and stability
   2. Offering reliability and predictability
   3. traffic synchronization amongst stakeholders
   4. And air space organization which is critical for maximizing capacity and enhancing system safety.

CDM participants should consider utilizing all available electronic means and tools that allow the analysis of various traffic scenarios in order to more effectively achieve the balancing of demand and capacity.

> ***Note:*** Global experience has shown that teleconferences and electronic information exchanges are the recommended mechanisms for active participation throughout the System. However, each State/Service Provider may utilize whatever means are available to foster the sharing of information.

CDM implementation allows system participants to optimize their decisions in collaboration with others, by learning about their preferences, constraints, and the real and foreseen situation.

Decision-making within the CDM framework is facilitated by the exchange of accurate and timely information, aiming to adjust procedures, mechanisms and tools for better system performance.

The CDM concept consists of the following basic elements:

a. Information exchange.
b. Weather conditions.
c. Sequencing before departure.
d. Adverse conditions.
e. Up-to-date flight information.
f. Flight scheduling.
g. Airport Master Plan.
h. General Contingency Plans.
i. State aircraft operation planning (military, law enforcement and other).

CDM Structure

Developing a CDM organization within each State and/or Service Provider is essential in order to achieve the benefits that this model offers. The flexibility is that it takes into consideration any communication venues that already exist, and does not require expending valuable resources, and can be tailored to meet the local regional needs as determined.

For example, Service Providers can begin with engaging the stakeholders as follows:

a. Scheduling regular (e.g., quarterly, monthly, weekly) meetings
b. Pre-establishing agenda items that are of mutual concern
c. Discussing how tactical decisions will be managed, shared, and disseminated
d. Establishing CDM participants and entering a memorandum of understanding (MOU) which stipulates guidelines in areas such as information distribution, rules and regulations, and how shared leadership is accomplished.
e. Developing sub-work groups which fall under the direct leadership and guidance of the CDM organization and are specifically tasked with developing solutions.

Sharing duties

As with any collaborative endeavor, each participant should realize that this will require a level of sacrifice, commitment and a sense of what is best for the greater whole and/or system.

Participant must be willing to share:

a. Responsibility
b. Resources
c. Accountability
d. Mutual goals
e. Mutual trust

And as a direct result of these efforts, participants can generally expect to realize:

a. More effective communications
b. Increased information exchange
c. More effective decision making
d. Better solutions to ATFM problems

It is well accepted that regardless of the technological advances made in the aviation industry, CDM will require a culture change, team work approach, and be an integral part of how the future is shaped.

Chapter 5: Coordination

Coordination of traffic management information.

It is understood that there exists different levels of traffic flow management oversight within the CAR/SAM regions. The concept is for each Service Provider to assign responsibility within their respective FIR for collecting, disseminating, monitoring, and providing oversight of TMIs. This methodology would ensure that applicable information is shared by all Service Providers and customers in a timely and efficient manner.

Examples of applicable information include: Tactical level information such as capacities, demand, imbalances, airport conditions and anything that would impact their respective system. This list is not all inclusive and will depend on the good judgment of each facility.

A typical traffic management hierarchy model may consist of the following:

a. Control towers (TWR) coordinate with Approach Control Facilities (APP).

b. Approach Control Facilities (APP) coordinate with an Air Control Center (ACC).

c. Air Control Centers coordinate with ATFM authority.

d. ATFM authority would be responsible for dissemination within their respective region.

Note: The purpose of this coordination methodology is to establish a protocol for each level of the organization to be informed of timely and accurate information. It is fully realized that this as an organizational model and can be modified to meet the needs of each specific situation.

Note: For standardization, it is desirable that the States develop and/or modify letters of agreement (LOA) which describe this coordination.

Exchanging ATFM Information

Air Traffic Service (ATS) and/or ATFM Service Providers in adjacent FIRs should establish schedules and regular telephone conferences, as required, to meet their specific operational needs. The purpose of these conferences is to share and disseminate information to air traffic facilities and customers for making tactical adjustments as required.

It is recommended that the following three methods be utilized:

1. Scheduled telephone conferences. These consist of a pre-coordinated time when FMUs establish a conference amongst themselves to exchange information.

2. Tactical telephone conferences. These are non-scheduled teleconferences which are conducted on a real-time tactical level to make adjustments.

3. Automated Web Pages. ATFM service providers may create web pages with relevant ATFM information, as described in this paragraph. The purpose of the web pages is to share applicable system information for everyone to access and to minimize workload. As a minimum, the web pages may include:

a. TMI's such as ground stops, delay programs, etc.
b. Runway configuration
c. Runway/airport capacities
d. Weather
e. Outages
f. Delay information
g. Airport closures
h. Miscellaneous

Operations plan

The operations plan may take into consideration the terms of balancing demand and capacity, ATFM initiatives, special operation requirements, special events (such as Carnival, World Cup) and any other events that may arise. The purpose is to tactically and/or strategically develop an outlook for the applicable airspace system that the aviation community can use as a planning forecast. Specific items that may be used are similar to the web page and allow the aviation community to provide input into the development of this plan. For example, an FMU would canvass applicable Air Traffic facilities and customers on how best to resolve system impacts.

Special operations may be defined as air operations conducted by State aircraft or for humanitarian activities. It is implied that each State and/or service provider may define special operations as needed.

Implementing, adjusting, coordinating, and canceling of TMIs.

It is recommended that States and/or service providers develop an internal operations manual for their respective facilities describing the above-mentioned actions. For example:

a. Implementing TMIs could be accomplished through established means such as telephone calls, web pages, or any other available method.

b. Constant monitoring would be required for making the appropriate adjustments.

c. Cancellation of TMI's would be required when no longer needed or when system balance is achieved regarding demand and capacity related issues. It is important for all system users to be informed of canceled initiatives so that adjustments can be accomplished.

Civil/military Coordination

It is recommended that States and/or service providers develop a letter of agreement (LOA), based on ICAO Doc 9433, with their military customers that describes how military special use airspace can be utilized when not in use and/or during peak civilian periods in order to increase efficiency.

Chapter 6: Common ATFM Message Terminology

General

The primary goal of these guidelines is to develop standard terminology and phraseology for the exchange of ATFM telephone messages. The information contained herein is intended to reflect the current use of plain language and provide a basis for harmonization.

This includes the concept of modular and structured ATFM messages and define the components as who, what, where, when and why.

This is important because, at present, there is no module regarding how ATFM restrictions should be achieved by Service Providers. As with any communication model, it is the responsibility of both parties (sender and receiver) to ensure that the message is understood correctly and can be applied as requested.

It should be recognized that once information is exchanged regarding a restriction, it is considered MANDATORY unless otherwise coordinated.

ATFM Message Components

Each message should have five components that contain plain language elements and when combined provide a complete ATFM message.

This section breaks down the five message components.

WHO: This identifies the parties involved. Who is transmitting and receiving the message.

Examples: *CGNA THIS IS COLOMBIA FMU*

CCFMEX THIS IS ATCSCC

WHAT: This identifies the objective to be achieved.

Examples: *REQUEST 30 MILES IN TRAIL*

REQUEST 5 MINUTES IN TRAIL

WHERE: This identifies the location of the ATFM objective to be achieved. It is often preceded by a 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: *FOR ALL AIRCRAFT LANDING EL DORADO INTERNATIONAL AIRPORT*

FOR ALL TRAFFIC LANDING HOUSTON INTERCONTINENTAL AIRPORT

WHEN: This identifies the time and/or duration of the ATFM objective to be achieved.

Examples: *FROM NOW UNTIL 1700 UTC*

FROM 2000 UTC TO 2130 UTC

WHY: This identifies the reason for the ATFM objective:

Examples: *DUE TO SEVERE WEATHER OVER EL DORADO INTERNATIONAL AIRPORT*

DUE TO A LONG-RANGE RADAR OUTAGE

The following is an example of a complete message:

CGNA THIS IS COLOMBIA FMU. REQUEST 30 MILES IN TRAIL FOR ALL AIRCRAFT LANDING EL DORADO INTERNATIONAL AIRPORT FROM NOW UNTIL 1700 UTC DUE TO SEVERE WEATHER OVER EL DORADO INTERNATIONAL AIRPORT

Amendment

The amendment of an ATFM message should include similar elements but with additional modifiers. These modifiers may include:

a. CHANGE
b. AMEND
c. REDUCE
d. INCREASE
e. DECREASE

Example: *GUAYAQUIL FMP THIS IS LIMA FMP, REDUCE YOUR MILES-IN-TRAIL TO JORGE CHAVEZ INTERNATIONAL AIRPORT FROM 30 MILES-IN-TRAIL TO 20 MILES-IN-TRAIL FROM 1400 UTC TO 1700 UTC DUE TO IMPROVING WEATHER CONDITIONS AT JORGE CHAVEZ INTERNATIONAL AIRPORT*

Cancellation

The cancellation of an ATFM message should contain a canceling word or phrase. It is normally not necessary to state the reason for the cancellation. A canceling word or phrase may include:

a. CANCEL
b. RESUME
c. RESUME NORMAL
d. RELEASE

Example: *CARACAS FMP THIS IS GEORGETOWN FMP, CANCEL THE GROUND STOP FOR TIMEHRI CHEDDI JAGAN INTERNATIONAL AIRPORT DUE TO THE RUNWAY NOW OPEN.*

Cancellation messages should also identify which message is being cancelled because several restrictions could be in place at one time.

EXPLANATION OF TERMS

The development of this document is based on the understanding of important terms and expressions that are described below:

Stakeholders involved in ATFM - The ATFM stakeholder community includes the organizations, bodies or entities which could participate, collaborate and cooperate in the planning, development, utilization, regulation, operation, and maintenance of ATFM system.

Among them are:

> ***Aerodrome Community*** - The air traffic control authorities, aerodrome authorities, commercial, military, and general aviation operators, and other parties involved in the provision and operation of the physical infrastructure needed to support the take-off, landing, and ground handling of aircraft.
>
> ***Airspace Providers*** - Refers, in general terms, to Contracting States/Territories in their capacity as airspace owners with the legal authority to permit or deny access to their sovereign airspace. The term may also be applied to organizations of the State assigned responsibility for establishing the standards and guidelines for use of the airspace.
>
> ***Airspace users*** - Refers to the commercial, military, and general aviation operators that utilize the sovereign airspace of States/Territories/Organizations.
>
> ***ATM service providers*** - All of the organizations and personnel (e.g., controllers, engineers, technicians) involved in the provision of ATFM services to airspace users.
>
> ***Military aviation*** - Refers to the personnel, aircraft, and equipment of military organizations that serve a vital role in the security of States/Territories.
>
> ***International Civil Aviation Organization (ICAO)*** - Considered the only international organization in position to efficiently coordinate the implementation activities of global ATM.

Air Traffic Flow Management (ATFM) - A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that ATC capacity is utilized to the maximum extent possible and that the traffic volume is compatible with the capacities declared by the appropriate ATC authority.

Air Traffic Management (ATM) - A service which comprises airspace management, air traffic flow management, and air traffic services.

ATM Community - All the organizations, bodies or entities which might participate, collaborate and cooperate in the planning, development, use, regulation, operation and maintenance of the ATM System.

Air Traffic Management System - A system which provides ATM through the integration and cooperation of personnel, information, technology, facilities and services. It also involves the support of on-board and space-based communications, navigation and surveillance.

Air Traffic Volume - The number of aircraft within a defined airspace or aerodrome movement area in a given period of time.

Capacity (for ATFM purposes) - The maximum number of aircraft that can be accommodated in a defined airspace or aerodrome (throughput) in given period of time.

Declared Capacity (for ATFM purposes) – A measure of the ability of the ATC system or any of its subsystems or operating position to provide service to aircraft during normal activities. It is expressed as the number of aircraft entering a specified portion of airspace in a given period of time taking into account weather, ATC unit configuration, staff and equipment available, and any other factors that may affect the workload of the controller responsible for the airspace.

Regional ATFM Center - A flow management unit responsible for the provision of air traffic flow management across multiple area control centers.

Collaborative Decision Making - an operating philosophy and the associated technologies that enable traffic managers and aviation industry representatives to respond in a timely manner to constraints in the airspace system.

Demand - The number of aircraft requesting to use the ATC system in a given time period.

Efficiency - The ratio of the cost of ideal flight to the cost of procedurally constrained flight.

Flow Management Unit (FMU) - FMUs monitor and balance traffic flows within their areas of responsibility in accordance with traffic management directives. The FMU is delegated the authority to direct traffic flows and implement approved TMIs in conjunction with, or as directed by the oversight authority.

Flow Management Position (FMP) - A position established in an appropriate air traffic control unit to ensure the necessary interface between the local ATFM functions and other FMUs and/or a centralized ATFM unit.

Homogeneous ATM area - An airspace with a common ATM interest, based on similar characteristics of traffic density, complexity, air navigation system infrastructure requirements and other specified considerations, wherein a common detailed plan will foster the implementation of ATFM.

Main Traffic Flow - The concentration of a significant volume of air traffic on the same, or similar, flight trajectories.

Routing area - An area that encompasses one or more major traffic flows, defined for the purpose of developing a detailed plan for the implementation of ATM systems and procedures.

Traffic Management Initiatives - Techniques used by traffic managers to balance air traffic demand with available capacity.

ACRONYMS
LISTA DE ACRÓNIMOS/ LIST OF ACRONYMS

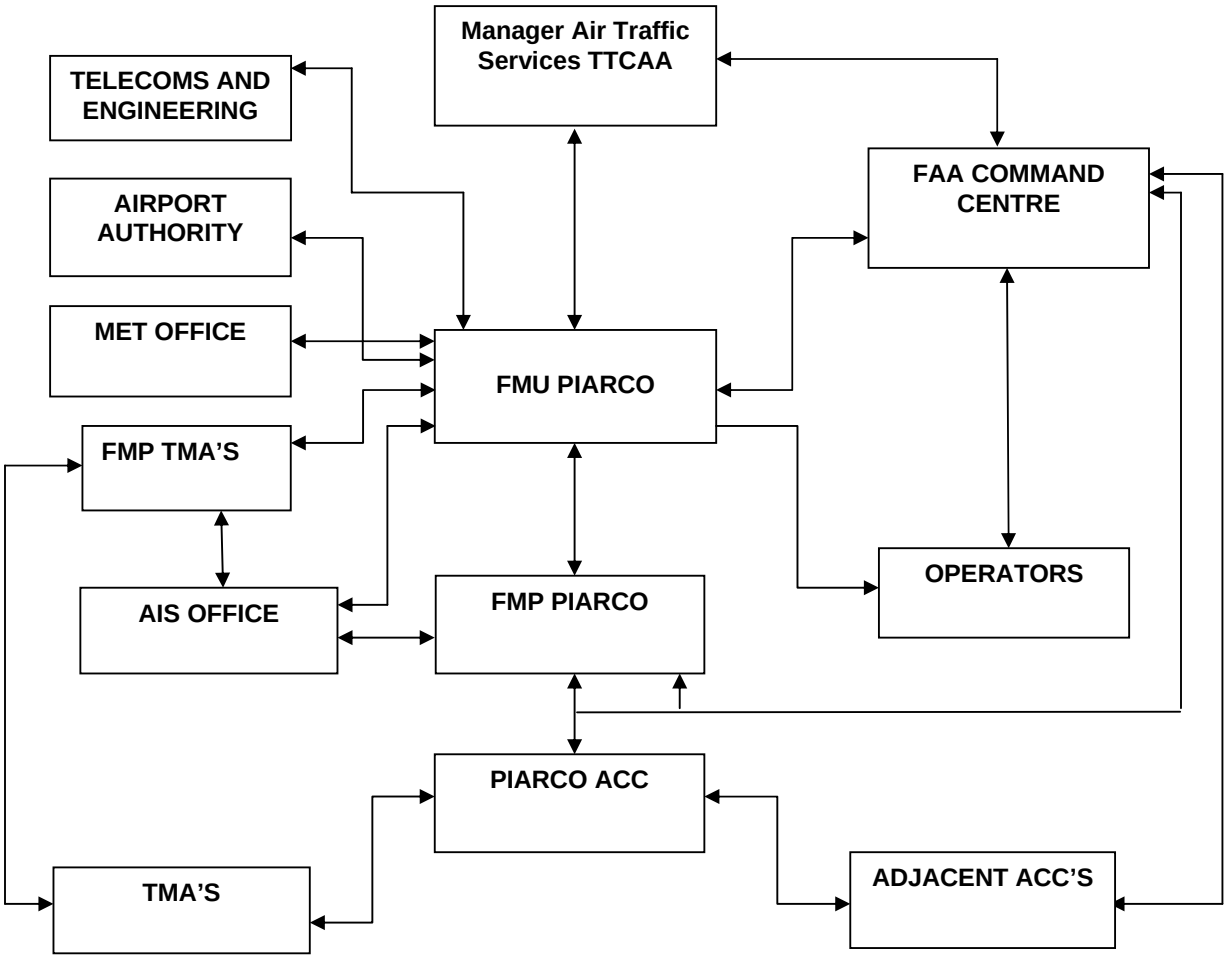
ACC	Centro de control de área	Area control centre
AFTN	Red de telecomunicaciones fijas aeronáuticas	Aeronautical fixed telecommunication network
AIP	Publicación de Información aeronáutica	Aeronautical information publication
AIS	Servicio de información aeronáutica	Aeronautical information service
ANP	Plan de navegación aérea	Air navigation plan
ANS	Servicios de navegación aérea	Air navigation services
ANSP	Proveedor de servicios de navegación aérea	Air navigation service provider
AO	Explotador de aeronave	Aircraft operator
APP	Oficina de control de aproximación	Approach control facility
AAR	Régimen de aceptación del aeropuerto	Airport Acceptance Rate
ADR	Régimen de salida del aeropuerto	Airport Departure Rate
ATC	Control de tránsito aéreo	Air traffic control
ATFM	Gestión de afluencia del tránsito aéreo	Air traffic flow management
ATM	Gestión del tránsito aéreo	Air traffic management
ATS	Servicios de tránsito aéreo	Air traffic services
CAA	Administración de aviación civil	Civil aviation authority
CAR/SAM	Regiones Caribe y Sudamérica	Caribbean and South American Regions
CATFM	Dependencia central de gestión de afluencia del tránsito aéreo	Centralised air traffic flow management unit
C/BA	Análisis de costo-beneficio	Cost/benefit analysis
CDM	Toma de decisiones en colaboración	Collaborative Decision Making
CNS/ATM	Comunicaciones, navegación y vigilancia/gestión del tránsito aéreo	Communications, navigation, and surveillance/air traffic management
CTA	Area de control	Control area
FDPS	Sistema de procesamiento de datos de vuelo	Flight data processing system
FIR	Región de información de vuelo	Flight information Region
FMP	Puesto de gestión de afluencia	Flow management position
FMU	Dependencia de gestión de afluencia	Flow management unit
FPL	Plan de vuelo	Flight plan
GREPECAS	Grupo regional CAR/SAM de planificación y ejecución	CAR/SAM regional planning and implementation group
IATA	Asociación del Transporte Aéreo Internacional	International Air Transport Association
IFALPA	Federación Internacional de	International Federation of Air Line

