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INFORMATION PAPER

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Mexico City, Mexico, 27 to 31 May, 2019

- Agenda Item 2: Review and Follow-up to Valid Conclusions/Decisions of the ANI/WG/04, NACC/WG/05 and GREPECAS/18 Meetings**
- 2.1 Follow-up and performance and monitoring assessment of the NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP)**

ICAO NACC REGIONAL APPROACH TO SUPPORT STATES TO PREPARE NATIONAL AIR NAVIGATION PLANS (ANPS) ALIGNED WITH ASBU BLOCK 0

(Presented by the Secretariat and the ASBU/TF Rapporteur)

EXECUTIVE SUMMARY

This information paper presents the approach taken by the ICAO NACC Regional Office (RO) assisted by the ANI/WG to support States, Territories, and Organizations in the region understand the relationship between the Global Air Navigation Plan (GANP), Regional Air Navigation Plans (ANP), and National ANPs and the Aviation System Block Upgrades (ASBU). The approach described in this IP worked very well in the NACC States and over 75% of targeted States, Territories, and Organizations successfully produced their ANPs as of 1 March 2019. National ANPs developed through this approach include ASBU Block 0 implementation status, regional aviation system improvements status, and state aviation system improvements status. This approach provides the structure and alignment that allows for easy, bi-directional information exchange between the Regional ANP and the associated National ANPs, which encourages close communication between the RO and its member states

Strategic Objectives:

- Safety
- Air Navigation Capacity and Efficiency

References:

- NAM/CAR Regional Performance-Based Air Navigation Implementation Plan (RPBANIP)
- GANP, 5th Edition (Doc 9750)
- The Aviation System Block Upgrades (ASBU), the Framework for Global Harmonization, issued July 2016
- Manual on Global Performance of the Air Navigation System (Doc 9883)
- Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4) report, Miami, Florida, August 2018
- Sixteen draft States ANPs accessible through the ICAO NACC web site: <https://www.icao.int/NACC/Pages/regional-group-asbu.aspx>

1. Introduction

1.1. Background: The Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBUs) concept and documents were developed to provide the framework and strategic direction for a global, harmonized aviation system. With approvals from the 12th Air Navigation Conference in 2012 and the 38th Assembly in 2013, the GANP and ASBUs provide a strategy which includes measurable operational improvements and key civil aviation policy principles to assist ICAO regions, sub-regions and States with the preparation and implementation of their air navigation plans. Together, the GANP and ASBU program enable States to modernize in a manner that is consistent with their individual needs, capabilities, and resources.

1.2. ANP Alignment and Hierarchy: Each region is unique with different needs and issues to be addressed. Similarly, each state is also unique with their own special concerns and needs to address. The GANP obligates regions and states to align and harmonize their regional or national programmes with the global plan. Through GANP, regions will prepare regional ANPs and deliver harmonized and interoperable aviation capabilities. Through GANP and regional ANPs, states will prepare national ANPs and implement such capabilities. This streamlined alignment from GANP to regional ANPs to national ANPs will provide states with far greater certainty for their investments.

1.3. NAM/CAR Regions: The ICAO NACC RO is accredited to a diverse mix of 22 Contracting States and 19 Territories. Dominica became a new member state in 2019. Also included is the Air Navigation Service Provider (ANSP), COCESNA providing air traffic services to the Central American region. Member states range from large states with very complex airspaces to smaller states with less complex systems. This diversity results in a very challenging aeronautical environment where addressing challenging issues requires a global perspective. In the following text, the aforementioned states, territories and organizations will be referred to as, “entity” or “entities” as appropriate.

1.4. No Country Left Behind (NCLB): ICAO NACC RO enthusiastically supports the “No Country Left Behind” initiative that highlights ICAO’s efforts to assist entities in implementing ICAO Standards and Recommended Practices (SARPs). The capabilities described in the ASBUs are supported by reference documents including standards, procedures, guidance materials, and approval documents. The RO ensures that its member entities are well aware of the need to deploy such standards when implementing ASBU capabilities and other aviation technologies.

1.5. Approach Principles: The resources to learn the fundamentals of GANP and ASBU could be the first challenge to many resource constrained entities in this region. Many regional entities do not have dedicated researchers and analysts available to translate the concept of GANP and ASBU into something tangible. The RO understands this and aims to provide a realistic, clear and simple approach that will help its member entities understand and utilized GANP and ASBU. The RO hopes to make all of the regions entities comfortable with the approaches introduced in this paper. Only after that is achieved, the RO intends to introduce a more complex and effective plan to support regional ASBU implementation.

