International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

ANI/WG/2 — WP/13
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Second NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/2)
Puntarenas, Costa Rica, 1 to 4 June 2015

Agenda Item 5: **Performance Monitoring of Air Navigation Systems**
5.1 Air Navigation Report Form (ANRF) review-regional level

REVIEW OF THE EXISTING AIR NAVIGATION REPORTING FORMS (ANRFs)

(Presented by the Secretariat)

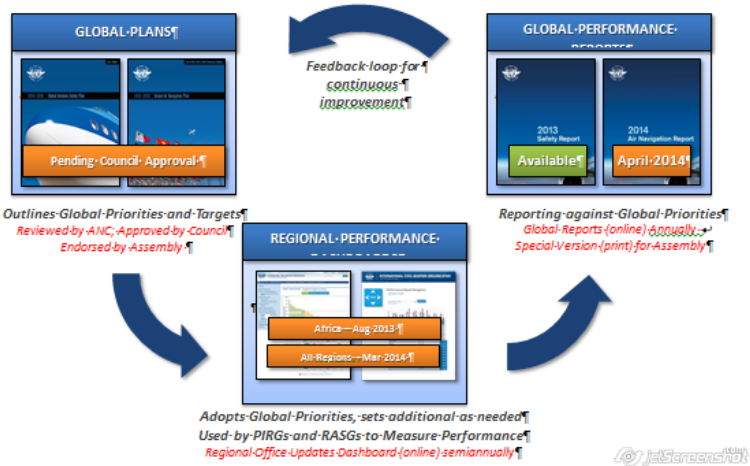
EXECUTIVE SUMMARY

This working paper presents the concern for the lack of use of the ANRFs adopted with the Regional Performance-Based Air Navigation Implementation Plan (RPBANIP) and proposes several ideas for review and improvements for this form to be implemented, including an analysis of the Air Navigation metrics.

Action:	Suggested action is indicated in section 3.
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency • Environmental Protection
References:	• First NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/1), Mexico City, Mexico, from 29 July to 1 August 2013 • Fourth North American, Central American and Caribbean Working Group Meeting (NACC/WG/4) Ottawa, Canada, from 24 to 28 March 2014 • Fourteenth Directors of Civil Aviation of the Central Caribbean Meeting (C/CAR/DCA/14), Kingston, Jamaica, from11 to 13 May 2015

1. Introduction

1.1 From the ANI/WG/01 Meeting, the ANI/WG agreed on the implementation monitoring through the Air Navigation Report Form (ANRF) contained in the ICAO Aviation System Block Upgrade (ASBU) Modules, whose information is part of the regional input to the global follow-up made in the Annual Global Air Navigation Report and feedback for the global Air Navigation Plan (GANP) and the Regional dashboards.



1.2 From the NACC/WG/04, the States/territories were:

a) urged to take the necessary actions in support of the ICAO NACC Regional Office for collecting the required information/data for the performance metrics to be included in the ICAO NACC Regional Performance Dashboard, recalling that a detailed description of the ANRF is included in Chapter 3 of the RPBANIP.

b) Informed that with the implementation of the Electronic Air navigation Plan (eANP) a third Volume is being included for the purpose of reflecting every regional adopted ASBU module, and the way the monitoring reporting of their implementation is going to be made.

2. Discussion

2.1 Since the adoption of the RPBANIP, all States and Territories of the NAM/CAR regions have been urged to develop their national implementation Plans in accordance to the RPBANIP and have committed to achieve the targets and goals defined in the RPBANIP and the core targets reflected in the *Port-of-Spain Declaration*.

2.2 In this sense, ICAO will assist and take the necessary actions to support the States in the completion of the reporting forms to ensure the proper understanding and appropriate provision of information for monitoring the implementation.

2.3 In this regard, to harmonize the collection of information following the implementation and benefits achieved with the RPBANIP, Conclusion NACC/WG/4/15 *Air Navigation Reporting/ Monitoring in the NAM/CAR Regions* was adopted for NAM/CAR States/Territories to:

a) invite all Air Navigation stakeholders in the data collection and reporting process;

b) use the RPBANIP ANRFs to the extent possible, to report their national, sub-regional and regional progress in implementation and performance; and
c) report periodically to the ICAO NACC Office to reflect the NAM/CAR Regions status in the different forums as needed.