	Asociaciones de Pilotos de Línea Aérea	Pilots' Associations
IFATCA	Federación Internacional de Asociaciones de Controladores de Tránsito Aéreo	International Federation of Air Traffic Controllers' Associations
LOA	Carta de acuerdo	Letter of Agreement
MET	Servicios meteorológicos para la navegación aérea	Meteorological services for air navigation
NOTAM	Aviso a los aviadores	Notice to airmen
OACI/ICAO	Organización de Aviación Civil Internacional	International Civil Aviation Organization
PANS ATM	Procedimientos para los servicios de navegación aérea – Gestión de tránsito aéreo	Procedures for Air Navigation Services –Air traffic management
PIRG	Grupo regional de planificación y ejecución	Regional planning and implementation group
PROSAT	Pronóstico de saturación	PROSAT
RNAV	Navegación de área/Area Navigation - RNAV Route: Ruta de navegación de área	Area navigation route
RNP	Performance de navegación requerida	Required navigation performance
SID	Salida normalizada por instrumentos	Standard instrument departure
STAR	Llegada normalizada por instrumentos	Standard instrument arrival
SYNCHROMAX	SYNCHROMAX	SYNCHROMAX
TBD	A ser determinado	To be determined
TELCON	Tele-conferencia	Telephone conference
TFMS	Sistema de gestión de la afluencia del tránsito (previamente, ETMS)	Traffic Flow Management System (previously called ETMS)
TMA	Área de control terminal	Terminal control area
TMC	Coordinador de la gestión del tránsito	Traffic Management Coordinator
TMI	Iniciativa de gestión del tránsito	Traffic management initiative
TWR	Torre de control	Control tower
WSO	Oficina del Servicio Meteorológico	Weather Service Office
WWW	Red mundial	World Wide Web

Appendix A

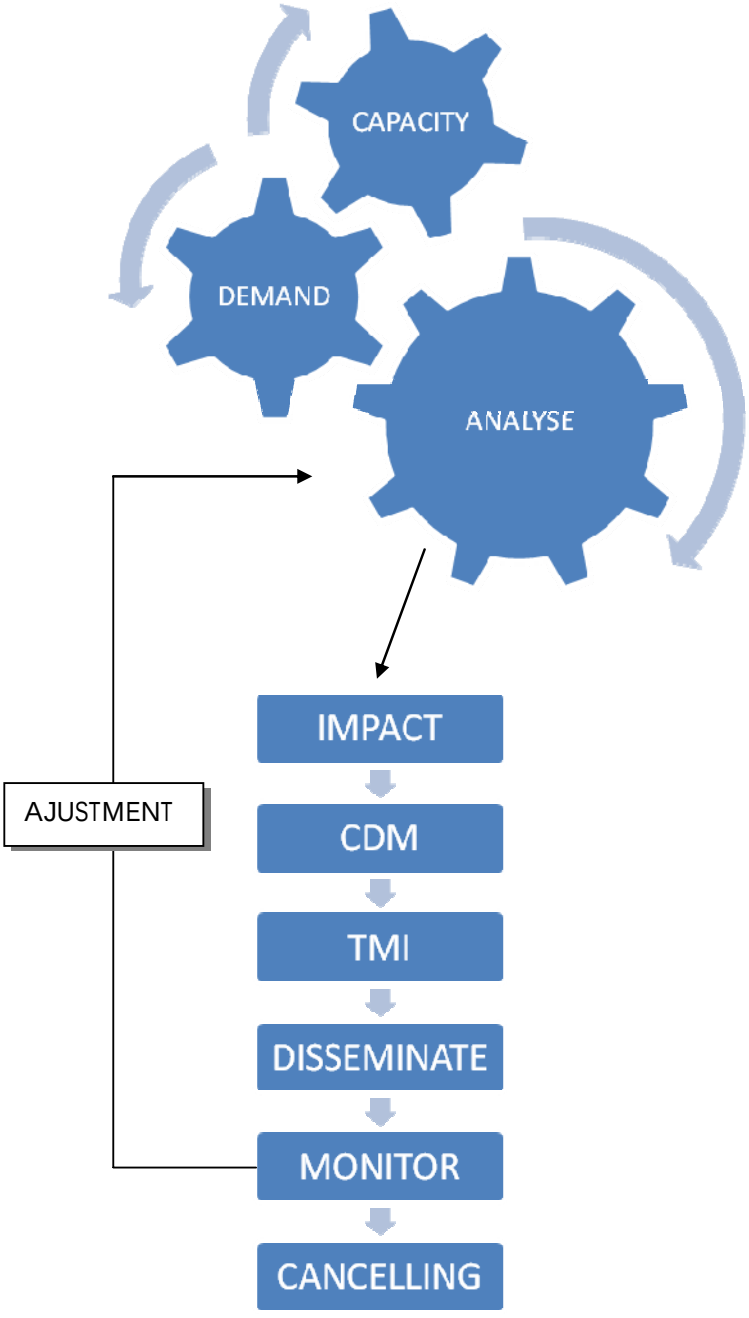
Trinidad and Tobago Civil Aviation Authority

Flow Diagram of Piarco Flow Management Unit



Appendix B

FLOW CHART ATFM ANALYSES



Appendix C

Insert Screen shot files of SYNCHROMAX, PROSAT and TFMS

Appendix D

INTERNATIONAL OPERATIONS
PLANNING TELCON FORMAT

_____ Greeting and introduction
xxxxZ planning telcon, working from advisory xxx
Covering the timeframe from xxxx UTC to xxxx UTC

_____ Common Weather Products – working from
1) the ICAO Area "A" Prog Chart, valid xxxx UTC for (Date)
2) the ICAO Area "A" IR Satellite photo, xxxx UTC for (Date)

_____ Planning discussion -- Work from south to north then from the Caribbean to the Pacific (east to west)

Significant weather and atmospheric conditions
Thunderstorm activity
Turbulence
Volcanic ash clouds

Terminal discussion
For select aerodromes:
Airport/Sector Capacities
Projected terminal demand
Aerodrome constraints, such as construction projects or NAVAID outages

Anticipated traffic management initiatives (TMIs)
Expanded miles-in-trail
Potential airborne holding
Potential ground stops

Enroute discussion
Enroute constraints, such as frequency outages or
NAVAID outages
Route discussion and issues
Anticipated TMIs
Expanded miles-in-trail
Potential airborne holding

_____ Additions to the plan, including any pertinent tactical updates.

_____ Stakeholder input, comments, and questions

_____ Next International Planning Telcon: xxxxZ

APPENDIX E

STATE QUESTIONNAIRE REGARDING THE USE OF AERONAUTICAL STUDIES TO DETERMINE AN ACCEPTABLE LEVEL OF SAFETY OF AIRCRAFT OPERATIONS AT AERODROMES

The objective of this questionnaire is to help us establish criteria for the use of aeronautical studies in the aerodromes and ground aids (AGA) field to determine an acceptable level of safety at aerodromes where permitted by the aerodrome specifications contained in Annex 14 — *Aerodromes* Volume I — *Aerodrome Design and Operations.*

1) Does the aerodrome legislation in your State allow you to conduct an AGA aeronautical study to assess the impact of deviations from the aerodromes specifications contained in Vol. I to Annex 14 to the Convention on International Civil Aviation and National Regulations?
2) Does the aerodrome legislation in your State consider AGA aeronautical studies to evaluate acceptable means of ensuring the safety of aircraft operations and assess the effectiveness of each means and recommend procedures to compensate for the deviation from the specifications and National Regulations?
3) Does your State's aerodrome legislation provide with sufficient guidelines for technical analysis in order to provide justification for a deviation from the specifications and National Regulations on the grounds that an equivalent level of safety can be attained by other means?
4) Is there any specific aeronautical study carried out in the AGA field that has been validated by the regulatory authority in your State?

5) If your answer to question 4 is yes, would your State be willing to share your experience in this specific topic in a seminar/workshop organised by ICAO?
6) In case your answer to question 2 was negative, would your State consider useful including the concepts mentioned in questions 2 and 3 in your aerodromes legislation?
7) If your State is interested in guidelines to generate legislation on AGA aeronautical studies, what technical criteria would you consider useful?
8) An aeronautical study is a study of an aeronautical problem to identify possible solutions and select a solution that is acceptable without degrading safety. In case of an aeronautical study that has been approved by the authority and an accident has occurred in relation to the deviation of a specific specification and/or National Regulation, this generates responsibility with the parties involved and the authority. What is the opinion of your State regarding this issue?
9) Do you consider that aeronautical studies are useful in the aerodrome certification process, as long as they are validated by the State aerodrome authority?
10) Are there any comments your State would like to contribute regarding AGA aeronautical studies?

SURVEY ON AIRPORT DEMAND/CAPACITY FOR CIVIL AVIATION AUTHORITIES AND STATE'S AIRPORT OPERATORS IN SUPPORT TO THE GREPECAS AGA/AOP SUBGROUP TASK FORCE ON AIRPORT DEMAND/CAPACITY

AIRPORT DEMAND/CAPACITY APPROACH AND APRON MANAGEMENT SERVICE

STATE: _____

1. Does your airport(s) comply with ICAO standards specified in Doc 9830-AN/452 – "*Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual (Doc 9830)*" or any other ICAO document?

Yes ☐ **No** ☐

2. Does your airport(s) comply with regulations issued by the civil aviation authority for apron management service or by regulations coming up from the airport authority?

3. Do you keep apron accident/incident statistics?

Yes ☐ **No** ☐

4. Does your airport(s) comply with procedures recommended by ACI or ACI-LAC for apron management service?

Yes ☐ **No** ☐

5. Who operates the apron management service at your airport(s) ?

6. a) Does your airport(s) account for SMS?
b) Does the SMS take into consideration these aspects?

	Yes	**No**
a)	☐	☐
b)	☐	☐

7. Do airlines comply with the regulations issued by the civil aviation authority, or by the airport authority?

8. Do airlines hire third party services for apron management service under the supervision of the airport authority, in compliance with its regulations or through airlines own regulations?

9. Are the results of accident/incident investigation occurring at aprons known by all parties involved with apron management services? Is full information provided to the airport administration or just only part of it?

10. Which parameters do you use to verify apron management service performance? Is there an SMS implemented taking this into consideration?

11. Who is responsible for aircraft movements at aprons? The airport administration, the aerodrome control or the pilots itself?

12. Who is responsible for ground vehicle movements at aprons? The airport administration, the aerodrome control, or any other organization(s)?

13. Who is responsible for aircraft stand allocation? The airport administration or another organization?

14. Who is responsible for aircraft arrival/departure times at aprons? The airport administration, the aerodrome control, or any other organization?

15. How does the airport administration communicate with the aerodrome control?

16. At your airport(s), which are the factors that influence apron capacity? Is the apron area sufficiently large, complex or busy most of the time? Is there any problem regarding dissemination of information to operators? Please indicate other measures implemented at your airport.

17. Does your airport experience congestions or problems related to demand/capacity at aprons? And what about other airport movement areas?

18. How would you consider the safety level at the apron(s) in your airport(s)? High, Medium or Low.

19. Do you consider feasible for GREPECAS AGA/AOP/SG Task Force on Airport Demand/Capacity to take into consideration these aspects related to demand/capacity and safety aspects at airports?

20. Do you have any other contribution on the subject of demand/capacity at airports, particularly in respect of the responsibilities of different parties involved on apron management service?. (Regulations from the authority, airport administration, control tower, airlines, others, etc.)?

– – – – – – – – – – – – – – – –

ROADMAP FOR THE TRANSITION FROM AIS TO AIM

Noted by the Air Navigation Commission on 10 March 2009

FOREWORD

The *Global Air Navigation Plan* (Doc 9750) was developed as a strategic document to guide the implementation of CNS/ATM systems with respect to the *Global Air Traffic Management Operational Concept* (Doc 9854) and the Strategic Objectives of ICAO.

The *Global Air Navigation Plan* (Doc 9750) contains near- and medium-term guidance on air navigation system improvements necessary to support a uniform transition to the air traffic management system envisioned in the *Global Air Traffic Management Operational Concept* (Doc 9854). More specifically, Doc 9750, Chapter 1, Table 1-1 sets out twenty-three global plan initiatives (GPI). Two are directly related to aeronautical information (*GPI-18 Aeronautical Information and GPI-20 WGS-84*) and many of the others have an indirect impact on the way aeronautical information will be exchanged in the future.

This roadmap has been developed to address more specifically, and in greater detail, the direction given in Doc 9750 for the future development of aeronautical information. The changes foreseen are such this development is being referred to as the transition from aeronautical information services (AIS) to aeronautical information management (AIM).

The roadmap offers practical guidance and advice to regional planning groups and States for development of the implementation and funding strategies which will be required for the global plan initiatives related to aeronautical information. It identifies the major milestones recommended for a uniform evolution across all regions of the world, specific steps that need to be achieved and timelines for implementation.

The roadmap is intended to serve as a strategic positioning initiative to drive the continuing improvement of aeronautical information services in terms of quality, timeliness and the identification of new services and products to better serve aeronautical users. The roadmap sets a baseline for establishing strategies and other initiatives to advance the AIM objectives globally. It should place the future AIM in a position to better serve airspace users and ATM in terms of their information management requirements.

The expectations are that the transition to AIM will not involve many changes in terms of the scope of aeronautical information to be distributed. The major change will be the introduction of new products and services and an increased emphasis on better data distribution in terms of quality and timeliness in order to meet user requirements and contribute to improved safety, increased efficiency and greater cost-effectiveness of the air navigation system.

TABLE OF CONTENTS

GLOSSARY

TERMS

Aeronautical data. A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

Aeronautical information. Information resulting from the assembly, analysis and formatting of aeronautical data.

[1]***Aeronautical information management (AIM).*** The dynamic, integrated management of aeronautical information services — safely, economically and efficiently — through the provision and exchange of quality assured digital aeronautical data in collaboration with all parties.

[1]***Data set.*** Identifiable collection of related digital data.

[1]***Database.*** A usually large collection of data stored in structured digital format so that appropriate applications may quickly retrieve and update it.

Note. — This primarily refers to digital data (accessed by computers) rather than files of physical records.

[1]***Digital***. Involving or relating to the use of computer technology or digital communications.

[1]***Information management (IM).*** The processes defined to ensure the collection, utilization and transmission of quality data which is tailored for the needs of each component of the air traffic management system.

[1]***Interoperability.*** The capacity for diverse systems and organizations to exchange information by transferring data and requesting remote services in a manner that requires the client system to have little or no knowledge of the unique characteristics of the server system.

Note.— This is usually achieved by common understanding of the semantic, the syntax and the protocols for the exchange of data.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

[1]***Metadata***. A structured description of the content, quality, condition or other characteristics of data.

---

1 Not an official ICAO definition. (Used in the context of this document only).

ABBREVIATIONS/ACRONYMS

AICM	Aeronautical information conceptual model
AIM	Aeronautical information management
AIP	Aeronautical information publication(s)
AIRAC	Aeronautical information regulation and control
AIS	Aeronautical information services
AIXM	Aeronautical information exchange model
AN-Conf/11	Eleventh Air Navigation Conference (2003)
ATM	Air traffic management
EUROCONTROL	European Organisation for the Safety of Air Navigation
IP	Internet protocol
PIB	Pre-flight information bulletin
RNAV	Area navigation
RNP	Required navigation performance
SARPs	Standards and Recommended Practices
WGS-84	World geodetic system-1984

Part I

Roadmap Overview

WHY AERONAUTICAL INFORMATION MATTERS

1. The Eleventh Air Navigation Conference (AN-Conf/11) held in Montreal in September 2003 endorsed the operational concept and recognized that, in the global air traffic management (ATM) system environment envisioned by the operational concept, aeronautical information service (AIS) would become one of the most valuable and important enabling services. As the global ATM system foreseen in the operational concept was based on a collaborative decision-making environment, the timely availability of high-quality and reliable electronic aeronautical, meteorological, airspace and flow management information would be necessary. Some recommendations of AN-Conf/11 addressed the importance of aeronautical information in particular.

