



Agenda Item 5: Air Navigation Matters
5.5 NAM/CAR RPBANIP version 3.0: ASBU oriented update of the Regional Implementation Plan

CRITICAL IMPLEMENTATION REQUIREMENTS FOR PBN, AIM QMS, MET QMS AND AERODROME CERTIFICATION

(Presented by the Secretariat)

SUMMARY	
This working paper presents a review of the critical implementation requirements for the Eastern Caribbean (E/CAR) States/Territories related to Air Navigation Systems (ANS) associated with Performance-Based Navigation (PBN), Aeronautical Information Management Quality Management Systems (AIM QMS), Aeronautical Meteorology Quality Management Systems (MET QMS) and Aerodrome Certification.	
Action is presented in paragraph 3.1.	
References:	
Annex 3 - <i>Meteorological Service for International Air Navigation</i> Annex 15 – <i>Aeronautical Information Services</i> Doc 9750 - <i>Global Air Navigation Plan</i> Doc 9854 - <i>Global Air Traffic Management Operational Concept</i> Doc 9882 - <i>Manual on Air Traffic Management System Requirements</i> Doc 9883 - <i>Manual on Global Performance of the Air Navigation System</i> Doc 9774 - <i>Manual on Certification of Aerodromes</i> Doc 8733 - <i>Caribbean and South American Regions Air Navigation Plan</i> Doc 9883 - <i>Manual on Global Performance of the Air Navigation System</i> Doc 9839 – <i>Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information (draft)</i> Doc 9674 – <i>World Geodetic System — 1984 (WGS-84) Manual</i> Doc 9881 – <i>Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information (draft)</i> NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (NAM/CAR RPBANIP) http://www.icao.int/NACC/Pages/nacc-regionalgroups-aniwg.aspx ICAO Roadmap for the transition of AIS to AIM	
Strategic Objectives	<i>This working paper is related to Strategic Objectives:</i> <i>A. Safety – Enhance Global Civil Aviation Safety</i> <i>C. Environmental Protection and Sustainable Development of Air Transport</i>

1. Introduction

1.1 States and Territories agreed on the implementation of operational improvement strategies for Air Navigation Services (ANS) reflected as Regional Performance Objectives (RPOs) in the NAM/CAR RPBANIP, approved at the Third Meeting of the North American, Central American and Caribbean Directors of Civil Aviation (NACC/DCA/3). The RPOs maintain a short and medium term dynamic and systemic implementation approach, identifying ANS operational improvements. The following activities should be considered of critical compliance to achieve these operational improvements.

2. Discussion

PBN Implementation

2.1 The implementation of a PBN airspace concept in the E/CAR requires coordination by a multidisciplinary team to analyze Airspace Organization and Management (AOM) redesign. Airspace organization is related to providing flight, radio communication and service requirements as specified in Annex 11, Appendix 4, Table of Air Traffic Service (ATS), Airspace Classes. Airspace Management is related to Air Traffic Control (ATC) management techniques, which together are key components of the *Global ATM Operational Concept*, ICAO Doc 9854.

2.2 To achieve implementation of a comprehensive PBN airspace concept, States are required to implement Area Navigation (RNAV) 5/2 routes in the continental upper airspace and publish Continuous Descent Operations (CDOs) and Continuous Climb Operations (CCOs) criteria in terminal area Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs) with RNAV/Required Navigation Performance (RNP) navigation specifications. In addition, pursuant to Assembly Resolution A37-11, States are required to publish RNP approach procedures. The **Appendix** to this working paper shows the progress of PBN approach procedures in the NAM/CAR Regions.

2.3 To assist States with PBN implementation, the ICAO NACC Regional Office, in coordination with IATA and CANSO, organized the Regional PBN Airspace Concept Workshop in Miami, United States, from 11 to 22 March 2013, and the Regional PBN Operational Approval (Train-the-Trainer) Course in Miami, United States, from 11 to 15 March 2013. Additionally, a Regional Workshop on Airspace Concept Redesign and Operational Approval of Performance-Based Navigation (PBN) was held in Mexico City, Mexico, from 25 to 29 November 2013.

2.4 As an outcome, Costa Rica, Honduras, Jamaica, Mexico, Trinidad and Tobago, and COCESNA provided information on implementing new PBN airspace projects with clear dates and milestones. The ICAO NACC Regional Office will continue to provide assistance in accordance with particular needs; however, all States and Territories from the E/CAR area should take further action to implement a comprehensive PBN airspace concept in the area.

