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**Agenda Item 6: NAM/CAR Regional Safety/Air Navigation Implementation
6.3 Air Navigation Implementation Matters**

PERFORMANCE BASED NAVIGATION (PBN) MANAGEMENT TRAINING

(Presented by Dominican Republic)

EXECUTIVE SUMMARY

To achieve an effective follow-up of the implementation of Performance Based Navigation, it is essential to develop and implement a training program that allows Air Navigation Services management personnel to acquire the knowledge and skills required for the management of the PBN according to what is specified in ICAO Document 9613. The training of the technical management personnel in charge of managing and supervising the implementation of the PBN is an essential factor for this process to occur in a fluent and in a precise manner, in order to achieve an acceptable level of safety by making use of the proposed tools and procedures by ICAO. In that sense, PBN Management training proposes to develop a special curriculum that clearly establishes the understanding of the new concepts in PBN, not only in theoretical but also practical terms.

It is noteworthy to mention that, the Dominican Republic is the first Spanish-speaking state that develops a standardized training package for the instruction about the management of PBN.

The main objective of this training is that the management personnel who have the responsibility to manage the PBN develop the knowledge and skills required to:

- Follow up on the implementation of the PBN and the procedures that allow the efficient use of airspace.
- Evaluate if such procedures are adequate or relevant, considering the particular needs of the air navigation system and operators. Also the verification that those procedures can be improved.
- Measure the satisfaction of the operators regarding the impact of the implementation of the procedures in terms of safety, efficiency, investment of resources, adaptability and competitiveness.
- Evaluate the capacity of the air navigation system and the Airspace.
- Verify compliance of air operators according to the requirements established for PBN operations in local regulations.

Action:	States are invited to: <ul style="list-style-type: none"> • Analyze and support the content of this Working paper. • Entrust the Secretariat to develop and promote the development of other guidance materials for the management of PBN. • Prioritize PBN management training as a tool to promote and strengthen safety in air navigation systems worldwide, thus guaranteeing successful follow-up to PBN implementation. • Include the need for training in PBN management in the processes related to change management.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> • Safety. • Air Navigation Capacity and Efficiency. • Environmental Protection.
<i>References:</i>	<ul style="list-style-type: none"> • CMDN "Performance Based Navigation (PBN) Management". • Doc 9613, 4th Edition -2013. • Global Air Navigation Plan for CNS/ATM Systems, 5th ed. – 2016. • Air Navigation Plan CAR/SAM Vol. I, 04/13/2016.

1. Introduction

1.1 The air transport industry plays an important role in economic activity in the Dominican Republic and as a key element in the global economy, continues to be one of the fastest growing sectors. One of the keys to maintaining the vitality of civil aviation is to ensure a safe, secure, efficient and environmentally sustainable air navigation system at the global, regional and national levels. This requires the implementation of an air traffic management system that allows to use optimally the capabilities offered by technical advances.

1.2 ICAO's efforts to meet the needs of the air transport industry and international civil aviation allowed the development of the global air navigation plan, considering the operational concept and the organization's objectives that facilitate the global planning of the ATM system, as part of the evolving process of the concept of CNS / ATM systems based on technology.

1.3 The complexities of the Caribbean airspace are unique in their nature. Having a very strategic geographic location at the confluence of ATS routes that connect to the main destinations, the airspace has become a vital link for the homogeneous traffic flow between the main airspaces in the CAR and NAM Regions.

1.4 In this regard, ICAO has developed a Regional Plan for the Implementation of PBN for the NAM / CAR region, which is in accordance with the Global Planning Initiatives (GPI) of the Global Air Navigation Plan (Doc. 9750) and with ICAO's vision for an integrated, harmonized and interfunctional ATM system established in Doc. 9854, Global ATM Operational Concept

1.5 Academia Superior de Ciencias Aeronáicas (ASCA) in support of global plans to improve the efficiency and safety of the civil aviation and air navigation systems, provides training to the technical personnel of the Dominican Institute of Civil Aviation (IDAC) and to different organization of the region, aligned with its strategic objectives. As part of the initiatives, designed the standardized course "Performance Based Navigation Management (PBN)", with the objective that the management personnel of air navigation services acquire the knowledge and skills required for the management of PBN as specified in ICAO Document 9613, regulations and regional agreements.

