Organización de Aviación Civil Internacional
Oficina para Norteamérica, Centroamérica y Caribe

OACI

NOTA DE ESTUDIO

NACC/WG/4 — NE/16
17/03/14

Cuarta Reunión del Grupo de Trabajo de Norteamérica, Centroamérica y Caribe (NACC/WG/4)

Ottawa, Canadá, 24 al 28 de marzo de 2014

Cuestión 3 del Orden del Día: **Seguimiento a los avances del Plan de Implementación de Navegación Aérea Basado en la Performance para las Regiones NAM/CAR (NAM/CAR RPBANIP)**

3.5.2 Monitoreo de la implementación a nivel regional a través del Formulario de Notificación de Navegación Aérea (ANRF)

MONITOREO DE LA IMPLEMENTACIÓN A TRAVÉS DE LOS FORMATOS DE NOTIFICACIÓN DE NAVEGACIÓN AÉREA DE LA OACI (ANRF)

(Presentada por la Secretaría)

RESUMEN EJECUTIVO

Esta nota brinda información un resumen en el mecanismo adoptado de monitoreo y notificación con el marco de referencia basado en la performance dentro del RPBANIP, y la necesidad de acordar la forma en que el monitoreo y notificación de la implementación de Navegación Aérea deberá ser llevada a cabo a nivel regional, sub-regional y nacional.

Acción:	Ver párrafo 3
Objetivos Estratégicos:	• Seguridad Operacional • Capacidad y eficiencia de la navegación aérea • Protección del medio ambiente
Referencias:	• Tercera Reunión del Grupo de Trabajo de Norteamérica, Centroamérica y Caribe (NACC/WG/3), Ciudad de Guatemala, Guatemala, 9 al 13 de mayo de 2011 • Primera Reunión sobre implementación de Navegación Aérea para las Regiones NAM/CAR (ANI/WG/1), Ciudad de México, México, 29 de julio al 1 de agosto de 2013 • Plan de Implementación de Navegación Aérea basado en la Performance para las Regiones NAM/CAR (NAM/CAR RPBANIP), Versión 3.0 • Port-of-Spain Declaration

1. Introducción

1.1 La Reunión NACC/DCA/3 adoptó el Plan Regional basado en la performance NAM/CAR para la implantación de la navegación aérea (RPBANIP) versiones 1.0 y 2.0, como el programa regional de trabajo, e invitó a los Estados a adoptar un marco nacional de performance. En este sentido, el marco de performance incluye los objetivos nacionales de performance, tomando en consideración las expectativas de los usuarios y las necesidades de los Estados para todas las áreas de la navegación aérea. El RPBANIP estableció las prioridades regionales y el esquema de trabajo para la Región CAR y los diferentes grupos de implementación y los Estados/Territorios.

1.2 Durante la Tercera Reunión del Grupo de Trabajo de Norteamérica, Centroamérica y el Caribe (NACC/WG/3) y siguiendo el marco de referencia de performance para los principios de monitoreo, se presentaron las métricas y logros sobre seguridad operacional y eficiencia obtenidos hasta mayo de 2011 de los trabajos de implementación en las Regiones NAM/CAR, el formato de muestra es presentada en el **Apéndice A** a esta nota de estudio.

1.3 Con la implementación de la Metodología de Mejoras por bloques del Sistema de Aviación (ASBU) de la OACI, el RPBANIP evoluciono en su versión 3.0, donde los Objetivos Regionales de Performance fueron alineados con los Módulos ASBU Bloque 0 adoptados por las Regiones NAM/CAR.

