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International Civil Aviation Organization ***English only***
CAR/SAM Regional Planning Implementation Group (GREPECAS)
Second Meeting of the Communications, Navigation and Surveillance / Air Traffic Management Subgroup (CNS/ATM/SG/2)
(Mexico City, Mexico, 16 to 19 November 2010)

Agenda Item 2: Follow-up to the implementation status of the performance based navigation systems plans for the CAR and SAM Regions and to the latest amendments to the ATM and CNS related SARPS

GULF OF MEXICO RNAV ROUTE PROJECT

(Presented by United States)

SUMMARY

This paper is intended to provide the group with an update to the U.S. Federal Aviation Administration (FAA) and Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM) project that will reduce lateral separation in the Gulf of Mexico (GoM) from 100 nautical miles (NM) to 50 NM and implement a new, more efficient area navigation (RNAV) route structure. The paper also notes the intent to pursue application of 30 NM lateral separation on two routes falling with radar and VHF communications coverage in the Merida control area.

1. Introduction

1.1 The FAA and SENEAM have agreed to pursue a project that will reduce lateral separation in the GoM from 100 NM to 50 NM applied between aircraft authorized the minimum navigation specification of RNP 10 or RNP 4 and implement a new, more efficient RNAV route structure.

1.2 Initial discussions were conducted between representatives from FAA and SENEAM in Merida, Mexico from 17-19 February 2009. Participants included representatives from SENEAM Mexico City Office, FAA Headquarters, FAA Eastern Service Area, and Merida, Monterrey and Houston Centres. The meeting covered a number of agenda items related to GoM operations.

1.3 A second meeting was hosted by SENEAM in Merida, Mexico from 28-30 July 2009, attended by representatives from SENEAM, DGAC Mexico, FAA and IATA. The meeting agreed that the GoM RNAV Routes Project continued to have the following objectives:

a) Reduce lateral separation from 100 nm to 50nm between aircraft authorized RNP 10 or RNP 4 for application of 50 NM lateral separation on Routes 1-10;
b) On proposed routes 11 and 12, apply 30 NM lateral separation between aircraft authorized RNAV/5 (see Appendix C);
c) Implement new RNAV routes in GoM route structure using 30 nm or 50 nm lateral separation on specified routes;
d) Harmonize transition to/from adjacent airspace;
e) Have a significant percentage of GoM operators obtain RNP 10 or RNP 4 authorization and, for operation on proposed Routes 11 and 12, RNAV/5 authorization; and,

f) Accommodate operation of a small percentage of flights conducted by aircraft that may not have obtained authorization for the specified navigation specification.

1.4 The meeting concurred with the FAA taking the lead in coordinating and updating the draft Concept of Operations (ConOps). The meeting recognized that the ConOps would be used as the basis for developing policy and procedures documents for GoM RNAV airplane operations and will be developed further as the project matures.

1.5 The meeting adopted a target implementation date of fourth-quarter 2011, but recognized that it was a tentative date that required further review. The group agreed to further review and report on factors that could affect the target implementation date such as the FAA En Route Automation Modernization (ERAM) schedule.

2. **Discussions**

2.1 A third meeting hosted by the ICAO North American, Central American and Caribbean (NACC) Regional Office in Mexico City, Mexico from 21-23 September 2010, was attended by representatives from SENEAM, DGAC Mexico, FAA and IATA. FAA participants included representatives from FAA Headquarters, the FAA ATC System Command Centre and Houston and Miami Centers.

2.2 This event also sought to assist States in the implementation of the document "PBN airspace concept for the CAR Region", according to the Regional Performance Based Air Navigation Implementation Plan for the NAM/CAR Regions (NAM/CAR RPBANIP). A review of the proposed RNAV routes was conducted, as well as a detailed analysis of regional ATS route network in the upper airspace as an extension of the RNP 10 implementation in the Gulf of Mexico, in order to allow more efficient flights in the CAR Region.