2. Approach

2.1. Three Levels of Capabilities/Elements: Three levels of capabilities or elements are defined: (1) ASBU elements; (2) Regional aviation system improvement elements; and (3) State aviation system improvement elements. ASBU elements are global and comprehensive and most of the current and future regional and entity needs are presented. Regional specific needs, not included in ASBU will be addressed in the Regional ANP as regional aviation system improvement elements and state specific needs not included in ASBU and regional ANP will be addressed as State aviation system improvement elements. From the states point-of-view, a National ANP should encompass global, regional, and state elements in a single document.

2.2. Understanding the ASBU Structure: ASBU is structured with 5 components: (1) Performance Improvement Areas (PIAs); (2) Blocks; (3) Threads; (4) Modules; and (5) Elements. According to the 5th Edition of GANP issued in 2016, there are 4 PIAs, 5 Blocks, 21 Threads, 51 Modules, and many Elements. For example, ASBU TF identified 69 Block 0 Elements in the 2016 version of “The NACC ASBU Handbook”.

2.3. The NACC ASBU Handbook: “The Aviation System Block Upgrades; The Framework for Global Harmonization; issued July 2016” is the current ICAO document that either define or imply Elements. This document is long and quite detailed. It is extremely important that the Elements are clearly defined. “The NACC ASBU Handbook” provides easy ways to identify Block 0 and Block 1 Elements. With this Handbook, entities only need to read the complete Framework document when they have questions relating to the Element descriptions.

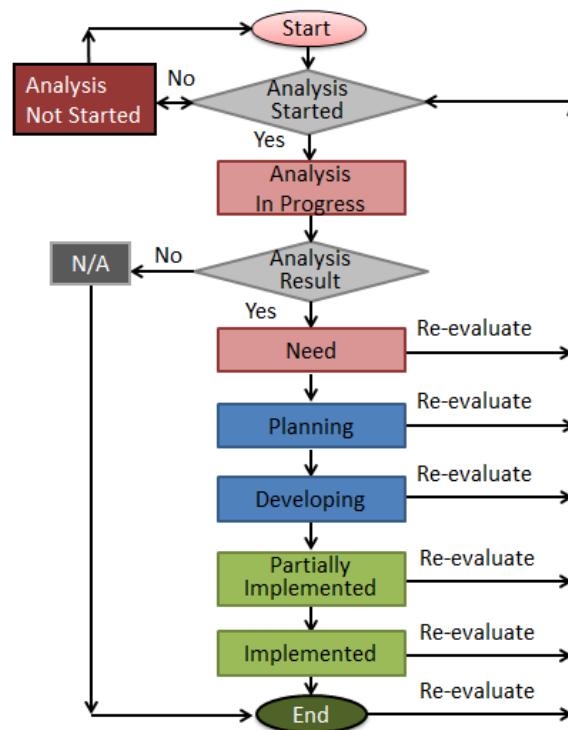
2.4. Block 0 Elements: The original version of Block 0 Elements were either defined or implied in the “Aviation System Block Upgrades, The Framework for the Global Harmonization” issued in March 2013. Similarly, the next version of Block 0 Elements were defined or implied in the same document issued in July 2016. Additional modifications will be made to the Block 0 Elements in the 2019 edition of GANP/ASBU.

2.5. Block 1 through 3 Elements: Block 1 Elements will become available for implementation for all aviation stakeholders when 2019 edition of GANP/ASBU become official. Blocks 2 and 3 will become available for implementation in the editions of GANP/ASBU 2025 and 2031, respectively.

2.6. Aerodrome Centric Elements vs Organization Centric Elements: Some Elements are aimed for the improvement of aerodromes and others are aimed for the improvement of organizations. For example, Block 0 RSEQ Element 2 “Departure Management”, AMET Element 4 “Aerodrome Warning”, DATM Element 4 “Electronic Terrain and Obstacle Data” and CDO Element 3 “PBN SIDs” are applicable to aerodromes, thus aerodrome centric elements. Capabilities such as Block 0 AMET Element 2 “International Airways Volcano Watch”, FICE Element 1 “AIDC to provide initial flight data to adjacent ATSUs”, OPFL Element 1 “ITP using ADS-B”, and TBO Element 1 “ADS-C over oceanic and remote areas” need to be implemented at the organization level (e.g., ANSPs and States).

2.7. Element Analysis and Implementation Process: There are many approaches to analyse the ASBU Element needs, implementation options and return on investment. There are many ways to define implementation processes. Sometimes it may be necessary to deploy a complex, detailed, expensive and sensitive approach to justify huge investments in the technology. However, prior to any deployment, impacted stakeholders should have a clear, high-level understanding of the capabilities presented in the GANP/ASBUs. Once that understanding is achieved, entity leaders can use that knowledge to determine if their entity needs those capabilities. Entities in the NACC region need simple, yet effective processes to help their leaders understand which of the capabilities presented in the GANP/ASBUs meet their needs.