1.4 Similarmente, la Reunión ANI/WG/1 formuló la Conclusión 1/14 - *Adopción de un Programa de Monitoreo y Medición de la Performance en las Regiones NAM/CAR,* donde los Estados, Territorios y Organizaciones Internacionales de las Regiones NAM/CAR fueron invitadas a adoptar un grupo de métricas sobre acceso y equidad, capacidad, eficiencia, ambiente y seguridad operacional relacionado con las Áreas clave de rendimiento (KPA) en los Formato de Notificación de Navegación Aérea de la OACI (ANRF), incorporar estas métricas en sus programas de monitoreo de performance, recolectar datos pertinentes, y presentarlos sobre una base regular a la Oficina Regional NACC de la OACI, coordinar con los miembros de la comunidad ATM con el fin de promover la recolección de datos e información, y notificar a la Oficina NACC de la OACI sobre su avance a más tardar el 30 de enero de cada año.

1.5 La implementación del Plan de Navegación Aérea electrónico incluirá un Tercer Volumen para el propósito de reflejar cada módulo regional ASBU adoptado, y la forma en que su implementación de monitoreo/notificación será llevada a cabo.

2. Formato de Notificación de Navegación Aérea (ANRF)

2.1 El ANRF es una herramienta adaptada para módulos ASBU, que se recomienda para establecer metas de planificación, monitorear la implementación, identificar retos, medir la implementación/performance, y reportar. Asimismo, GREPECAS y los Estados podrían usar este formato de notificación para cualquier otro programa de mejora de navegación aérea, tales como SAR. Si es necesario, otros formatos de notificación que proporcionen mayores detalles pueden utilizarse, pero deberían contener como mínimo los elementos descritos en la plantilla de ANRF. Los resultados serán analizados por la OACI y las partes interesadas de la aviación y serán utilizados al elaborar el Cuadro de mandos regionales (Dashboard) de Performance y el Informe de Navegación Aérea Mundial anual. Las conclusiones del Informe de Navegación Aérea Mundial servirán como base para futuros ajustes de políticas, ayudar a la practicidad de la seguridad operacional, asequibilidad, y armonización global, entre otras cuestiones

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2.2. Los ANRF (formato de muestra presentado en el **Apéndice B** a esta nota), incluyen la siguiente información:

- Objetivos de Performance Regionales/Nacionales
- Impacto en principales Áreas Clave de Performance
- Elementos relacionados a los Módulos ASBU
- Metas y Progreso de implementación (Tierra y Aire): Establecimiento de metas a ser logradas, este debe cubrir ambas, aviónica y sistemas de Tierra..
- Retos de implementación
- Monitoreo y Medición de Performance: el performance de monitoreo y medición es realizado a través de la recolección de datos para las métricas de apoyo. Esto incluye el monitoreo de implementación (progreso logrado) y performance de monitoreo (beneficios logrados)

2.3 Una descripción detallada de los ANRF está incluida en el Capítulo 3 del RPBANIP.

2.4 Todos los Estados y Territorios de las Regiones NAM/CAR son instados a desarrollar sus Planes nacionales de implementación de acuerdo al RPBANIP. Los Planes nacionales traducen las principales actividades de mejora operacional relacionados con temas y enfoques estratégicos, resultados esperados, indicadores clave de performance (KPI), la asignación de especialistas y la estimación de los recursos requeridos.

2.5 Todos los Estados/Territorios NAM/CAR se han comprometido a lograr los objetivos y metas definidas en el RPBANIP y las principales metas reflejadas en la Declaración de Puerto España.

2.6 Basado en lo anterior y para armonizar la recolección de información siguiendo la implementación y beneficios logrados con el RPBANIP, el siguiente Proyecto de Conclusión es propuesto:

PROYECTO DE CONCLUSIÓN NACC/WG/4/xx NOTIFICACIÓN/MONITOREO DE NAVEGACIÓN AÉREA EN LAS REGIONES NAM/CAR

Que a más tardar en diciembre de 2014 para la armonización y recolección de datos eficientes para notificación y monitoreo del progreso de la implementación de Navegación Aérea y la performance/beneficios logrados, los Estados/Territorios NAM/CAR:

a) invitar a todas las partes interesadas de Navegación aérea en la recolección de datos y el proceso de notificación;

b) usar los ANRF del RPBANIP como mínimo para notificar su avance nacional, sub-regional y regional en la implementación y la performance; e

c) informar periódicamente a la Oficina Regional NACC de la OACI para reflejar el estado de las Regiones NAM/CAR en los diferentes foros, según se requiera.

