



Agenda Item 3: Activities for the development of the air navigation systems/services
3.2 Air Traffic Management (ATM)

IMPLEMENTATION OF AIR TRAFFIC FLOW MANAGEMENT (ATFM) IN THE NAM/CAR REGIONS

(Presented by the Secretariat)

SUMMARY

This Working paper presents up-to-date information on required tasks in the ATM field, issued by the conclusions of the C/CAR DCA/7, NACC/DCA/2 and GREPECAS/13 meetings.

References:

- Report of the Fifth Central Caribbean Working Group Meeting (C/CAR WG/5), (Mexico City, Mexico, 21 to 24 February 2005).
- Report of the Second Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/2), (Tegucigalpa, Honduras, 11–14 October 2005)
- Report of the Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/13), (Santiago, Chile, 14 to 18 November 2005).

1. Introduction

1.1 The Fifth Central Caribbean Working Group Meeting, considering the guidelines of the Eleventh Air Navigation Conference (AN-Conf-11) on the early evolution of global air traffic management (ATM), agreed to begin ATFM implementation studies designating the points of contact for the corresponding studies through the following conclusion:

Conclusion 5/24 - ATFM Points of Contact in the Central Caribbean

1.2 The Second Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/2), considering the need for establishing a balance between demand and capacity, agreed that States, Territories and International Organizations of the NAM/CAR Regions should begin coordination activities for the development of a NAM/CAR inter-regional ATFM system, and consequently, it adopted the following conclusions:

Conclusion 2/18 - Implementation of Air Traffic Flow Management (ATFM) in the Central American FIR

Conclusion 2/19 – Implementation of the ATFM System in the NAM/CAR Regions

1.3 The Thirteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/13), formulated, among other, the following conclusions concerning the development of Air traffic flow management (ATFM):

- **Decision 13/64 - Centralized ATFM Objectives, Principles and Functions and Requirements for its Implementation**
- **Decision 13/65 - Model Action Plan for ATFM Implementation in the CAR/SAM Regions**
- **Conclusion 13/67 - ATFM Events**
- **Decision 13/69 - Efficiency in the Use of Fuel**

2 Discussion

2.1 In several NAM/CAR Flight Information Regions in the past years, air operations saturation periods have occurred; it is foreseen that this problem will continue growing between traffic flows of the NAM Region from/to the Eastern Caribbean and of the Caribbean from/to Europe, which have kept a continuous growth of operations.

2.2 Operators have expressed GREPECAS their concern for the high cost of fuel and since this crisis affects airlines, as well as the fuel savings campaign initiated by IATA, through which service ATS providers have been requested to adopt actions addressed to the achievement of the greatest possible efficiency in the use of fuel, which would undoubtedly help users to overcome the cost problem. GREPECAS has expressed its commitment of taking into account this situation in all its activities aimed at studying and developing new strategies and ATM implementation.

Implementation of ATFM System in the NAM/CAR Regions

2.3 Air traffic flow management (ATFM) is a service addressed to ensure a balance between air traffic with the declared capabilities and helps air traffic control (ATC) to use to the maximum extent its capacity to serve service demand. In order to attain its objectives, ATFM monitors air traffic and, if applicable, issues management initiatives to keep a safe, orderly and timely movement of the air traffic flow.

2.4 A collaborative decision-making (CDM) process facilitates the planning, coordination and the dynamic application of ATFM initiatives for an efficient airspace and airports management, which results in an efficient use of resources and capacities in air operations, as well as in financial benefits for users and ATS providers. CDM also provides an equitable access to information, which in turn facilitates a better planning of air operations at the airports and accommodates the preferred routes of airspace users.

2.5 The NACC/DCA/2 and the GREPECAS/13 Meetings concluded that the CAR Region, including Mexico, Central America, the Central Caribbean and the Eastern Caribbean are characterized as an homogeneous ATM area with similar operational features and needs, and therefore, as a potential scenario for ATFM implementation, in view that ATFM implementation will have an impact on all the FIRs of the CAR Region, the States, Territories and International Organizations of the NAM/CAR Regions should initiate ATFM coordination activities for balancing ATS demand and capacity. The adopted joint strategy for the development of an interregional NAM/CAR ATFM system is included in **Appendix A** to this Working paper.

