International Civil Aviation Organization
North American, Central American and Caribbean Office (NACC)
Tenth Meeting of Directors of Civil Aviation of the Central Caribbean (C/CAR/DCA/10)
Grand Cayman, Cayman Islands, 18 to 21 August 2009

Agenda Item 6: Air Navigation Matters
6.2 Global and Regional Performance Based Air Navigation Implementation Plans

PERFORMANCE BASED AIR NAVIGATION IMPLEMENTATION IN THE CAR REGION REPOSITIONING OF THE PROPOSED ICAO TECHNICAL COOPERATION PROJECT (RLA/09/801 PREVIOUSLY RLA/08/000)

(Presented by the Secretariat)

SUMMARY

Further to consideration of a proposed regional ICAO Technical Cooperation project by the NACC/DCA/3 meeting in September 2008, this project is being repositioned in view of recent developments and adoption of performance based air navigation planning by GREPECAS/15 in October 2008.

Consequently, this working paper revisits the project document and suggests a performance based approach in enhancing the air navigation infrastructure in the CAR region. The performance approach captures strategic operational improvements needed and facilitates States and Territories to build on to what is already existing and choose only what is required to be enhanced.

Action by the meeting is in paragraph 5.

References

GREPECAS/15 Meeting Report
NACC/DCA/3 Meeting Report and WP/19 (Project Document)
Global Air Traffic Management Operational Concept (Doc 9854)
Manual on Global Performance of the Air Navigation System (Doc 9883)
Global Air Navigation Plan (Doc 9750)
NAM/CAR Regional Performance Based Air Navigation Implementation Plan (WP/14)

Strategic Objectives	**THIS WORKING PAPER IS RELATED TO STRATEGIC OBJECTIVES** *A: Safety – Enhance global civil aviation safety* *C: Environmental Protection – Minimize the adverse effect of global civil aviation on the environment* *D: Efficiency – Enhance the efficiency of aviation operations* *E: Continuity – Maintain the continuity of aviation operations*

1. Background

1.1 *Review by NACC/DCA/3 meeting*: The Third meeting of North American, Central American and Caribbean Directors of Civil Aviation (NACC/DAC/3) held in September 2008 in Punta Cana, Dominican Republic reviewed a proposal for a Regional ICAO Technical Cooperation (TC) project aimed at establishing a mechanism for the States/Territories for the implementation of harmonized air navigation systems leading to a seamless Global ATM system. Subsequently, the meeting agreed that a CAR regional project be developed and determine the requirements and priorities for each of CAR region State/Territories, and the Meeting adopted the following conclusion:

CONCLUSION NACC/DCA/3/1 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 Regional Project 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.*

2. Performance framework for air navigation systems

2.1 *ATM Community approach*: As the aviation industry evolved into a less regulated and more corporatized environment with greater accountabilities, the advantages of transitioning from systems based to performance-based planning were apparent. To facilitate the realization of a performance based air navigation planning and implementation, ICAO has made significant progress in the development of relevant guidance material. The documents include: a) Global Air Traffic Management Operational Concept (Doc 9854); b) Air Traffic Management System Requirements (Doc 9882); c) Manual on Global Performance of the Air Navigation System (Doc 9883); and d) Global Air Navigation Plan (Doc 9750).

2.2 *Outcome of GREPECAS 15*: The GREPECAS 15 meeting held in Rio de Janeiro, Brazil from 13 to 17 October 2008, while adopting a regional performance framework (Conclusion 15/1 refers), invited States to implement a national performance framework on the basis of ICAO guidance material and aligned with the regional performance objectives, the regional air navigation plan and the Global ATM Operational Concept. As a follow-up to the GREPECAS 15/1 conclusion, the Secretary General, in January 2009, established under Special Implementation Project mechanism two workshops for the CAR region. The first workshop on performance planning was conducted in Mexico City from 6 to 10 July 2009. The second workshop dealing with business case methodology is scheduled for 28 September to 2 October 2009 in Antigua and Barbuda.