3. Acción sugerida

3.1 Se invita a la Reunión a:

a) tomar nota de la información proporcionada en esta nota de estudio;

b) adoptar el proyecto de conclusión sugerido en el párrafo 2.6; y

c) analizar otras consideraciones al respecto que considere necesarias.

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APPENDIX/APÉNDICE A

SAMPLE FORM
MONITORING OF AIR NAVIGATION SYSTEMS PERFORMANCE METRICS AND ACHIEVEMENTS: C/CAR SUBREGION - May 2011

Key Performance Area and Corresponding Metrics	FIR							
	Central America	**CURACAO (Aruba, Curacao, Bonaire)**	**HAVANA**	**Port-au-Prince**	**Kingston**	**United States (Houston Miami)**	**Santo Domingo**	**Mexico**
Efficiency • Estimated fuel savings (year 2000 as baseline); • Percent of flights departing on-time; • Percentage of instrument runway ends with an approach procedure with vertical guidance (APV), (BARO-VNAV and/or augmented GNSS) either as the primary approach or as a back-up for precision approaches; • PBN Routes implemented and published in en-route; • Number of certified aircrafts and pilots for PBN operations for en-route and TMA; • Percent of flights with normal flight duration; • implemented.	Costa Rica: 2009=191, 227.152 litres 18 RNAV implemented Routes.	RNAV route network will be reviewed in 2011	-5 RNAV routes will be implemented – by June 2010. - Analysis of delays for more than 15 minutes due to operational errors in progress	2 RNAV routes extended from WATRS airspace	RNAV route network will be reviewed in 2011	RNAV Routes network in the Gulf of Mexico to be reviewed in April 2012.	16 RNAV routes implemented, 3 extended from the WATRS airspace.	3,638,931 tons. 10 RNAV Routes 8 Automated systems: Tijuana, Guadalajara, Mexico, Puerto Vallarta, Cancun, Monterrey, Merida, Mazatlan.
Safety • Number of runway incursions per year; • Number of operational errors per year; • Number of accidents per 100,000 departures; • Number of fatalities per 100,000 departures; • Number of LHD reports	Based on implemented comprehensive quality system, analysis ongoing of statistics, operational errors and incident occurrences for continuous improvements in air navigation services	-- Aruba: collecting information ongoing - NA: analysis of statistics ongoing regarding LHDs and Runway incursions.	Percentage of 0.02% Incidents per number of air operations	Analysis of LHDs ongoing to mitigate occurrences.	Analysis of LHDs ongoing	Extensive matured evaluation process based on quality assurance principles. Operational improvements based on SMS risk analysis to ensure level of air navigation services in the airports and national air space system	Analysis ongoing of operational errors and incident occurrences reported by users	

SAMPLE TEMPLATE

1. AIR NAVIGATION REPORT FORM (ANRF)

(This template demonstrates how ANRF to be used.
The data inserted here refers to ASBU B0-CDO as an example only)

Regional and National planning for ASBU Modules

2. REGIONAL/NATIONAL PERFORMANCE OBJECTIVE – B0-CDO:
Improved Flexibility and Efficiency in Descent Profiles

Performance Improvement Area 4:
Efficient Flight Path – Through Trajectory-based Operations

3. ASBU B0-CDO: Impact on Main Key Performance Areas (KPA)

	Access & Equity	Capacity	Efficiency	Environment	Safety
Applicable	N	N	Y	Y	Y

4. ASBU B0-CDO: Planning Targets and Implementation Progress

5. Elements	6. Targets and implementation progress (Ground and Air)
1. CDO	
2. PBN STARs	

7. ASBU B0-CDO: Implementation Challenges

Elements	Implementation Area			
	Ground system Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. CDO				
2. PBN STARs				

