



PERFORMANCE BASED NAVIGATION IMPLEMENTATION IN NAMA , NIGERIA

NAMA, NIGERIA PRESENTATION ON PBN
IMPLEMENTATION, DAKAR, SENEGAL 24TH JUNE
2014

PBN IMPLEMENTATION IN NAMA, NIGERIA

**AN OVERVIEW OF NAMA ACTIVITIES
TOWARDS PBN IMPLEMENTATION IN
NIGERIA.**

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INTRODUCTION

- PBN implementation in Nigeria is predicated on key assumptions;
 - Surveillance availability
 - The NAV SPECS of RNAV, Basic RNP are sufficient and satisfactory

THE ICAO VISION ON PBN

- The 2007 36th ICAO General Assembly resolution 36/23 urged States to implement routes and approach procedures in accordance with the PBN Procedures.
- Complete PBN implementation plan by 2009.
- 30% of PBN Procedures implemented by 2010.
- Approach with Vertical Guidance (APV) to all Runways by the end of 2016
- Complete transition to PBN by 2025.

GLOBAL NAV SPECS

RNAV	RNP
RNAV ₁₀ (RNP ₁₀)	RNP ₄
RNAV ₅	RNP _{1,2}
RNAV ₂	Advanced RNP
RNAV ₁	Basic RNP ₁
	RNP 0.3
	RNP APCH
	RNP AR APCH

NIGERIA NAV SPEC

- RNAV₁ and RNP APCH with Basic RNP₁, STARs and SIDs in TMA, with surveillance are sufficient because Nigeria does not have significant terrain obstacle challenges, and traffic is medium density.

NIGERIA'S DRIVE TOWARDS PBN IMPLEMENTATION

- Nigeria is implementing PBN procedures as part of a Global activity to promote safety, increase airspace capacity, enhance efficiency, enable access and address environmental issues,
- In addition to implementing the procedures in 24 airports, RNAV, STARs, SIDs, and RNAV (GNSS) approaches are being implemented in Lagos, Abuja, Kano and Port Harcourt to enable CDOs and CCOs.

SURVEY

- NAMA has completed WGS-84 survey of 24 Airports in the Country to facilitate PBN Implementation.
- Six Surveyors received hands-on training.
- The purpose of this project is to develop required data for Terrain and Obstacle Database, as well as for Instrument Approach Flight Procedure Design and charting.

TRAINING

- In 2009 PBN 1 & 2 Course was conducted for all stakeholders, including ATCOs, Pilots, Regulators, Cartographers, Procedure Designers, Airport Operators, Military etc.
- In 2010, PANS-OPS PBN Criteria course was conducted for NAMA and NCAA Cartographers and Procedure Designers.
- In 2010 & 2012 , PBN ATC Control Procedures, phraseology, Separation requirements training was conducted for ATCOs and Pilots from NAMA, NCAA and NAF.

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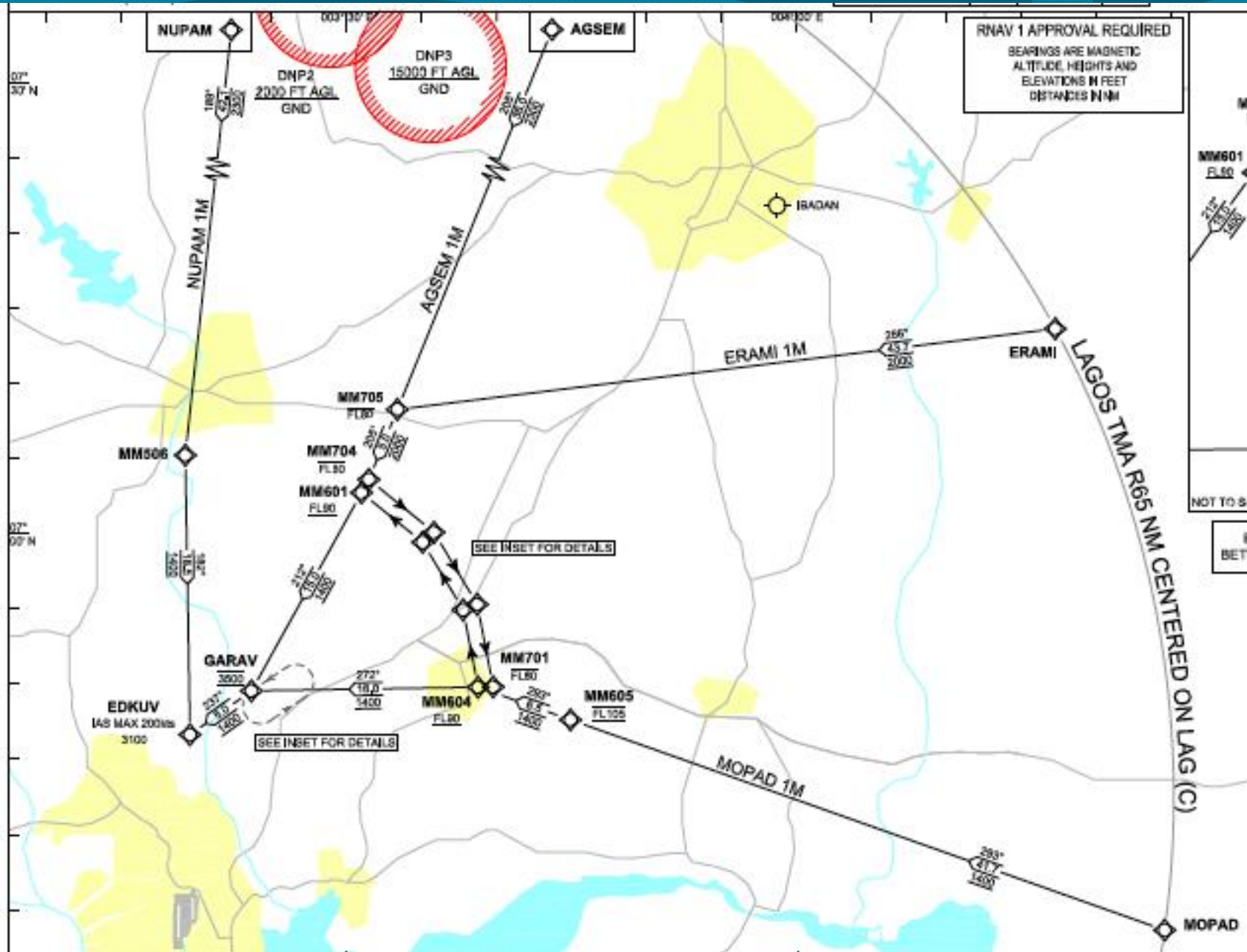
TRAINING CONTD.