2.4 Following this Conclusion NACC/WG/4/15, the C/CAR Directors of Civil Aviation mandated the ANI/WG through their conclusion C/CAR/DCA/14/6, that, in order to streamline the air navigation performance reporting/monitoring activities:

a) present the operational benefits and performance achievements in the CAR States resulting from the ANI/WG activities;
b) in coordination with the ICAO NACC Regional Office, develop a way of showing the progress on the different air navigation targets for ease of follow-up;
c) update their Terms of reference to include the actions a) and b); and
d) present the results of items a) to c) at the C/CAR/DCA/15 Meeting.

2.5 The adoption of the ANRFs was to support and facilitate the monitoring and reporting on the achievement of the elements conforming the ASBU modules, including the progress in the implementation of the elements and the reporting of the operational benefits gained from the ASBU modules. The operational benefits may be different from State to State depending on each State particular operational scenario.

2.6 ICAO has conducted a preliminary analysis for completing the Air Navigation targets as shown in **Appendix** to this paper, where several metrics need to be defined starting with the definition of the criteria of success, the selection criteria and the selection to be applied.

3. Suggested Actions

3.1 The Meeting is invited to:

a) take note of the background information for applying the ANRFs;
b) review the ease of use and filling the ANRFs in practical terms;
c) identify improvements to the ANRFs;
d) review the analysis of the metrics presented in Appendix to this paper;
e) propose a way of showing the progress on the different air navigation targets for ease of follow-up; and
f) take any action as deem necessary.

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APPENDIX
NAM/CAR RPBANIP AIR NAVIGATION TARGETS
BASED ON RPBANIP VER 3.1

Red text: POS Declaration Targets **Updated: 10 Apr 2015**

Element	Targets	RO	Source of data to measure it/ supporting body	Action needed/ Concern
1. Airspace Planning	100% of States to have completed a PBN plan by Dec. 2018	ATM/ VH	List of National PBN plans	
2. Flexible Use Airspace	50% of selected segregated airspaces available for civil operations by Dec. 2016	ATM/ VH		• Define criteria for selecting the segregated airspace • Define selection
3. AMAN And Time-Based Metering	10% of selected aerodromes with AMAN and time based metering by Dec. 2016	ATM/ VH		• Define AMAN application w/ time based metering • Define criteria for selecting the aerodrome for AMAN • Define selection
4. Departure Management (DMAN)	10% of selected aerodromes with DMAN by Dec. 2016	ATM/ VH		• Define DMAN application • Define criteria for selecting the aerodrome for DMAN • Define selection
5. Movement Area Capacity Optimization	20% of selected aerodromes with Airport-capacity calculated by Dec. 2016	AGA/JC		• Define criteria for selecting the aerodrome for airport capacity • Define selection
6. ADS-C Over Oceanic and Remote Areas	80% of selected FIRs with ADS-C implemented by December 2016	CNS/ JS	Regional NAM/CAR ADS-C/CPDLC Plan: GOLD TF	
7. CPDLC	80% of selected FIRs with CPDLC implemented by June 2018	CNS/ JS	Regional NAM/CAR ADS-C/CPDLC Plan: GOLD TF	
8. APV with Baro VNAV	80% of instrument runways to have APV with Baro VNAV implemented by December 2016 – Service Providers and users	ATM/ VH	AIPs	Collect data to have a table for the metric
9. APV with SBAS (WAAS)	20% of instrument runways to have APV with SBAS/WAAS implemented by December 2018– Service Providers and users	ATM/ VH	AIPs	Collect data to have a table for the metric