2.8. Element Analysis and Implementation Process – Flow Diagram: The diagram below depicts the process used by ASBU TF in the NACC region to identify Regional and entity needs and capabilities identified in the GANP/ASBU Block 0 Elements. There are only 8 stages in the process which are clear, simple, and useful. They are (1) Analysis Not Started; (2) Analysis In-Progress; (3) Not Applicable; (4) Need, but not started the planning; (5) Planning; (6) Developing; (7) Partially Implemented; and (8) Implemented.



2.9. Record Keeping: ICAO Headquarters provided regions and states with the Air Navigation Reporting Form (ANRF) template. This was a very useful record keeping tool that provided an easy way to track the status of ASBU Elements implementation. The ANI/WG modified the ANRF to meet their needs. In addition, the ANI/WG created the Regional ANRF and State ANRF to keep records of regional and state specific improvement elements. It is important to maintain accurate records because it enables continuity and accurate situational awareness of state/territory/organizations modernization efforts during periods of organizational transition and personnel turnover.

3. National ANP Workshops

3.1. Targeted States/Territory/Organization (entities): After completing an analysis on the characteristics of its member entities, the RO targeted the collection of 21 ANPs (Dominica was not included in this process but will be part of future efforts) from its region. Specifically, the RO will encourage 19 Central America and Caribbean states (21 NACC states minus Canada and USA), 1 territory (Curacao will also address Aruba and Bonaire), and 1 organization (COCESNA) to prepare ANPs.

3.2. Goal of National ANP Workshop: The primary goal of each ANP workshop is for participants to understand the relationship between the GANP, regional ANPs, national ANPs and the ASBUs and to further understand how they relate to their entity. Additionally, the RO aims for participants to understand the national ANP templates and complete draft versions of their ANPs during the workshop and for participants to be able to explain the results of the workshop, including the ANP, to their organizations leadership.

3.3. National ANP Template: It is not easy to create your own National ANP that is aligned with ASBU/GANP and regional ANP while addressing its entity's needs. Understanding the ASBU/GANP has proven difficult ever since its introduction in 2013. Though they are very willing to learn about the ASBU/GANP, many entities in the NACC region do not have ample resources to do so. Most ASBU/GANP workshop attendees already have other full time jobs. It was therefore, critical the NACC region created a template that was simple and useful. It was also important for the RO that the template easily feed the information back to its regional ANP. ASBU TF proposed a template based on experiences and recommendations of member States and territories.

3.4. The 1st National ANP Workshop: After the successful pilot exercise with Saint Lucia to create and use the National ANP Template, the RO hosted the first "National Air Navigation Plan (ANP) Development Workshop" at its regional office in Mexico City, Mexico in March 2018. Participants included Barbados, Belize, Curacao, Mexico, and COCESNA. All participants successfully created and presented their ANPs during the workshop.

3.5. The 2nd National ANP Workshop: The second workshop was focused on the Central American area and was hosted by the COCESNA in Tegucigalpa, Honduras on 6 to 9 August 2018. Participants included Belize, COCESNA, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Dominican Republic. COCESNA hoped the preparation of ANPs by all Central American states would help them understand future aviation technologies and also help COCESNA to provide better air navigation services for them. All participants successfully created and presented their ANPs during the workshop.

3.6. The 3rd National ANP Workshop: The third workshop was focused on the Eastern Caribbean area and was hosted by Barbados on 6 to 9 November 2018. Participants included Antigua and Barbuda, Barbados, Haiti, Saint Vincent and Grenadines, and Trinidad and Tobago. All participants successfully created and presented their ANPs during the workshop.

3.7. Comments from the Workshop Participants: The workshops have been very successful. Participants commented during and after the workshops. Comments included, "We understand what we did. We can go home and explain what we learnt and did to my boss." "We can put all our (aviation related) plans in one place." "We can use this (ANP) for the future budget planning."

3.8. Results of National ANP Workshops: The ICAO NACC RO goal was to have ANPs from 21 of its entities by the end of 2018. By the end of 2018, 16 entities had prepared draft ANPs constituting a 76% completion rate. If you include Canada and USA, the NACC region has accomplished a 78% completion rate (excluding Dominica).

4. Block 0 Implementation Status and other Considerations

4.1. Identification of Metrics and Target: To measure the performance in implementing ASBU Elements, simple Boolean Metrics were selected. The First Metric is the completion of a “need” analysis. You need to know if your entity needs a particular Element or not. If the analysis has not been conducted, then you need to establish a target date for the completion of your analysis. The Second Metric can be determined by asking, “is the implementation complete or not?” (Assuming you need this Element). If the Element has not been implemented, then once again, you need to set the Target date to complete the implementation.

