



*International Civil Aviation Organization*

**THE THIRD MEETING OF PERFORMANCE BASED NAVIGATION  
IMPLEMENTATION COORDINATION GROUP (PBNICG/3)**

Bangkok, Thailand, 08 – 10 March 2016

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**Agenda Item 10: Issues and challenges regarding PBN implementations**

**INDONESIA PBN IMPLEMENTATION AS EFFICIENCY/ENVIRONMENTAL MEASURE  
AND STAKEHOLDERS INVOLVEMENT**

(Presented by DGCA Indonesia)

**SUMMARY**

This paper presents the inclusion of PBN implementation in Indonesia in its State Action Plan for Emissions Reduction in Aviation, expected environmental benefits, and the related support actions taken: creation of a PBN implementation stakeholder Working Group.

**1. INTRODUCTION**

1.1 The Indonesia Directorate General of Civil Aviation (DGCA) has taken several policy and implementation measures in line with the commitment of Indonesia to actively contribute to the global initiatives of mitigation of climate change and reduction of GHG emissions, as reflected in the “*Indonesia’s National Action Plan for Green House Gases Emission Reduction*”.

1.2 As requested by the Assembly, Indonesia submitted to ICAO in 2013 its “*State Action Plan to reduce GHG Emissions on the Aviation Sector*” and updated it in June 2015 including a “basket of measures” which follows ICAO recommendations and shows Indonesia’s commitment in supporting its global policies regarding aviation environmental protection.

1.3 For the implementation of such State Action Plan, the Indonesia DGCA signed in 2013 with the ICAO Technical Cooperation Bureau (TCB) an agreement to receive Assistance in the Development and Implementation of Environmental Measures for Civil Aviation. A three-year program (INS13801 Project, Oct. 2014 – Oct. 2017) was launched and supported under the Indonesia Ministry of Transportation budget.

1.4 Acknowledging that improving operational safety is the main priority, implementation of PBN was included in the Action Plan as a key measure for achieving as well fuel efficiency and reducing GHG emissions. The DGCA-ICAO TCB INS13801 Project was tasked, among several other actions, to support DGCA on such objective.

1.5 An initial assessment with DGCA identified as an immediate need the need to involve key aviation stakeholders in a collaborative approach to ensure smooth and timely implementation of Indonesia PBN Plan, as mandated by ICAO.

## **2. STAKEHOLDERS INVOLVEMENT AND KEY ISSUES AND CHALLENGES**

### **2.1 Indonesia PBN-OPS Working Goup**

2.1.1 DGCA Indonesia, AirNav Indonesia (ANSP) and ICAO TCB INS13801 Project, have agreed to create a stakeholder’s “Working Group on Operations and PBN” (Here in after OPS-PBN WG).

2.1.2 The WG is formed by operational experts and aim to support the effective implementation of PBN in Indonesia as well as other operational efficiency measures related with Air traffic Management, through a coordinated and collaborative approach with aviation stakeholders: Regulator (DGCA), ANSP (AirNav Indonesia), Airlines, Airports, and Aircraft Manufacturers.

2.1.3 There will be organized several technical OPS-PBN Working Group meetings during 2016.

2.1.4 The kick-off of such meetings has been held on February 22-26, 2016 in Bogor (West Java) with active participation of more than 50 local experts and with support of four International experts from ICAO Beijing Regional Office, ICAO TCB INS13801 Project, Airbus Prosky and CGX Aero.

2.1.5 An initial objective was to identify main issues and challenges regarding PBN implementations in Indonesia and support DGCA on drafting an updated Implementation Plan with strategic planning and guidelines agreed with stakeholders.

2.1.6 A very active exchange of information and concerns was shared among participants, with very valuable inputs among others, from local ATC’s and experienced pilots from the main Indonesian operators.

### **2.2 Issues and challenges regarding PBN implementations**

2.2.1 The main issues and challenges identified by Indonesian stakeholders for an effective PBN Implementation were the following:

- 1) Some airports, which already have PBN procedures, are still not being used effectively:
  - Further work will be needed in coordinating ATC’s jurisdictions, harmonized use of military restricted areas and integration with conventional and visual traffic.
- 2) Approved and published procedures are not flown by operators.
  - Economic, safety and operational benefits need to be assessed and communicated to incentivize the allocation of operator’s resources and necessary investments.
  - Improved knowledge of PBN concept and navigation specification shall facilitate implementation.
- 3) Approved and published procedures are normally not cleared by ATC.