2.0 Discussion

2.1 The management personnel responsible for the management of the PBN and who, therefore, are involved with the activities inherent to the PBN already implemented, often does not have defined in their functions the competency objectives of the tasks inherent to their job profiles. Additionally, this personnel, if are not receiving specific training standardized in PBN management, will not use the appropriate PBN tools when managing projects already applied, nor the new specifications that appear in a PBN context already implemented. As a result, this personnel may not perform their professional potentials effectively and efficiently.

2.2 The problems that arise from what has already been described would trigger an inefficient follow-up to the PBN already implemented. A managerial staff without the appropriate knowledge regarding a sensitive topic like this, puts at risk the scope of the proposed objectives with the implementation of PBN, such as reduction of airspace saturation, reduction of flight time of the aircraft and decrease of CO2 emissions, among others.

2.3 A lack of priority on the part of some authorities on the importance of efficiently managing PBN has been identified in our regions, as well as a lack of a national policy that covers the requirements necessary to manage PBN, integrating all the interest groups of the industry where the implementation of this navigation system impacts. Likewise, there is no systematic training program standardized by competence for all segments of personnel involved in the management of the PBN implemented.

2.4 An airspace in which the PBN is not managed properly is an airspace where navigation and air traffic management occurs in a disorderly manner, where the routes in use are not efficient due to their design framed between the existing navigation aids and RNAV procedures and routes that do not satisfy users.

2.5 Dominican Republic is the first Spanish-speaking state that developed a standardized training package for training in the management of PBN. This Set of Normalized Teaching Materials will allow the technical management personnel of the air navigation services of the regions involved in the execution of the Regional Plan of the PBN, to acquire the knowledge, skills and attitudes that provide of the necessary competences that allow them to efficiently manage navigation based on performance in the different airspaces.

2.6 The main objective of this training is for the management personnel under their responsibility to manage the PBN to develop the knowledge and skills required to:

- Follow up on the implementation of the PBN and the procedures that allow the efficient use of airspace.
- Evaluate if such procedures are adequate or relevant, considering the particular needs of the air navigation system and operators. Also, the verification that those procedures can be improved.
- Measure the satisfaction of the operators regarding the impact of the implementation of the procedures in terms of safety, efficiency, investment of resources, adaptability and competitiveness.
- Evaluate the capacity of the air navigation system and the State against the restructuring of the airspace and possible introduction of improvements derived from the implementation.
- Verify compliance of air operators according to the requirements established for PBN operations in local regulations.

2.7 Knowing that in the Regional NAM / CAR Implementation Plan for Aerial Navigation in Performance (RPBANIP), dated May 16, 2018, it is declared that "performance-based navigation (PBN) is the highest priority of the ICAO account. ", the adequate training of the management personnel, of those who are intimately involved in the policies of monitoring the implementation of the PBN is very important, because normally this personnel tends to be changed with some regularity and others take their place, this training program for the newly occupied positions at the managerial level will guarantees the follow up and monitoring of the objectives set in relation to the PBN.

2.8 The training program designed by Dominican Republic through ASCA, seeks compliance with the Regional Performance Objectives (RPO), declared in appendix A of the RPBANIP, such as: "a) Implement Collaborative Decision Making (CDM) process and approved PBN training in coordination with stakeholders"; and "h) Develop and implement a PBN training program for pilots, ATCOs, operators and regulators, as well as the implementation of GNSS technologies".

2.9 The airspace demands more and more, not only the implementation of the PBN, but also a real management of this, because in relation to the traffic of aircrafts it is predicted that the general number of movements will increase above 3.7 million in 2031. The average growth rates for the route groups will be in the range of 4.5% (between North American and CAR / SAM routes) to 8% (between South America and Central America / Caribbean).

3.0 Conclusion

3.1 Civil aviation authorities should consider the PBN Management standard course, which we have identified as the most efficient response in terms of training to the management personnel of the Air Navigation Services, to the present challenges presented by the implementation of the PBN. This will require a firm conviction of the aeronautical authorities that the human factor plays a leading role in any strategy to be implemented in relation to aviation.

3.2 The success of the programs implemented for the improvement of aviation depends to a great extent on the training of the human factor. This training must be carried out through an instruction designed according to the highest quality standards and in accordance with ICAO guidelines, considering the strategic objectives of the organization. For this reason ASCA has dedicated itself in the preparation of this standardized PBN Management course.

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