2. In June 2006, a Global AIS Congress was held in Madrid, Spain. The event was facilitated by the European Organization for Safety of Air Navigation (EUROCONTROL) in partnership with ICAO. The congress considered the essential role of AIS in the evolving world of ATM. It noted that computer-based navigation systems, and area navigation (RNAV), required navigation performance (RNP) and ATM requirements, introduced a need for new corresponding AIS requirements for quality and timeliness of information. The role of AIS would need to transform to an information management service, changing duties, responsibilities and scope to satisfy these new requirements and to cope with and manage the provision of information.

3. The congress supported the recommendations of AN-Conf/11 dealing with aeronautical information, and began to define a future high-level view as to the shape, nature and content of a strategy for the evolution from traditional product-centric AIS to the enlarged scope of data-centric aeronautical information management (AIM). Realizing the safety-critical nature of aeronautical information, the congress agreed that, in order to prevent diverging developments in the future, it was considered essential that ICAO take the lead at the global level with regard to the transition from AIS to AIM. Accordingly, the congress developed ten recommendations calling for ICAO action or support from States and international organizations.

4. In September 2007, the 36th Session of the Assembly recognized the need to support the recommendations of the congress and called for further coordination with States and international organizations.

5. Today, high-quality aeronautical information is often cited in research programmes as a pre-requisite for the development of the many new interoperable tools that future aircraft will carry to improve their effectiveness in navigating safely and efficiently. These new tools will also be used by ATM systems to improve the efficiency while maintaining safety. This will result in the provision of more services to more aircraft in the same airspace at the same time.

HOW INFORMATION IS DISTRIBUTED TODAY

6. We are in the age of the Internet, satellite navigation and computer networks, yet our approach to aeronautical information distribution is still based on paper charts, paper documentation and telex-based text messages. Systems exist in isolation. Much of the data is entered more than twice in different computers using a keyboard rather than via file transfer or database transactions.

7. Better aeronautical information is essential if we are to have an integrated and interoperable ATM system which enables air navigation service providers to safely handle more traffic in the same amount of space during the same amount of time. Such a system would effectively link the full range of services from airspace design to flight planning, airport operations planning and flight separation assurance while continuing to maintain the safety and security of the travelling public and lessening the environmental impact on the planet and its population.

8. Better aeronautical information is essential if we are to have a flexible ATM System which reduces costs and environmental impacts while improving access to congested airspace and remote airports in developing countries. Such a system would allow planners and decision makers to make the right decisions for the development of new tools and techniques based on information of the right accuracy, available on time at the right place.

9. Better aeronautical information is essential if we are to have a system that empowers airspace users by giving them a greater role in shaping the ATM system, understanding their options and helping them making informed decisions while maintaining the public safety and minimizing the impact on the environment. Such a system would be focussed on users needs.

10. Corrupt or erroneous aeronautical information has the potential to adversely affect the safety of satellite navigation just as corrupt or malfunctioning navigation aids adversely affects the safety of ground-based navigation.

11. These improvements are central to the ICAO Global Air Traffic Management Operational Concept and justify by themselves the name change from AIS to AIM that identifies the new focus on all aspects related to proper information management as opposed to the traditional way of focusing on the provision of standard products to the pilot only.

THE OBJECTIVE OF THE TRANSITION TO AIM

12. Recommendation 1/8 of AN-Conf/11 clearly stated the objective for global aeronautical information as follows:

> "That ICAO, when developing ATM requirements, define corresponding requirements for safe and efficient global aeronautical information management that would support a digital, real-time, accredited and secure aeronautical information environment".

13. The Global Air Traffic Management Operational Concept, which had been developed to be visionary in scope and not constrained by the level of technology available at the time, was also endorsed by AN-Conf/11.

14. Much has been done in the community, and the technology has become more mature and more widely deployed. However, some regions are more advanced than others and the need for the adoption of global standards is becoming more evident now than it was in 2003. Present and future navigation systems, and other air traffic management systems, are data dependant. All require

access to global, broad-based aeronautical information of a considerably higher quality and timeliness than is generally available today. The provision of aeronautical information is a core process that underpins all elements of ATM.

15. To satisfy new requirements arising from the Global Air Traffic Management Operational Concept, aeronautical information services must transition to a broader concept of aeronautical information management, with a different method of information provision and management given its data-centric nature as opposed to the product-centric nature of AIS.

WHAT WILL CHANGE

16. The Global Air Traffic Management Operational Concept defines seven interdependent concept components that will be integrated to form the future ATM system. They comprise airspace organization and management, aerodrome operations, demand and capacity balancing, traffic synchronization, conflict management, airspace user operations and ATM service delivery management. The order of these components implies no priority.

17. The management, utilization and transmission of data and information are vital to the proper functioning of these components. The exchange and management of information used by the different processes and services must ensure the cohesion and linkage between the seven concept components described above.

Users

18. The provision of aeronautical information today is mainly focused on the requirements of pre-flight briefing. The provision of aeronautical information tomorrow will address the requirements of all components of the ATM system for all phases of flight.

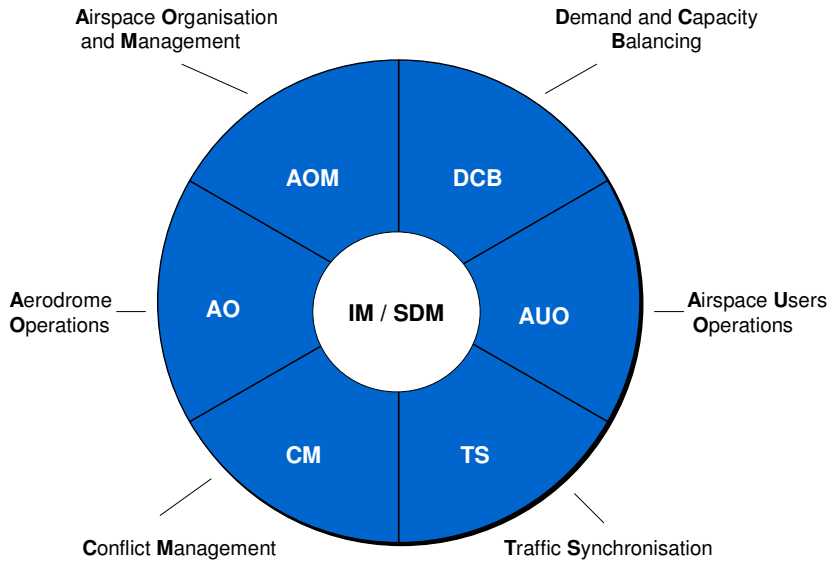


Figure 1. Information Management as a component of the future ATM Operational Concept

Data

19. The shift from standardizing products to standardizing data will enable more freedom in the definition of future products while maintaining a high degree of quality, integrity and coherency of the information contained in these new products.

20. The biggest change in the transition to AIM will be the increase use of computer technologies in the management of information. This will be materialised by an increased emphasis on the digital form of data that will drive all processes for the management of information.

21. Both graphical and text products will be based on the same underlying, standard definition of geo-referenced atomic data. The definition of a standard aeronautical data exchange model will ensure standardized interfaces between computers of providers and users of data. This will enable the definition of new products where both text and graphics will be presented in a more readable form. This will enable the definition of new services where the same information will be made available in the decision support tools for all ATM components.

22. The current standard in Annex 15 — *Aeronautical Information Services* is centred on products and does not provide specifications required for digital data exchange. A central element in the transition to AIM will be the precise standardization of atomic data elements in terms of field names, field types and field definitions. This will be provided in the form of a standard aeronautical data dictionary (also called metadata registry). Furthermore, the definition of standard structured groupings of fields by features, attributes and associations is necessary. This will be provided in the form of a standard conceptual model for aeronautical information. Finally, the mechanisms to maintain a data set, up to date across different components, would need to be agreed. This will be provided in the form of a standard exchange model for aeronautical data. The evolution of these models will be organised at the global level to ensure continuity in the services in a way that allows innovation and new requirements to be taken into account.

23. By using this approach, the definition of the data products is decoupled from definition of the usage for the end products. The end-user applications which make use of the information transferred in the form of data sets do not rely exclusively on the structure and format of the messages, but are free to transform the data and combine it with other data to construct the final view appropriate for the end user.

Products

24. Pre-flight information bulletins are often loaded with information not relevant to the flight because of the limited filtering capabilities that the current NOTAM format is offering. Pre-flight briefings are often also difficult to read and interpret because of the lack of graphical capabilities of the current NOTAM format. This will require that new standard products combining textual and graphical information be specified.

25. Electronic chart displays are becoming easier to install in the cockpit and at lower costs. Their functionality is increasing and it is likely that they will progressively complement some paper charts and replace others. This will require updated standards and symbols for electronic displays capabilities.

26. The future capabilities of transferring digital data between the air and the ground will be used for providing new products such as In-flight information bulletins by uploading aeronautical and meteorological information directly aboard the aircrafts at all phases of flight.

27. The AIM concept requires that all aeronautical information, including that currently held in aeronautical information publications (AIP), be stored as individual standardized data sets to be accessed by user applications. The distribution of these data sets will define the new services provided by the future AIM. This will constitute the future Integrated Aeronautical Information package that will contain the minimum regulatory requirement to ensure the flow of information necessary for the safety, regularity and efficiency of international air navigation.

Static versus dynamic information

28. Stability is essential for proper planning of airspace operations. Examples of changes that must be announced well in advance are: the installation or decommissioning of ground-based air navigation aids; the opening of a new aerodrome for international flight operations; airspace danger and restricted areas; and the route structure for major traffic flows.

29. Events of short duration or known with little advance notice are inevitable occurrences. These events must be announced quickly in a manner that is comprehensible by the different components of the ATM system.

30. In an interoperable environment based on data standards, these two types of information will be transferred by common networks under the same data exchange mechanisms using the same data standard definitions.

AIRAC cycle

31. It is expected that the need for aeronautical data to become effective on internationally agreed common dates will remain. Coordination and planning constraints require major changes to be announced well in advance and introduced only at regular intervals.

32. The quality and integrity requirements of databases will define new roles for human intervention such as verification, monitoring and correction before releasing new data.

33. The current cycle is essentially based on the maximum expected time for postal delivery of the paper products. The distribution of data products through data networks will not suffer from the same delay in delivery. Shorter cycles will become possible to better match users needs. Transitioning to a modern distribution mechanism will mean that the specifications for new concepts of operation need not be constrained to a twenty-eight-day cycle. The future ATM system will be free to identify a better cycle that will adequately balance the need for improved reactivity with the need for advanced planning.

EIGHT GUIDING PRINCIPLES FOR THE TRANSITION TO AIM

34. The projects undertaken to achieve the steps identified in the roadmap must be specified and conducted in accordance with the following eight guiding principles. The transition from AIS to AIM will have to:

1. comply with the process for amendments to the Annexes to the Chicago Convention;

2. support or facilitate the generation and distribution of aeronautical information which serves to improve the safe and cost-effective accessibility of air traffic services in the world;

3. provide a foundation for measuring performance and outcomes linked to the distribution of quality assured aeronautical information and a better understanding of the determinants of ATM, safety and effectiveness not related to the distribution of the information;

4. assist States to make informed choices about their aeronautical information services and the future of AIM;

5. build upon developments in States, international organizations and industry and acknowledge that the transition to AIM is a natural evolution rather than a revolution;

6. provide over-arching and mature standards, that apply to a wide range of aeronautical information products, services and technologies;

7. be guided by the *Global Air Navigation Plan* (Doc 9750) and ensure that all development is aimed at achieving the ATM system envisaged in the *Global Air Traffic Management Operational Concept* (Doc 9854);

8. ensure, to the greatest extent possible, that solutions are internationally harmonized and integrated and do not unnecessarily impose multiple equipment carriage requirements for aircraft or multiple systems on the ground.

THE ROADMAP TO AIM

35. The purpose of the roadmap is to develop the AIM concept and associated performance requirements by providing a basis upon which to manage and facilitate, on a worldwide basis, the transition from AIS to AIM. The roadmap is based on what we know today but has been developed to provide sufficient flexibility for the new concepts that will emerge from future research.

36. Three phases of action are envisaged for States and ICAO to complete the transition to AIM:

Phase 1 — Consolidation

Phase 2 — Going digital

Phase 3 — Information management

37. The roadmap must proceed with caution when advocating more sophisticated information management initiatives to ensure that they do not impede the obligations of States to correct infrastructure and other deficiencies already identified.

38. In the first phase, existing standards will need to be refined and strengthened and their implementation in all States ensured. This will concern mainly: quality requirements; AIRAC adherence; the implementation of the adopted standard reference system for coordinates (World Geodetic System-1984); and the provision of terrain and obstacle data. The projects in the first phase will be conducted to identify potential gaps in order to focus on near-term work programme activities.

39. In the second phase, the introduction of database-driven processes will improve the value of current products by improving their quality and availability for current users. This will concern mainly the creation of a national or regional databases used to produce the existing products and services, but with better quality and availability. The global deployment of new, already well specified products

such as electronic AIP will also be initiated. The projects in the second phase will be conducted to enhance the quality and availability of existing products in the medium-term work programme activities.

40. In the third phase, new products and services will be developed. Quality control and staff training and planning will be applied to current and new products and services. This will support a new AIM function for air navigation service providers which will enable the provision of the new data that will be required by the future ATM components. The projects in the third phase will be conducted to serve new users and to promote continuous improvement by the research community.

41. The roadmap will identify the main steps to be achieved in the three phases. Each step will require projects of two types of activities: one will be the development of the standards required and the other will be the implementation in States of the standards.

a) ***Development of Standards.*** The development of new standards often lie on the critical path of the transition. Amendments to ICAO Standards and Recommended Practices (SARPs) are required for uniform implementation of the transition to AIM in all States. Actions related to the establishment of these standards in Annexes to the Chicago Convention and in guidance material will be led by the ICAO Secretariat with the support of States and International Organisations.

b) ***Implementation of Standards.*** Implementation of Standards allowing the transition to AIM will be the responsibility of States. Guidance material will be issued by ICAO to assist in the implementation.

42. Part II of the roadmap lists numerous steps of varying complexity. Some will result in the establishment of new databases or the expansion of existing ones. Others will seek to foster better data and technical standards for gathering information and data protection. Still others will focus on obtaining consensus on the indicators and determinants of quality aeronautical information. Almost all of the projects will involve collaborative efforts with key stakeholders at the national, regional and inter-regional levels. Securing stakeholder participation at the outset of the process and maintaining it throughout the project implementation phase are critical to ensuring that outcomes are relevant, practical and contribute to improving the efficiency and safety of air travel and of the ATM system.

43. Accordingly, consultations through various ICAO working arrangements have been and will remain an ongoing feature of the roadmap. The input and feedback of all players is key to ensuring that the roadmap contributes to better aeronautical information and a stronger ATM system for the air transport industry.

Phase 1 — Consolidation

44. During Phase 1 of the transition to AIM, steps will aim to strengthen a solid base by enhancing the quality of the existing products. Fine-tuning and improvement of SARPs for existing products will continue to be conducted in the usual manner in order to respond to near-term user requirements.

45. Since the electronic AIP will have the exact same structure as the paper it is important that States make every effort to issue their aeronautical information as specified in Annex 15.

46. The NOTAM system as it exists today requires on-going upgrades to cope with new types of information (e.g. GNSS navigation) and to respond to the difficulties being reported by the users. It is not clear at this time when and how the current NOTAM system will be changed. Research and trials are underway and their results will be addressed in Phase 3 of the transition to AIM or later. It

is important to continue to improve the current SARPs related to NOTAM to better serve users needs with the current products. It is also important for States to continue to invest the time and effort necessary to comply with these SARPs.

47. Many ICAO charts types form an integral part of the AIP. Amendments to specifications are also envisaged for electronic chart display but most of the SARPs in Annex 4 — *Aeronautical Charts* will remain applicable after the transition to AIM. It is important that States comply with the existing Annex 4 SARPs.

48. The requirement to use a common horizontal, vertical and temporal reference system remains essential to facilitate the exchange of data between different systems. The expression of all coordinates in the AIP and charts using WGS-84 is important and should be pursued during the first phase of the transition to AIM.

49. Provision of terrain and obstacle data becomes applicable during Phase 1 of the transition to AIM. It will be an important project to be conducted by States. Feedback from States on the implementation experience may require adaptation of the relevant SARPs. Since these constitute also digital data sets products, the achievement of these steps will also contribute to phase 2 of the roadmap.

50. Quality requirements on information are covered by current SARPs in terms of accuracy and integrity. The steps in Phase 1 aim to meet these requirements. Should the requirements prove to be difficult to implement, the requirements would have to be reassessed to verify that the risk of harm to persons or damage to property for not achieving the requirements is reduced to, and maintained at or below, an acceptable level (definition of safety). In addition, States will implement and continuously improve their quality management system in view of its increasing importance for future products and services.