8. Performance Monitoring and Measurement 8A. ASBU B0-CDO: Implementation Monitoring	
Elements	**Performance Indicators/Supporting Metrics**
1. CDO	Indicator: Percentage of international aerodromes/TMAs with CDO implemented Supporting metric: Number of international aerodromes/TMAs with CDO implemented
2. PBN STARs	Indicator: Percentage of international aerodromes/TMAs with PBN STARs implemented Supporting metric: Number of international aerodromes/TMAs with PBN STARs implemented

8. Performance Monitoring and Measurement 8 B. ASBU B0-CDO: Performance Monitoring	
Key Performance Areas	**Metrics (if not indicate qualitative Benefits)**
Access & Equity	Not applicable
Capacity	Not applicable
Efficiency	Kilograms of fuel saved per flight
Environment	Kilograms of CO_2 emissions reduced per flight (= KGs fuel saved per flight x 3.157)
Safety	Number of controlled flight into terrain (CFIT) incidents/accidents

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AIR NAVIGATION REPORT FORM
HOW TO USE - EXPLANATORY NOTES

1. **Air Navigation Report Form (ANRF):** This form is nothing but the revised version of Performance Framework Form that was being used by Planning and Implementation Regional Groups (PIRGs)/States until now. The ANRF is a customized tool for Aviation System Block Upgrades (ASBU) Modules which is recommended for application for setting planning targets, monitoring implementation, identifying challenges, measuring implementation/performance and reporting. Also, the PIRGs and States could use this report format for any other air navigation improvement programmes such as Search and Rescue. If necessary, other reporting formats that provide more details may be used but should contain as a minimum the elements described in this ANRF template. The results will be analysed by ICAO and aviation partners and utilized in developing the Regional Performance Dashboard and the Annual Global Air Navigation Report. The conclusions from the Global Air Navigation Report will serve as the basis for future policy adjustments, aiding safety practicality, affordability and global harmonization, amongst other concerns.

2. **Regional/National Performance objective:** In the ASBU methodology, the performance objective will be the title of the ASBU module itself. Furthermore, indicate alongside corresponding Performance Improvement area (PIA).

3. **Impact on Main Key Performance Areas:** Key to the achievement of a globally interoperable ATM system is a clear statement of the expectations/benefits to the ATM community. The expectations/benefits are referred to eleven Key Performance Areas (KPAs) and are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. The KPAs applicable to respective ASBU module are to be identified by marking Y (Yes) or N (No). The impact assessment could be extended to more than five KPAs mentioned above if maturity of the national system allows and the process is available within the State to collect the data.

4. **Planning Targets and Implementation Progress:** This section indicates planning targets and status of progress in the implementation of different elements of the ASBU Module for both air and ground segments.

5. **Elements related to ASBU module:** Under this section list elements that are needed to implement the respective ASBU Module. Furthermore, should there be elements that are not reflected in the ASBU Module (example: In ASBU B0-ACDM, Aerodrome certification and data link applications D-VOLMET, D-ATIS, D-FIS are not included; Similarly in ASBU B0-DATM, note that WGS-84 and eTOD are not included) but at the same time if they are closely linked to the module, ANRF should specify those elements. As a part of guidance to PIRGs/States, every Regional ANP will have the complete list of all 18 Modules of ASBU Block 0 along with corresponding elements, equipage required on the ground and in the air as well as metrics specific to both implementation and benefits.

6. **Targets and implementation progress (Ground and Air):** Planned implementation date (month/year) and the current status/responsibility for each element are to be reported in this section. Please provide as much details as possible and should cover both avionics and ground systems. If necessary, use additional pages.
7. **Implementation challenges**: Any challenges/problems that are foreseen for the implementation of elements of the Module are to be reported in this section. The purpose of the section is to identify in advance any issues that will delay the implementation and if so, corrective action is to be initiated by the concerned person/entity. The four areas, under which implementation issues, if any, for the ASBU Module to be identified, are as follows:

    - Ground System Implementation:
    - Avionics Implementation:
    - Procedures Availability:
    - Operational Approvals:

    Should be there no challenges to be resolved for the implementation of ASBU Module, indicate as "NIL".