2.3 The meeting accomplished the following GoM RNAV Routes Project objectives:

a) Project overview;
b) Review concept of operations;
c) Review and update task list and schedule, including target implementation date;
d) Review possible factors affecting operator/aircraft readiness;
e) Review draft RNAV route design and operating policy;
f) Discuss transition plan; and,
g) Discuss plans for State Regulator review of Safety Documents

2.4 The meeting adopted the tentative target implementation date of 20 October 2011.

2.5 The meeting agreed to conduct further coordination meetings in 2nd quarter 2011.

3. **Conclusion**

3.1 The Group is invited to note the information presented in this paper and at the following Appendices:

A. "Draft Concept of Operations for Implementation of 50 NM Lateral Separation in the Gulf of Mexico";

B. "Draft Summary of Gulf of Mexico 50 NM Lateral/RNP 10 Implementation Tasks";

C. "Draft Gulf RNAV Routes".

APPENDIX A

DRAFT CONCEPT OF OPERATIONS FOR IMPLEMENTATION OF 50 NM LATERAL SEPARATION IN THE GULF OF MEXICO

Note: when it has progressed sufficiently, this Concept of Operations will be updated to include information on the application of 30 NM lateral separation between aircraft authorized RNAV/5 on proposed Routes 11 and 12. Those routes fall within the Merida control area.

1. Vertical and horizontal boundaries of airspace

a. **Horizontal Boundary.** 50 NM lateral separation is planned to be applied between aircraft authorized RNP 10 or RNP 4 operating on oceanic routes or areas:

- Within the Houston Oceanic CTA/FIR and the Gulf of Mexico portion of the Miami CTA/FIR.
- Within the Mexico FIR/UTA: Monterrey CTA and Merida High CTA

b. **Vertical Boundary.** 50 NM lateral separation is planned to be applied between aircraft authorized RNP 10 or RNP 4 operating above the floor of controlled airspace within the CTAs listed above.

2. Lateral separation standard(s) to be applied

a. **Application of 50 NM Lateral Separation to Operators/Aircraft Authorized RNP 10 or RNP 4.** 50 NM lateral separation will be applied between aircraft authorized RNP 10 or RNP 4 operating at any altitude within the Gulf of Mexico CTAs above the floor of controlled airspace.

Note: the ICAO PBN Manual (ICAO Doc 9613) includes a provision for aircraft equipped with a single long range navigation system to qualify for RNP 10 authorization. The FAA and SENEAM are developing the necessary documentation to apply this provision.

b. **Lateral Separation Applied to Operators/Aircraft Not Authorized RNP 10 or RNP 4.** Within the Gulf of Mexico CTAs, (100 NM? 90 NM?) lateral separation will be applied to operators/aircraft not authorized RNP 10 or RNP 4 (NonRNP10 aircraft).

3. Concept for transfer of control to Adjacent CTA's. Transfer of control will be affected per regional agreement with the appropriate separation standard applied.

4. Concept for RNAV route design.

a. Track spacing between RNAV routes will be 50 NM.

b. Routes will be bi-directional **except where agreed otherwise**. (TBD in coordination with SENEAM).

5. Operator/Aircraft requirements for operation on routes on the periphery of the Gulf CTAs. Operation on certain routes that fall within the boundaries of Gulf CTAs will not be affected by the introduction of RNP 10/50 NM lateral separation, scheduled for _____. Operation on the following routes will not be affected: **TBD**

6. Flight Plan Equipment Suffix Requirements

a. **ICAO Flight Plan Required.** Operators are required to file an ICAO flight plan.

b. **ICAO Flight Plan Entries.** To inform ATC and to key ATC automation that they have RNP 10 or RNP 4 authorization and are eligible for 50 NM lateral separation, operators must annotate:

- *Item 10 (Equipment) of the ICAO Flight Plan with the letter "R" (RNP type certification) and "Z" (Other equipment carried).

- *Item 18 (Other Information) with, as appropriate, "NAV/RNP10", "NAV/RNP4", "STS/NONRNP10".

*Note: ICAO is planning to publish revised ICAO Doc 4444, Appendix 2 policy for ICAO Flight Plan Item 18 entries to show aircraft Comm, Nav and Surveillance capabilities. The revised Doc 4444, Appendix 2 material is planned to be effective in November 2012.