51. The requirement for States to adhere to the Aeronautical Information Regulation and Control (AIRAC) process must be emphasized. The quality of the future service to be provided under information management will rely on proper mechanism for distribution and synchronisation of information. Shorter response times will be required in the future. This can only be achieved if the current requirements can, at the very least, be met.

Phase 2 — Going digital

52. During Phase 2 of the transition to AIM, the main focus will be on the establishment of data-driven processes for the production of the current products in all States. States which have not yet done so will be encouraged “to go digital” by using computer technology or digital communications and introducing the use of structured digital data from databases in their production processes. The emphasis will not, therefore, be on the introduction of new products or services but more on the introduction of highly structured databases and tools like geographic information systems.

53. An aeronautical information conceptual model will provide guidance for States to implement such digital databases. Guidance material will include advice on a minimum data set to begin a phased development of the database.

54. Many States are already providing electronic forms of their AIPs, whether on CD or on the Internet. These electronic AIP may be accessible for printing and/or for navigation via a web browser tool. Guidance material that will be based on existing best practices will be provided to States to ensure that new types of media will be harmonized for users.

Phase 3 — Information management

55. During Phase 3, the digital databases that will have been introduced in Phase 2, will be used for the transfer of information in the form of digital data. This will require the adoption of a standard aeronautical data exchange model to ensure interoperability between all systems for the exchange of full aeronautical data sets, but also for short term notification of changes.

56. As new products are introduced, organisational changes will need to be defined to implement better management of information in terms of: staff planning and staff training; formalization of agreements with data providers to ensure high degree of data quality; introduction of an extensive amount of explicit meta-information; impact on cost-recovery mechanisms; and explicit traceability of the changes to information and identification of liabilities.

57. The third phase will place the future AIM functions of the States in capacity of addressing the new requirements that will be needed to implement the future Global Air Traffic Management Operational Concept in a net-centric information environment.

58. ATM systems will require a common information reference model with quality procedures for the management of seamless information flow to ensure not only interoperability between States, but interoperability between different systems within the State. New digital data products and services will be specified to serve these interoperability requirements.

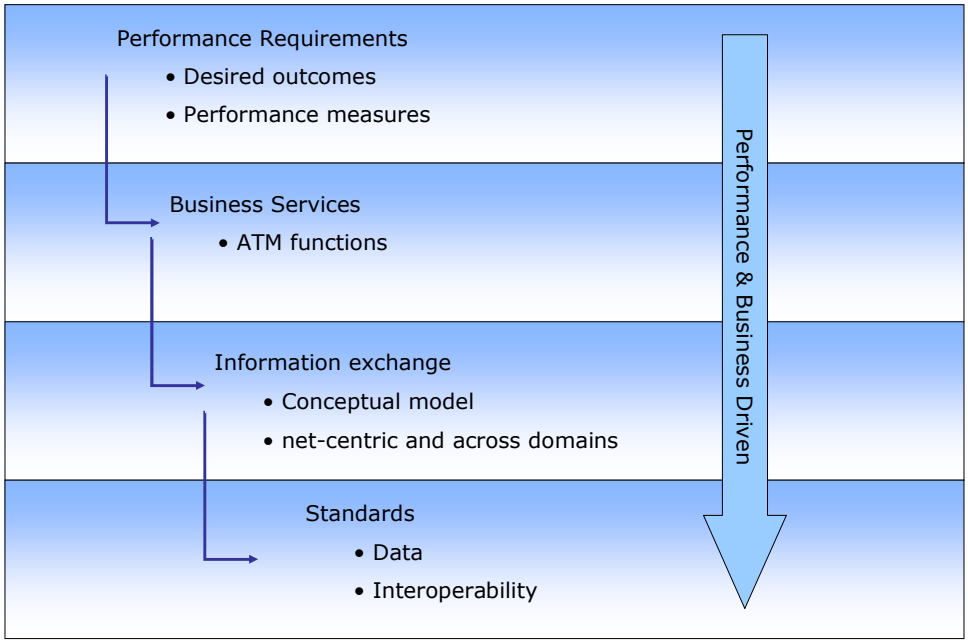


Figure 2. Performance driven approach.

59. The definition of new AIM data products and services will be based on requirements identified for each ATM Component. A structured approach to the development of these new requirements on AIM will be followed to ensure that any standards recommended for AIM is derived from agreed information exchange models that specify the minimum information required to support business services defined for ATM functions that are identified to fulfil desired outcomes specified in terms of performance requirements. This structured top-down approach of deriving specific data

standards from high level objectives will ensure that the new requirements introduced in the transition to AIM on States will clearly relate to identified enablers for the future ATM system as illustrated in Figure 2.

The regional dimension

60. During the complex transition to AIM, industry, regulators, manufacturers, service providers and other organizations will need to work together to achieve the best results.

61. In Europe, the SESAR Master Plan and the Single European Sky initiatives have assembled a multitude of partners to define a modernization programme to significantly reduce costs and increase service capabilities.

62. In United States of America, the NextGen programme is also underway to modernize the national air transportation system to allow increased capacity and reliability, while improving safety and security and minimizing the environmental impact of aviation.

63. In many parts of the world States are grouping their resources to introduce new equipment and new structures for the provision of common services over their common airspace.

64. These are only three of the many examples of modernization programmes that are underway in different regions of the world. All initiatives are primarily directed towards improving safety and security and minimizing the environmental impact of aviation. They all seek a more efficient and reliable exchange of information between the various components of the future ATM system. They refer to new concepts such as system-wide information management, increased automation for collaborative decision making, better integration of systems and 4-D trajectory, to name just a few.

65. These initiatives are all using the Global Air Traffic Management Operational Concept as a guide to ensure a common reference. They are referring to the Global Air Navigation Plan as a common planning framework. All of these initiatives need some assurance of stability in the development of new techniques. This is the purpose of the Global Air Navigation Plan and this roadmap.

66. This roadmap provides a structured framework for States to plan and to monitor their progress with reference to other States in the same region and across regions of the world and supports regional and national plans to implement the transition to AIM.

67. It is not the intention that this roadmap could be used without addition to form a national or a regional plan. No milestones nor description of deliverables are provided in the roadmap, since these will be included via the usual planning process.

Part II

Roadmap Steps

INTRODUCTION

68. The roadmap overview provides the strategic direction and major principles for the transition to AIM. Three phases have been introduced in Part I of this document, the three phases are not to be followed in a waterfall approach to each of the phases. For example, steps may be taken to introduce the digital elements while the consolidation steps are not all finalised yet. Similarly, it is not necessary that all steps for going digital be achieved to start introducing new measures related to information management. The phases are however giving an indication of the priorities on how to address the transition.

69. A minimum list of major steps to achieve in order to realise the transition to AIM is provided in Part II. A broad positioning of the steps in relation with the three phases is also provided. The transition to AIM will be effective at the global level when these steps will be achieved. Most steps in Phase 2 and 3 of the transition require new standards and recommended practices to be adopted at the global level, an indication of the time required for these new texts to be made available is provided in Part III.

STEPS

70. The steps listed in Part 2, constitute a minimum list of areas of activities for States to coordinate the transition to AIM between themselves and with ICAO. The steps are to be taken as a checklist of high level actions to be conducted for realising the transition. Failing to take action on any of those steps would necessarily increase the duration of the transition and negatively affect the enabling role of AIM in the future ATM Concept of operation.

71. The list may evolve during the transition especially when we get closer to Phase 3. This roadmap will be maintained up-to-date with the further evolution of the overall ATM concepts and system requirements.

P-01 — Data quality monitoring

P-02 — Data integrity monitoring

P-03 — AIRAC adherence monitoring

P-04 — Monitoring of States' differences to Annex 4 and Annex 15

P-05 — WGS-84 implementation

P-06 — Integrated aeronautical information database

P-07 — Unique identifiers

P-08 — Aeronautical information conceptual model

P-09 — Aeronautical data exchange

P-10 — Communication networks

P-11 — Electronic AIP

P-12 — Aeronautical information briefing

P-13 — Terrain

P-14 — Obstacles

P-15 — Aerodrome mapping

P-16 — Training

P-17 — Quality

P-18 — Agreements with data originators

P-19 — Interoperability with meteorological products

P-20 — Electronic aeronautical charts

P-21 — Digital NOTAM

P-01 — Data quality monitoring

An ongoing challenge for organizations producing information is to ensure that the quality of the information produced suits its intended uses, and that data users are provided the appropriate information about data quality.

P-02 — Data integrity monitoring

Data integrity requirements introduced by safety objectives must be measurable and adequate.

P-03 — AIRAC adherence monitoring

The standard regulation and control mechanisms for the distribution of aeronautical information is an essential element ensuring that each person involved makes decisions based on the same information.

P-04 — Monitoring of States' differences to Annex 4 and Annex 15

Adherence to Standards is an ongoing effort. The transition to AIM offers an opportunity to increase the focus on implementation and on reviewing differences in application of the Standards by States.

P-05 — WGS-84 implementation

The target of expressing one hundred per cent of coordinates in the WGS-84 reference system is achievable. This is one of the first steps to achieve in the transition to AIM.

P-06 — Integrated aeronautical information database

The establishment and maintenance of a database where digital aeronautical data from a State is integrated and used to produce current and future AIM products and services is the main step in phase 2 of the transition to AIM.

A database may be operated by States or by regional initiatives under delegation from the States. The design of such a database will not be identical in all States or regions to accommodate local technical or functional requirements. However, the material that will be provided under step P-08 will provide guidance that may be used to validate the design for facilitating the future data exchange.

P-07 — Unique identifiers

Improvements to the existing mechanisms for the unique identification of aeronautical features is required to improve the effectiveness of information exchange without the need for human intervention.

P-08 — Aeronautical information conceptual model

Defining the semantics of the aeronautical information to be managed in terms of digital data structures is essential for introducing interoperability.

The existing documentation developed by States and international organizations considered mature enough for global applicability will be used to produce common guidance material. This may serve as a reference for the database design needed in P-06 for States that do not yet have a database.

New information requirements coming from the Global Air Traffic Management Operational Concept will be analyzed and modelled if needed (e.g. airspace sectors, or information related to airspace and route traffic restrictions, or generic information related to aircraft performance, or information related to airline operators call signs).

P-09 — Aeronautical data exchange

Defining the syntax of the aeronautical data to be exchanged in terms of field names and types is essential for introducing interoperability.

The exchange of data, and the mechanisms to exchange or access the new digital products or services, will be defined by an exchange model. The content of the model will be driven by the aeronautical information conceptual model (top-down)

and by requirements coming from technological choices (bottom-up) and the evolution of the model will be coordinated in order to balance the need for innovation with the need for protecting investments.

The use of the Internet as a communication media is, for example, one important bottom-up driver in the definition of the model. The use of well established geographic information standards also applied in non aeronautical domains is another important technological choice.

P-10 — Communication networks

More data will be exchanged on ground networks and the current data will be exchanged in a form that will require more bandwidth. It is envisaged that a transition of the network to be based on Internet protocol (IP) will be required to cope with these future needs. for the transition to AIM to be effective, the needs of future AIM will have to be declared in terms usable for network specification. Which data network will be used to distribute the new data products and services;, what information can be exchanged via the public Internet; and what information requires a secured network reserved for aviation are open questions that will need to be answered for the transition to be effective.

P-11 — eAIP

The integrated aeronautical information package will not be phased out because new products will be introduced to serve the needs of future systems and new users. On the contrary, the integrated aeronautical information package will be adapted to include the new data products needed during the transition to AIM.

The electronic version of the AIP will be defined in two forms: one will be in the form of a printable document, and the other will be in a form that can be viewed by web browsers.

Guidance material will be required to help States implementing the web browser form of the electronic AIP in order to avoid the proliferation of many different presentations of AIP information over the Internet.

P-12 — Aeronautical information briefing

Fine tuning of the current NOTAM format by introduction of new selection criteria is needed to improve the selectivity of the information presented to pilots in the Pre-flight information bulletin (this can be done in Phase 1).

The combination of graphical and textual information in a digital net-centric environment will be exploited to better respond to the airspace users requirements of aeronautical information in all phases of flight when the new digital data products will be specified and made available (in Phase 3).

P-13 — Terrain

The compilation and provision of terrain data sets is an integral part of the transition to AIM.

P-14 — Obstacle

The compilation and provision of obstacle data sets is an integral part of the transition to AIM.

P-15 — Aerodrome mapping

There is a new requirement emerging from industry that traditional aerodrome charts should be complemented by structured aerodrome mapping data which can be imported into electronic displays.

P-16 — Training

The training of personnel will be adapted to the new requirements on skill and competences introduced by the transition to AIM.

A new training manual will be developed to reflect the new competencies required by the transition to AIM.

P-17 — Quality

Quality management measures will be re-enforced to ensure the required level of quality of the aeronautical information.

In order to assist States in the implementation of an efficient quality management system, guidance material for the development of a quality manual will be developed.

P-18 — Agreements with data originators

Data of high quality can only be maintained if the source is of good quality. States will be required to better control relationships along the whole data chain from the producer to the distributor. This may take the form of template service level agreements with data originators, neighbouring States, information service providers or others.

P-19 — Interoperability with meteorological products

The meteorological data products of the future will be combined with the AIM data products to form the future flight briefings and the new services provided to all ATM components.

This will require that the meteorological data will be made available in a similar format to the other aeronautical data which are clearly focusing on the use of open standards (such as XML and GML) for the implementation of table-driven data validation built into the data exchange mechanism, whereas current meteorological data products for aviation are based on simple alphanumeric codes.

Now that the bandwidth of telecommunication links and space of digital storage devices are no longer a limiting factor, the move towards net-centric and system-wide information management is becoming feasible for wider distribution of meteorological forecast data from the world area forecast centres in a format that

will not require considerable efforts for the learning and configuration of a decoding software thereby ensuring true interoperability.

Meteorological information is essential in the compilation of pilot briefings, the transition to AIM will include activities both at the standardization and implementation level to find solutions for the interoperability of meteorological data products with the new AIM data products.

P-20 — Electronic aeronautical charts

New electronic aeronautical charts, based on digital databases and the use of Geographic Information Systems will be defined to complement paper charts and replace others that have become obsolete and need to be improved to satisfy user needs. The possibility to deploy these new products over the Internet will be exploited.

P-21 — Digital NOTAM

One of the most innovative data product that will be based on the standard aeronautical data exchange model will be a digital NOTAM that will provide dynamic aeronautical information to all stakeholders with an accurate and up-to-date common representation of the aeronautical environment.in which flights are operated.

The digital NOTAM will be defined as a data set that contains information included in a NOTAM in a structured format which can be fully interpreted by an automated computer system for accurate and reliable update of the aeronautical environment representation both for automated information equipments and for human actors.

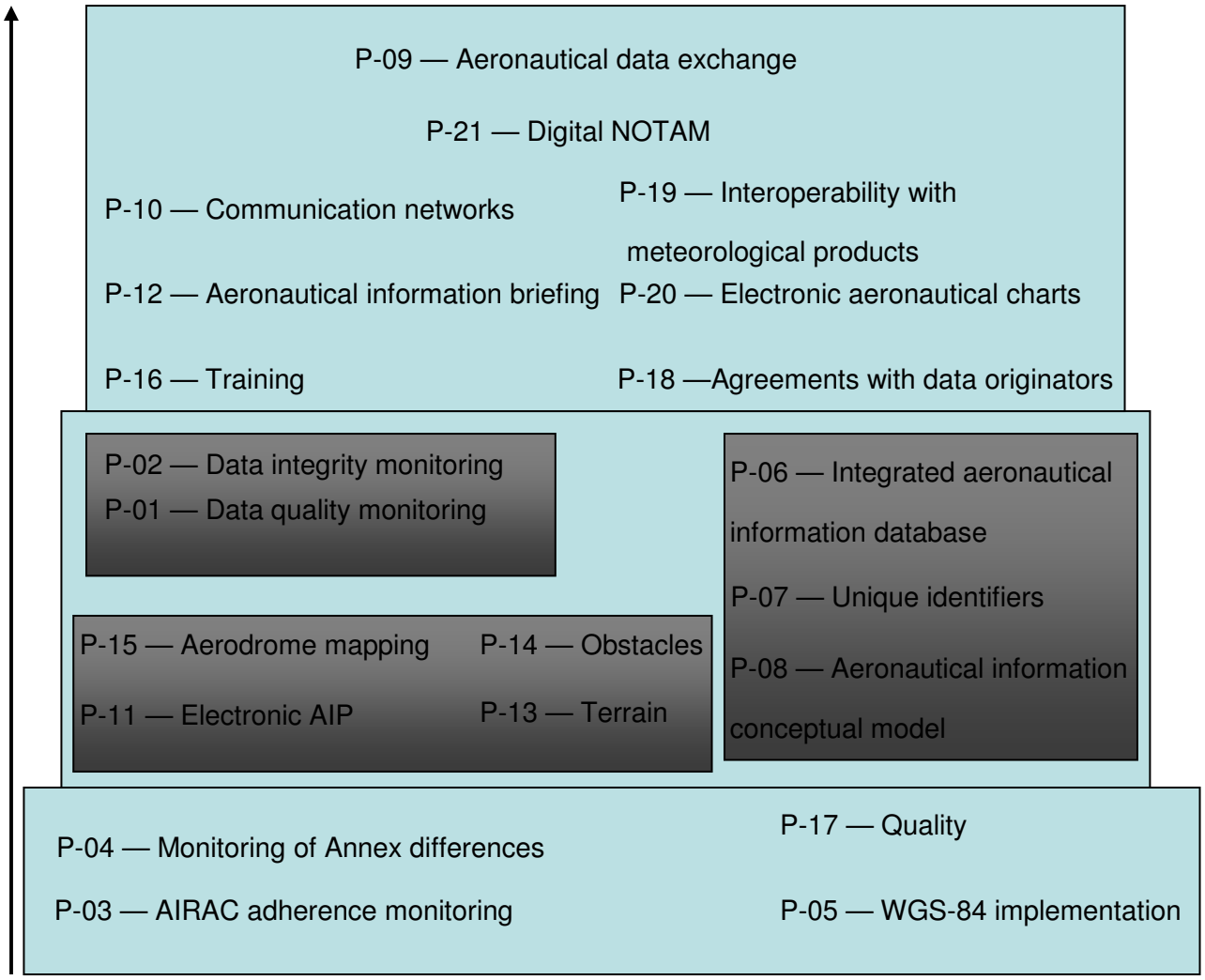


Figure 3. Positioning of the 21 steps of the roadmap in the three phases.

