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WORKING PAPER

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**Second Eastern Caribbean Civil Aviation Technical Group (E/CAR/CATG/2) Meeting**  
Miami, United States, 15 to 17 July 2015

**Agenda Item 4: Air Navigation Matters**

**4.2 Follow-up on the implementation of the NAM/CAR Regional Performance Based Air Navigation Plan (RPBANIP) and the Port-of-Spain Declaration Air Navigation Targets in the Eastern Caribbean**

- **Review of performance-based metrics and benefits achieved (Air Navigation Report Forms - ANRFs)**

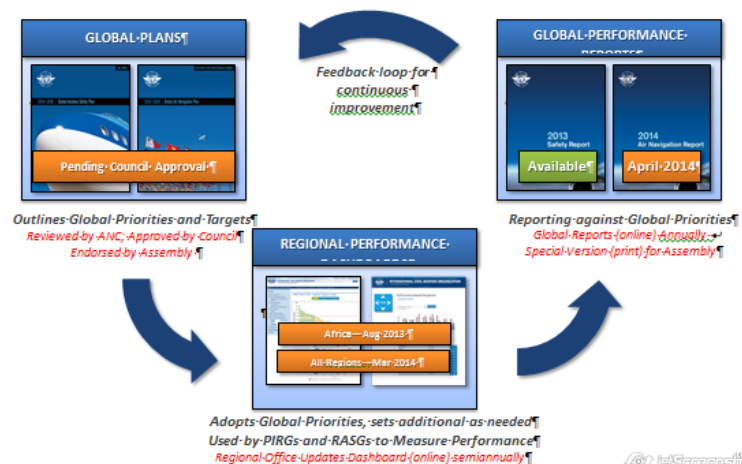
**REVIEW OF PERFORMANCE-BASED METRICS AND BENEFITS ACHIEVED USING AIR NAVIGATION REPORTING FORMS (ANRFs)**

(Presented by the Secretariat)

| <b>EXECUTIVE SUMMARY</b>   |  |
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| 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 presents the improvements agreed in the ANI/WG/02 Meeting for the E/CAR States/territories implementation. |  |
| <b>Action:</b>   | Suggested actions are presented in Section 3.  |
| <i>Strategic Objectives:</i>   | <ul style="list-style-type: none"> <li>• Safety</li> <li>• Air Navigation Capacity and Efficiency</li> <li>• Environmental Protection</li> </ul>                             |
| <i>References:</i>   | <ul style="list-style-type: none"> <li>• Second NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/2), Puntarenas, Costa Rica, 1 to 4 June 2015.</li> </ul> |

**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 CAR Directors of Civil Aviation mandated the ANI/WG 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 The Seventeenth CAR/SAM Regional Planning and Implementation Group Meeting (GREPECAS/17) considered that the Programmes and Projects Review Committee (PPRC) would be responsible of the collection, monitoring and reporting progress on operational improvement implementation in the CAR/SAM Regions through the Regional Offices. In this sense, the Meeting agreed Conclusion 17/7 – *Approval of the Forms to Follow-Up on the Progress on Indicators and Targets for the CAR/SAM Regions*, where it was established that GREPECAS will collect, monitor, and report progress on operational improvement implementation in the CAR/SAM Regions based on the indicators and targets established in the Bogota and Port-of-Spain Declarations, and will commission ICAO NACC and SAM Regional Offices to implement this forms for the progress reporting in the regional performance dashboards.

2.7 In this regard, the NACC Regional Office collects information on the air navigation progress through regional implementation groups, such as the NAM/CAR Air Navigation Implementation Working Group (ANI/WG) through the use of the Air Navigation Report Forms (ANRFs).

2.8 During the Second NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/2), the meeting identified that only few States have developed their air navigation performance-based plans and using ASBU methodology. In this sense, a review and improvement of the ANRF was made in order to promote its implementation by the States, including an air navigation metrics analysis and a better understanding of the concepts, for the facilitation of the national target measuring process and the operational benefits. The detail of this discussion by the ANI/WG/2 Meeting is presented in the **Appendix A** to this working paper.

