



International Civil Aviation Organization

North American, Central American and Caribbean Office

**Second Meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/2)**

Tegucigalpa, Honduras, 11 – 14 October 2005

NACC/DCA/2-WP/12

12/09/05

**Agenda Item 3: Air Navigation Services**  
**3.1 CNS/ATM**

**ATM DEVELOPMENTS**

(Presented by the Secretariat)

**SUMMARY**

This Working paper presents the regional developments in the ATM field, as a result of the tasks of the Working Groups of North America, Central America and the Caribbean carried out according to the conclusions of the GREPECAS/12 and NACC/DCA/1 meetings

**References:**

- Report of the First North America, Central America and Caribbean Directors of Civil Aviation Meeting (Grand Cayman, Cayman Islands 8-11 October 2002).
- Report of the 12th Meeting of the CAR/SAM Regional Planning and Implementation Group, GREPECAS/12 (Havana, Cuba, 7-11 June 2004).
- Report of the Fourth Meeting of the GREPECAS ATM/CNS/SG (Mexico City, Mexico, 15-19 August 2005).

**1. Background**

1.1 The First North American, Central American and Caribbean Directors of Civil Aviation Meeting (NACC/DCA/1), agreed on working guidelines of the main issues for the ATM field in the NAM and CAR Regions through the following conclusions:

- **Conclusion 1/10** – National RNAV/RNP Implementation Programmes for the CAR Region
- **Conclusion 1/11** – Development of a National RVSM Implementation Plan in the States/Territories/COCESNA in the CAR Region
- **Conclusion 1/15** – Support for the Continuing Development and Implementation of CNS/ATM Systems in the CAR Region
- **Conclusion 1/19** – Agreement on ATS Contingency Plans and Supporting Services for the CAR Region

1.2 The 12th Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/12) agreed, among others, the following conclusions concerning the development of Air Traffic Management (ATM):

- **Conclusion 12/7** – Guidance Material for the Implementation of RNAV Routes in the CAR/SAM Regions.
- **Conclusion 12/9** – Implementation of SIDs and STARs.
- **Conclusion 12/10** – Use of Reporting Point and ATS Route Designators.
- **Conclusion 12/14** – Collection of Large Height Deviations (LHD).
- **Conclusion 12/20** – Harmonization of the RVSM Implementation Date for the CAR/SAM and NAM Regions.
- **Conclusion 12/23** – States/Territories/International Organizations Official Approval for RVSM Implementation in the CAR/SAM Regions.

## 2. *RVSM Implementation*

2.1 In accordance with the action plan approved by GREPECAS/12 the States/Territories/International Organizations of the CAR/SAM Regions successfully implemented on 20 January 2005 at 09.00 UTC the reduced vertical separation minimum (RVSM) from FL 290 to FL 410 inclusive, homogeneously with the NAM Region.

2.2 As a follow-up to the implementation, the ICAO NACC Regional Office monitored the transition procedures carried out in the FIRs of the NAM and CAR Regions, in close communication with ICAO Headquarters. As a result of this implementation, the Secretary General of ICAO sent a congratulatory letter to the representatives of the involved civil aviation authorities.

2.3 In accordance with the information provided by the Administrations, during the first hours of implementation some problems and minor coordination issues arose; nevertheless, to date no similar situations have been reported, and coordination among the adjacent ACCs and other ATS units are performed normally without major problems.

2.4 The States agreed through the activation of Scrutiny Working Groups to analyze the information provided regarding all reported large height deviations (LHDs) of 300 feet or more. The review of this data has revealed that errors in ATC-unit-to-ATC-unit coordination generated the greatest percentage of the deviations, and therefore, the Working Groups recommended remedial action to reduce the number of LHDs caused by errors in ATC-unit-to-ATC-unit coordination.

2.5 Taking into account these errors in the ATS coordination loop have a direct impact on safety, the CAR/SAM States/Territories/International Organizations should ensure the application of suitable measures in order to timely report and to reduce this type of errors.

