CNS/ATM/SG/1-IP/08
22/2/10
International Civil Aviation Organization ***English only***
CAR/SAM REGIONAL PLANNING IMPLEMENTATION GROUP (GREPECAS)
First Meeting of the Communications, Navigation and Surveillance / Air Traffic Management Subgroup (CNS/ATM/SG/1)
(Lima, Peru, 15 to 19 March 2010)

Agenda Item 2: Review of global and CAR/SAM CNS/ATM developments

Gulf of Mexico RNAV Route Project

(Presented by United States of America)

SUMMARY

This paper is intended to inform the group that the U.S. Federal Aviation Administration (FAA) and Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM), the Air Traffic Service (ATS) provider for Mexico, have agreed to pursue a 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.

ICAO strategic objectives:	*A - Safety* *D - Efficiency*

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 The group agreed that the implementation of 50 NM track spacing can enable additional routes to be established in the GoM to enhance operations for air traffic operating between North America and South America. The group agreed that additional routes provide the potential to do the following:

a) Increase airspace capacity;

b) Add more direct, cost efficient routes; and

c) Reduce delays during periods of heavy traffic volume.

2. Discussion

2.1 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. SENEAM participants included representatives from SENEAM Headquarters and Merida and Monterrey Centres. FAA participants included representatives from FAA Headquarters, the FAA Air Traffic Control System Command Center (ATCSCC), and Houston, Miami and Jacksonville Centres.

2.2 The objectives of the meeting were to:

a) Further develop the Concept of Operations document;

b) Further develop the List of Key Implementation Tasks;

c) Identify a tentative Target Implementation Date;

d) Develop a draft RNAV Route Structure Design; and,

e) Identify follow-up actions required to progress the project.

2.3 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;

b) Implement new RNAV routes in GoM route structure using 50 NM lateral separation;

c) Harmonize transition to/from adjacent airspace;

d) Have a significant percentage of GoM operators obtain RNP 10 or RNP 4 authorization from appropriate State authority; and,

e) Accommodate the approximately 5% of flights not projected to meet RNP 10 or RNP 4 navigation specification.

2.4 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.

2.5 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.

3. Actions

3.1 The Group is invited to note the information presented in this paper, including 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"; and,
D. “Draft Gulf RNAV Route Operating Policy”.

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APPENDIX A

DRAFT – 22 JULY 2009

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

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.

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.

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. Flight of aircraft previously authorized RNP 10 with only one of the required long range navigation systems operational.

a. To the maximum extent possible, operators that are authorized RNP 10 should operate on Gulf oceanic routes in compliance with RNP 10 standards. Operators may, however, if the situation warrants, fly an aircraft on Gulf of Mexico oceanic routes with one of two long range navigation systems (LRNS) inoperative. The intent of this policy is to allow an aircraft to be flown to a maintenance facility for repair. For U.S. operators conducting operations under Part 121, 125 or 135 of the Code of Federal Regulations, Operations Specifications paragraph B054 (Class II (Oceanic) Navigation Using Single Long-Range Navigation System) applies.

TASK: see paragraph 11b below.

b. **In this situation, operators will <u>not</u> annotate their filed flight plan with an aircraft equipment suffix indicating RNP 10 compliance.** The aircraft will be treated as Non-RNP 10 aircraft and appropriate lateral separation will be applied.

10. Aircraft Population RNP 10 or RNP 4 Authorization Objective

a. <u>Implementation Objective:</u> <u>Percentage of Flights Authorized RNP 10 or RNP 4.</u> 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. <u>RNP 10 or RNP 4 Compliance To the Maximum Extent Possible.</u> The Gulf Task Force will advocate that <u>all operators/aircraft</u> that fly in the Gulf CTAs obtain RNP 10 or RNP 4 authorization as soon as possible.

11. 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. <u>Guidance To Be Used,</u> 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).

<u>TASK:</u> determine if agreement can be reached for single LRNS equipped aircraft to operate as RNP 10 aircraft on Gulf RNAV routes.

12. Target Dates:

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

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

c. Target Implementation Date: tentatively 4/Q 2011 (depends on factors such as FAA ERAM program and Special Use Airspace developments. Will be an AIRAC date for application of 50 NM lateral separation and implementation of the re-designed route structure).