3. Repositioning of the proposed TC project for the CAR region

3.1 *Approach*: As a result of recent developments and adoption of performance based planning by GREPECAS, ICAO is repositioning the TC project proposal which is based on four basic principles: focus on operational improvements; build on existing infrastructure; take advantage of existing airframes capabilities; and enhance only what is needed using a menu of projects. The project proposes 5 strategic operational improvements (SOIs) consisting of a) enhance airspace capacity and efficiency of enroute airspace; b) enhance airspace capacity and efficiency of terminal airspace; c) enhance aerodrome operations; d) improve flexibility of operations in enroute and TMA airspace; and e) enhance aviation safety.

3.2 *Implementation*: The States (or group of States on the basis of Homogenous ATM areas), depending on current and future scenarios will decide which of the five SOIs are applicable to its situation. An example of the Performance Framework Form (PFF) for a SOI “enhance airspace capacity and efficiency of enroute airspace” is illustrated in **Appendix A** hereto. The formulation of the airspace concept and determining requirements (an initial step in implementation), calls for multidisciplinary team and includes factors such as airspace organization and management, assessing existing fleet capability and available CNS infrastructure, listing airworthiness and operational approvals, etc.

3.3 *Project timelines*: The estimated timeframe for the ICAO and States’ planning and implementation process is reflected in **Appendix B** hereto. It is expected that States will receive the detailed project proposal for air navigation systems by 28 February 2010 with a planned completion of the entire project by June 2013.

3.4 It is proposed that the project resources be composed of a Project Coordinator with an up-to-date performance based air navigation (CNS/ATM) background in the region, supported by the ICAO NACC Regional Officers, short term experts and experts on loan from the States, the latter being the same persons that contribute to the sub-regional air navigation working groups and GREPECAS sub-groups and task forces. The use of the project budget can then be maximised by utilising it for mission expenses rather than salaries, except in the case of the project coordinator and the short-term experts.

4. Conclusion

4.1 *Evolutionary approach:* Existing and emerging systems/technologies are providing options to support both tactical and strategic management of air traffic services. However, technology by itself will not be able to provide the ideal solution for both airspace and airframe efficiencies. Service delivery management, as defined in ATM Operational Concept document, will be the future integrated approach. While safety case addresses any operational changes, investment decision in air navigation infrastructure has to be justified by business case analysis. The future Global ATM system calls for a shift from tactical control to strategic management and would facilitate all members of ATM community, more so the airspace users, to participate in decision making process for a safe and efficient air transport operations.

4.2 *Recommendation:* Recognizing the need to have a clearly defined strategy to implement performance based air navigation systems in the CAR region, the meeting is invited to adopt the following conclusion:

DRAFT
CONCLUSION C/CAR/DCA/10/XX PERFORMANCE BASED ICAO TECHNICAL COOPERATION PROJECT (RLA/09/801) FOR THE CAR REGION

a) States/Territories of the C/CAR region support repositioning of the ICAO TC Project for the CAR region on the basis of the performance based approach;

b) ICAO send its repositioned TC project document along with proposed timelines to States/Territories of the CAR region by 30 October 2009, for review and comment;

c) ICAO finalize the detailed performance based air navigation project document and disseminate to all CAR States by 28 February 2010 for their participation; and

d) States/Territories of the C/CAR region are urged to participate in this performance based regional ICAO TC project leading to a seamless and cost effective global ATM system .

5. Action by the Meeting

5.1 The meeting is invited to review the content of this paper and consider adopting the draft conclusion at paragraph 4.2 above.