### **3                    *ATS Letters of Agreement (LOAs)***

3.1                    As a result of the RVSM implementation, all the LOAs between ATC units were updated during 2004. This task reflects one of the great co-operation efforts carried out by States/Territories/International Organizations responsible for the provision of air traffic services to achieve a complete agreement throughout the NAM, CAR and SAM Regions.

3.2                    In addition, in the NAM and CAR Regions other operational and technical agreements between adjacent ACCs are being analysed for the implementation of the service for the air traffic flow management and for interfacing ATM automation systems. It is expected that these operational agreements will be finalized in the short term in a bilateral and/or multilateral fashion.

### **4                    *RNAV Routes and Required Navigation Performance (RNP) Implementation***

4.1                    Since 2000, when the ATS routes revision process began, 45 RNAV routes have been implemented, 38 were realigned and 6 were deleted, all submitted for consideration by and approval of the ICAO Council. Recently, the implementation of 9 RNAV routes, realigning 6 and deleting 3 routes was agreed upon, thus the corresponding procedures for the development of a proposal for amendment to the Basic ANP are carried out in order to send it to the ICAO Council for its approval.

4.2                    At the end of all this process, in 2005 it is expected that 54 RNAV Routes will be implemented; realigning 44 routes and deleting 9 routes. A permanent review of the route network in order to respond to the user's requirements will continue.

4.3                    Additionally, the NACC Office has continued coordination with the States of the NAM Region for the harmonization of ATS route designators and of the allocated polar routes in coordination with the ICAO APAC Office. The regional activities performed for the NAM and CAR airspace organization include the review and provision of 5-letter name codes designators as established in ICAO Annex 11.

4.4                    Bearing in mind that the RNAV/RNP routes and procedures also provide important operational advantages to ATS service users and providers in those terminal areas (TMAs) and airports serving as a start/end, a regional implementation strategy of GNSS procedures and SID and STARs standardized procedures among the airports and the RNAV routes which are already implemented or under implementation process was developed, so as to allow a greater use of airspace, a task that has been supported by GREPECAS/12.

4.5                    To this end, a NAM/CAR/SAM Regional Seminar on RNAV and RNP Implementation was held in Mexico City, Mexico, from 11 to 13 August 2005. The seminar had the purpose to provide updated ICAO information related to required navigation performance (RNP) and area navigation (RNAV), such as performance air navigation applications, approach procedures, relations between OPS approval and airspace planning, concepts, terminology and definitions associated with RNP and RNAV.

4.6 In view of the importance of the matters presented, the most relevant aspects of the seminar are included in **Appendix A** to this paper, for consideration by the States, Territories and International Organizations when planning RNAV and RNP.

## **5. *Search and Rescue***

5.1 In collaboration with the Dominican Republic Civil Aviation Authority, the ICAO NACC Office organized a SAR Seminar for the CAR Region, held from 28 March to 1 April 2005. Likewise, a SAR Seminar for the Central American FIR was conducted in the ICAO NACC Office from 29 to 30 August 2005. The seminars focused mainly on the requirements and harmonization aspects of the SAR service included in the audits programme of ICAO such as the organization, legislation and documentation, cooperation agreements, drills and SAR quality assurance.

5.2 As a result of the work carried out, it was recommended that the SAR plans and cooperation agreements among States be adjusted to ICAO guidelines and to the IAMSAR Manual (Doc 9731), which has the advantage of harmonizing the future SAR tasks.

5.3 On the other hand, in accordance with the information provided to the NACC Office that has been presented at the meetings of the Working Groups, an assessment exercise of the status of SAR services in the CAR Region was developed. The results of this assessment are depicted in **Appendix B** to this Working paper. The assessment was conducted using a methodology that has been applied in other regions, with the aim of detecting weak SAR implementation areas in order that ICAO can provide suitable assistance to the States.

## **6. *ATM Contingency Plans***

6.1 Since 25 November 2003 new requirements to Annex 11 for States to develop their ATM contingency plan for airspace and aerodromes under their jurisdiction became applicable. These contingency plans should be approved by the President of ICAO Council, when a deviation from what is established in the air navigation plan is envisaged.