7. Concept for use of ATC automation in GULF OF MEXICO Oceanic Airspace

TBD

8. DRAFT Provisions for accommodating aircraft not meeting RNP 10 or RNP 4

a. For the project to be fully successful, operators flying on oceanic routes or areas in the Gulf of Mexico CTAs between FL 290-410 (inclusive) should obtain RNP 10 or RNP 4 authority (to the maximum extent possible). **For initial project implementation, however, the airspace of the Gulf CTAs will not be "exclusionary".** Aircraft not authorized RNP 10 will be allowed to fly on oceanic routes or areas within Gulf CTAs, however, 50 NM lateral separation will not be applied to them. #They will be cleared on their preferred routes and altitudes as traffic permits. Aircraft that are authorized RNP 10 or RNP 4 will have a better opportunity of obtaining their preferred route and altitude because the 50 NM lateral separation standard will be applied to those aircraft.

b. The following DRAFT basic accommodation policies will apply:

(1) Non-RNP 10 operators/aircraft will be able to file any route at any altitude in the Gulf of Mexico CTAs. They will be cleared to operate on their preferred routes and altitudes "as traffic permits". (ALTERNATIVE: "based on traffic complexity and controller work load".)

Note: in WATRS Plus airspace, NonRNP 10 aircraft are assigned specific leg segments on some routes.

(2) Non-RNP 10 aircraft will retain the option of climbing to operate at altitudes above those where traffic is most dense (i.e., at/above FL 410). To minimize the chance of conflict with aircraft on adjacent routes, Non-RNP 10 aircraft should plan on completing their climb to or descent from higher FL's within radar coverage.

(3) All aircraft can enhance their opportunity to be cleared on their preferred route and altitude if they operate at non-peak hours, approximately ____ to ____ UTC.

c. Possible Regulation Change. The FAA (and SENEAM?) may propose a regulatory change that would be effective some time (to be determined) **after** the _____ project implementation date. The goal of the proposal would likely be to maximize operational efficiency by requiring RNP 10 or RNP 4 authorization for cruise operations in the Gulf oceanic CTAs between FL 290-410 (inclusive). The content of and effective date for the change would be established after the necessary coordination required by the rulemaking process.

9. Aircraft Population RNP 10 or RNP 4 Authorization Objective

a. Implementation Objective: Percentage of Flights Authorized RNP 10 or RNP 4. The Gulf Task Force will progress its work with the objective of having at least **__% of flights** operating in Gulf oceanic airspace authorized for RNP 10 or RNP 4 by _____ (i.e., one month prior to the ____ planned project implementation date).

b. RNP 10 or RNP 4 Compliance To the Maximum Extent Possible. The Gulf Task Force will advocate that all operators/aircraft that fly in the Gulf CTAs obtain RNP 10 or RNP 4 authorization as soon as possible.

10. Aircraft/operator authorization requirements (equipage, RNP 10 authorization documents)

a. For 50 NM lateral separation to be applied, operators will be required to obtain RNP 10 or RNP 4 authorization from the appropriate State authority.

b. Guidance To Be Used, The FAA will use FAA Order 8400.12 (as amended) or, if applicable, FAA Order 8400.33 (as amended). It is recommended that other States use either the FAA orders or the ICAO Performance Based Navigation (PBN) Manual (ICAO Document 9613).

11. Target Dates:

a. Implementation Decision Date: _____ (calendar date, 3 months prior to target implementation date).

b. Operator/aircraft RNP 10 or RNP 4 Authorization Date: _____ (calendar date, 1 month prior to target implementation date).

c. **Tentative** Target Implementation Date: 20 Oct 2011

APPENDIX B

DRAFT GULF OF MEXICO OF 50 NM LATERAL/RNP 10 PROJECT IMPLEMENTATION TASKS LIST

START DATE: 21/09/10 **TENTATIVE IMPLEMENTATION DATE: 20/10/2011**

NOTE: when it has progressed sufficiently, this task list will be update to include tasks related to application of 30 NM lateral separation between aircraft authorized RNAV/5 on proposed Routes 11 and 12. These routes fall within radar and VHF coverage within the Merida control area.