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APPENDIX B

DRAFT 22 July 2009

SUMMARY OF GULF OF MEXICO 50 NM LATERAL/RNP 10 IMPLEMENTATION TASKS

Introduction. The following is a summary of major implementation tasks for the Gulf of Mexico 50 NM lateral/RNP 10 project.

	SUBJECT	TARGET DATE	SUMMARY OF KEY IMPLEMENTATION TASKS
1	ICAO SARPS and Guidance	Complete	Review related ICAO SARPS and guidance documents: ICAO Doc 4444; Annexes 2, 6, 11. Note: 50-lat criteria is currently only published in Caribbean (CAR) Regional Supplementary Procedures (ICAO Doc 7030).
2	RNP 10 and RNP 4 authorization criteria	Review complete; Other actions in progress.	1. Complete. Review ICAO Performance Based Navigation (PBN) Manual (ICAO Doc 9613) for current criteria for RNP 10 and RNP 4 authorization. (Third Edition – 2008 is current) 2. Determine if single Long Range Nav System (LRNS) 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 re Gulf RNAV route operations.
3	ICAO Regional Supplementary Procedures	In progress	Develop amendment for CAR Regional SUPPS and begin coordination with ICAO North American Central American, Caribbean (NACC) Mexico City Office.
4	Concept of Operations	In progress	Develop and coordinate Concept of Operations and incorporate into appropriate operational policy and procedures documents (e.g., FAA Notice, State AIP Supplements).
4a	Target Implementation Date	In progress	Action is to continue to assess factors that will affect the target implementation date such as: the FAA ERAM program and Special Use Airspace issues. 4/Q 2011 tentatively established as target implementation date pending further review.
5	Operator/aircraft fleet readiness projection	In progress	Project if operator/aircraft fleet can be authorized RNP 10 or RNP 4 by the implementation date. (Goal: approximately __% of flights conducted by RNP 10 or RNP 4 authorized aircraft).
6	ATC system modification		Establish system and time requirements to modify ATS provider ATC systems.
7	Task List and Schedule	In progress	Develop Task List and schedule for completion of individual tasks.
8	Regional Supplementary Procedures amendment	12 months prior	Submit draft to ICAO NACC Mexico City Office for distribution to States and industry for comment. **Target date for ICAO publication: _____.**
9	Safety Assessment	12 months prior	Complete Safety Assessment/Collision Risk Modelling to be available at time of Doc 7030 submission.
10	Safety Risk Management Document(s)	6 months prior	**1. FAA requirement:** complete and submit FAA SRMD (Safety Risk Management Document) for approval approx. 6 months prior. **2. SENEAM requirement?**

	SUBJECT	TARGET DATE	SUMMARY OF KEY IMPLEMENTATION TASKS
11	Route structure redesign	In progress	1. Complete 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 adjoining airspace.
11a	Coordination with U.S. DoD on Special Use Airspace	Planned	Coordinate with U.S. Department of Defense (DoD) in regard to Special Use Airspace (SUA).
12	Plan and schedule for aeronautical chart data publication	TBD	Develop plan and schedule for publication of aeronautical chart data. Consider whether or not it is necessary to publish "transition" waypoints on AIRAC date 56 days in advance of implementation date. Stakeholders: SENEAM, NACC Office, CSC, ESC, NFDC, ZHU, ZMA, JAX, NACG. Note: Antonio Villanueva is SENEAM POC for aeronautical charting.
13	Information Dissemination Program	18 months prior	Establish Webpage. Develop distribution list for State and industry organizations and key individuals. Distribute ICAO State letters, as necessary.
14	RNP 10 or RNP 4 Authorization Job Aids	18 months prior	Update required to address Gulf and potential single aircraft Long Range Nav System operations. Post on Webpage. Ensure current PBN Manual references incorporated. Have ICAO State letter advocate use of Job Aids.
15	Advance notice	18 months prior	Provide advance notice to States and operators of intent to implement (key dates, basic plan and operating policy, etc.).
16	ICAO State Letter	12 months prior	ICAO Regional Office distribute ICAO State letter to: outline project and advocate use of RNP 10 and RNP 4 Job Aids and other guidance posted on the Webpage).
17	Coordination with Regional ICAO Working Groups	18 months prior	Submit Working Papers and Information papers to appropriate ICAO Working Groups in the region: e.g., C/CAR WG, C/CAR DCA, NACC WG
18	State regulator preparation	12 months prior	States prepare responsible offices for RNP 10 or RNP 4 authorization tasks.
19	State regulations and guidance	12 months prior	States revise or develop regulations and guidance for RNP 10 or RNP 4 authorization, as necessary.
20	Operational Policy & Procedures documents	6-9 months prior	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).
21	State ATS policy documents	TBD	States revise or develop Air Traffic Services policy documents, as necessary.
22	Transition Plan	12 months prior	Determine if a transition plan is required.
22a	Publish Transition Plan (if required)	3 months prior	If required, publish coordinated plan and schedule to transition to new separation standard.
23	Pre-implementation Safety Assessment & Implementation Decision	90 days prior	Update and complete final Safety Assessment and Readiness Review.
24	Notice of decision to implement	75 days prior	Provide notification to States and operators of decision to implement.

