



GHANA PRESENTATION ON ASBU AT ICAO SEMINAR ON ASBU/AFPP 17-21 NOVEMBER 2014 ADDIS ABABA, ETHIOPIA

PRESENTATION OUTLINE:

- Introduction**
- Current status of the implementation of ASBU Modules**



Example bullet point slide

- Planning and implementation process
- Challenges and experiences.

1.0 INTRODUCTION

ICAO Assembly resolution A37-11 made PBN the highest priority in the Air Navigation calendar and subsequent resolution which prioritized 3 ASBU BLOCK O modules to be implemented globally namely 1. PBN 2. CDO 3. CCO



GHANA IMPLEMENTATION STATUS OF CURRENT ASBU MODULES

- **1.0 PBN**
- PBN implemented in 2013 at TMAs of 5 airports in Ghana including Kotoka International Airport(KIA).
- The implementation process include STARs and SIDs for:
- A. KIA- both runway ends 21/03.



- B. Kumasi Airport R. 20
- C. Tamale Airport for runway 25.
- D. Takoradi (Military) runway 21.



- KIA has in-built CCOs and **CDOs** –
- **2.0 ASBU BO 65/APTA**: optimization of approach procedures including vertical guidance(PIA 1- Airport operations)
- All the airports have PBN RNP APCH at the runways including APV with BARO-VNAV,LNAV/VNAV



- **3.0 BO-10/FRTO: IMPROVED OPERATIONS THROUGH ENHANCED ENROUTE TRAJECTORIES(PIA 3- Optimum Capacity and flexible flights**
- **3.1 FLEXIBLE USE OF AIRSPACE**
- **Good civil/military coordination.**
- **Sufficient awareness by the military**



3.2 FLEXIBLE ROUTING:

AORRA implemented by SAT states including Ghana.

Establishment of GATES for entry/exit into the Random Routing Area.



- **3.3 PERFORMANCE MONITORING**
- **Access and Equity**– Better access to airspace by a reduction of the permanently segregated volume of airspace



- **Capacity**– The flexible routing reduce significantly potential congestion on the main routes and at busy crossing points.PBN also helps to reduce route spacing and aircraft separation.
- **Efficiency**– The AORRA and flexible routing improves Gate to Gate operation and reduce flight length and related fuel burn as well as emissions.



- **Environment**– Reduced emissions due to reduced fuel.
- **Safe**– Increased safety through greater possibilities of flight separation.
- **3.4 IMPLEMENTATION CHALLENGES**
- Insufficient number of equipped aircraft.



- Primary means of navigation in the AORRA airspace: ADC-C/CPDLC, RNAV10
- **4.0 ASBU-25/FICE: Increase interoperability, efficiency and capacity through Ground-Ground integration. (PIA 2 Global Interoperability system and data)**
- Ghana has implemented AMHS and is interconnected with a number of ANSPs



- **5.0 ASBU BO-20/CCO: Increased flexibility and efficiency of Departure Profiles(PIA 4-Efficient flight Path through trajectory Based operations).**
- With the publication of PBN terminal SIDs for Accra Airport. The SIDs have in-built CCOs for efficient departure profiles at both ends(21/03).



- SIDs have also been implemented at the other airports –KUMAS SID runway 20,TAMLE SID runway 23,TAKORADI SID runway 21.
- This has significantly increased Terminal airspace capacity and cost saving through reduced fuel burn and efficient acft



- operating profiles and also reduced radio transmissions.
- **5.1 IMPLEMENTATION CHALLENGES:**
- **Inadequate** training for the Air Traffic Controller in CCOs/CDOs operations.



- **6.0 ASBU-05/CDO- Improved Flexibility and efficiency in Descent Profiles(PIA 4)**
- Ghana as part of the PBN Terminal implementation has implemented STARS with in-built CDO operations for the Accra International Airport as well as four of the five airports in the country.



• 5.1 BENEFITS

- Increased Terminal Airspace Capacity and also efficiency through reduced fuel burn and acft operating profile as well as reduction in radio transmissions.
- Increased Safety through more consistent flight paths and stabilized approach paths with a reduction in the incidence of Controlled flight into Terrain(CFIT) .



- As well as reduction in number of conflicts.
- **5.3 IMPLEMENTATION CHALLENGES**
- Controller training in the concept of CDO

7.0 PLANNING AND IMPLEMENTATION PROCESS.

➤ Ghana hired the services of a consultant



- From IATA in December 2012 who met with all stakeholders namely GCAA, GACL, AIRFORCE, DOMESTIC AIRLINES to brief them on the project and solicit their involvement and in-puts.
- Inception mission was embarked upon to all the airports in the country to gather information and data.



- An inception report was submitted in late December 2012 including draft airspace assessment and TMA Airspace concept for the 5 airports in Ghana for comments.
- A team made up of all the stakeholders met and subjected the report to scrutiny and suggested amendments to the IATA consultant.
- The final TMA airspace assessment and .



- TMA airspace concept was submitted in March 2013 and was accepted by all stakeholders.
- Procedure designers began work on the procedures (RNAV APP, STARS, SIDS) for the 5 airports based on the TMA airspace concept submitted.
- A draft design was submitted but it was detected that some obstacles have



- Penetrated through the approach surface because of obsolete WGS 84 data .(due to delayed WGS 84 data maintenance).
- Project delayed for some months to get the WGS 84 maintenance data to enable procedure designer to come out with final draft design.
- Whiles the procedure design was on-going,training for PBN operational approval



- For flight operations and airworthiness personnel as well as Air Traffic Controllers training including pilots from the domestic airlines and Ghana Air force.
- Concurrently legislation for the use of satellite(GNSS) for Navigation in Ghana was also being gazetted.
- Flight test of STARs,SIDs, RNAV APP procedures by selected domestic airlines



- As well as simulations of the above-mentioned procedures by some international airlines in their flight simulators.
- Finally Ghana Air force flew all the PBN procedures for all the 5 airports in Ghana before the actual implementation.
- NOTAMs issued



- All comments on the trial period were collated and incorporated into revised final procedure before AIP SUPP was issued for coding by the appropriate agencies.
- Post implementation challenges as well as stakeholders concerns are to incorporate into PBN phase 2.



CHALLENGES AND EXPERIENCES

- 8.1 Absence of regular maintenance of WGS 84 data delaying implementation process.
- 8.2 Lack of patronage of RNAV approaches due to non-precision nature whiles precision approach facility such as ILS is still in use
- 8.3 Inadequate domestic aircraft equipage.



- 8.5 Absence of any policy to entice airlines to use RNAV APP. such as best equipped best served, lower charges for usage of RNAV APP etc.

8.6 Advisable to train local personnel on any new technologies before going in for any consultant to assist in the implementation.



- THANK YOU.
- MEDA ASE.
- MERCI.
- ASANTE TANA.