2.6 The NACC/DCA/2 Meeting recognized that traffic growth in the NAM and CAR Regions represents new conquests and collaboration opportunities to achieve the goal of regional ATM development. With regard to the aspects for the harmonious implementation of the ATFM service, the States and Territories of the Central Caribbean should review the ATS organization and management allowing an optimization and better flexibility and use of airspace and airports for the benefit of users and service providers. Other aspects to be resolved in the short-term are the following:

- the harmonization of the States' aeronautical rules;
- the development of an ATFM operational procedures manual for its common application in all the regions, including specifications to determine the airport capacity and ATS capacity;
- the improvements regarding surveillance and automated systems for aircraft data processing as well as the development and co-ordination of ATFM messages;
- the effective planning of human resources and required training aspects;
- improvements of traffic forecast;
- improvements of random routes, as well route network programmes; and
- to encourage new operational agreements between ATS users and providers for ATFM implementations, especially in those areas where flow problems are already present caused by the traffic increase.

2.7 Based on the paragraphs above, the Meeting should approve the following

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CONCLUSION 6/X

ATFM PROCEDURES DEVELOPMENT

That C/CAR States/Territories develop an ATFM Manual to serve as a basis for the provision of ATFM service in the different FIRs of the C/CAR.

2.8 GREPECAS has also developed an action plan included in **Appendix B** with detailed information on the required planning activities for the implementation of a CAR/SAM interregional ATFM system, considering the ATM evolutionary tables of the CAR/SAM Air Navigation Plan (ANP) FASID.

2.9 Due to the different characteristics and needs of the FIRs of the CAR and SAM Regions, GREPECAS agreed to work towards a common ATFM planning for both regions and the implementation will be carried out by the different CAR and SAM Working Groups, considering the implementation of at least one centralized ATFM unit for the CAR Region and another one for the SAM Region.

2.10 COCESNA and FAA have established an agreement to share operational information through the use of the ETMS to monitor traffic flows to/from the NAM/CAR/SAM Regions and has kept a constant communication with ICAO NACC Office in order to coordinate the corresponding regional implementation activities. COCESNA has also identified an additional oceanic-continental traffic flow of medium intensity between Central America and Miami which will impact the ATFM development in the Central Caribbean.

2.11 United States has expressed its intent to work with the Caribbean Region to develop an ATFM system and to implement the corresponding initiatives. FAA was recently been added co-operation activities related to the Air Traffic Management (ATM) work programme for the Caribbean Region in order to work jointly with all the adjacent States of the Region.

2.12 The Meeting should establish operational agreements between ATS units in the short term and other agreements that might be necessary the mid-term. Therefore, the following Draft Conclusion is suggested for the Meeting's consideration:

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CONCLUSION 6/X

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.

3 Conclusion.

3.1 The ATFM implementation activities will facilitate the path towards a seamless global harmonized and inter-operable air traffic management (ATM) system, merging efforts, data, knowledge, ideas, and concepts, and will contribute with great financial benefits, an enhanced safety, an increased ATM system capacity, and effectiveness of air operations. ATFM planning should take into account the guidelines of the ATM implementation road map of the Global Air Navigation Plan.

3.2 In order to meet these regional goals, the NACC Office has convened a regional NAM/CAR ATM meeting for year 2006, to be held in Santo Domingo, Dominican Republic and an ATFM seminar to be held in Tegucigalpa, Honduras. Their main purpose is to examine all the aspects related with ATM planning and implementation and to define specific actions for the development and implementation of an ATFM system in the CAR Region in harmony with other Regions.

3.3 Taking into account that the implementation of the ATFM service needs to carry out a series of well-coordinated activities among the States and Territories, the C/CAR WG should support the participation of ATM officers in the activities organised by the ICAO NACC Office and review the joint strategy agreed by the NACC/DCA/2 Meeting and the action plan approved by GREPECAS to develop its activities schedule focused at the harmonious implementation of the ATFM service in the Central Caribbean. To that end, the Meeting should consider formulating the following draft conclusion:

DRAFT**CONCLUSION 6/X****PERSONNEL INVOLVED IN ATFM ACTIVITIES**

That the C/CAR States/Territories/International Organizations support the development of specialists involved in ATFM implementation and their participation in the different related activities to be developed in coordination with the ICAO NACC Office.

4. Suggested action

4.1 Bearing in mind the foregoing background, the Meeting is invited to:

- a) note the information presented in this Working paper;
- b) adopt the Draft Conclusions mentioned in paragraphs 2.7, 2.12 and 3.3;
- c) provide up-to-date information on the development of the national ATFM implementation plans;
- d) name the points of contact (POC) of the States and Territories who will serve as liaison for the studies of ATFM implementation in the Central Caribbean;
- e) recommend specific actions for the implementation of Air Traffic Flow Management (ATFM) in the Central Caribbean;
- f) recommend the appropriate actions to improve ATS management in the airspace and international aerodromes of the Central Caribbean;
- g) support the participation of ATM officers of the C/CAR at the regional NAM/CAR ATM meeting to be held in Santo Domingo, Dominican Republic; and
- h) recommend other actions as appropriate.

