

**COMISSÃO LATINO-AMERICANA
DE AVIAÇÃO CIVIL**



**LATIN AMERICAN CIVIL
AVIATION COMMISSION**

COMISIÓN LATINOAMERICANA DE AVIACIÓN CIVIL

**SECRETARÍA
APARTADO 27032
LIMA, PERÚ**

CLAC/GEPEJTA/22-NE/27
21/05/09

**VIGÉSIMO SEGUNDA REUNIÓN DEL GRUPO DE EXPERTOS EN ASUNTOS POLÍTICOS,
ECONÓMICOS Y JURÍDICOS DEL TRANSPORTE AÉREO (GEPEJTA/22)**

(Ciudad de Panamá, Panamá, del 26 al 28 de mayo de 2009)

**Cuestión 6 del
Orden del Día:**

Otros asuntos

- **Presentación de BOEING sobre RNP**

(Nota de estudio presentada por la BOEING)

1. Como es de su conocimiento, la Autoridad Aeronáutica de Panamá viene desarrollando un Proyecto con la BOEING referente a procedimientos de aproximación RNP. En ese sentido, se ha previsto una presentación por parte de la BOEING (**Adjunto**) con el objeto de compartir con los Estados miembros de la CLAC la experiencia panameña en esta materia.

Medidas Propuestas al Grupo de Expertos

2. Se invita al GEPEJTA a tomar conocimiento de la presentación, intercambiar puntos de vista y adoptar las medidas que estime pertinente.



Tocumen International & Howard Airports RNP Project

Autoridad Aeronáutica Civil de Panamá / Copa Airlines

Annie Beck
 Regulatory Affairs
 on behalf of Navigation Services
 Commercial Aviation Services
 May 23, 2009

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Topics for Discussion

Tocumen International & Howard Airports RNP Project

- Project Overview
- Project Objectives
- Statement of Work
- Project Team
- Project Selection Process
- Procedure Development Process
- System Requirements Review
- Procedure Concepts for PTY
- Next Milestone: Preliminary Design Review
- Questions & Answers



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Project Overview

- Cooperative effort: AAC of Panama, Copa Airlines, Boeing, Jeppesen
- Develop RNAV STARs and RNP procedures for approach operations at Tocumen International & Howard Airports
- Copa Airlines will be the lead air carrier to introduce RNP with the 737NG.
- Other operators are anticipated to use these same procedures or RNAV derivatives of these procedures over time.
- The ACC Panama (through LACAC) will invite other Director Generals to participate as project observers along with ICAO.
- Major milestone events & reviews will be conducted in Panama.



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Required Navigation Performance (RNP)

A highly flexible means of navigation

- RNP uses advanced flight management systems and GPS to allow aircraft to fly tightly confined corridors of airspace
- Allows operators and airspace planners to take advantage of the improved path performance to more efficiently use the available airspace.
- RNP can help avoid obstacles or terrain, and avoid noise sensitive or restricted areas.
- RNP can also be used to maintain safe separation between aircraft, as on parallel or converging runways.



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Project Objectives

- Allow the AAC to introduce RNP at Panama airports to enhance operational safety
- AAC of Panama will support the implementation of closely spaced parallel approach operations with RNP.
- Develop a full set of RNAV (RNP) procedures (RNP 0.3, 0.15, and 0.10.)
- Allow Copa Airlines to minimize the number of track miles flown in approach and departure operations (save fuel)
- Provide momentum for continued RNP implementation in Latin America



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Statement of Work Summary

- Program Management (Boeing)
- System Requirements & Objectives (Boeing)
- RNP Instrument Procedures (Jeppesen)
 - Design Procedures
 - Submit Procedures for Approval to AAC
 - Flight Crew Procedures (Copa Airlines)
 - Provide Flight Crews, Simulators, Aircraft (Copa Airlines)
 - Make application for operational approval and conduct an operational validation test. (Copa Airlines)
 - Approve RNP Instrument Procedures (AAC)
 - Approve Flight Operations (AAC)
- Implementation & Assessment of Efficiency Gains (Copa Airlines, AAC, Boeing)
 - (Pending) Airspace Model & Simulation (Jeppesen)
 - (Pending) RNP Integration Workshop (Boeing)



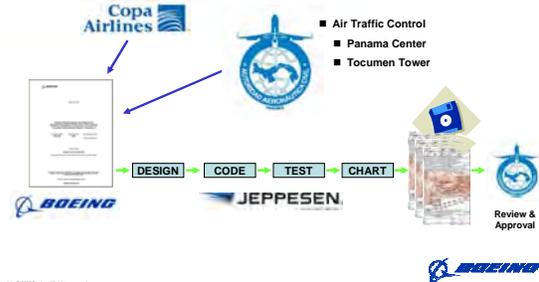
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Project Selection A Four Step Process

1. LACAC Provided Project Candidate Recommendations to Boeing
2. Boeing coordinated the recommended candidates internally (Marketing & Sales)
3. Boeing confirmed interest with candidate state and proposed lead airline.
4. Project formalized through contracts.



Procedure Design Process "A Systems Engineering Approach"



Project Timeline

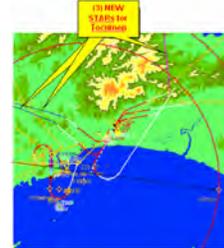
ID	Task Name	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter						
		Sep	Nov	Jan	Mar	May	Jul	Sep	Nov	Jan	
1	Tocumen International / Howard Airports RNP Project	[Gantt bar]									
2	Major Milestones										
3	Formalize Customer Interest in the "Tocumen / Howard" RNP Project			1923							
4	Complete PGA for "Tocumen / Howard" RNP Project				311						
5	Propose "On-Board" Officer					410					
6	Conduct a System Requirements Review										
7	Conduct Preliminary Design Review										
8	Conduct a Critical Design Review (F37 Flight Simulator)						011				
9	Complete the Demonstration Flight Test (F37) (FLIGHT VALIDATION Pt)							714			
10	Submit Instrument Procedure Design to IAC								015		
11	Issue Equivalent of Approved "RNP" Forms for the RNP Departures									008	
12	Submit COPA Airlines Application for Operational Approval for RNP Ops									025	
13	Complete the Operational Validation (Test) Plan									002	
14	Begin RNP Operations at Tocumen International Airport									003	
15	Distribute the RNP Approach Operational Efficiency Report									011	

- System Requirements Review April 14, 2009
- Preliminary Design Review, June 11, 2009
- Demonstration Flight, 4th Week of July 2009



Next Major Milestone Preliminary Design Review, June 11, 2009

- Hosted by AAC de Panama
- Led by Boeing
- Review Preliminary Design Concepts from Jeppesen
- Participation from U.S. FAA
- LACAC and ICAO Invited to Observe Process



- Concept Envisioned by AAC de Panama
- New RNAV STAR's feeding RNP approaches.
- New RNP approaches to Runways 03L/R, and 21L/R
- New RNAV SID from Runways 03L/R

Successful RNP implementation requires all the elements be in place.



- Successful introduction of RNP operations:
 - Regulatory Framework
 - Airspace Infrastructure
 - Airline Flight Operations
 - Airplane RNP Capability

