



International Civil Aviation Organization

The Second Meeting of ICAO Asia/Pacific Performance based Navigation Implementation Coordination Group (PBNICG/2)

Bangkok, Thailand, 11-12 June 2015

PBNICG/2-IP/03
11/06/2015 - 12/06/2015

Agenda Item 4: Reports on Relevant Meetings Outcomes
Agenda Item 10: Issues and Challenges regarding PBN Implementations

**PROGRESS REPORT ABOUT
APANPIRG IONOSPHERIC STUDY TASK FORCE**

(Presented by Secretariat)

SUMMARY

This paper presents the progress of APANPIRG ISTF and way forward.

1. INTRODUCTION

1.1 The Fifth Meeting of Ionospheric Studies Task Force (ISTF/5) was held Japan from 16 to 18 February 2015 and was attended by 21 participants from 6 States (China, India, Japan, Malaysia, Thailand, USA), 1 Regional Organization (Eurocontrol) and 5 Industry organizations (Boeing, UK NATS, Honeywell, Indra Navia, Thales).

1.2 The meeting report is available here:
<http://www.icao.int/APAC/Meetings/2015%20ISTF5/ISTF5%20Report%20-%20final.pdf>.

2. DISCUSSION

Progress

2.1 The ISTF is tasked with 6 activities:

- a) Task 1 - Data Collection
- b) Task 2 - Iono Analysis
- c) Task 3 - TEC Generation
- d) Task 4 - Scintillation Data
- e) Task 5 - Iono Models
- f) Task 6 - Space Weather

2.2 Tasks 1 to 4 and Task 6 have well progressed, and details are in the report. As per TOR, the question ISTF had to confirm if ionospheric threat models were needed in the APAC region. As a result of progress, the meeting established the following draft decision for adoption by APANPIRG:

Draft Decision 5/1 Need for ionospheric threat models in the APAC region

That,
Considering that extreme ionospheric gradients were observed in the APAC region through data collection, and in Brazil likewise, the need for GBAS threat model is confirmed. Considering the various factors such as variable ground stations network layouts and service levels, guidance for establishing a SBAS iono safety case model is needed.

Way forward for Task 5

2.3 Considering the draft decision proposed, task 5 is now to start, and the meeting identified 5 steps to complete the Task 5 for GBAS:

Using the draft GAST D SARPS guidance as a reference,

1. *Identify the operational hazards related to the ionospheric threats for GBAS*
2. *Identify factors influencing the mitigation strategy for GBAS in addition to parameters referenced in the GBAS related SARPS guidance material (such as occurrence probability, number of simultaneously influenced satellites, etc)*
3. *Summarizing the iono characteristics of the APAC region (SED, plasma bubbles, optionally nominal ionosphere) for 2 sets of parameters in the APAC region*
4. *Recommend/develop tool(s) for generating the threat model*
5. *Develop a methodology to generate the threat model.*

2.4 In the same spirit, the meeting identified 6 steps to complete the Task 5 for SBAS:

1. *Identify the operational hazards related to the ionospheric threats for SBAS*
2. *Identify factors influencing the mitigation strategy (ground stations distribution, iono model used, etc)*
3. *Identify common threats (independent of any particular iono model) such as temporal and spatial threats*
4. *Identify requirements for the threat model (such as: level of overbounding of ionospheric errors)*
5. *Develop a methodology to generate threat mitigation models*
6. *Optionally, develop a tool for generating the threat model*

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper, more specifically the draft decision in para 2.2 and the way forward for developing Iono models for GBAS and SBAS; and
- b) discuss any relevant matters as appropriate.

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