APPENDIX A

JOINT STRATEGY FOR EXPANDING AIR TRAFFIC FLOW MANAGEMENT (ATFM) SYSTEM

Supported by the North American, Central American and Caribbean, (NACC) Civil Aviation Authorities (CAA) and Air Navigation Service Providers (ANSPs)

The North American, Central American and Caribbean (NACC) Directors General of Civil Aviation (DCAs) and Air Navigation Service Providers (ANSPs) recognize the need to expand air traffic flow management capability within and between NAM and CAR Regions, as a means to improving airspace capacity, traffic flow, and efficiency of air operations in response to growing demand by aircraft operators and service providers.

The Directors General of Civil Aviation (DCAs) and Air Navigation Service Providers (ANSPs) acknowledge that forecast traffic growth between of NAM and CAR Regions (7% per year) warrants near-term action to maintain efficient air operations between both regions.

The Second Meeting of North American, Central American and Caribbean, Directors General of Civil Aviation (NACC/DCA/2) agree that increased ATFM capability must be based on a collaborative decision making (CDM) process in order to have a significant and positive impact on coordinated air traffic flow management. The benefits resulting from inter and intra-regional ATFM based on the CDM model, include:

- A focus on ensuring system performance by supporting the facilities and offering alternatives;
- Implementation of balancing ATS demand capacity initiatives on wide regional and interregional ATFM system;
- A total picture approach on how restrictions affect customers or adjacent facilities;
- Minimized delays and reduced costs for the customers through improved ATFM within and between regions;
- Avoid additional flight time resulting from congestion, weather or short staffing situations;
- Common Situational Awareness for ATM community;
- Collaborative Decision Making (CDM) between ATM Community to ensure the most efficient use of airspace resources; provide equitable access for all airspace users; accommodate user preferred routes; and ensure that service demand will not exceed its capacity;
- Management of contingency situations;
- Focal point for sharing of ATFM information (one stop shopping) for customers, ATS units, operational managers and other service providers;
- Enhanced ATM safety management and performance assessment;
- Structure to support procedures for in flight contingency and operations;
- Assist the operators and users in making the best flight planning decisions;
- Ability to report the actual situation, system wide and in real time; and
- Enhanced communication, planning and coordination between Air Traffic Services Providers and customers will lead to better decision making.

The North American, Central American and Caribbean Directors General of Civil Aviation recognize that implementation of a regional and interregional ATFM capability will follow a progressive and phased process based on various factors including the traffic flow and coordination requirements with adjacent Regions. This strategy will ensure that a logical and economical approach to establishing a regional and interregional ATFM capability is undertaken. ATS Providers will need to assess their ATFM requirements in coordination with ATS Providers of adjacent FIRs to determine the optimum ATFM capability, based on:

- A common understanding of ATFM options;
- A prioritized approach that considers costs/benefit analysis;
- A systems approach, developed with the customers;
- A commitment to support and participate in the joint strategy to develop ATFM system.

In developing an ATFM capability, the North American, Central American and Caribbean Directors General of Civil Aviation agree that the ATFM system should strive for:

- A common understanding of ATFM philosophies with users;
- A common application of air traffic flow management initiatives across FIRs;
- Compatible automation systems;
- Common ATFM terms and procedures;
- Develop common training programs;
- Use of compatible operational situation displays;
- Develop an orchestrated implementation plan;
- Sharing new ideas and concepts;
- Encourage collaborative decision making between ATS providers and users.

The North American, Central American and Caribbean, Directors General of Civil Aviation support the implementation of regional and interregional Air Traffic Flow Management capability by taking coordinated action on strategic issues. Initial areas for coordination in the near term include: training, technical assistance, air traffic control inter-facility data exchanges; best practices; and operational agreements for coordination of air traffic flow management in adjacent airspace.

The North American, Central American and Caribbean, Directors General of Civil Aviation support a strategy for ATFM capability system based on the collaborative decision making model and a progressive development process that recognizes traffic levels and coordination requirements; agree that this strategy provides a realistic and economical approach to establishing ATFM capability, benefiting the ATS Providers and customers and leading to more efficient and cost-effective air operations.