8. **Performance Monitoring and Measurement:** Performance monitoring and measurement is done through the collection of data for the supporting metrics. In other words, metrics are quantitative measure of system performance – how well the system is functioning. The metrics fulfil three functions. They form a basis for assessing and monitoring the provision of ATM services, they define what ATM services user value and they can provide common criteria for cost benefit analysis for air navigation systems development. The Metrics are of two types:

    A. **Implementation Monitoring**: Under this section, the indicator supported by the data collected for the metric reflects the status of implementation of elements of the Module. For example- Percentage of international aerodromes with CDO implemented. This indicator requires data for the metric "number of international aerodromes with CDO".

    B. **Performance Monitoring**: The metric in this section allows to asses benefits accrued as a result of implementation of the module. The benefits or expectations, also known as Key Performance Areas (KPAs), are interrelated and cannot be considered in isolation since all are necessary for the achievement of the objectives established for the system as a whole. It should be noted that while safety is the highest priority, the eleven KPAs shown below are in alphabetical order as they would appear in English. They are access/equity; capacity; cost effectiveness; efficiency; environment; flexibility; global interoperability; participation of ATM community; predictability; safety; and security. However, out of these eleven KPAs, for the present, only five have been selected for reporting through ANRF, which are Access & Equity, Capacity, Efficiency, Environment and Safety. It is not necessary that every module contributes to all of the five KPAs. Consequently, a limited number of metrics per type of KPA, serving as an example to measure the module(s)' implementation benefits, without trying to apportion these benefits between module, have been identified below. This approach would facilitate States in collecting data for the chosen metrics. If it is not possible to identify performance metrics for an individual module, mention qualitative benefits under this section.

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LIST OF PERFORMANCE METRICS FOR ASBU MODULES RELATED TO ELEVEN KPAs - EXAMPLES

Key Performance Area	Related Performance Metrics
1. Access & Equity	1. KPA/Access: Number of international aerodromes with APV
	2. KPA/Access: Percentage of time Special Use Airspace (SUA) available to Civil Operations
	3. KPA/Access: Percentage of requested flight level versus cleared flight level
	4. KPA/Access: Number of access denials due to equipment failure
	5. KPA/Equity: Percentage of aircraft operators by class who consider that equity is achieved
	6. KPA/Equity: Percentage of different types of aircraft operating in a particular airspace or international aerodrome.
2. Capacity	1. Number of operations (arrivals+departures) per international aerodrome per day
	2. Average ATFM delay per flight at an international aerodrome
	3. Number of landings before and after APV per international aerodrome
	4. Average en-route ATFM delay generated by airspace volume
	5. Number of aircraft in a defined volume of airspace for a period of time
3. Cost effectiveness	1. IFR movements per ATCO hour on duty
	2. IFR flights (en-route) per ATCO hour duty
4. Efficiency	1. Kilograms of fuel saved per flight
	2. Average ATFM delay per flight at the international aerodrome
	3. Percentage of PBN routes
5. Environment	1. Kilograms of CO_2 emissions reduced per flight (= KGs fuel saved per flight x 3.157)
	2. The number of electronic pages dispatched
6. Flexibility	1. Number of backups available in emergency
	2. Number of changes approved to the flight plan
	3. Number of alternatives granted
7. Global Interoperability	1. Number of ATC automated systems that are interconnected
8. Participation of the ATM Community	1. Level of participation in meetings
	2. Level of responses to planning activities
9. Predictability	1. Arrival/departure delay (in minutes) at international aerodrome
10. Safety	1. Number of runway incursions per international aerodrome per year
	2. Number of incidents/accidents with MET conditions as a sole or as a contributory factor
	3. Number of ACAS RA events
	4. Number of CFIT accidents
	5.Number of missed approaches avoided due to use of CDO
11. Security	Not Applicable

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