2.5 Implementation of the PBN airspace concept is in compliance with ICAO provisions and the NAM/CAR RPBANIP regional objectives as follows:

- Significant improvements have been achieved in the CAR Region ATS route network with 21 new RNAV routes implemented in the Gulf of Mexico in January 2013
- States will follow ICAO Standards
- States will develop training programmes for all concerned staff (Civil Aviation Authority, ATS, airlines, etc.) for better understanding of PBN fundamentals

- States will develop and implement PBN operational approval processes
- States will promote collaborative PBN efforts with all stakeholders
- States will ensure high quality aeronautical information and data associated with the publication of PBN aeronautical charts
- States will review their communication and navigation infrastructure, Distance Measuring Equipment/ VHF Omnidirectional Radio Range (DME/DME, VOR, etc.) coverage for PBN implementation in terminal areas

2.6 According to Resolution A37-19, all States should submit accomplishments in reducing CO₂ emissions through PBN implementation by using the online ICAO Fuel Savings Estimation Tool (IFSET). The estimation should be based on operational improvements obtained in air traffic management operational efficiency, use of infrastructure and alternative fuels.

Current Status of MET QMS Implementation in the Eastern Caribbean States

2.7 The Meeting is invited to take note that the establishment of a Quality Management System for aeronautical meteorology is a requirement in support of global air traffic management. Therefore, Standard 2.2.2 of Annex 3 mandates the implementation of a properly organized quality system to provide quality management of meteorological information being supplied to aeronautical users.

2.8 It is important to emphasize the need for E/CAR States/Territories to implement MET QMS since it is essential to improve the quality and timeliness of aeronautical meteorological information provided to users in accordance with Annex 13 ICAO Standards and Recommended Practices (SARPs).

2.9 The following updated table presents the current implementation status of MET QMS processes for E/CAR States/Territories.

Status of Quality Management System/Aeronautical Meteorology (QMS / MET) Implementation in the Eastern Caribbean States (E/CAR)	
Anguilla	mid-stage
Antigua and Barbuda	completed
Barbados	slightly above mid-stage
British Virgin Islands	advanced-stage
French Antilles: Guadeloupe, Martinique, Saint Barthélemy, Saint Martin	advanced-stage
Grenada	75% completed with assistance from Trinidad and Tobago
Montserrat	mid-stage
Saba	mid-stage
Saint Kitts and Nevis	slightly above starter stage
Saint Lucia	65% complete
Saint Vincent and the Grenadines	70% complete with the assistance of Trinidad and Tobago
Sint Eustatius	mid-stage
Sint Maarten	mid-stage
Trinidad and Tobago	90% complete
United States, Puerto Rico, Virgin Islands	completed

AIM QMS Implementation

2.10 Recent follow-up on the assessment of the PIARCO AIS QMS conducted by ICAO (March 2013) with participation and support from ASSI (UK) and ECCAA showed progress in the following documentation prepared by Trinidad and Tobago:

- QMS Procedure for Control of Non-Conforming Product/Service Manual
- QMS Procedure for Corrective and Preventive Action (CAPA) Manual

2.11 It is important to emphasize the need for E/CAR States/Territories to implement QMS as it is essential to improve the quality and timeliness of aeronautical information/data provided to users as identified by Annex 15 SARPs and Phases 1 and 2 of the ICAO Roadmap for the transition from Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM). The following updated table presents updated status for both documents (QMS-P/004 and QMS-P/006):

Review AIM QMS Implementation - Deployment Procedures			
Item tasks	Action office(s)	Due date	Status
Develop, Issue Quality Management System Procedures (QMS-Ps)			
QMS-P/001 - Production of a Quality Document	Chief AIM QMO & Project Team		On-going
QMS-P/002 - Control of Documents			On-going
QMS-P/003 - Control of Records			On-going
QMS-P/004 – Control of Non-Conforming Product or Service			On-going
QMS-P/005 – Internal Audits			Not started
QMS-P/006 – Corrective Actions & Preventive Actions (CAPA)			On-going

2.12 The following QMS elements were considered in ICAO Doc 9839, *Manual on the Quality Management System for Aeronautical Information Services* (Unedited Advance Version) (draft version) and included in the QMS AIM Implementation Plan developed by Trinidad and Tobago:

- a) QMS implementation plan
- b) Procedures for QMS Corrective Actions & Preventive Actions (CAPA)
- c) QMS internal audit procedure
- d) Procedure for control of AIS management system records
- e) Procedure for drafting AIM-QMS documents
- f) Procedure for control of QMS non-conforming services/products

Aerodrome Certification Implementation in the Eastern Caribbean (E/CAR) States/Territories

2.13 In 2013, two workshops were carried out - *Taxiway Design to Avoid Runway Incursions and Alternative Methods for Runway Excursions* (25-28 June 2013); and the *Regional Workshop on GREPECAS SMS and Progress Achieved in The Aerodrome Certification Progress in the CAR Region Project F1 – Aerodrome Certification Improvements* (14-18 October 2013) in the ICAO NACC Regional Office, Mexico City, Mexico. Several aerodrome AGA experts from both regulatory bodies and airport operators attended the above-mentioned events, which facilitated the exchange of knowledge, expertise, and best practices towards the solution of common problems at their aerodromes.