The North American, Central American and Caribbean, Directors General of Civil Aviation therefore plan to pursue this harmonized and coordinated implementation strategy for expanding air traffic flow management capability in the near term in order to obtain the capacity and efficiency necessary to accommodate the forecast traffic growth in and between the North American (NAM) and Caribbean (CAR) Regions.

APPENDIX B / APÉNDICE B

LISTA DE TAREAS PARA LA IMPLANTACIÓN DEL SISTEMA ATFM EN LAS REGIONES CAR/SAM / CAR/SAM ATFM SYSTEM IMPLEMENTATION TASKS LIST				
ID	Descripción Tarea/ Task Description	Inicio/ Start	Termino/ Finish	Nombre de Recursos/ Resource names
1.0	Asuntos Operacionales para la implantación del Sistema ATFM /Operational Issues for ATFM implementation system			
1.1	Identificar necesidades operacionales / Identify Operational Needs			
	Desarrollar y actualizar el Concepto Operacional / Develop and update Operational Concept			
1.3	Definir espacio aéreo afectado/ Define airspace affected			
1.4	Definir planes de recolección de datos / Define data collection plan			
1.5	Recolección de datos para el análisis de ATFM / Data collection for ATFM analysis			
1.6	Definir y analizar escenarios para implantación del sistema ATFM / Define and analyze of ATFM scenarios for implementation system			
1.7	Examinar factores operacionales entre demanda y capacidad de servicio asociada con la implantación/ Examine the operational factors between demand of service and capacity associated with implementation			
1.8	Determinar las herramientas requeridas / Determine required tools			
1.9	Desarrollar, la documentación internacional y regional necesaria (Manual de Procedimientos) / Develop, necessary international and regional documentation(Handbook procedures)			
1.10	Desarrollar las políticas y procedimientos ATFM / Develop ATFM policies and procedures			
1.11	Detallar los requerimientos necesarios incluyendo los parámetros de performance/Detail the necessary requirements, including the performance parameters			
1.12	Determinar los mensajes ATFM/ Determine the ATFM messages			
1.13	Proporcionar información para el análisis de Costo - Beneficio / Provide data to the Cost Benefit Analysis			
1.14	Preparar planes y material de capacitación ATFM / Prepare plans and ATFM training material			
2.0	Coordinación con Estados, Territorios, Organizaciones Internacionales e Industria involucrados / Coordination with adjoining States, Territories, International Organizations and Industry.			
2.1	Publicar los Suplementos AIP/NOTAM necesarios / Publish necessary AIP Supplement/NOTAM			
2.2	Comunicarse con Estados, Proveedores ATS, Proveedores de comunicaciones y usuarios del espacio aéreo / Communicate with States, ATS Providers, Communications Service Providers and airspace users			
2.3	Diseminación de información para los Usuarios ATS / Information dissemination to ATS Users			
3.0	Desarrollo de procedimientos para usuarios del espacio aéreo / Develop airspace users Procedures			
3.1	Revisar planes de contingencia ATM / Review ATM contingency planning			
3.2	Revisión de practicas y procedimientos para la gestión de consumo de combustible y cuidado ambiental / Review of fuel and environmental management practices and procedures			
4.0	Desarrollar procedimientos ATC / Develop ATC Procedures			
4.1	Determinar necesidades para simulaciones / Determine need for simulations			

LISTA DE TAREAS PARA LA IMPLANTACIÓN DEL SISTEMA ATFM EN LAS REGIONES CAR/SAM / CAR/SAM ATFM SYSTEM IMPLEMENTATION TASKS LIST				
ID	Descripción Tarea/ Task Description	Inicio/ Start	Termino/ Finish	Nombre de Recursos/ Resource names
4.2	Armonizar requerimientos de los ANPs / Harmonise ANPs requirements			
5.0	Realizar verificación del sistema / Perform system verification			
5.1	Completar pruebas y evaluaciones de las herramientas ATFM y procedimientos de coordinación de la ATFM / Complete trials and evaluation of ATFM tool and coordination procedures with ATFM			
5.2	Realizar evaluación de la performance del sistema / Carry out measuring performance system			
5.3	Validación del sistema / System validation			
6.0	Decisión final de implantación / Final Implementation Decision			
6.1	Revisar factores que afectan la decisión de implantación / Review all factors affecting implementation decision			
6.2	Declarar implantación operacional definitiva dentro de área definida / Declare full operational capability within defined area			
6.3	Desarrollar plan de seguimiento del Sistema ATFM posterior a la implantación / Develop Post-Implementation follow-up Plan for ATFM system			
7.0	Monitorear performance del sistema / Monitor System Performance			
7.1	Realizar monitoreo del sistema / Perform follow-on monitoring system			