	SUBJECT	TARGET DATE	STATUS	RESPONSIBLE	SUMMARY OF KEY IMPLEMENTATION TASKS
1	**Task List and Schedule**	-----	Completed	Mexico, United States	Develop Task List and schedule for completion of individual tasks.
2	ICAO SARPS and Guidance	-----	Completed	ICAO	Review related ICAO SARPS and guidance documents: ICAO Doc 4444; Annexes 2, 6, 11.
5	RNP 10 and RNP 4 authorization criteria	21/09/10	Completed	Mexico, United States, ICAO	1. Review ICAO Performance Based Navigation (PBN) Manual (ICAO Doc 9613, Third Edition - 2008 is) for current criteria for RNP 10 and RNP 4 authorization. 2. Determine if single Long Range Navigation System (RNAV) can be authorized for Gulf operations. Reference: ICAO PBN Manual, Vol. II, Part B, Chapter 1, paragraph 1.3.6.2. 3. Update Job Aids to reflect operational guidance Gulf of Mexico RNAV route operations.
5.1	Airspace and Cost/Benefit Analysis	TBD	Valid	United States	1. Mitre Update analysis of current versus proposed Gulf of Mexico RNAV route redesign 2. Check on involvement of FAA Tech Center
5.2	State regulations and guidance material	15/02/2011	Valid	Mexico, United States	States revise or develop regulations and guidance for RNP 10 or RNP 4 authorization, as necessary.
5.3	State regulator preparation	TBD	Valid	Mexico, United States	States prepare responsible offices for RNP 10 or RNP 4 authorization tasks.
7	Operator/aircraft fleet readiness projection	In progress	Valid	Mexico, United States	Project if operator/aircraft fleet can be authorized RNP 10 or RNP 4 by the implementation date. (Goal: approximately 85% of flights conducted by RNP 10 or RNP 4 authorized aircraft).