Conclusion

2.14 To ensure harmonized implementation of air navigation infrastructure and services in the Eastern Caribbean, the Meeting should encourage compliance with air navigation system requirements and other operational improvement initiatives.

2.15 National implementation plans should be harmonized with the NAM/CAR RPBANIP, which also serves as guidance material to harmonize State implementation plans.

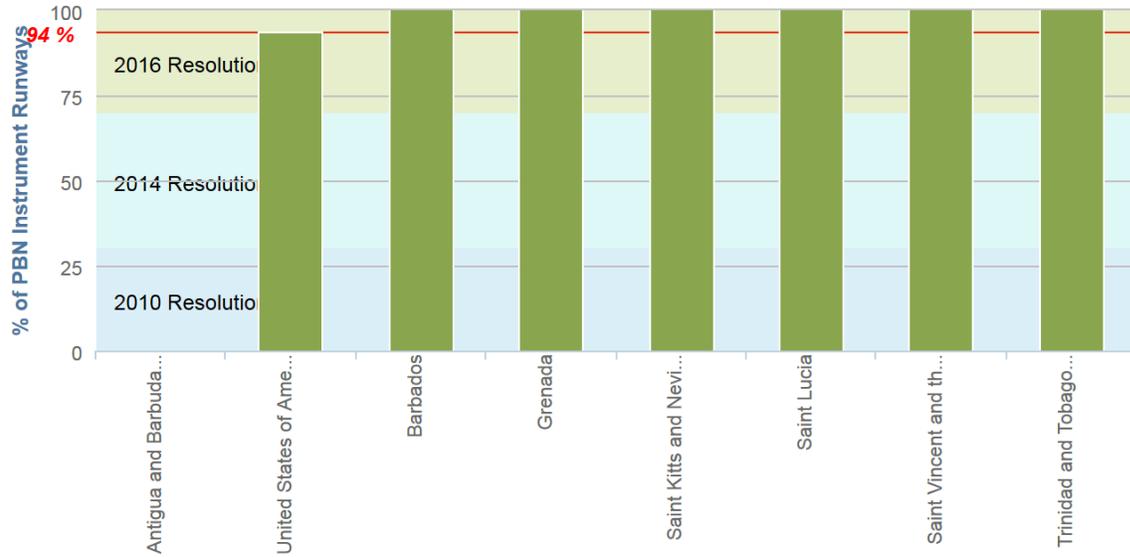
3. Suggested Action

3.1 The Meeting is invited to:

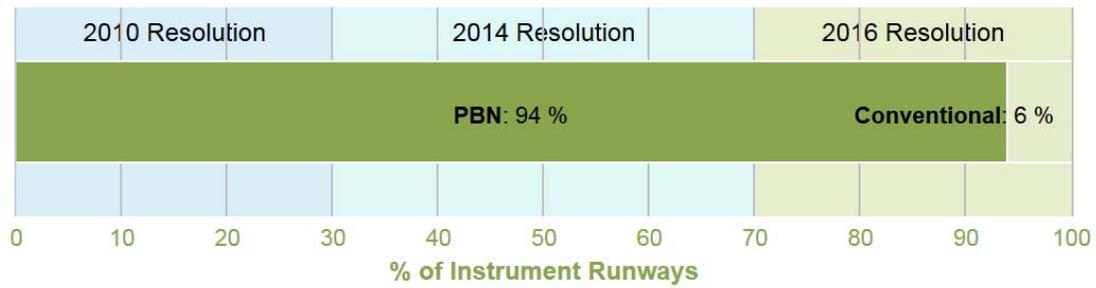
- a) take note of the information presented in this working paper;
 - b) implement the ANS requirements identified in this working paper;
 - c) identify other initiatives and/or operational improvements for a regionally harmonized air navigation system; and
 - d) recommend other actions as deemed necessary.
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APPENDIX

Regional PBN Implementation
% of PBN Runways per Country for ECAR



PBN RWYs vs CONVENTIONAL RWYs
% of Runways for ECAR



— END —