- A Train-the-Trainers course was organized for 32 ATCOs , drawn from all the airports nationwide to ensure that all ATCOs receive the training preparatory for implementation.
- ATCOs in Port Harcourt, Lagos, Kano and Abuja have also been trained on the basic PBN Control Procedures, phraseologies and separation requirements, prior to commencement of flight trials.

POINT MERGE/OPEN and CLOSED STARS

- Point merge, are depicted for Lagos STAR to eliminate aircraft holding over the “LAG” facility and enable pilots plan for terminal delay at the enroute phase of flight..
- Open and Closed STARs are depicted for Abuja , Port Harcourt and Lagos STAR to eliminate aircraft holding over the facility.

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Terminal Approach Procedures

- RNAV and RNP Approach Procedures for 24 airports have been charted and published.
- PBN SIDs and STARs for Lagos, Abuja, Kano and Port Harcourt have also been charted and published.

Depiction of SIDs and STARs On Radar Maps

- Approach plates depicting the SIDs and STARs have been drawn on the Air Situation of 4 Radar Stations of Lagos, Abuja, Kano and Port Harcourt to enable ATCOs monitor compliance or any deviation from the published procedures by enabled aircraft during the flight trials.
- Also, ATCOs use the depicted plates to compare conventional radar vectors and PBN Approaches, including separation in a mixed operation.

Flight Trials

- Flight trials of PBN SIDs and STARs as well as RNAV/RNP Approaches were conducted by some foreign carriers that are PBN approved by the State of Registry.
- The flight trials took place in all the (4) major airports, and the following airlines were involved;
- KLM, Emirates, South African Airways,
- Air France
- British Airways
- Lufthansa

FLIGHT TRIALS CONTD.

- It is our desire to have more of Nigerian registered aircraft approved for PBN operations.

THE BENEFITS TO STAKEHOLDERS

- **Navigational accuracy**
- **User-preferred route structure**
- **Lower cost of maintenance of sensor-based navigational systems by NAMA**
- **Cost-effective and efficient flight operation to airlines/operators.**
- **Navigational Data Integrity**
- **Global harmony in aircraft equipage**

BENEFITS CONTD

- Continuous Climb and Descend Operations,
- User preferred Routes,
- Reduced Pilot and ATC Workload,
- Reduced CO₂ emissions and environmental benefits,
- Noise abatement, etc.
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THE CHALLENGES

- Low domestic participation due to paucity of operational approvals of aircraft and crew.
- Operations of non-PBN compliant aircraft. (Mixed Traffic)
- Inadequate training for stakeholders.
- ATCO resistance (Prefer vectoring)

THE WAY FORWARD

- 1. Regulator to drive the Project through :
 - # stakeholders training and sensitization,
 - # Expeditious operational approvals,
- 2. Improvement in aircraft equipage and Crew training.
- 3. Increase coverage in Training by leveraging on the AFI FPPO training packages as APS.

Conclusion

- In view of the enormous benefits which includes safety, efficiency, and economic flight operations, all operators are enjoined to take advantage of this facility which provides a win-win situation.



THANK YOU

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QUESTIONS?

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