2.9 ICAO has conducted a preliminary analysis for completing the Air Navigation targets as shown in **Appendix B** 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 of the revised ANRFs in practical terms;
- c) review the analysis of the metrics presented in Appendix to this paper;
- d) analyse the activities undertaken by the E/CAR Region in order to promote the measuring, monitoring and reporting of the targets established in the RPBANIP and of the Port-of-Spain Declarations, and the development of the national plans aligned with the RPBANIP; and
- e) take any action as deemed necessary.

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## **APPENDIX A**

### **REPORTING AND MONITORING ACTIVITIES: ANI/WG/02 MEETING**

The ANI/WG/02 Meeting discussed the difficulty for Regions and States to correlate their plans with the ICAO ASBU planning framework. In particular, the information about the ASBU Modules provided in the GANP was not sufficiently detailed to permit easy mapping to existing regional and national plans. The group agreed that the Module descriptions were of high level and were not suitable to guide specific implementations. To determine implementations, it is necessary a level of detail that was not provided in the GANP.

The group reviewed a working document used by some of its members to map their national air navigation implementation plans to ASBU implementation. The document consisted of the basic Module information provided in the GANP, plus the elements for each Module, determined by careful review of the ASBU Working Document of March 2013. The group agreed on this and provided a straightforward tool for States and Regions to determine how their particular air navigation improvements would address ASBU implementation. It was noted that the ASBU Working Document (Attachment to 12TH ANCONF/12 Report) dated March 2013 is very large, not generally available and inconsistently written. Additionally, the Module elements were only sometimes directly listed; for many Modules, it is necessary to extract the elements from the descriptive text.

The group examined the performance needed to be measured, particularly in regard to ICAO's No Country Left Behind initiative. The ad-hoc group agreed that the first indicator to be measured is if a State has assessed the requirement and feasibility of implementing a specific operational improvement. The group agreed that a flow chart description of the assessment, planning and implementation process would assist States in reporting their actual implementation status and also ICAO in monitoring if a State was being "Left Behind" at critical steps of the implementation process.

The meeting agreed a metrics table for all ASBU Block 0 elements and then reviewed the RPBANIP and inserted already agreed metrics in the appropriate places in the reviewed ANRF as shown in DP/09 (Appendix A). All metrics from the RPBANIP were highlighted. This was possible for all ASBU Block 0 Modules except APTA (Airport Accessibility), for which the RPBANIP descriptions were not technically correct. It is therefore suggested that this section is reviewed by matter experts.

In this regard, a preliminary analysis for completing the Air Navigation targets was conducted, where several metrics need to be defined starting with the definition of the success, selection and application criteria.

This new approach for the ANRFs was a more practical and simple way of using the ANRFs for States and Regions to determine how their particular air navigation improvements would address ASBU implementation. Also the Meeting considered that training and more practical exercises on the new ANRFs will facilitate its understanding and application. In this sense, the meeting agreed on the following conclusion:

**CONCLUSION**  
**ANI/WG/2/xx**

**ADOPTION OF NEW ANRF AND REPORTING APPROACH TO  
ASBU IMPLEMENTATION**

That, in order to provide a straightforward tool for States/Territories/International Organizations to determine their operational air navigation improvements:

- a) NAM/CAR States/Territories to review and adopt the proposed new ANRFs for application by June 2016;
- b) NAM/CAR States/Territories to assess their status of implementation and report to ICAO NACC Regional Office by 30 July 2016; and
- c) ICAO to organize by the first semester of 2016 a hands-on ANS/ASBU ANRF workshop for the use and understanding of the new ANRFs with the participation of CANSO, IATA , Civil Aviation Training Centers and air navigation planning experts.