Part III

Roadmap Timeline

1. The roadmap serves as general indication of what the air transport industry may be expecting from States in their implementation of the transition to AIM. In this part III, the timeline indicates to States, the major milestones that are envisaged in ICAO to support the transition to AIM and the Global Air Traffic Management Operational Concept initiatives related to the management of aeronautical information.

December 2008

Phase 1 — Consolidation, has begun with the establishment of the AIS-AIM Study Group, more information on the work and planned actions of the group may be found on the ICAO website under the Air Navigation Bureau, MET/AIM link.

The consultation process for Amendment 36 to Annex 15 and Amendment 56 of Annex 4 are initiated in the first quarter of 2009.

The development of Amendment 2 to the AIS Manual (Doc 8126) and Amendment 30 to the PANS-ABC (Doc 8400) has begun to introduce guidance on best practices already available.

November 2009

Phase 2 – Going digital will begin by the development of new guidance material related (electronic AIP, aeronautical information conceptual model, training, quality) that will be developed with the support of the AIS-AIMSG which will hold its second meeting end of 2009.

November 2010

Amendment 36 of Annex 15 and Amendment 56 of Annex 4 would become applicable. The preparation of Amendment 37 to Annex 15 and Amendment 57 to Annex 4 plus any consequential amendments required in other annexes will have progresses with the help of the AIS-AIMSG.

October 2011

Phase 3 — Information management, will begin with the fourth meeting of the AIS-AIMSG which will finalise the proposals for amendment 37 to Annex 15 and amendment 57 of Annex 4. These amendments will be setting the scene for the future requirements on States to produce data sets. It is not envisaged that new data products will be required for mandatory provision by the future ATM systems at this date, but if States choose to provide the data identified in scope at that time, they will be able to base their development on recommendations ensuring a global harmonisation.

The consultation process of Amendment 37 to Annex 15 and Amendment 57 to Annex 4 will be initiated in the first quarter of 2012.

November 2013 Amendment 37 to Annex 15 and Amendment 57 to Annex 4 would become applicable,

Possible divisional-type meeting should a substantial number of subjects of worldwide scope involving meteorological, aeronautical information and supporting communication network fields need to be agreed in order to finalize the transition to AIM. This could include a substantial enlargement of the scope of aeronautical information required by ATM and an obligation to provide the information in the form of digital data.

November 2016 Amendment 38 to Annex 15 and Amendment 58 to Annex 4 would become applicable including the recommendations of the divisional meeting.

APPENDIX G

STRATEGIC ACTION GUIDELINES TO DEVELOP REGIONAL TRAINING PROGRAMMES

1. Modern air navigation systems require training and human resource planning strategies to ensure sufficient personnel and to highlight enhancements in training activities as part of their organisational culture in order to achieve homogeneous performance of all its members.

Human Resource Planning Strategy

2. The first step of a human resource planning strategy consists of developing a study of the factors to calculate the required number of personnel in line with the particular duties of each post and of each working unit along with forecasted air traffic demand. To this end, it is necessary to consider tasks and workload.

3. Moreover, personnel must meet the minimum requirements of skills, knowledge and familiarisation with the unit corresponding to the work post. Additional elements to be taken into consideration are weekly rest periods, vacations and foreseen absences. Some methods require establishing the busiest day of the year and/or peak hours.

4. In order to achieve these goals, a planning strategy in line with average traffic growth should be established for 3 or 5 year periods; a complete approach should consider long-term organisational goals and evolution. The annual periodic review of human resource and training needs will allow the organisations to maintain the required level of personnel to fulfil operational service demand. The strategy should have a clear vision and goals so that all organisation members commit to their achievement.

Training Strategy

5. Training is characterised as a critical element for the organisation to maintain international competitive standards and, at the same time, internal growth in line with the organisation's objectives. This approach requires planning very complete training, from the basic to the most advanced levels.

6. Strategic training normally begins with the development of a broad view plan and programme to achieve the highest professional performance from all members, which will result in clear productivity benefits for the organisation; one benefit goes along with the other. Some organizations of the CAR and SAM Regions are already working with this vision, taking into account current and future needs.

7. In the first instance, a training plan is required that covers service needs and at the same time allows the personnel to develop sufficient skills and technical, operational and managerial knowledge.

8. A good training strategy may be divided as follows:

Basic Formal Training

9. The objective of this training is to ensure that the personnel obtain knowledge and basic skills to perform their duties in an efficient manner.

Familiarisation or Introduction to Working Units

10. This objective provides all personnel with introductory training on the tasks of the working units to which they have been assigned, on the job training (OJT), new procedures or procedures that will be valid in the near future such as changes to operational handbooks, etc.

11. This type of training provides personnel with a better understanding of the internal functions of the organisation, the processes, techniques, relationships, etc., which will result in safe and efficient service.

Recurrent Training

12. ATS personnel should receive periodic training including current objectives, and procedures applicable to the unit and/or organisation, in order to maintain the highest service levels (e.g., periodic exercises and operational procedures etc.).

13. Under this item, the fact that personnel should receive recurrent training in accordance with duties performed should also be considered.

Proficiency Training

14. It is important to periodically monitor unit performance to detect training needs. Occasional monitoring and assessment of organisational performance will identify service deficiencies.

15. A proficiency-training programme that provides resolution to identified deficiencies through additional training courses should be considered when necessary. The objective of this training is to help personnel maintain proficiency in their performance and improve the quality of service.

16. In addition, specialisation-training programmes should be considered, which will allow personnel to achieve higher responsibility categories. These courses should normally be structured in accordance with organisational needs and should aim towards higher performance levels in collaboration with the international community.

Agenda Item 3: Follow-up on actions taken concerning valid Conclusions/Decisions of previous meetings and review of Terms of Reference (ToRs) and Work Programme

3.1 Review of the Conclusions/Decisions from the NACC/DCA/3, NACC/WG/2, C/CAR/WG/6 and GREPECAS/15 meetings.

3.1.1 The Meeting reviewed and updated the status of the outstanding conclusions and decisions of the Central Caribbean meetings. The results are included as **Appendices A** to **E** to this part of the report as follows:

Appendix A Conclusions and Decisions of the C/CAR/WG/6
Appendix B Conclusions and Decisions of the Second North American, Central American and Caribbean Working Group Meeting (NACC/WG/2)
Appendix C Conclusions and Decisions of the Third Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/3)
Appendix D Conclusions and Decisions of the Ninth Meeting of Directors of Civil Aviation of the Central Caribbean (C/CAR DCA/9)
Apéndice E Conclusions and Decisions of the Fifteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/15).

3.2 Review of the C/CAR/WG Terms of Reference (ToRs) and Work Programme

3.2.1 The Meeting reviewed the Terms of Reference of the C/CAR WG according to those approved by the Central Caribbean Directors of Civil Aviation, with a proposed updated version for the C/CAR/WG.

3.2.2 Additionally, the Meeting reviewed the Work Programme of the Working Group with different comments by the participants, and some modifications were integrated reflecting what was discussed during the meeting. In this regard, the following Draft Conclusion was formulated, wherein the updated version of the Terms of Reference and Work Programme of the C/CAR Working Group is presented:

DRAFT
CONCLUSION 7/5 TERMS OF REFERENCE AND WORK PROGRAMME OF THE C/CAR WORKING GROUP

That the C/CAR States/Territories/International Organizations adopt the revised Terms of Reference and Work Programme included in **Appendix F** to this part of the report, and the meeting host rotation list shown in **Appendix G** to this part of the report, for the C/CAR Working Group.

APPENDIX A
STATUS OF OUTSTANDING CONCLUSIONS (C) / DECISIONS (D) OF THE CENTRAL CARIBBEAN WORKING GROUP (C/CAR WG)

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
D	1/19	CNS	**REVIEW/IMPLEMENTATION OF THE CNS 2A, CNS 2B, CNS 3 AND CNS 4A – FASID**	That the C/CAR Working Group as a follow-up of its immediate work:, a) review the installation Plan and related services to the Aeronautical Mobile Service and the AMSS (Table CNS 2A), the HF Network Designators Table (Table CNS 2B), the Radio Navigation Aids Plan (Table CNS3), as well as Surveillance Systems (Table CNS 4A) all from the FASID; and b) analyze difficulties in the implementation in order to suggest all pertinent actions to complete the implementation.	a) Item 2.1 of this Meeting provides the update on this information (Tables CNS) b) The review and analysis of the relevant actions to be considered in the NAM/CAR AN Implementation Plan will be dealt with under Item 2.2	C/CAR WG			Completed
D	1/27	CNS	**ESTABLISHMENT OF A RADAR DATA SHARING TASK FORCE FOR THE CENTRAL CARIBBEAN**	The Meeting agreed to establish a Task Force on the Radar data sharing in the Central Caribbean, together with the Terms of Reference, Work Programme, Composition and Rapporteur, which is attached to this part of the Report in Appendix F. This Task Force should also report its progress to every C/CAR Working Group Meeting, as well as to make periodical reports if necessary.	This matter will be discussed under Agenda Item 2.2. Results from the Task Force work or information from each State involved in this sharing is expected. To include in Action Plan on Agenda Item 2.2.	C/CAR WG			Completed
D	2/18	AGA	**FOLLOW UP TO THE IMPLEMENTATION OF AERODROME CERTIFICATION IN THE C/CAR STATES/TERRITORIES**	That the C/CAR Working Group follows up on the compliance of the aerodrome certification requirement on behalf of States/Territories of the C/CAR States, for which a table was prepared shown in the Appendix A to this part of the Report.	The ICAO NACC Regional Office did not receive information on the aerodrome certification process on behalf of States/Territories.	C/CAR WG	Maintain the table updated and assist States who are in process of certifying their airpors.	30 Sept. 2009	Valid
C	3/12	MET	**UPDATING OF FASID TABLES MET 2 AND MET 2A CONCERNING THE CENTRAL CARIBBEAN**	That the Civil Aviation Authorities of the States/Territories of the Central Caribbean, in coordination with their respective MET authorities, a) review the corresponding parts of the FASID Tables MET 2 and MET 2A of the FASID CAR/SAM, in order to update their requirements; and b) present to the ICAO NACC Regional Office the proposals for amendment duly documented, making use of the form included in **Appendix A** to this part of the Report by **28 November 2003**.	The ICAO NACC Regional Office has not received other proposals for amendment. Cuba sent updated information.	States / Territories			Valid
C	4/3	ATM	**DEVELOPMENT OF ATS QUALITY ASSURANCE PROGRAMMES AND ATS CONTINGENCY PLANS IN THE CENTRAL CARIBBEAN**	That States/Territories send to the ICAO NACC Regional Office by 30 June 2004: a) the status of implementation of the ATS Quality Assurance Programmes; b) the measures towards the solution of ATS incidents; and c) ATS contingency plans.	b) Incorporated in the Terms of Reference of the C/CAR WG c) Superseded by Conclusion 7/8 of the C/CAR DCA/7 Meeting.	C/CAR States / Territories			Completed
D	4/7	CNS	**VHF/AMS COMMUNICATIONS COVERAGE**	That the C/CAR VHF/AMS Coverage Task Force (Rapporteur – Jamaica), with the support of the ICAO Regional Office, review the pending VHF/AMS communications coverage issues and develop a regional action plan for their resolution to be presented at the C/CAR/WG/5 Meeting.	This item will be dealt with under Agenda Item 2.2. An update on this issue is expected on the PFF.	C/CAR VHF/AMS Coverage Task Force Include in the activities of the NAM/CAR Implementation Plan			Completed

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	4/8	CNS	**ATN/AMHS TRAINING**	That, ICAO, if possible, coordinate with States/Territories to hold an ATN/AMHS training event in the 2004-2005 timeframe.	ICAO has planned an ATN Seminar in the last quarter of 2009 in compliance with this Conclusion.	States / Territories			Valid
D	4/16	SAR	**DEVELOPMENT AND INTEGRATION OF THE SEARCH AND RESCUE PLANS IN THE CENTRAL CARIBBEAN**	That the C/CAR/WG, supported by the C/CAR SAR Task Force in coordination with the ICAO NACC Regional Office: a) continue to follow-up the development and improvement of National SAR Plans; b) develop an action plan for the development of a C/CAR SAR Plan to be presented at the next C/CAR/WG/5 Meeting; and c) incorporate SAR tasks in its Work Programme.	Will be dealt with during the C/CAR WG/8 Meeting.	C/CAR SAR Task Force			Valid
C	5/1	GEN	**AIR NAVIGATION DEFICIENCIES**	That the Civil Aviation Authorities of the States and Territories of the Central Caribbean: a) carefully review the Air Navigation Deficiencies identified in the Air Navigation Services and aerodromes under their jurisdiction; b) submit to the ICAO NACC Office the name of the person designated as Point of Contact (POC) for the access to the GREPECAS Air Navigation Deficiencies Database (GANDD) by 30 April 2005; and c) correct the Air Navigation Deficiencies in their respective States and Territories considering the use of the database available at the ICAO NACC Office web page.	a) and b) completed c) Valid	C/CAR States / Territories	Deficiencias corrected. Action plan to correct deficiencies	30/11/2009	Completed
C	5/2	AIS	**NEED FOR EFFECTIVE ACTIONS IN AIS/MAP ASPECTS**	That the States/Territories, in order to facilitate the development of the CNS/ATM systems in accordance with the Global Air Navigation Plan and the Recommendations of the Eleventh Air Navigation Conference and, in order to accelerate and materialize the implementation of AIS/MAP elements: a) take necessary measures for implementing those AIS/MAP aspects required to develop the global ATM operational concept, taking into account that the collaborative decision-making (CDM) requires the availability of high quality aeronautical information sources; b) develop technical assistance bilateral agreements directly with those States that have already efficiently implemented such elements and have offered to provide assistance; and c) if it is deemed necessary, take into account the mediation of the NACC Regional Office to endorse the corresponding agreements.	Delegates will inform on the actions taken by their respective Administrations.	C/CAR States / Territories	Complete implementation of SARPs of Annexes 15 an 14.	30/06/2009	Valid
C	5/12	CNS	**INITIAL ACTION TO UPDATE THE CAR REGION PLAN TO IMPLEMENT VHF, HF AND SATELLITE DATA LINKS**	That, with the aim of updating the corresponding part of the VHF, HF and satellite data link requirements of the CNS 2A Table of the FASID: a) ICAO request IATA updated information on the projection in the time scale of aircraft capacity operating in the CAR Region; b) States, Territories and International Organizations participate in the programme of initial actions contained in Appendix F to this part of the Report; and c) the results of the actions in items a) and b) above be presented to the GREPECAS mechanism.	Superseded by Conclusion 1/7 of the NACC/WG/1 Meeting	ICAO C/CAR States / Territories			Superseded
C	5/14	CNS	**IMPROVEMENT OF SURVEILLANCE SERVICES IN ATS UNITS**	That all C/CAR States/Territories/ Organizations that require surveillance services in their ATS units and have not implemented radar services as yet, adopt an aggressive action plan for its implementation or study the feasibility to implement ADS or ADS –B.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	C/CAR States / Territories			Completed