4.2. Regional Block 0 Implementation Status: Figure 4.2.a and Figure 4.2.b show the implementation status of aerodrome centric and state centric elements, respectively. As for the aerodrome centric data, 25 aerodromes were accounted for from the states who have data. Presumably, there are seven aerodromes located in the five states with no data. That constitutes 22% of the total.

| | |
|-----------------------|------|
| N/A | 41% |
| Implemented | 15% |
| Partially Implemented | 3% |
| Developing | 5% |
| Planning | 6% |
| Need | 3% |
| In Progress | 2% |
| Not Started | 3% |
| No Data | 22% |
| Total | 100% |

Aerodrome Centric Elements

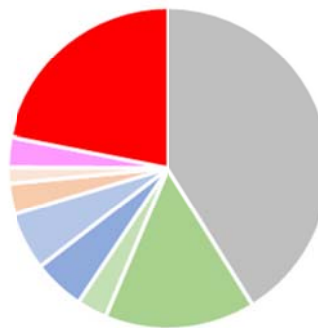


Figure 4.2.a: Implementation Status of Block 0 Aerodrome Centric Elements

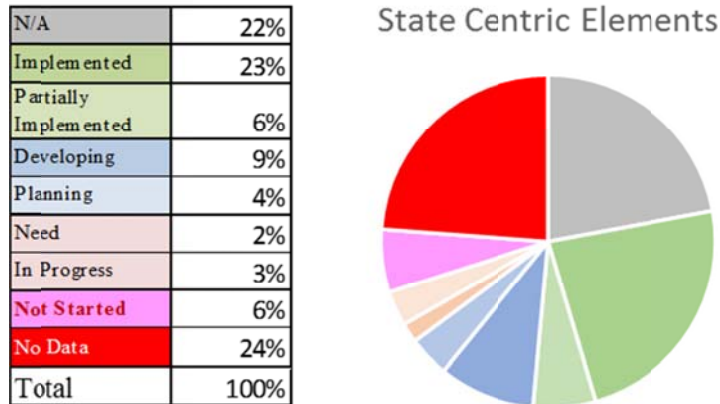


Figure 4.2.b: Implementation Status of Block 0 State Centric Elements

4.3. **Enhancement to Include Key Performance Areas (KPA)s:** There are eleven KPAs defined in the ICAO Doc 9883, “Manual on Global Performance of the Air Navigation System”. Among the eleven KPAs, five KPAs, namely (1) Access and Equity; (2) Capacity; (3) Efficiency; (4) Environment; and (5) Safety, should be analysed. The ANRFs contains a benefit description section where the results of analysing those five KPAs can be entered. Although conducting a quantitative benefit analysis on those five KPAs is ideal, requires highly trained professionals.

4.4. **Addressing Changes Introduced by 2019 GANP/ASBU:** The definition of Block 0 was introduced in 2013. It was modified in 2016. The new version of the GANP/ASBUs will be introduced during the ICAO 40th Assembly between September 24 and October 4, 2019. The 2019 version of the GANP/ASBUs will bring many changes, including a definition of Block 0. Once the 2019 version of the GANP/ASBUs is approved by the Assembly, entities needs to learn the changes and address issues appropriately.

5. Regional ANP

5.1. **Relationship between Regional ANP and National ANPs:** The ICAO NACC Regional target is consistent with the ICAO Initiative of “No Country Left Behind”. The RO is making an effort to support all entities to have National ANPs aligned with ASBU.

5.2. **Regional Needs:** All regions are unique and have specific needs to be addressed. Version 4 of the RPBANIP provides guidance for addressing those needs. In addition, it provides the structure that will allow the region to collect helpful data that can eventually be used to integrate the states’ ASBU need analysis results with the regions modernization and implementation efforts. Analysing collected data will give the region a better understanding of what the region really needs so it is ready for the future.

6. Conclusions

6.1. ICAO NACC Approach Works: Given that all of the National ANP development workshop attendees successfully drafted their National ANPs during their respective workshop, the ANI/WG approach to support NACC regions entities is working. In addition, attendees of the workshops expressed a better understanding of the relationship between the GANP/ASBUs and their roles and responsibility.

6.2. Reviewing National ANP: Every three years, the GANP/ASBUs will be revised. Every six years, new Block Elements will be defined and made available for implementation. Circumstances surrounding states/territories/organizations change all the time. It is necessary for them to review their National ANPs periodically and to determine the best use of their National ANP. ANI/WG needs to keep abreast of GANP evolution and take proper actions to achieve a global interoperable air navigation system for NACC Region.

— END —