6.2 In the CAR Region, several occurrences have happened wherein some air navigation services have been interrupted. The ICAO NACC Office has kept constant communication with States/Territories/International Organizations in order to coordinate and harmonize the development of ATM Contingency Plans as a preventive measure for the possible partial or total interruption of air navigation services. The status of development of the contingency plans is found in **Appendix C** to this Working paper.

6.3 Likewise, the fact that the NAM and CAR Regions are formed by continental or oceanic areas susceptible to earthquakes, seaquakes and hurricanes has been discussed; during several work and coordination meetings, the need for establishing preventive contingency measures in view of the natural disasters risk has been discussed.

6.4 Some States have taken the initiative of creating emergency operation centres and contingency procedures for natural disasters. Nevertheless, considering the great human and material losses caused by natural disasters that have occurred in the last years, these initiatives should be supported with more emphasis by all the States/Territories/International Organizations for their harmonized regional harmonization.

**7. Suggested action**

7.1 The Meeting is invited to:

- a) continue supporting the work for the development of the ATM matters applicable to the NAM and CAR Regions bearing in mind the background expressed in the above paragraphs; and
- b) recommend other actions as appropriate.

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**APPENDIX A**

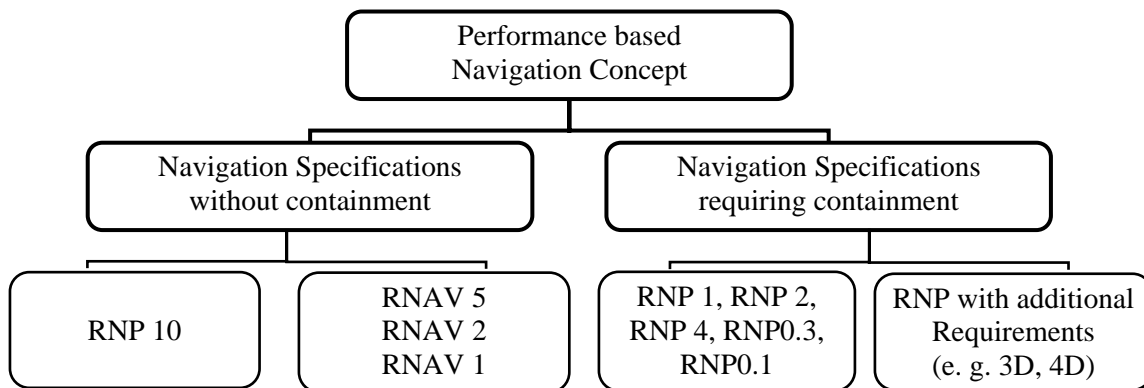
**NAM/CAR/SAM REGIONAL SEMINAR ON RNAV AND RNP IMPLEMENTATION  
(Mexico City, Mexico, 11 to 13 August 2005)**

1. In light of new technologies and capabilities and experience gained over previous years with RNP and RNAV implementations at the global level with respect to air navigation performance, discussions were focused in different perspectives and implementations of required navigation performance (RNP) and area navigation (RNAV) carried out between the international civil aviation community and some individual States, which evolved towards a divergence of interpretations and resulted in a lack of harmonization.

2. The participants noted that work of the RNP Special Operations Requirements Study Group (RNPSORSG) is presently progressing very well and agreed that the future RNAV and RNP applications should be as follows:

Area of Application	Navigation accuracy	Designation of navigation standard: Current situation	Designation of navigation standard: New RNP concept
Oceanic/ Remote	10	RNP 10	RNP 10
	4	RNP 4	RNP 4
En Route- Continental	5	RNP 5 Basic RNAV	RNAV 5
En Route- Continental and Terminal	2	USRNAV type A	RNAV 2
Terminal	1	USRNAV type B P-RNAV	RNAV 1

3. Also, considering that the navigation containment is based on accuracy, functional integrity, continuity and systems availability, the participants noted that the RNPSORSG agreed on the need for specifying future applications of a **performance based navigation concept without containment integrity and continuity, which will be designated as RNAV** and **with containment integrity and continuity, which will be designated as RNP**, as follows:



4. In addition, the Separation and Airspace Safety Panel (SASP) is in the process of drafting an amendment to *Attachment B* of Annex 11, "*Method of establishing ATS routes for use by RNAV-equipped aircraft*", its work includes updating relevant guidance material on safety and separation.