Element	Targets	RO	Source of data to measure it/ supporting body	Action needed/ Concern
10. APV with GBAS	20% of instrument runways to have APV with GBAS by December 2018 – Initial implementation at some States (services providers)	ATM/ VH	AIPs	Collect data to have a table for the metric
11. LNAV	60% of instrument runways to have LNAV procedure implemented by December 2016 – Service Providers and users as per Assembly Resolution A37-11	ATM/ VH	AIPs	Collect data to have a table for the metric
12. Surveillance System for Ground Surface Movement (PSR, SSR, ADS B or Multilateration)	30% of selected aerodromes with SMR/ SSR Mode S/ ADS-B/ Multilateration for ground surface movement by June 2018 States/airport operator	CNS/ JS	Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF	• Define criteria for selecting the aerodrome with SMR/ SSR Mode S/ ADS-B/ Multilateration (AGA) • Define selection
13. On-board Surveillance Systems (transponder with ADS-B capacity)	20% of aircraft on the NAM/CAR State registries to have surveillance system on board (SSR transponder, ADS B capacity) by June 2018 Aircraft operators	CNS/JS	IATA and States (General aviation) / ADS-B TF	• Define total aircraft registry in NAM/CAR • Define procedure for data collection from States/IATA
14. Vehicle Surveillance Systems	20% of vehicles at selected aerodromes with a cooperative transponder systems by June 2018 Vehicle operators	CNS/ JS	Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF	• Define of cooperative transponder system for vehicles • Define criteria for selecting the aerodrome where vehicles are to have collaborative transponders (AGA) • Define selection
15. Visual Aids for Navigation	70% of selected aerodromes complying with visual aid requirements as per Annex 14 by December 2015 States/Airport operators	AGA/ JC	ICAO´s requirement per Annex 14, Vol I for all airports. Aerodromes certified shall comply with the requirement.	• Define criteria for selecting the aerodrome complying with visual aid requirements • Define selection
16. Aerodrome Bird/Wildlife Organization and Control Programme	70% of selected airports with an aerodrome bird/wildlife organization and control programme by December 2018 Airport operators	AGA/ JC	ICAO´s requirement per Annex 14, Vol I for all airports. Aerodromes certified shall comply with the requirement.	• Define criteria for selecting the aerodrome with an aerodrome bird/wildlife organization and control programme • Define selection

Element	Targets	RO	Source of data to measure it/ supporting body	Action needed/ Concern
17. Airport – CDM	60% of selected aerodromes with Airport-CDM by Dec. 2018 – Airport Operator, Stakeholders	AGA/ JC	In consultation	• Define criteria for selecting the aerodrome with Airport-CDM • Define selection
18. Aerodrome Certification	48% of international aerodromes to be certified in the CAR Region by December 2016– State CAA	AGA/ JC	CAR Regional Aerodrome Certification Implementation Plan (CRACIP)	
19. Heliport Operations	30% of selected Heliports with operational approval by Dec. 2018 – State CAA	AGA/ JC	To request States for a list of heliports with operational approval	• Define criteria for selecting the Heliports with operational approval • Define selection
20. Implementation of ADS-B	30% of selected aerodromes with ADS-B implemented by Dec 2018	CNS/ JS	Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF	• Define criteria for selecting the aerodrome with ADS-B • Define selection
21. Implementation of Multilateration	80% of multilateration system implemented in selected aerodromes by June 2018	CNS/ JS	Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF	• Define criteria for selecting the aerodrome to have Multilateration System • Define selection
22. ACAS II (TCAS Version 7.1)	10% of aircraft on NAM/CAR State registries equipped with ACAS II (TCAS Version 7.1) by Dec 2018	CNS/ JS	States response	Enquiry to States
23. Short-term Conflict Alert Implementation (STCA)	80% of selected ATS units with ground based safety nets (STCA) implemented by Dec 2015	ATM/ VH	Enquiry to States / GREPECAS C-Project	• Define criteria for selecting the ATS units with ground based safety nets (STCA) implemented • Define selection
24. Area Proximity Warning (APW)/ Minimum Safe Altitude Warning (MSAW)	70% of selected ATS units with ground based safety nets (APW) implemented / 70% of selected ATS units with ground based safety nets (MSAW) implemented by Dec 2015	ATM/ VH	Enquiry to States / GREPECAS C-Project	• Define criteria for selecting the ATS units with ground based safety nets (APW) / MSAW implemented • Define selection
25. Medium-term Conflict Alert (MTCA)	80% of selected ATS units with ground based safety nets (MTCA) implemented by Dec 2016	ATM/ VH	Enquiry to States / GREPECAS C-Project	• Define criteria for selecting the ATS units with ground based safety nets (MTCA) implemented • Define selection
26. WAFS	100% of States implementation of WAFS Internet File Service (WIFS) by December 2014	MET	Table listing the WIFS implementation	