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

**Red text: POS Declaration Targets**

**Updated: 10 Apr 2015**

| Element                                | Targets   | 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  | List of National PBN plans                    |  |
| 2. Flexible Use Airspace               | 50% of selected segregated airspaces available for civil operations by Dec. 2016                                |   | <ul style="list-style-type: none"> <li>Define criteria for selecting the segregated airspace</li> <li>Define selection</li> </ul>  |
| 3. AMAN And Time-Based Metering        | 10% of selected aerodromes with AMAN and time based metering by Dec. 2016                                       |   | <ul style="list-style-type: none"> <li>Define AMAN application w/ time based metering</li> <li>Define criteria for selecting the aerodrome for AMAN</li> <li>Define selection</li> </ul> |
| 4. Departure Management (DMAN)         | 10% of selected aerodromes with DMAN by Dec. 2016   |   | <ul style="list-style-type: none"> <li>Define DMAN application</li> <li>Define criteria for selecting the aerodrome for DMAN</li> <li>Define selection</li> </ul>                        |
| 5. Movement Area Capacity Optimization | 20% of selected aerodromes with Airport-capacity calculated by Dec. 2016  |   | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome for airport capacity</li> <li>Define selection</li> </ul>   |
| 6. ADS-C Over Oceanic and Remote Areas | 80% of selected FIRs with ADS-C implemented by December 2016  | Regional NAM/CAR ADS-C/CPDLC Plan: GOLD TF    |  |
| 7. CPDLC                               | 80% of selected FIRs with CPDLC implemented by June 2018  | 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 | 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  | AIPs  | Collect data to have a table for the metric  |

| Element  | Targets   | 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)                             | 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             | 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<br>States/airport operator               | Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF   | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome with SMR/ SSR Mode S/ ADS-B/ Multilateration (AGA)</li> <li>Define selection</li> </ul>   |
| 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<br>Aircraft operators | IATA and States (General aviation) / ADS-B TF   | <ul style="list-style-type: none"> <li>Define total aircraft registry in NAM/CAR</li> <li>Define procedure for data collection from States/IATA</li> </ul>   |
| 14. Vehicle Surveillance Systems   | 20% of vehicles at selected aerodromes with a cooperative transponder systems by June 2018<br>Vehicle operators   | Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF   | <ul style="list-style-type: none"> <li>Define of cooperative transponder system for vehicles</li> <li>Define criteria for selecting the aerodrome where vehicles are to have collaborative transponders (AGA)</li> <li>Define selection</li> </ul> |
| 15. Visual Aids for Navigation   | 70% of selected aerodromes complying with visual aid requirements as per Annex 14 by December 2015<br>States/Airport operators                            | ICAO's requirement per Annex 14, Vol I for all airports.<br>Aerodromes certified shall comply with the requirement. | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome complying with visual aid requirements</li> <li>Define selection</li> </ul>   |
| 16. Aerodrome Bird/Wildlife Organization and Control Programme                           | 70% of selected airports with an aerodrome bird/wildlife organization and control programme by December 2018<br>Airport operators                         | ICAO's requirement per Annex 14, Vol I for all airports.<br>Aerodromes certified shall comply with the requirement. | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome with an aerodrome bird/wildlife organization and control programme</li> <li>Define selection</li> </ul>   |
| 17. Airport – CDM  | 60% of selected aerodromes with Airport-CDM by Dec. 2018 – Airport Operator, Stakeholders   | In consultation   | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome with Airport-CDM</li> <li>Define selection</li> </ul>   |



| Element  | Targets  | Source of data to measure it/ supporting body                       | Action needed/ Concern   |
|--|--|---|--|
| 18. Aerodrome Certification  | 48% of international aerodromes to be certified in the CAR Region by December 2016– State CAA  | CAR Regional Aerodrome Certification Implementation Plan (CRACIP)   |  |
| 19. Heliport Operations  | 30% of selected Heliports with operational approval by Dec. 2018 – State CAA   | To request States for a list of heliports with operational approval | <ul style="list-style-type: none"> <li>Define criteria for selecting the Heliports with operational approval</li> <li>Define selection</li> </ul>                              |
| 20. Implementation of ADS-B  | 30% of selected aerodromes with ADS-B implemented by Dec 2018  | Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF   | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome with ADS-B</li> <li>Define selection</li> </ul>   |
| 21. Implementation of Multilateration                                  | 80% of multilateration system implemented in selected aerodromes by June 2018  | Regional ADS-B/MLAT Plan for selected aerodromes (TBD) / ADS-B TF   | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodrome to have Multilateration System</li> <li>Define selection</li> </ul>                         |
| 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   | 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   | Enquiry to States / GREPECAS C- Project                             | <ul style="list-style-type: none"> <li>Define criteria for selecting the ATS units with ground based safety nets (STCA) implemented</li> <li>Define selection</li> </ul>       |
| 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 | Enquiry to States / GREPECAS C- Project                             | <ul style="list-style-type: none"> <li>Define criteria for selecting the ATS units with ground based safety nets (APW) / MSAW implemented</li> <li>Define selection</li> </ul> |
| 25. Medium-term Conflict Alert (MTCA)                                  | 80% of selected ATS units with ground based safety nets (MTCA) implemented by Dec 2016   | Enquiry to States / GREPECAS C- Project                             | <ul style="list-style-type: none"> <li>Define criteria for selecting the ATS units with ground based safety nets (MTCA) implemented</li> <li>Define selection</li> </ul>       |
| 26. WAFS   | 100% of States implementation of WAFS Internet File Service (WIFS) by December 2014  | Table listing the WIFS implementation                               |  |
| 27. IAVW   | 70% of MWOs with IAVW procedures implemented by December 2014. Volcanic Ash Advisory Centre, Washington USA and VAAC Montréal, Montréal, Canada                    | Table of MWOs with IAVW procedures implemented                      |  |