- Training local ATC's would improve confidence on management of PBN traffic and provide a better perception of benefits in terms of workload and complexity reduction.
  - Shared operational approval databases among Regulator and ANSP would facilitate oversight of Pilots/Operators capability to operate PBN procedures.
- 4) Need of updated information airport's data on Obstacle Limitation Surface (OLS).
- Allocation of resources to develop & update data and shared database systems would accelerate the design and approval of new PBN procedures.
- 5) Procedures that have been already developed have not yet been approved/published.
- Consultation/involvement of key actors would facilitate further approval/implementation.
- 6) Operational approvals of aircraft operators are below fleet's operational capabilities.
- Facilitation of approval/certification process would reduce barriers for operators to use existing PBN procedures.

### 2.3 **Updated Implementation Plan and next actions**

2.3.1 During the kick-off meeting of the OPS-PBN WG, it was agreed to support DGCA, in a collaborative manner, to update the Indonesia Performance Based Navigation (PBN) State Implementation Plan following the ICAO Standard Template.

2.3.2 During the meeting the ICAO expert from the Beijing Regional Office provided an overview of the Standard Template contents and each chapter was discussed among present stakeholders to take into consideration their concerns and priorities on its elaboration.

2.3.3 DGCA Indonesia is currently drafting an updated Performance Based Navigation (PBN) State Implementation Plan to be submitted to ICAO shortly.

2.3.4 Acknowledging the stakeholder's expressed priorities on PBN Implementation, DGCA Indonesia has prioritized a selection of airports and procedures.

2.3.5 As indicated in IP with title "Update on Indonesia PBN Implementation" the agreed next steps on implementation, will be:

- The DGCA small-group PBN Task Force will prepare the concept of a selected PBN flight procedures design for four prioritized airports.
- The PBN Working Group will organize dedicated stakeholders meetings with support of DGCA/ICAO TCB INS13801 Project (Environmental Measures in Civil Aviation) to finalize the design of the selected PBN flight procedures.

2.3.6 Once finalized, the same approach will be applied to develop and publish the additional list of International airports PBN flight procedures included in the Implementation Plan.

2.3.7 In parallel, DGCA will evaluate the possible improvement of its regulatory and operational approval frameworks as well as databases and information sharing, in order to overcome the identified PBN implementation constraints.

### **3. PBN IMPLEMENTATION EXPECTED ENVIRONMENTAL BENEFITS**

3.1 The Indonesia State Action Plan to reduce GHG emissions on the aviation sector submitted to ICAO in 2015 considers ATM improvements and in particular PBN implementation as the measure with more potential benefits in terms of fuel savings and GHG emissions reductions from the ones included in the Action Plan.

3.2 It is intended to make a detailed analysis on the fuel and emissions savings for each of the airports and PBN procedures included in the Updated Implementation Plan using the ICAO Fuel Savings Estimation Tool (IFSET).

3.3 But to illustrate Indonesian operators on the potential economic and environmental benefits of PBN Implementation, the following estimation has been calculated for the three main Indonesian airlines with international operations (Garuda Indonesia, Indonesia Airasia and Lion Air).

3.4 ICAO IFSET estimates PBN procedures can generate average savings of 40 Kg of fuel per optimized approach and landing procedure and 100 Kg per departure. Applying such potential saving only to international operations of those three main operators, it could be saved about 12.5 Million Liter of jet fuel and about 30,000 Ton of CO<sub>2</sub> emissions per year with the current traffic, which is estimated to keep significantly growing in Indonesia.

3.5 Not taking into account the possible future cost of CO<sub>2</sub> emissions (ICAO is currently discussing a CO<sub>2</sub> Offsetting mechanism for international aviation) and considering current prices of jet fuel, that could also drive to more than 10 Million USD annual savings only for those three operators.

### **4. ACTION REQUIRED BY THE MEETING**

4.1 The meeting is invited to note the information contained in this paper.

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