	SUBJECT	TARGET DATE	SUMMARY OF KEY IMPLEMENTATION TASKS
25	State controller training	During month prior	States train controllers.
26	Aeronautical chart and navigation databases	TBD	Publish and distribute revised aeronautical chart and navigation database information for redesigned route structure; consider publishing some waypoint data one charting cycle (56 days) prior to implementation
27	State ATC automation systems	TBD	Modify ATC automation systems and programs, as necessary.
28	Operator RNP 10 or RNP 4 authorization	One month prior	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.
29	Target Implementation Date	Tentative date 4/Q 2011	Implement 50 NM lateral separation and, if applicable, redesigned route structure.
30	Post implementation monitoring	TBD	Conduct post-implementation monitoring and convene specialists as necessary for monitoring.

Major Sections Generally Contained in Implementation Task Lists:

I. General Project Development & Management	VI. Operations, Airworthiness & RNP Authorization
II. International Coordination: ICAO Groups & Documents	VII. State Responsibilities For RNP Authorization
III. Route Structure Redesign & Publication	VIII. Operator Responsibilities & Tasks
IV. Safety Analysis & Monitoring	IX. Final Implementation Decision & Notification
V. Air Traffic Control Tasks – General	X. Post-Implementation Tasks

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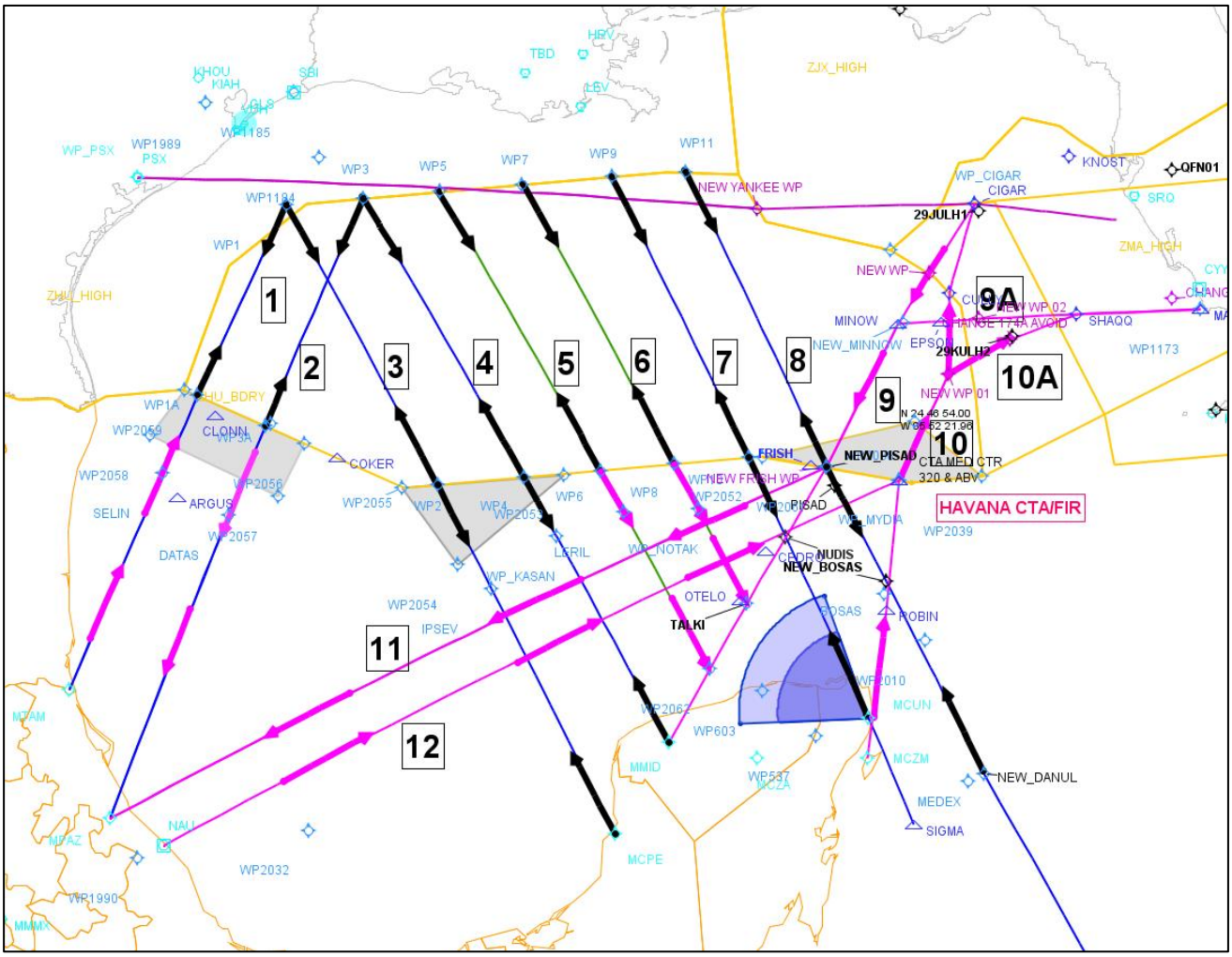
APPENDIX C