| Element                                 | Targets  | Source of data to measure it/ supporting body                    | Action needed/ Concern  |
|---|--|--|---|
| 28. Tropical Cyclone Watch              | 100% of MWOs with tropical cyclone watch procedures implemented by December 2014. Tropical Cyclone Advisory Centre, Miami, USA                 | Table of MWOs with tropical cyclone watch procedures implemented |   |
| 29. Aerodrome Warnings                  | 50% of selected aerodromes/AMOs with Aerodrome warnings implemented by December 2014   |  | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodromes/AMOs with Aerodrome warnings</li> <li>Define selection</li> </ul>             |
| 30. Wind Shear Warnings and Alerts      | 20% of selected aerodromes/AMOs with wind shear warnings procedures implemented (MET provider services) by December 2015                       |  | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodromes/AMOs with wind shear warnings procedures</li> <li>Define selection</li> </ul> |
| 31. SIGMET                              | 90% of selected aerodromes/MWOs with SIGMET procedures implemented (MET provider services) by Dec. 2014  | Table of MWOs with IAVW procedures implemented                   | <ul style="list-style-type: none"> <li>Define criteria for selecting the aerodromes/AMOs with SIGMET procedures</li> <li>Define selection</li> </ul>              |
| 32. MEVA III IP Network Implementation  | 100% implementation of MEVA III IP Network by MEVA Member States by August 2015  | 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                            | 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 | Regional AIDC Implementation Plan/ AIDC TF                       |   |
| 35. ATN Router Structure Implementation | 70% of ATN router structure implemented by June 2016   | 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  |  |   |
| 37. e.TOD Implementation                | 10 % of States e-TOD Implemented by Dec.2018   |  |   |
| 38. AIXM 5.1 Implementation             | 40 % of States with AIXM 5.1 implemented by Dec.2018   |  |   |
| 39. e-AIP Implementation                | 45 % of States with e-AIP implemented by Dec.2018  |  |   |
| 40. Digital NOTAM                       | 35 % of States with Digital NOTAM implemented by Dec. 2018   |  |   |

| Element                         | Targets   | Source of data to measure it/ supporting body | Action needed/ Concern                                      |
|---------------------------------|---|---|---|
| 41. Air Traffic Flow Management | 100% of FIRs within which all ACCs have ATFM measures available by Dec. 2018  |   |   |
| 42. CDO implementation          | 50% of selected. Aerodromes with continuous descent operations (CDO) implemented by Dec.2016                          |   |   |
| 43. PBN STARs                   | 80% of selected. Aerodromes with PBN STARs implemented by Dec.2016  |   |   |
| 44. CCO Implementation          | 60 % of selected aerodromes with continuous climb operations (CCO) implemented by Dec.2016                            |   |   |
| 45. PBN SIDs Implementation     | 60% of selected aerodromes with PBN SIDs implemented by Dec.2016  |   |   |
| Results from 36-40              | 100% of Aeronautical Information Services (AIS) to implement AIM Roadmap – Phase I required elements by December 2016 |   | 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                     | IATA  |   |

— END —