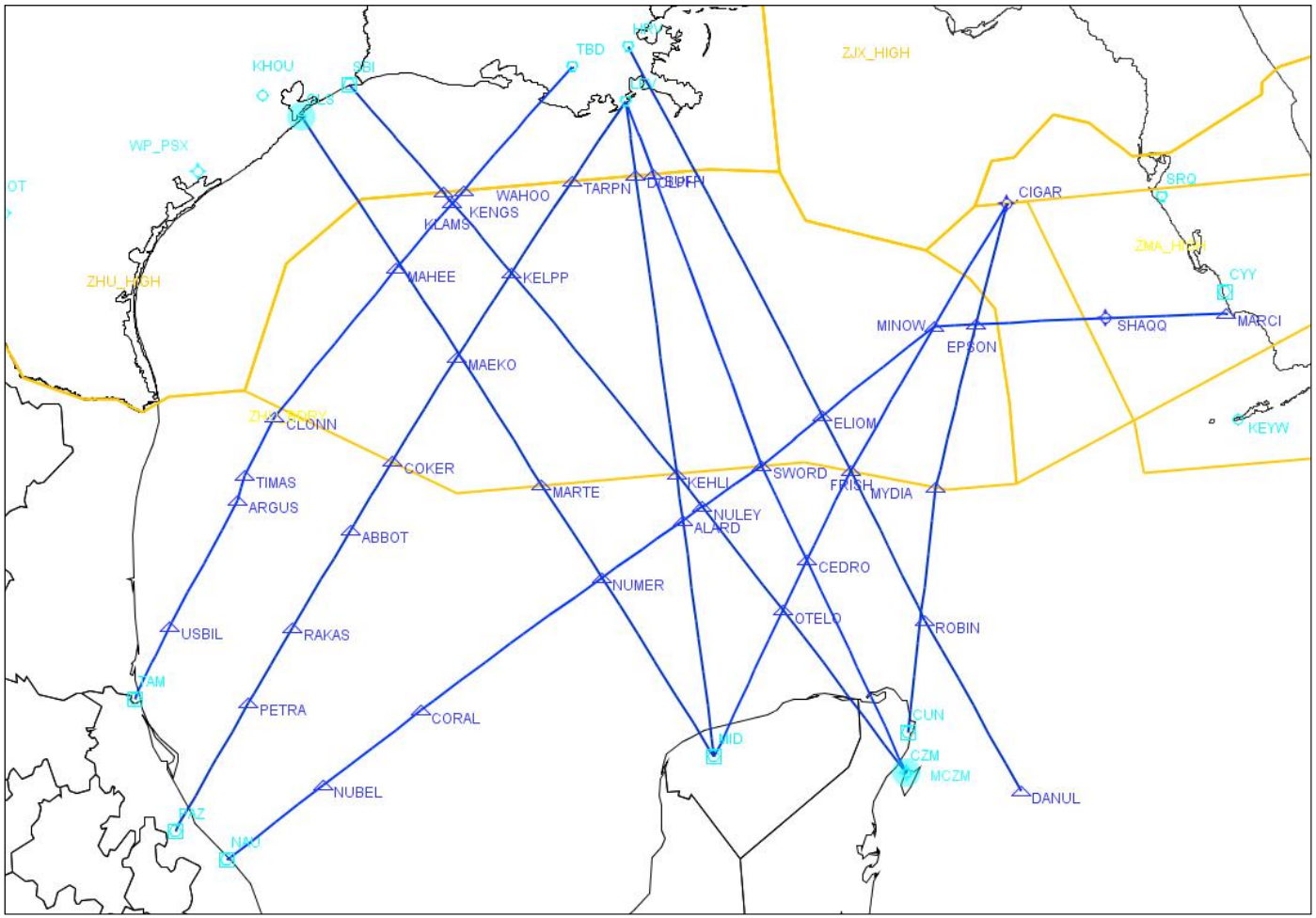
	SUBJECT	TARGET DATE	STATUS	RESPONSIBLE	SUMMARY OF KEY IMPLEMENTATION TASKS
8	Develop RNP 10 or RNP 4 Authorization Job Aids	15/02/11	Valid	Mexico, United States	Update requirements to address Gulf of Mexico and potential single aircraft Long Range Navigation System operations. Post Job Aids and guidance material on Webpage. Ensure current ICAO PBN Manual references are incorporated.
9	ICAO State letter to advocate use of guidance material	10/03/11	Valid	ICAO	To outline project and advocate use of RNP 10 and RNP 4 Job Aids and other guidance material posted on Webpage.
10	Operator RNP 10 or RNP 4 authorization	19/09/2011	Valid	Operators	Operators of RNP 10 or RNP 4 capable aircraft should have obtained RNP 10 or RNP 4 authorization by one month in advance of implementation.
11	State operational Policy & Procedures documents	01/03/2011	Valid	Mexico, United States	States revise or develop ATS operational documents, as necessary. 1. Distribute documents (e.g., State AIC's, FAA Notice) containing applicable operational policy and procedures. 2. FAA consider follow-up in AIM (Aeronautical Information Manual).
12	Complexion of new RNAV route structure redesign	01/12/10	Valid	Mexico, United States	1. Complete new RNAV route structure redesign, including validation of routes and fix coordinates; 2. Consider possible impact on related SIDs/STARs and airport operations. 3. Coordinate with ATS providers controlling adjacent airspace.
13	Coordination of overseas restricted areas for the Flexible Use of Airspace (FUA)	01/12/10	Valid	United States	Coordinate with U.S. Department of Defence (DoD) in regard to Special Use Airspace (SUA).
14	Waypoint and RNAV route allocations	01/12/10		Mexico, United States	Request waypoint and route designations from ICAO
15	Concept of Operations	15/02/11	Valid	Mexico, United States	Develop and coordinate Concept of Operations and incorporate into appropriate operational policy and procedures documents (e.g., FAA Notice, State AIP Supplements).
16	Develop Transition Plan	15/02/11	Valid	Mexico, United States	Determine if a transition plan is required for tactical application.
17	Review ATC letters of agreement (LOA)	15/08/11	Valid	Mexico, United States	Conduct coordination between ACCs concerned providing ATC services in the Gulf of Mexico