Element	Targets	RO	Source of data to measure it/ supporting body	Action needed/ Concern
27. IAVW	70% of MWOs with IAVW procedures implemented by December 2014. Volcanic Ash Advisory Centre, Washington USA and VAAC Montréal, Montréal, Canada	MET	Table of MWOs with IAVW procedures implemented	
28. Tropical Cyclone Watch	100% of MWOs with tropical cyclone watch procedures implemented by December 2014. Tropical Cyclone Advisory Centre, Miami, USA	MET	Table of MWOs with tropical cyclone watch procedures implemented	
29. Aerodrome Warnings	50% of selected aerodromes/AMOs with Aerodrome warnings implemented by December 2014	MET		• Define criteria for selecting the aerodromes/AMOs with Aerodrome warnings • Define selection
30. Wind Shear Warnings and Alerts	20% of selected aerodromes/AMOs with wind shear warnings procedures implemented (MET provider services) by December 2015	MET		• Define criteria for selecting the aerodromes/AMOs with wind shear warnings procedures • Define selection
31. SIGMET	90% of selected aerodromes/MWOs with SIGMET procedures implemented (MET provider services) by Dec. 2014	MET	Table of MWOs with IAVW procedures implemented	• Define criteria for selecting the aerodromes/AMOs with SIGMET procedures • Define selection
32. MEVA III IP Network Implementation	100% implementation of MEVA III IP Network by MEVA Member States by August 2015	CNS/JS	MEVA III Implementation Plan / MEVA TMG	
33. AMHS Implementation	4 States with Air Traffic Services Message Handling Services (AMHS) interconnected with other AMHS by December 2014	CNS/JS	Regional AMHS Implementation Plan / AMHS TF	
34. AIDC Implementation	50% of FIRs within which all applicable ACCs have implemented at least one interface to use AIDC/OLDI with a neighbouring ACC by December 2016	CNS/JS	Regional AIDC Implementation Plan/ AIDC TF	
35. ATN Router Structure Implementation	70% of ATN router structure implemented by June 2016	CNS/JS	CAR/SAM CNS Table 1Ba/ Enquiry to States/ AMHS TF	Check ATN router criteria
36. QMS - AIM	100 % of States QMS Certified by Dec.2016	AIM/RM		
37. e.TOD Implementation	10 % of States e-TOD Implemented by Dec.2018	AIM/RM		

Element	Targets	RO	Source of data to measure it/ supporting body	Action needed/ Concern
38. AIXM 5.1 Implementation	40 % of States with AIXM 5.1 implemented by Dec.2018	AIM/RM		
39. e-AIP Implementation	45 % of States with e-AIP implemented by Dec.2018	AIM/RM		
40. Digital NOTAM	35 % of States with Digital NOTAM implemented by Dec. 2018	AIM/ RM		
41. Air Traffic Flow Management	100% of FIRs within which all ACCs have ATFM measures available by Dec. 2018	ATM/ VH		
42. CDO implementation	50% of selected. Aerodromes with continuous descent operations (CDO) implemented by Dec.2016	ATM/ VH		
43. PBN STARs	80% of selected. Aerodromes with PBN STARs implemented by Dec.2016	ATM/ VH		
44. CCO Implementation	60 % of selected aerodromes with continuous climb operations (CCO) implemented by Dec.2016	ATM/ VH		
45. PBN SIDs Implementation	60% of selected aerodromes with PBN SIDs implemented by Dec.2016	ATM/ VH		
Results from 36-40	100% of Aeronautical Information Services (AIS) to implement AIM Roadmap – Phase I required elements by December 2016	AIM/ RM		Need to define elements to measure from individual elements
Result form PBN- IFSET	Reduce Regional CO2 emissions by 40,000 tons per year through PBN implementation by December 2016	ATM/ VH	IATA	

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