30 JULY DRAFT GULF RNAV ROUTES



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APPENDIX D

30 JULY 2009 DRAFT GULF RNAV ROUTE OPERATING POLICY

Operating Policy In Houston (ZHU) and Monterrey (MTY) Centers

#Route 1:
-Planned to be unidirectional - northbound
-Planned to be published as unidirectional
-Planned to be operated as bidirectional in ZHU airspace

#Route 2:
-Planned to be bidirectional in ZHU airspace
-Planned to be southbound in MTY airspace

Operating Policy In ZHU and Merida (MID) Centers

General Note: Operating policy to/from MMUN also applies to MMCZ

#Route 3:
-Planned to be bidirectional
-Over flights allowed to/from destinations in Caribbean, Central and South America
-No MMUN arrivals
-No altitude restrictions
-CPE arrivals

#Route 4:
-Planned to be bidirectional
-Over flights allowed
-MMUN arrivals allowed
-No altitude restriction
-Waypoints 2 & 4 may require possible changes w/CTA

#Route 5:
-Planned to be bidirectional
-MMUN arrivals only
-No over flights
-No altitude restriction

#Route 6:
-Planned to be bidirectional
-MMUN arrivals only
-No over flights
-No altitude restriction

#Route 7:
-Planned to be bidirectional
-MMUN arrivals allowed

#Route 8:
-Planned to be bidirectional
-No altitude restriction
-MMUN arrivals (FRISH CEDRO MMUN)
-Over flights allowed

#Route 9: -Planned to be Southbound only
-No altitude restriction
-MMUN arrivals allowed
-MID arrivals allowed
-Military flights

#Route 10: -Planned to be northbound only
-No altitude restriction

#Route 11: -FRISH to PAZ (southwest bound only)
-Miami to MMMX routing: Route 9A to MINOW, Route 9 to FRISH, Route 11 to PAZ

#Route 12: -Northeast bound only
- MMMX to Miami routing: Route 12 (NAU to MYDIA) then Route 10

Notes re Routes 11 and 12

1. 30 NM track spacing between Routes 11 and 12
2. Routes to be operated under radar coverage
3. Routes to be operated under Mexican national policy

Miscellaneous Notes:

1. During RADAR outages - Non-RADAR rules will apply
2. 3 CTAs: to facilitate RADAR handoffs
    a. at MYDIA
    b. at MARTE
    c. at FIR between ZHU and MTY: airways #1 and #2
3. Routes 9 and 10 – are procedurally separated (can use inappropriate altitude for direction)
4. IATA has requested that FAA/SENEAM consider life raft equipage rule (162 NM from shore) in developing routes paralleling the coast.

– END –