5. The participants were informed of the new activities that ICAO, with the assistance of the RNPSORSG and SASP, is carrying out to clarify all RNAV and RNP guidelines so as to ensure a common understanding of the RNP concept and the relationship between RNP and RNAV functionality, facilitating at the same time global harmonization of existing applications as well as the establishment of the future basis of air navigation performance operations, in benefit to the entire global aviation community.

6. Attendees concurred that any new implementation should be in accordance with ICAO guidelines and considering other provisions for all weather operations, safety issues, ATM requirements, verification-approval procedures, fleet equipment and available infrastructure.

7. Also, future RNAV and RNP implementations should envisage aspects regarding Human Factors such as common use of ATC terminology and phraseology, radar and non radar procedures, safe use of air navigation database, training and educational events looking to sharing acknowledge, and CDM process of ATM community.

8. Participants took note that new ICAO guidelines with amendments to Annexes 6 and 11, a revised Performance Based Navigation Manual and other related provisions will soon be presented as follows:

- Revised RNAV and RNP Standards:
  - State consultation August 2006
  - Applicable November 2007
- Performance Based Navigation Manual:
  - Available July 2006
- Obstacle Clearance Criteria (PANS-OPS):
  - State consultation August 2006
  - Applicable November 2007
- ATC Separation Criteria (PANS-ATM):
  - State consultation August 2006
  - Applicable November 2007

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## APPENDIX B

## STATUS OF THE ATM CONTINGENCY PLANS OF THE NAM AND CAR FIRS

FIR	Adjacent FIRs / FIR adyacente	Status / Estado		Remarks / Observaciones
		Draft / Borrador	Final	
<b>Canada</b>	United States / Estados Unidos			
	NAT Region			
	Russian Federation			
<b>Curacao</b>	Colombia			
	United States / Estados Unidos			
	Kingston			
	Port-au-Prince		X	
	Santo Domingo	X		
	Venezuela			
<b>La Habana</b> <i>(Plan presented with domestic Contingency procedures / Plan presentado con procedimientos nacionales de Contingencia)</i>	United States / Estados Unidos	X		
	Port-au-Prince	X		
	Kingston	X		
	Mexico	X		
	COCESNA	X		
<b>Kingston</b>	Curacao /Curazao			
	Colombia			
	Havana			



FIR	Adjacent FIRs / FIR adyacente	Status / Estado		Remarks / Observaciones
		Draft / Borrador	Final	
<b>Kingston</b>	Panamá			
	Port-au-Prince		X	
	COCESNA			
<b>Mexico</b>	Cuba			
	United States / Estados Unidos			
	COCESNA		X	Agreed for adjacent airspace with Guatemala / Acordado para el espacio aéreo adyacente con Guatemala
<b>PIARCO</b>	United States / Estados Unidos		X	
	Guyana	X		In process of final coordination
	French Guiana	X		In process of final coordination
	Venezuela	X		In process of final coordination
	Suriname	X		In process of final coordination
<b>Port-au-Prince</b> <i>(Plan approved by the President of ICAO Council / Plan aprobado por el Presidente del Consejo de la OACI)</i>	Havana		X	
	United States / Estados Unidos		X	
	Kingston		X	
	Curacao		X	
	Santo Domingo		X	
<b>Santo Domingo</b>	Curacao	X		
	Port-au-Prince		X	
	United States / Estados Unidos	X		