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**5/15**	**CNS**	**ANALYSIS ON THE FEASIBILITY OF THE MEVA II NETWORK TO SUPPORT RADAR DATA CIRCUITS**	That, a) the NACC Office request the MEVA II TMG to perform a general analysis on the feasibility of the MEVA II Network to support radar data circuits; and b) depending on the analysis by the MEVA II TMG in accordance with item a) above, the States/Territories/Organizations who adopt a decision to implement circuits for the radar data exchange present in a timely fashion to the MEVA II TMG the details of the requirements of the circuits to switch their radar data systems for its analysis.	This conclusion follow-up will be dealt with under agenda item 2.3.2 of this Meeting.	MEVA TMG II C/CAR States / Territories			Valid
C	**5/16**	**CNS**	**PROVISION OF RADAR EXPERTS TO THE RADAR DATA SHARING TASK FORCE**	That every State/Territories/International Organizations in charge with the provision of air traffic services within the C/CAR that is interested in radar data sharing provides adequate experts who assist to the work of the radar data sharing task force in order to help the Task Force to advance expeditiously in the execution of its tasks.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	C/CAR States, Territories, and International Organizations			Completed
C	**5/17**	**CNS**	**ASSESSMENT OF THE TRAINING NEEDS FOR RADAR DATA EXCHANGE**	That, based on a regional consultation through ICAO, States/Territories/International Organizations assess the need for providing training to their operational and technical personnel through an integrated regional solution, with a view to implementing radar services and/or radar data exchange.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	C/CAR States and Territories			Completed
C	**5/19**	**CNS**	**DATA INTEGRITY OF THE RADAR SYSTEM IN RADAR DATA EXCHANGE**	That States/Territories/International Organizations implement an adequate system to ensure reliability of the service to the user and integrity of transmitted or received radar data.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	C/CAR States/Territories			Completed
C	**5/21**	**CNS**	**COMMENCEMENT OF THE RADAR DATA EXCHANGE PROGRAMMES**	That States/Territories/International Organizations who can benefit from radar data sharing start negotiations on a bilateral or multi-lateral basis to implement a radar data exchange programme, awaiting the further development of the system.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	C/CAR States, Territories, and International Organizations			Completed
C	**5/22**	**CNS/ ATM**	**SUB-REGIONAL ACTION FOR THE STUDY AND IMPLEMENTATION OF THE ADS AND ADS-B SYSTEMS**	That, a) with a view to the deployment of ADS and ADS-B systems in the Central Caribbean in the short-term, ICAO request information from IATA on the current avionics capacity and on their member airlines plans for the deployment of the use of ADS and ADS-B in the Caribbean and Central America; b) each State/Territory/International Organization of the Central Caribbean is urged to, • taking into account the operational requirements of its airspace, evaluate its respective radar coverage, its radars' useful life and the potentialities of covering empty spaces and substitute or replace the radar coverage with ADS or ADS-B; • evaluate and plan the existing and future ATC automated systems capacity in order to support ADS or ADS-B systems; • investigate and evaluate their policies related to the ADS and ADS-B data sharing with their respective neighbouring areas in which the position is provided by the same aircraft instead of being measure by the radars; and • consider the feasibility to apply ADS-B as a solution to the movement control in the airports surface.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	States/ Territories/ International Organizations ICAO			Completed

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	5/24	ATM	**ATFM POINTS OF CONTACT IN THE CENTRAL CARIBBEAN**	That the States and Territories of the Central Caribbean provide to the ICAO NACC Office by 30 April 2005 the name of the person that will act as a point of contact for the ATFM studies, with a view to an early ATM evolution in the Central Caribbean.		C/CAR States, Territories, and International Organizations			Completed
C	6/1	AIS	**FINALIZATION OF THE HARMONIZATION PROCESS OF THE WGS-84 COORDINATES AT THE FIR BOUNDARIES**	That the C/CAR States/Territories/International Organizations that have not yet done so: a) finalize the harmonization of boundary geographical coordinates in their respective FIRs, in coordination with the ICAO NACC Regional Office; and b) inform the ICAO NACC Regional Office: 1. on the officer appointed as the point of contact to carry out the task by 7 June 2006; according with the ICAO data base information that for such purpose would be distributed by the ICAO NACC Regional Office, as applicable, and 2. on the agreements reached in this respect by 15 September 2006.	-Implementation of WGS84 coordinates in the FIR limits. - Inform the NACC Office the agreements reached among the States.	States / Territories	31/12/2009		Valid
C	6/2	ATM	**ESTABLISHMENT OF ATS SAFETY MANAGEMENT MEASURES**	That the States and Territories of the Central Caribbean, in order to reduce ATC loop errors: a) ensure that LHDs are promptly forwarded to CARSAMMA and copied to the ICAO Regional Office; b) request to the ATS authorities to establish management measures to enhance monitoring of ATC operations through the application of ATS quality assurance mechanisms; c) establish the maximum permitted levels as an objective of LHDs incidents and/or occurrence; d) in compliance with Doc 9859, Safety Management System (SMS), establish for the identification of the main incident causes and for risk assessment; e) foster coordination bilateral visits among their ATS quality assurance experts in order to exchange experiences and data on ATC Loop Errors and the actions taken to mitigate against recurrence; f) as applicable, plan the early interconnectivity of their ATS automated system in accordance with GREPECAS regional guidelines; and g) request the assistance of the ICAO NACC Regional Office where bilateral actions taken to address these errors prove insufficient.	The Meeting is expected to provide information on the implemented measures under Agenda Item 2.3	States / Territories			Valid
C	6/3	ATM	**ATFM PROCEDURES DEVELOPMENT**	That, C/CAR States/Territories, based on their regional and subregional developments: a) develop an ATFM Manual to serve as a basis for the provision of ATFM service in the different FIRs of the Central Caribbean; and b) present the progress thereupon to the C/CAR WG/7.	Will be dealt with under Agenda Item 2.3	States / Territories			Completed
C	6/4	ATM	**ATFM OPERATIONAL AGREEMENTS**	That C/CAR States/Territories encourage ATS providers to establish operational agreements among ATS units for ATFM service provision in the C/CAR.	Will be dealt with under Agenda Item 2.3	States / Territories			Valid
D	6/7	CNS	**STUDY ON THE INITIAL C/CAR ATN IMPLEMENTATION PLAN**	That an ATN Task Force be activated to conduct preliminary studies of ATN architecture in the Central Caribbean, composed by members of Cayman Islands, Cuba, Haiti, Jamaica and United States (Rapporteur) so as to present the results of its study at the next C/CAR WG meeting.	Actions are included in the Action Plan for PFF. Situation Awareness (Agenda Item 2.2)	Cuba, United States, (Rapporteur), Haiti, Cayman Islands and Jamaica			Completed

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
D	**6/9**	**CNS**	**DISBANDING OF THE C/CAR VHF/AMS COVERAGE TASK FORCE**	That, considering the VHF/AMS improvement and the existing actions plans for on-going enhancements, that the C/CAR VHF/AMS Coverage Task Force be disbanded, appreciating the work carried out by the Rapporteur and the Members.	New terms of reference have been formulated for this working group				Completed
C	**6/15**	**CNS**	**FIRST PHASE OF BILATERAL RADAR DATA SHARING**	That, taking into account the technical feasibility studies and operational benefits carried out for the first phase of radar data sharing; Cuba, Cayman Islands and Jamaica, in coordination with COCESNA, consider initiating work and bilateral agreements in accordance with the guidelines of Appendix F for radar data exchange between the following centres: Kingston ACC/Cenamer ACC/Grand Cayman APP, Havana ACC/Kingston ACC and Cenamer ACC/Havana ACC.	Completed during the NACC/WG/2 Meeting	Cayman Islands, Cuba, Jamaica and COCESNA			Completed
C	**6/16**	**CNS**	**SEMINAR ON RADAR DATA SHARING**	That the C/CAR States/Territories/International Organizations and ICAO take into account the proposed subjects presented in Appendix H to this part of the report for the development of seminars on radar data sharing.	The NACC/WG/2 Meeting analyzed the details of this conclusion	States / Territories and ICAO			Completed
C	**6/17**	**MET**	**APPOINTMENT OF MET EXPERTS IN THE C/CAR STATES/TERRITORIES**	That, as applicable, the C/CAR Civil Aviation Administrations, in coordination with the aeronautical meteorological services, take the corresponding actions in order to: a) designate a MET officer to participate as a point of contact in behalf of the aeronautical meteorological service; b) send to the ICAO NACC Office by 1 June 2006 the name and electronic address of the appointed MET focal point; and c) provide to the MET point of contact the support of the required electronic means so that he/she may be contacted by the Rapporteur of the C/CAR MET Task Force and the Secretariat of the GREPECAS AERMET Subgroup, in order to carry out the necessary coordination concerning the respective work programmes.	Few responses received from CAR States to the ICAO messages. Only 2 or 3 States replied.	DGAC and MET Authorities			Valid
C	**6/18**	**SAR**	**ADOPTION OF EMERGENCY LOCATOR TRANSMITTERS (ELTs) AT 406 MHZ**	That the C/CAR States/Territories/International Organizations, in the terms and periods defined by ICAO: a) establish that all international transport aircraft including passengers and cargo that perform operations in the C/CAR area be equipped with emergency locator transmitters (ELT) at 406 MHz in accordance with Annex 6 parts I, II and III; b) take the necessary measures so that operators, including the ones in general aviation, use ELTs at 406 MHz or equivalent; and c) ensure that necessary arrangements and the requirements be established for the register of all the ELTs at 406 MHz, and stipulate that these register data be available 24 hours a day for any RCC that might need them.	a) y b) It is expected that the States/Territories have taken note of this Conclusion.	States / Territories			Completed

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	6/20	SAR	**ESTABLISHMENT OF SEARCH AND RESCUE (SAR) AGREEMENTS BETWEEN THE CENTRAL CARIBBEAN RCCs**	That, based on the draft agreement included in Appendix I to this part of the report: a) the States and Territories of the Central Caribbean have their SAR Coordinators review/develop the SAR Letters of Agreement between the corresponding RCCs; b) Civil Aviation Authorities of Cuba, Dominican Republic, Haiti and Jamaica establish a multilateral SAR agreement in the short term; and c) Civil Aviation Authorities of the States and Territories of the Central Caribbean endorse the SAR agreements achieved and present the progress status to the Eighth Meeting of Directors of Civil Aviation of the Central Caribbean (CCAR/DCA/8).	The CAR/WG/01 developed a SAR multilateral agreement.	States / Territories	Publication of the Aeronautical Regulations	30/09/2009	Valid
C	6/21	GEN	**HARMONIZATION OF THE AERONAUTICAL REGULATIONS IN THE CENTRAL CARIBBEAN**	That, aimed at maintaining the harmonization of the aeronautical regulations required by the States and Territories, the Central Caribbean Civil Aviation Administrations promote adequate coordination and collaboration among its designated experts for the development and publication of aeronautical regulations.	It is expected that States inform on the Aeronautical Regulations harmonization progress.	States / Territories			Valid
C	6/22	CNS ATM	**REQUEST OF INFORMATION ON HUMAN RESOURCES AND TRAINING**	That, as part of the main elements for the CNS/ATM systems implementation, the C/CAR Civil Aviation Administrations: a) notify the ICAO NACC Office the name and email address of their respective Point of Contact; b) complete the forms contained in Appendices A, B, C and D to this part of the Report; and c) send the information detailed in items a) and b) above to the ICAO NACC Regional Office by 7 July 2006.	The follow-up on this Conclusion will be dealt with under Agenda Item 2.4.	States / Territories			Valid
D	6/23	GEN	**PROVISION OF INFORMATION TO THE HUMAN RESOURCES AND TRAINING TASK FORCE BY THE C/CAR WG MEMBERS**	That, with the purpose of carrying out tasks, the C/CAR Working Group Members directly provide information to the Human Resources and Training Task Force regarding the needs and policies of each aeronautical field/specialty.	This part will be reviewed under Agenda item 2.4.	C/CAR WG Member States / Territories	Inform the needs and policies of States on human resources and training	30/09/2009	Valid

APPENDIX B
STATUS OF OUTSTANDING CONCLUSIONS (C) / DECISIONS (D) OF THE PREVIOUS MEETINGS OF THE NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN WORKING GROUP (NACC/WG)

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**1/1**	**GEN**	**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.	a) The follow-up on GREPECAS conclusions was included in the work programme b) Completed c) The terms of reference will be reviewed under agenda item 3.	States/Territories/ International Organisations			a) and c) Valid b) Completed
C	**1/2**	**ATM**	**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 and Tobago, United States, IATA, IFATCA. Rapporteur: Fidel Ara (Cuba).*	The CAR ATM Task Force will meet during the discussion of Agenda Item 2.	ICAO States/Territories/ International Organizations			Completed
C	**1/4**	**SAR**	**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.	The meeting was postponed.	ICAO States/Territories/ International Organizations			Valid
C	**1/8**	**CNS**	**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.	Information was received from several States and the NDB Deactivation Plan was updated. This information was included in the Amendment to Table CNS 3.	States/Territories/ International Organizations			Completed
C	**2/1**	**ATM**	**ADOPTION OF A NAM/CAR ATFM OPERATIONAL PROCEDURES HANDBOOK**	That CAR and NAM States / Territories / International Organizations, when implementing ATFM service, use the NAM/CAR ATFM Operations Plan included in Appendix C to this part of the report.	Will be dealt with under Agenda Item 2.3	CAR and NAM States/Territories /International Organizations			Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**2/2**	**SAR**	**DEVELOPMENT OF NATIONAL SAR SERVICES QUALITY ASSURANCE PROGRAMME**	That NAM/CAR States / Territories / International Organizations develop a SAR Quality Assurance Handbook, taking into consideration the questionnaire shown in Appendix D to this part of the report, in order to establish a National SAR Services Quality Assurance Programme by **30 August 2009**.	Results were presented to the C/CAR WG/8 Meeting	NAM/CAR States /Territories /International Organizations			Valid
C	**2/3**	**ATM**	**IMPLEMENTATION OF ADDITIONAL COORDINATION PROCEDURES FOR HURRICANES AND VOLCANIC ASH**	That NAM/CAR States / Territories / International Organizations attach the additional coordination procedures for hurricanes and volcanic ash included in Appendix E to this part of the report to their respective ATS contingency plans, and disseminate these procedures among pilots and controllers to achieve homogeneous application during these natural disasters.		NAM/CAR States/Territories /International Organizations			Completed
C	**2/4**	**ATM**	**ACTIONS TO AVOID DUPLICATION OF FLIGHT PLANS**	That: a) NAM/CAR States, Territories and International Organizations take appropriate actions in the short term to: i) publish the proper address in the AIP for destination of filed flight plans; ii) urge operators to avoid duplication of CPL and/or RPL messages, noting that only one should be in force for a specific flight plan; iii) establish timelines for coordination of filed flight plans and updating related changes; iv) follow-up national provisions for FPL acceptance in accordance with ICAO Doc 4444 for flights operating from one FIR to another adjacent FIR; v) initiate interface coordination between ATS automated systems in accordance with the Interface Control Document for Data Communications between ATS Units (ICD) approved by GREPECAS; vi) ensure that dispatch offices have a sufficient number of qualified specialists for proper coordination and flight plans follow-up; and vii) take appropriate measures to ensure that the flight plan be sent officially. b) operators carry out proper coordination of filed flight plans to ensure that only one is in force.		NAM/CAR States, Territories and International Organizations			Valid
C	**2/5**	**GEN**	**TERMS OF REFERENCE AND WORK PROGRAMME OF THE NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN WORKING GROUP (NACC/WG) AND NAM/CAR IMPLEMENTATION PLAN**	That: a) the Central Caribbean (C/CAR WG), Eastern Caribbean (E/CAR WG), Central American Air Navigation Experts (CA/ANE/WG) and Canada, Mexico and United States (CAN/MEX/USA) Working Groups, when developing and reviewing their work programmes, take into account the NACC/WG Terms of Reference and Work Programme and NAM/CAR Implementation Plan, respectively, included in Appendices A and B to this part of the report; b) NAM/CAR States/Territories develop their national action plans based on the NAM/CAR Implementation Plan to achieve harmonized interregional implementation; and c) ICAO take appropriate measures to monitor the implementation of the NAM/CAR Implementation Plan and submit NACC/WG progress reports to the NACC/DCA Meetings.	This issue will be reviewed under Agenda Ítem 3.2. .	C/CAR WG	Terms of Reference and Work Programme		Valid

APPENDIX C

STATUS OF OUTSTANDING CONCLUSIONS (C) / DECISIONS (D) OF THE NORTH AMERICAN, CENTRAL AMERICAN AND CARIBBEAN DIRECTORS OF CIVIL AVIATION PREVIOUS MEETINGS (NACC/DCA/2 AND NACC/DCA/3)