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Appendix A

PERFORMANCE FRAMEWORK FORM
(For illustration purpose only)

STRATEGIC OPERATIONAL IMPROVEMENT/ NATIONAL PERFORMANCE OBJECTIVE ENHANCE ENROUTE AIRSPACE CAPACITY AND EFFICIENCY				
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.			
Measurement				
Metrics	• number of PBN routes implemented; • Percent difference between optimal and actual route • Number of aircraft entering a specified volume of airspace/hr • Pounds of fuel burn per operations			
Strategy **Medium term *(2010 - 2013)***				
ATM Operational Concept Components	**PROJECTS/TASKS**	**TIMEFRAME START-END**	**RESPONSIBILITY**	**STATUS (as of ….)**
Airspace organization and management (AOM)	• formulate airspace concept and determine requirements	May 2010 - October 2010	CAA/Country X	Database under preparation
	• analyze the en-route ATS route structure and implement all identifiable improvements;			
	• reduce horizontal separation between aircraft			
	• implement PBN			
	• migration to WGS-84/eAIP/AIXM			
	• transition to new flight plan			
	• improve data and voice communications and enhance situational awareness			
	• enhance meteorological forecast systems			
Linkage to GPIs	GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/9: situational awareness; GPI/12: FMS-based arrival procedures; GPI/17 Data link applications; GPI/18 Aeronautical information; GPI/19 Meteorological systems; GPI/20 WGS-84; GPI/21 Navigation systems; and GPI/22 Communication infrastructure.			

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APPENDIX B

ICAO Technical Cooperation Project (RLA/09/801) for the CAR Region
Performance-based air navigation systems implementation

ICAO PLANNING PHASE

PHASE I – Timescale

PROJECT/TASK	MILESTONE
1. Initial presentation of the TC project	August 2008 – Completed
2. NACC/DCA/3 endorsement of the NAM/CAR Regional Implementation Plan and Technical Cooperation Project for the CAR Region	September 2008 – Completed
3. Adoption of performance framework by GREPECAS/15	October 2008 – Completed
4. Project Document Revision	March 2009 – Completed
5. Project Objectives Review	May 2009 – Completed
6. Conduct of performance framework workshop	July 2009 – Completed
7. Repositioning of TC project	August – October 2009 Ongoing
8. Conduct of Business case workshop	28 September - 2 October 2009
9. Send repositioned draft TC project document along with proposed timelines, work plan, schedule, budget and mechanism for financial contributions to all CAR States for review and comment	30 October 2009
10. CAR Regional Project Steering Committee Meeting	January 2010
11. Develop and send final performance based TC project document to States for their participation	28 February 2010
12. States confirm participation in the project	31 March 2010
13. Deposit of initial funds by States	30 April 2010
14. Project Commencement	1 May 2010
15. Establishment of an on-line host infrastructure in the ICAO NACC Regional office to facilitate project monitoring along with supporting electronic air navigation planning tools.	30 June 2010

ICAO Technical Cooperation Project (RLA/09/801) for the CAR Region
Performance-based air navigation systems implementation

STATES PLANNING AND IMPLEMENTATION PHASE

PHASE II – Timescale

PROJECT/TASK	MILESTONE
1. Develop operational scenario: - current traffic density - traffic forecast 2020 - deficiencies and metrics - gap analysis	Determine the appropriate Strategic Operational Improvement/national performance objective July 2010
2. Analysis of airspace concept and determining requirements: It calls for multidisciplinary team and includes factors such as airspace organization and management, assessing existing fleet capability and available CNS infrastructure, listing airworthiness and operational approvals etc.	Formulation of airspace concept and finalizing the requirements October 2010
3. a) Identification of enablers in the field of ATM/CNS/AIM/MET/AGA through technical audit and economic analysis using GANP (for SOIs 1 to 4) b) Identification systems and procedures through GASP analysis (for SOI 5)	Determination of projects that meets SOIs 1 to 5 February 2011 February 2011
4. Agreement by States for an implementation plan	April 2011
5. Deposit of funds by States	May 2011
6. Procurement /installation/ Commissioning of air navigation systems/procedures	May 2013
7. Completion report of the CAR project	June 2013 (tentative to be determined on the basis of the final project still to be defined)

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