	SUBJECT	TARGET DATE	STATUS	RESPONSIBLE	SUMMARY OF KEY IMPLEMENTATION TASKS
18	ATC automated system modification	15/02/11	Valid	Mexico, United States	1. Establish system and time requirements to modify ATS provider ATC automated systems. 2. Assess if the FAA ERAM program will affect implementation 3. Modify ATC automated systems and programs, as necessary.
19 19.1	Safety Assessment Complete initial Safety Assessment /Collision Risk Modelling.	15/01/11	Valid	Mexico, United States	Available at time of Doc 7030 submission
19.2	Pre-implementation Safety Assessment	21/07/11	Valid	Mexico, United States	Update and complete final Safety Assessment and Readiness Review.
19.3	Safety Risk Management Document(s)	21/04/11	Valid	United States Mexico	1. FAA requirement: complete and submit FAA SRMD (Safety Risk Management Document) for approval approx. 6 months prior. 2. SENEAM requirement?
19	Develop proposal for amendment to ICAO Regional Supplementary Procedures (Doc 7030).	01/11/10	Valid	Mexico, United States, ICAO	Submit draft to ICAO NACC Mexico City Office for distribution to States and industry for comment. *Note: 50-lateral criteria is currently published ICAO Regional Supplementary Procedures (Doc 7030), CAR part.*
20	Develop proposal for amendment to ICAO CAR/SAM Regional Air Navigation Plan /ANP (Doc 8733).	01/04/11	Valid	Mexico, United States, ICAO	Based on RNAV Route redesign in the Gulf of Mexico
21	Establish Information Dissemination Program	15/01/11	Valid	Mexico, United States	Establish Webpage to reflect the required information, documentation and process for the users. Develop stakeholder's distribution list for State and industry organizations and key individuals.
22	Coordination with Regional ICAO Working Groups	30/06/11	Valid	Mexico, United States, ICAO	Submit Working Papers and Information Papers to appropriate ICAO Working Groups in the CAR Region: e.g., C/CAR/WG, C/CAR/DCA, NACC/WG, etc.

	SUBJECT	TARGET DATE	STATUS	RESPONSIBLE	SUMMARY OF KEY IMPLEMENTATION TASKS
23	Plan and schedule for aeronautical chart data publication	31/12/10	Valid	Mexico, United States	Develop plan and schedule for publication of aeronautical chart data. Consider to publish information on AIRAC cycle dates at least 56 days prior to implementation date. Provide information to stakeholders: Mexico DGAC, SENEAM, NACC Office, CSC, ESC, NFDC, ZHU, ZMA, JAX. 1. Distribute documents (e.g., State AIC's, FAA Notice) containing applicable operational policy and procedures. 2. FAA consider follow-up in AIM (Aeronautical Information Manual
24	Advance NOTAM publication	15/02/11	Valid	Mexico, United States	Provide advance notice to States and operators of intent to implement (key dates, basic plan and operating policy, etc.). Publish coordinated plan and schedule to transition to new separation standard.
25	Aeronautical chart and navigation databases	25/08/11	Valid	Mexico, United States	Publish and distribute aeronautical chart and navigation database information for redesigned route structure approx. 3 moths in advance
26	State ATC training programme	01/09/11	Valid	Mexico, United States	To define a standard controller training package to be posted on the GOMEX webpage for training purposes States to conduct ATC training programme.
27	Go or not go decision making for implementation	25/07/2011	Valid	Mexico, United States	Conduct final Safety Assessment and Readiness Review. Provide notification to all stakeholders go or not go decision for implementation.
28	Post implementation monitoring	20/10/2011	Valid	Mexico, United States	Conduct post-implementation monitoring and convene specialists as necessary for monitoring.

APPENDIX C

EXISTING GULF RNAV ROUTES



PROPOSED GULF RNAV ROUTES