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	2/12	CNS	**DEVELOPMENT OF A MODERNIZATION AND IMPLEMENTATION PLAN OF D-ATIS EQUIPMENT IN THE INTERNATIONAL AIRPORTS OF THE CAR REGION**	That, taking into account the experiences of COCESNA in developing a new D-ATIS equipment, States, Territories of the CAR Region and COCESNA examine and consider adopting in the international airports an equipment modernization plan and implementation of ATIS services, in accordance with ATM requirements.	States/ Territories and COCESNA are invited to provide information on this regard in order to be considered as a task for the working groups through the working group. It is expected that this task will be incorporated into the PFF. These activities will be dealt under agenda item 2.2	States/ Territories and COCESNA		July 2009	Completed
C	2/18	ATM	**IMPLEMENTATION OF AIR TRAFFIC FLOW MANAGEMENT (ATFM) IN THE CENTRAL AMERICAN FIR**	That, considering the important operational and financial benefits for the ATM community, derived from the implementation of an efficient and safe Air Traffic Flow Management (ATFM) system, the States in the Central American FIR and COCESNA: a) initiate, under the coordination of COCESNA, the actions regarding the implementation of a sub-regional ATFM system for the Central American FIR, considering to that end the guidelines of ICAO, as well as the tasks and implementation programme to be agreed upon in the CAR/SAM Regions; b) continue the coordination with States, ICAO NACC Regional Office and other International Organizations, air operators, other ATFM Units and related bodies within a cooperative framework, in order to establish an efficient, safe and highly beneficial ATFM system; and c) present to the NACC/DCA/3 Meeting, through COCESNA, a report on the status of the progress of this project.	States of Central America and COCESNA informed on their progress with ATFM implementation through the NACC/WG mechanism. This task will be included into the NACC/WG work programme.	States of Central America and COCESNA		July 2009	Valid
C	2/26	AIS/ MAP	**ADOPTION OF GUIDANCE MATERIAL FOR THE NOTAM CONTINGENCY PLAN**	That States and Territories of the NAM/CAR Regions and COCESNA consider the contents of the NOTAM Contingency Plan for Havana's FIR as guidance material for the establishment of operational agreements related to NOTAM contingencies.	States are invited to inform on the NOTAM Contingency Plan progress.	States and Territories of the NAM/CAR Regions and COCESNA	NOTAM Contingency Plan	Sept. 2009	Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**3/1**	**TC**	**TECHNICAL CO-OPERATION PROJECT FOR THE CAR REGION (RLA/08/000)**	That, based on the need to establish an effective instrument to achieve efficient, cost effective and harmonized implementation of new systems for international civil aviation, the Meeting approved: a) a CAR Regional Project be developed through the ICAO Technical Co-operation Programme; b) the establishment of a CAR Region Steering Committee to develop the first phase of the project, which will determine the requirements and priorities for each CAR Region State / Territory / International Organization; and c) a meeting of the CAR Regional Project Steering Committee* to be held at the ICAO NACC Office in Mexico City in January 2009. * *Dominican Republic, United States, COCESNA, RASOS/CASSOS have committed representatives to the Steering Committee.*		ICAO			Valid
C	**3/4**	**ATM**	**IMPLEMENTATION OF THE NEW FLIGHT PLAN FORMAT**	That, considering the importance of Amendment 1 to Doc 4444 applicable in 2012, States / Territories / International Organizations develop a harmonized transition and implementation plan to the new ICAO Flight Plan format and ATS related messages in their automated systems, and present the results of this implementation no later than the NACC/DCA/4 Meeting.		States/Territories/ International Organizations			Valid
C	**3/5**	**CNS**	**REGISTRATION OF 24-BIT AIRCRAFT ADDRESSES WITH MODE S TRANSPONDERS**	That, taking into account that the use of global communications, navigation and surveillance systems is based on assigning exclusive aircraft addresses composed of 24-bit for ACAS, ELT, SSR Mode S, and ATN with VDL, AMSS and other functionality, States and Territories: a) apply the procedure established by ICAO to identify aircraft assigned 24-bit aircraft addresses in accordance with Annex 10, Volume III, Part I, Chapter 9, *Global plan for the allocation, assignment and application of aircraft addresses*; b) publish information on this registration procedure for user application; c) implement mechanisms to make this 24-bit aircraft address information available to users; and d) present progress on the above actions to the ICAO NACC Office not later than **30 November 2009**.	States/ Territories and COCESNA are invited to provide information on this regard in order to be considered as a task for the working groups through the working group. It is expected that this task will be incorporated into the PFF. These activities will be dealt under agenda item 2.2	States/Territories			Completed
C	**3/6**	**CNS**	**NAM/CAR STATES SUPPORT TO THE ICAO POSITION FOR THE ITU WRC-11**	That NAM/CAR States, Territories and International Organizations, in order to prepare and support the ICAO position for the ITU World Radiocommunication Conference – 2011 (WRC-11): a) support and follow-up on the work of ICAO to prepare and update its position for WRC-11; b) appoint a point-of-contact to serve as liaison with ICAO and with the national radio frequency spectrum management authority to coordinate matters concerning WRC-11 (February 2009); c) participate actively in Organization of American States (OAS) CITEL meetings in preparation for WRC-11; d) participate in any meetings and seminars convened by ICAO, which explain and analyze the WRC-11 position; and e) actively participate in WRC-11 in support of the ICAO position.	This issue will be dealt with under agenda item 2.3.4. The PoC designation has been requested through EMX0295. New PFF proposed for Agenda Item 2.2	NAM/CAR States/Territories/ International Organizations			Completed

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**3/7**	**ATM**	**USE OF THE CURRENT FLIGHT PLAN (CPL) AND REVIEW OF AUTOMATED SYSTEM(S) CAPACITIES**	That, as part of ATM automation implementation, taking into account the regional strategy for integrating ATM automated systems and the Interface Control Document (ICD) approved by GREPECAS, States/Territories and International Organizations: a) consider the use of the Current Flight Plan (CPL) for the exchange of updated flight plan data; b) study and review the ATM automation capacities/functionalities of their corresponding area control centres to meet future implementation requirements; c) inform results of actions in a) and b) to the ICAO NACC Office **not later than 31 September 2009**; and d) conduct CPL tests between adjacent area control centres where benefits related to this implementation could result, informing results to the ICAO NACC Office **not later than February 2010.**		States/Territories/ International Organizations			Valid
C	**3/8**	**MET**	**IMPROVEMENTS IN MET SERVICES AND AERONAUTICAL CHART PRODUCTION**	That the following be included in the Regional Technical Co-operation Project to improve MET and AIS services of the States/Territories: a) training programmes for MET personnel; b) OPMET information exchange in CAR States; c) follow-up on the implementation of the recommendations formulated in the 2008 MET SIP for the CAR Region; d) improved operational coordination and provision of MET services; e) participation of MET personnel in ICAO meetings; f) establishment of agreements between Civil Aviation Administrations and MET Authorities of CAR States / Territories / International Organizations; and g) aeronautical chart production. Note: Information to be included in the CAR Regional Project and presented to the CAR Regional Project Steering Committee Meeting in **January 2009.**	OPMET data(METAR and TAF) from all CAR States and Territories are currently available at OPMET data banks, but there are still some discrepancies with the ANP CAR/SAM. Several States have not established a Letter of Agreement between ATS and MET Services Few aeronautical meteorologists attend ICAO meetings and seminars	ICAO			Valid
C	**3/9**	**AIS**	**TRANSITION FROM AIS/MAP TO THE NEW AIM CONCEPT**	That States / Territories / International Organizations of the CAR Region: a) give priority to recommendations 6, 7 and 8 issued by the 2006 AIM Global Congress (Appendix G to this part of the Report); b) review the first version of the "*Strategic Project for the Transition to AIM*" to ensure implementation of appropriate actions for the transition from AIS to AIM (Appendix H to this part of the Report) and provide comments by **August 2009**; c) assign qualified personnel for development of new tasks and appropriate actions for transition from AIS to AIM; and d) include the AIS – AIM transition process in the CAR Regional Project.	States are invited to inform the progress on the transition from AIS to AIM.	CAR Region States/Territories/ International Organizations	Information from State on transition from AIS to AIM.	30/Set/09	Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**3/10**	**AVSEC**	**ENHANCEMENT OF INTERNATIONAL CIVIL AVIATION SECURITY**	That NAM/CAR States / Territories: a) continue supporting USAP and ensure implementation of their respective corrective action plans in compliance with Annex 17 SARPs; b) provide qualified AVSEC specialists in the form of Short-Term-Experts (STE) to provide training for the 2009 ICAO Training Schedule; c) contribute to the AVSEC Plan of Action; d) participate in courses and workshops on aviation security screener certification organized by ICAO for 2008 – 2010; e) provide ICAO with up-to-date information on their AVSEC and FAL points-of-contact (if not already done so) before 28 November 2008; f) implement the recommended guidelines on security controls for screening liquids, gels and aerosols; and g) provide ICAO with timely information on acts of unlawful interference that have occurred within their territories.	a) There have been some advance in some States with their Corrective Action Plan implementation. b) States provide STEs. c) States have been contributing the ICAO AVSEC Action Plan hosting AVSEC events. d) Not all States provide support or assign budget for participating in the ICAO AVSEC Training Programme. e) Changes of Points of Contact are not always informed officially to ICAO. f) States have adapted local regulations on LAGS. g) There is a lack of communications of acts or intent of acts of unlawful interference, and information is obtained from press or other sources.	NAM/CAR States/Territories Note: All AVSEC issues will be addressed by the new AVSEC/FAL Regional Group (AVSEC/FAL/RG).	Strengthening of the Regional Aviation Security System	31/Dec/10	Superseded by AVSEC/ FAL/RG
C	**3/11**	**GEN**	**HUMAN RESOURCE PLANNING AND TRAINING IN THE NAM/CAR REGIONS**	That those States / Territories / International Organizations that do not have Human Resource Planning for air navigation services, safety oversight and civil aviation security consider the guidance material included in Appendix A to this part of the Report, and a) develop, not later than **30 September 2009**, a five-year Human Resource Plan including a civil aviation personnel training programme that includes the implementation and operation of the ATM system, safety oversight and civil aviation security; and b) promote the participation of specialists in activities sponsored by ICAO (courses, seminars, workshops, etc.) taking into account that such activities are aimed at complementing and updating civil aviation personnel training.	This item will be dealt with under Agenda item 2.4	States/Territories/ International Organizations	Human resources plan and training Programme.	30/Set/09	Valid
C	**3/12**	**GEN**	**AERONAUTICAL TRAINING STRATEGY FOR THE CAR REGION**	That ICAO, in coordination with the CAR Region States, develop a regional training strategy that includes: a) determining CAR States training needs; b) develop regional instructors to train CAR Civil Aviation Administration aeronautical technical personnel; c) agreements to share training plans and programmes among the CAR Civil Aviation Training Centres (CATCs), taking into account the ICAO technical cooperation programmes; d) develop regional training guidelines in accordance with the ICAO TRAINAIR programme guidelines; and e) present progress on this regional strategy at the NACC/DCA/4 Meeting.	This item will be dealt with under Agenda item 2.4	ICAO	Present training strategy progress.	NACC/DCA /4 Meeting	Valid

APPENDIX D
STATUS OF CONCLUSIONS RELATED TO THE NINETH MEETING OF DIRECTORS OF THE CENTRAL CARIBBEAN (C/CAR DCA/9)

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	9/2	AGA	**FOLLOW-UP AND PRIORISED ATTENTION TO AGA/AOP ISSUES**	That, taking into account the importance of AGA/AOP issues on safety, the numerous existing deficiencies in this field and their negative impact on the results of the USOAP audits, the C/CAR States/Territories: a) follow-up on the development of AGA/AOP issues presented in Appendix I to this part of the Report; b) prioritise the implementation of action plans for AGA/AOP deficiencies; and c) adopt the regulations and other relevant measures in order to improve AGA/AOP safety.	States/Territories are to update the GANDD database, the FASID Table AOP 1 of the Regional Air Navigation Plan	C/CAR States/Territories	States/Territories should prepare action plans to correct the deficiencies described on the GANDD and update the CAR/SAM ANP	Before the GREPECAS/15 Meeting 13 October 2008	Completed

APPENDIX E
STATUS OF OUTSTANDING CONCLUSIONS (C) / DECISIONS (D) OF THE GREPECAS/15 MEETING CONCERNING THE CENTRAL CARIBBEAN WORKING GROUP (C/CAR WG)

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**15/1**	**ATM**	**DEVELOPMENT OF PERFORMANCE BASED REGIONAL AND NATIONAL PLANS**	That, GREPECAS develop a performance-based regional plan in accordance with the Global Air Navigation Plan and the Global ATM Operational Concept. This plan should include identification of regional performance objectives and completion of performance framework forms for all air navigation areas such as ATM, CNS, AIM, MET and AGA/AOP; and States, Territories and International Organizations, taking into account user needs, develop performance-based national plans in accordance with the regional performance objectives included in the Regional Air Navigation Plan. These national plans should encompass identification of national performance objectives and completion of performance framework forms for all air navigation areas such as ATM, CNS, AIM, MET and AGA/AOP.	ICAO NACC Office scheduled a workshop on national plans based on performance for 2009.	GREPECAS and States, Territories and International Organizations		Dec.2009	Valid
C	**15/8**	**MET**	**UPDATE TO WAFC WORKSTATIONS TO INTRODUCE CHANGES TO OPMET DATA**	That: a) the Washington WAFC provider State provide States and workstation vendors the necessary information on changes to the broadcast of products over the ISCS; b) States take the necessary action to update their workstations for the cut-over planned for 31 August 2008, to input the set of OPMET data; and c) States review the existing maintenance service contract for their ISCS workstations, which should provide the necessary support to update the database management programme. Note:The Washington WAFC provider State and the ICAO Regional Offices had taken the necessary action in August 2008, to minimize the impact of these changes on ISCS users.	In August 2008, States were informed that, according to information provided by suppliers of the MORCOM, COROBOR and INFOSYS WAFS workstations in the CAR Region. Non of the 2008 changes in the ISCS broadcasts would affect operation of their WAFS workstations.	Washington WAFC provider State and States			Valid
C	**15/9**	**MET**	**IMPLEMENTATION PLAN FOR THE TRANSITION FROM GRIB 1 TO GRIB 2 CODE FORM**	That States take note and appropriate action with respect to the transition plan for the implementation of the GRIB 2 code form adopted by the Fourth Meeting of the WAFS Operations Group (WAFSOPSG/4) presented as Appendix B to this part of the Report.	Message was sent to the CAR States concerning this urgent matter in August 2008	States			Valid
C	**15/10**	**MET**	**LETTERS OF AGREEMENT BETWEEN CIVIL AVIATION AND METEOROLOGICAL AUTHORITIES AND THE VULCANOLOGICAL AGENCY**	That in order to promptly notify all the parties involved and to mitigate the hazard to air operations within the first few hours following an eruption: • States make full use of Doc 9766-AN/968, Handbook on the International Airways Volcano Watch (IAVW) - Operational Procedures and Contact List; and • establish letters of agreement between the parties involved; in particular, the civil aviation and meteorological authorities and the volcanological agency, specifying the agreed responsibilities of each party. *Note: A sample letter of agreement is presented in Appendix A to Doc 9766-AN/968.*	Message was sent to the CAR States on this urgent matter in August 2008	States			Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	15/11	MET	**IMPLEMENTATION OF THE VOLCANO OBSERVATORY NOTICE FOR AVIATION (VONA) FORMAT**	That ICAO urge the States to implement the VONA format in order to: a) improve the transfer of information on volcanic activity to the ACC/FIC, the VAAC, and MWO; and b) provide feedback on the usefulness of the VONA and the adjustments to be considered by the International Airways Volcano Watch Operations Group.	In progress. Few aeronautical meteorologists attended Seminar /Workshop MET in Nicaragua.	ICAO and States			Valid
C	15/13	MET	**INCREASED FREQUENCY OF PERIODIC SIGMET WV TESTS**	That, in order to maintain constant feedback and efficiency in the issuance of volcanic ash SIGMETs, the States, in coordination with the corresponding VAACs, carry out periodic tests with bi-annual frequency during the months of May and November. Tests should last 48 hours.	All CAR States with active volcanoes participated in the first annual VA SIGMET test carried out in May 2009.	States			Valid
C	15/15[1]	MET	**TRANSITION TO THE NEW TAF FORMAT**	That CAR/SAM States/Territories be encouraged to visit the NWS webpage in order to learn more about the TAF format changes and test their processors with the models provided.	Transition to the new TAF code has been completed	States			Completed
C	15/19	AGA	**AERODROME CERTIFICATION TRAINING**	That: a) ICAO study the possibility of conducting a seminar/workshop on aerodrome certification in the CAR/SAM Regions with simultaneous interpretation in English and Spanish; b) this seminar/workshop be carried out in 2010; and c) ICAO urges States/Territories that still required training on this topic to send their technical staff to this event.	This event was carried out in Saint Lucia from 9 to 12 June 2009. If there is a possibility to carry out another event it will be held in 2010.	ICAO NACC Regional Office	Guide States/Territories in the Aerodrome Certification Process	December 2009	Completed
C	15/21	AGA	**SEMINAR ON AIRPORT DEMAND/CAPACITY FOR THE CAR/SAM REGIONS**	That: a) the ICAO NACC and SAM Regional Offices organize a seminar on Airport Demand/Capacity for the CAR/SAM Regions to be held in 2010, taking into account the main factors that impact airport capacity such as air traffic services, types of aircraft that are operating, weather conditions, and others; and b) ICAO urges States/Territories, airport operators and international organizations to send their technical officials and experts to participate in this event.	This event is planned to be carried out next year for the CAR/SAM regions.	ICAO States	Provide States with techniques to determine the demand and capacity at airports, mainly in those that are congested	December 2010	Valid
D	15/22	AGA	**SURVEY ON AERONAUTICAL STUDIES IN THE AGA FIELD**	That the Regional Offices circulate the questionnaire contained in Appendix D of the AGA/AOP/SG/6 Final Report to the States/Territories and international organizations, which should be completed and submitted to NACC and SAM Regional Offices not later than 30 March 2009.	The ICAO NACC Regional Office sent the survey to States/Territories in February 2009 to be completed and returned by 30 March 2009. Only 6 CAR States provided replies to this questionnaire.	ICAO and States	Know the implementation environment by States/Territories in accordance with Annex 14 specifications.	30 March 2009	Completed
C	15/23	AGA	**LOCATION OF OBSTACLES**	That the respective States/Territories determine the elevation and location of obstacles in the runway approach areas and update AIP information by the next meeting of the AGA/AOP/SG.	Letter Ref. EMX0462 dated 11 May 2009, was circulated to States so they can proceed to determine the elevation and location of obstacles in runway approach areas and in order to update the information in the corresponding AIP.	States	States to update and provide precise information in the AIP	December 2009	Valid