FIR	Adjacent FIRs / FIR adyacente	Status / Estado		Remarks / Observaciones
		Draft / Borrador	Final	
<b>United States / Estados Unidos (FIRs)</b>	Havana			
	Mexico			
	Port-au-Prince		X	
	Santo Domingo	X		
	PIARCO		X	With New York Oceanic / Con New York Oceanic
	Venezuela			
<b>COCESNA (FIR Centroamérica)</b> <i>(Contingency measures developed for the Central American FIR)</i>  <i>/ Medidas de Contingencia Desarrolladas para la FIR de Centroamérica)</i>	Colombia	X		
	Havana	X		
	Kingston	X		
	Mexico		X	Plan agreed for adjacent airspace with Guatemala.
	Panama		X	Plan acordado para el espacio aéreo adyacente con Costa Rica.
	Ecuador	X		

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## APPENDIX C

### SAR EVALUATION IN THE CAR REGION

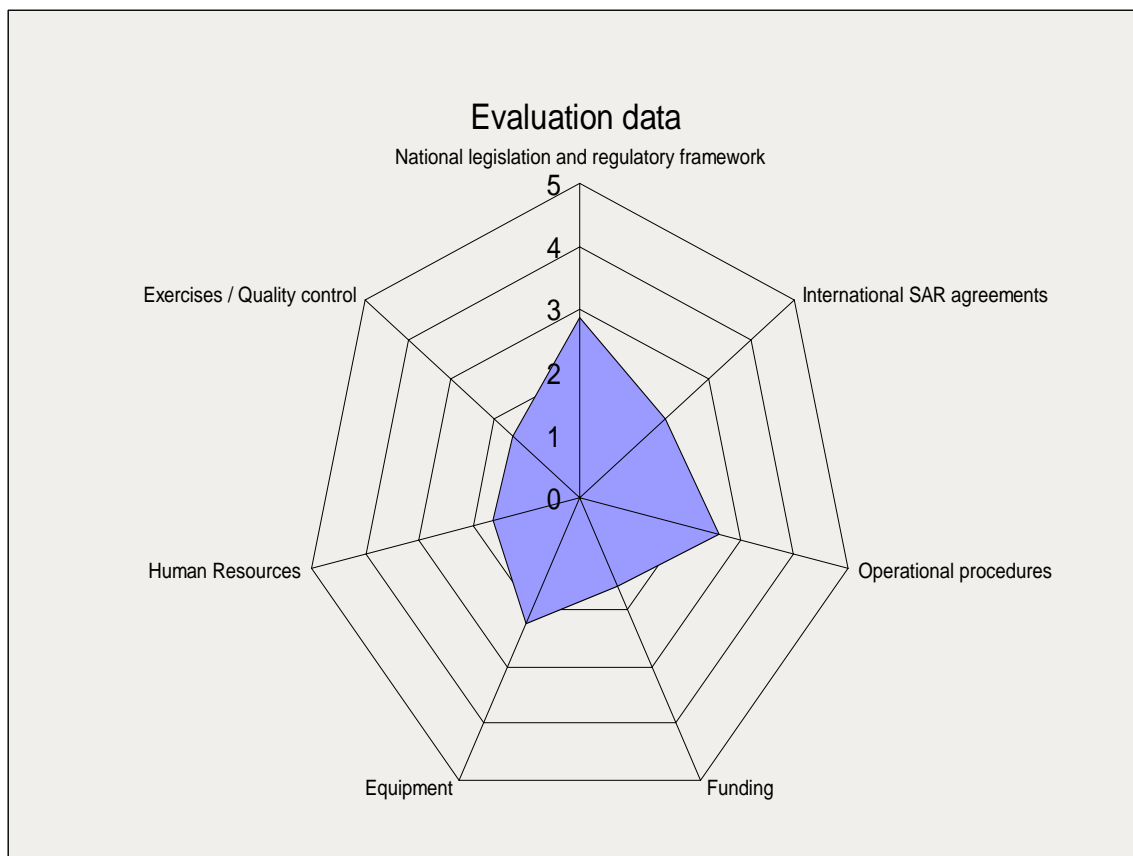
1 – Not implemented.

2 – Initial implementation.

3 – Meets requirements of Annex 12 and other ICAO/IMO provisions, in some areas.

4 – Meets requirements of Annex 12 and other ICAO/IMO provisions, in several areas.

5 – Fully complies with the requirements of Annex 12 and other ICAO/IMO provisions.



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