[1] ***Approved through GREPECAS fast track mechanism***

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**15/27**	**AIS**	**ADOPTION OF THE DRAFT STRATEGY FOR THE TRANSITION TO AIM**	That CAR/SAM States adopt the first version of the "Draft Strategy for the Transition to AIM" prepared by the AIM/QM/TF. Note:The document mentioned in the above conclusion will be available on the NACC Regional Office website www.mexico.icao.int, soon; this will be informed to States through a letter and messages to the respective AIM (AIS/MAP) Areas.	Inform progress on the transition to AIM.	States	Adoption of Guidelines	30/Set/09	Valid
C	**15/28**	**AIS**	**PRIORITY IN THE APPLICATION OF MEASURES FOR THE MIGRATION FROM AIS/MAP TO AIM SERVICES**	That civil aviation authorities of CAR/SAM States, Territories, and International Organizations assign high priority to the implementation of the Standards and Recommended Practices (SARPs) contained in Annex 4 and Annex 15, and that: a) the Secretariat of the AIM/SG prepare a survey on the status of implementation of ICAO SARPs in the AIM field (AIS/MAP) and send it to CAR/SAM States, Territories and International Organizations; b) States, Territories, and International Organizations send their replies to the accredited CAR and SAM Regional Offices not later than 31 May 2009; and c) if no answer is received by the date mentioned in item b), the respective SARPs be considered as NOT IMPLEMENTED.	Inform progress on the transition to AIM.	States, Territories, and International Organizations	Implementation of SARPS of Annexes 15 and 4.	31/05/09	Valid
C	**15/29**	**AIS**	**DATE OF AIRAC SYSTEM**	That States, Territories and International Organizations of the CAR/SAM Regions: a) publish an AIC each year that includes AIRAC based on effective dates of the aeronautical integrated documentation package, which includes the AIRAC system application in support of efficient use of the mentioned system, as well as the important impact that the system has on operational safety; b) publish aeronautical information that introduces significant changes impacting air navigation systems at least 56 days prior the effective date; and c) notify the NACC and SAM ICAO Regional Offices of the total implementation of the AIRAC system not later than 31 July 2009.	Report the AIC Publication	States, Territories, and International Organizations	Publication of AIC. Implementation of AIRAC system.	31 July 2009	Valid
C	**15/30**	**AIS**	**APPLICATION GUIDANCE OF THE HUMAN FACTORS PRINCIPLES IN AIS/MAP**	That States/Territories/International Organizations adopt, as Part 5 of the Guidance Manual for the implementation of a Quality System in the CAR/SAM AIS/MAP, the Application Guidance of the Human Factors Principles in AIS/MAP.	States are invited to inform on the aplication of guidance of AIS/MAP human factors principles.	States, Territories, and International Organizations	Implementation of Guidance Manual	30/Set/09	Valid
C	**15/31**	**AIS**	**RESTRICTED ACCESS IN AREAS WHERE AERONAUTICAL INFORMATION/DATA IS MANAGED IN WEB SERVERS AND NOTAM AND GIS DATA BASES**	That CAR/SAM States/Territories/International Territories take the following steps to protect the security of essential and critical information in the AIS/MAP and NOTAM areas by establishing: a) restricted access in spaces reserved for communications, data base servers and any other essential and critical information exchange equipment; and b) sufficient information technology firewalls in system data bases, network accesses and any other means that could permit alteration of sensitive information, which could turn into a safety risk.	States are invited to inform on the progress of restricted access designation.	CAR/SAM States, Territories, and International Organizations	Designation of AIS/MAP (AIM) and NOTAM restricted access.	30/Set/09	Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	15/32	AIS	**FOLLOW-UP ON THE DEVELOPMENT OF MODELS FOR THE EXCHANGE OF INFORMATION/AERONAUTICAL DATA FOR AIM**	That States, Territories, International and Organizations follow-up on the development of models for the exchange of information/aeronautical data for AIM in which ICAO has participation.	Participation in AIXM Seminar in Tegucigalpa, Honduras from 19 to 21 May 2009. States are invited to participate.	States, Territories, and International Organizations	Participation in AIXM Seminar.	31 May/09	Valid
C	15/33	AIS	**ACTIONS BY STATES FOR THE INTRODUCTION OF THE e-AIP DIRECTED TO AIXM**	That CAR/SAM States/Territories and International Organizations, when considering the management concept for aeronautical information through electronic means, provide the necessary training to AIS/MAP (AIM) personnel in the management of information technology systems and in the Aeronautical Information Exchange Model (AIXM), in order to become familiar with the essential and critical electronic data management characteristics, as background towards the preparation of an e-AIP.	Initiate transition from AIS to AIM.	CAR/SAM States, Territories, and International Organizations	Provide information in digital formats.	30 Jun/10	Valid
C	15/35	ATM	**IMPLEMENTATION OF THE NEW ICAO FLIGHT PLAN MODEL**	Considering that States should take measures to implement the new ICAO flight plan model pursuant to Amendment No. 1 to the 15th Edition of the PANS-ATM (Doc 4444), and in order to establish a regional strategy to facilitate global implementation of this amendment that: based on the guidance material to be prepared by ICAO, CAR/SAM States/Territories and International Organizations take the necessary measures to prepare for the transition to the new flight plan model; and the Subgroup establish a contributory body to develop a regional strategy for the transition to the new flight plan model in the CAR/SAM Regions and the provisions associated with ATS messages.	Will be dealt with under Agenda Item 2.3	States, Territories, and International Organizations			Valid
C	15/36	ATM	**MEASURES TO REDUCE OPERATIONAL ERRORS IN THE ATC COORDINATION LOOP BETWEEN ADJACENT ACCs**	That taking into account the impact of operational errors in the ATC coordination loop between adjacent ACCs on air operations safety: a) CAR/SAM States/Territories/International Organizations apply, on an urgent basis among other measures, the programme for the prevention of errors in the coordination loop between adjacent ACCs described in Appendix F to this part of the Report in order to reduce LHDs caused by errors in traffic coordination messages between ATC units to achieve an acceptable target level of safety; b) CAR/SAM States/Territories/International Organizations gradually implement the interface for data exchange among ATC units (AIDC); and c) ICAO coordinate, provides assistance, and conduct follow-up on the implementation of these corrective measures.	Will be dealt with under Agenda Item 2.3	States, Territories, and International Organizations			Valid
C	15/37	ATM	**REVIEW OF THE METHODOLOGY USED FOR SAFETY ASSESSMENT**	That ICAO review the methodology used for conducting post RVSM implementation safety assessments considering the fact that type M and N errors identified and used to perform this assessment may not be related to RVSM implementation.	ANC agreed that M and N type errors should be taken into account for safety assessment.	CAR/SAM States, Territories, and International Organizations			Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	15/38	ATM/ CNS	NATIONAL PBN IMPLEMENTATION PLANS	That in order to initiate PBN implementation and in accordance with Resolution 36/23, CAR/SAM States/Territories: a) develop their PBN national implementation plans by December 2009, and present them to the corresponding Regional Offices; b) consider using the PBN action plans models presented in Appendix G to this part of the Report as guidance material; and c) designate a Point-of-Contact who will coordinate PBN implementation activities in each State/Territory.	To consider with the requirements and infrastructure of required radio navigation. To be dealt with under agenda item 2.2	CAR/SAM States, Territories			Valid
C	15/42	CNS	AVAILABILITY OF GNSS RECEIVERS FOR PROJECT RLA/03/902 IONOSPHERIC ANALYSES AND STUDIES	In order to support the ionospheric analyses and studies being conducted by project RLA/03/902, CAR/SAM States/Territories/International Organizations are urged to inform ICAO, through their respective Regional Offices no later than 15 July 2009, about the existence and availability of GNSS receivers with an L1 and L2 data collection capability per second, reporting their geographic location and the type of equipment.	States/Territories are expected to provide information	CAR/SAM States, Territories, and International Organizations			Valid
C	15/44	CNS	USE OF GNSS IN THE SHORT-TERM	In order to comply with the implementation of the CAR/SAM PBN Roadmap, States/Territories/International Organizations are urged to complete the development and approval of GPS-based NPA operations, establishing regulations and procedures (NOTAM, AIC, etc.) for the use of RAIM GPS and Baro-VNAV GPS in the short-term.	These actions are included in the PFF (Agenda Item 2.2)	States, Territories, and International Organizations			Valid
C	15/45	CNS	REVIEW OF THE PLAN FOR THE PHASE-OUT OF NDB STATIONS	That States/Territories /International Organizations review and complete the information contained in the Regional Plan for the Phase-out of NDB Stations in the CAR and SAM Regions that appears in Appendix O to this part of the Report and send missing information to the respective ICAO Regional Offices before 15 July 2009.	States/Territories are expected to provide information. The current information has been included in Amendment to the Table CNS 3	States, Territories, and International Organizations			Valid
C	15/46	CNS	CAR/SAM REGIONAL ACTION FOR THE PREPARATION AND SUPPORT OF THE ICAO POSITION FOR WRC-11	That CAR/SAM States and International Organizations, in preparation and support of the ICAO position for the ITU World Radio Communication Conference – 2011 (WRC-11): support and follow-up on the work of ICAO to prepare and update its position for WRC-11; appoint a focal point or a contact person to serve as a liaison with ICAO and with the national radio frequency spectrum management authority to coordinate matters concerning WRC-11; participate actively in the Organization of American States (OAS) CITEL meetings in preparation for WRC-11; participate actively in any meetings and seminars convened by ICAO to explain and analyze the position of this organization for WRC-11; participate actively in WRC-11 in support of the ICAO position; and f) recommend and implement other appropriate measures.	To be dealt with under agenda item 2.3.4. Message EMX0295 on the designation of PoCs should be taken into account. New PFF proposed for Agenda Item 2.2.	States, Territories, and International Organizations			Valid

C/D	No.	Field	Title	Text of Conclusion (C) / Decision (D)	Follow-up	Action for	Deliverable	Target date	Status
C	**15/47**	**GEN**	**FURTHER ACTIONS TO IMPLEMENT CONCLUSION ASB/8/2**	In order to complete Conclusion ASB/8/2 that: a) immediately after the GREPECAS/15 Meeting, the ICAO Regional Offices forward to IATA and IFALPA the list of "U" air navigation deficiencies currently available in the GANDD; b) States that have been not yet done so carry out the "U" deficiency risk assessment and submit results to the accredited Regional Office not later than 5 January 2009; c) IATA and IFALPA carry out the "U" deficiencies risk assessment and submit the results to the ICAO Regional Offices not later than 1 March 2009; and d) ICAO conduct a special ASB Meeting at the NACC Regional Office in Mexico City in April 2009, to analyze the results of the completed exercise.	States are invited to present a Report on the evaluation progress.	States	To the NACC Office the Evaluation Report on "U" Deficiencies risk.	30/Set/09	Valid

APPENDIX F

TERMS OF REFERENCE AND WORK PROGRAMME OF THE CENTRAL CARIBBEAN WORKING GROUP (C/CAR/WG)

1 Background

The Central Caribbean Working Group was established by Conclusion 4/10 of the Fourth Meeting of Directors of Civil Aviation of the Central Caribbean, held in the Cayman Islands from 17 to 20 May 2000, to deal with the development of air navigation systems/service issues in the Central Caribbean. The aforementioned Meeting also agreed that ICAO should assist in the establishment of the Working Group and provide Secretariat services.

Conclusion 4/10 Establishment of a Central Caribbean Work Group (C/CAR/WG)

That,

a) an informal work group dealing with the air navigation areas be established for the Central Caribbean;

b) the ICAO Regional Office prepare the Terms of Reference and Work Programme for the work group and provide Secretariat services;

c) the ICAO Regional Office, by 30 July 2000, should circulate the Terms of Reference and Work Programme for the work group to all States/Territories in the Central Caribbean as well as to relevant International Organizations for comments and invite them for the nomination of members of the working group;

d) the work of the C/CAR ATS Task Force be incorporated into the tasks of the work group and that the ATS Task Force be disbanded, with the appropriate note of gratitude being sent to its members by the ICAO Regional Office on behalf of the States/Territories of the Central Caribbean; and

e) a meeting of the work group be scheduled prior to the Fifth Meeting of the C/CAR Directors of Civil Aviation.

2. Terms of Reference

a) coordination of the implementation of the CAR/SAM Air Navigation Plan and other relevant regional documentation, in compliance with ICAO SARPs, as required;

b) facilitation for the development of emerging aviation issues focusing on continued improvements to operational efficiency through coordinating harmonised procedures and promote interoperability of networks and implementation of new technologies;

c) development of implementation initiatives and associated technologies to improve safety, increase operational and economic efficiency and/or capacity of regional Air Navigation Services;

d) coordination to implement the performance objectives related to Regional Air Navigation Services with regard to GPIs;

e) share information on implementation initiatives for enhancing compatibility of air traffic operations; and

f) technical advice to the C/CAR Directors General as applicable, initiatives to the CAR Regional Implementation Plan and any other necessary steps for implementation.

3. Work Programme

a) consider the deadlines for implementation of facilities, services and procedures to improve ANS in the CAR Region;

b) develop guidelines and recommendations for States/Territories to implement their national plans;

c) recommend the implementation of air navigation facilities and services to ensure interregional harmonization, taking due account of performance metrics, environmental benefits and operational issues;

d) provide recommendations to improve human resources planning and development in line with ICAO guidelines;

e) associate in a logical manner the implementation of initiatives with the seven components of Doc 9854, (AOM, DCB, AO, TS, CM, AUO ATMSDM) as appropriate;

f) quantify cost/benefit analysis in terms of performance measures, deadlines, responsible body for implementation and results as well as human factors performance;

g) report the work programme progress to the NACC Working Group.

4. Working Methods

a) the Chairperson of the C/CAR/WG will be a representative from the State/Territories designated by the Meeting for a three-sessions period;

b) avoid duplication of work and maintain a close coordination between States/Territories/International Organization and users to optimised the use of available resources and experience;

c) carry out the coordination of tasks using electronic tools and teleconferences to guarantee an efficient exchange of information, when required, etc.;

d) the meetings will be convened every year or when necessary and the ICAO Regional Office will provide Secretariat services.

5. Membership

Aruba, Bahamas, Cayman Islands, Colombia, Cuba, Dominican Republic, Haiti, Jamaica, Mexico, Netherlands Antilles, Panama*, Turks and Caicos Islands, United Kingdom, United States, Venezuela*, ACI, COCESNA, IATA, IFALPA and IFATCA.

* To be invited.

APPENDIX G

PROGRAMME FOR THE ROTATION OF FUTURE MEETINGS OF THE CENTRAL CARIBBEAN WORKING GROUP

Meeting	**States/Territories**
8th Meeting	United States
9th Meeting	ICAO NACC Regional Office, Mexico City
10th Meeting	Aruba
11th Meeeting	Bahamas
12th Meeting	Turks and Caicos Islands
13th Meeting	ICAO NACC Regional Office, Mexico City
14th Meeting	Cayman Islands

Agenda Item 4: Other business

4.1 Next meeting site, dates, and funding

4.1.1 Under this Agenda item the Information Paper 14 was discussed, and the Meeting was briefed on the importance of confirming the focal points designated by the States/Territories/International Organizations of the C/CAR WG, to this end, the Meeting was encouraged to send the names and e-mail addresses of the members of the Working Group to the ICAO NACC Regional Office. In this sense, the Meeting commented and approved the Central Caribbean Working Group Membership, which is included in number 5 of the Appendix F to the Report on Agenda item 3, as well as the rotation programme of meetings, included in the Appendix G to the Report on Agenda item 3.

4.1.2 The Meeting was made aware that, due to financial restraints faced by ICAO concerning traveling to some State/Territory of the C/CAR Area, the NACC Regional Office might be the venue for a future meeting.

4.1.3 In this regard, when discussing the subject of the next C/CAR WG/8 Meeting, the United States kindly offered to host that event in Miami from 17 to 20 May 2010.

Historical Meetings host

4.14 The previous Central Caribbean Working Group Meetings (C/CAR WG), have been held in the following sites and dates:

- First Central Caribbean Working Group Meeting (C/CAR WG/1), held in the ICAO NACC Regional Office in Mexico City, from 19 to 23 February 2001.
- Second Central Caribbean Working Group Meeting (C/CAR WG/2), held in Pétion Ville, Haiti, from 18 to 22 February 2002.
- Third Central Caribbean Working Group Meeting (C/CAR WG/3), held in Willemstad, Curazao, Netherlands Antilles, from 24 to 28 March 2003.
- Fourth Central Caribbean Working Group Meeting (C/CAR WG/4), held in Santo Domingo, Dominican Republic, from 9 to 13 February 2004.
- Fifth Central Caribbean Working Group Meeting (C/CAR WG/5), held in the ICAO NACC Office, Mexico City, Mexico, from 21 to 24 February 2005.
- Sixth Central Caribbean Working Group Meeting (C/CAR WG/6), held in La Havana, Cuba, from 20 to 24 February 2006.
- Seventh Central Caribbean Working Group Meeting (C/CAR WG/7), held in the ICAO NACC Office, Mexico City, Mexico, from 13 to 16 February 2009.