International Civil Aviation Organization

FIRST MEETING OF IONOSPHERIC STUDIES TASK FORCE (ISTF/1)

27 – 29 February 2012, Tokyo, Japan

国土交通省

Agenda Item 2: Review of relevant meetings/conferences

REVIEW OF TWENTY SECOND MEETING OF ASIA PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG/22)

(Presented by the Secretariat)

SUMMARY

APANPIRG noted that requirement of characterizing ionosphere in the region to facilitate implementation of GNSS applications like GBAS and SBAS. A workshop was organized in 2011 and based on its recommendation. A Task Force was established by CNS/MET Sub-Group of APANPIRG. This paper discusses the developments that have taken place in the relevant field.

This paper relates to -

Strategic Objective:
A: Safety – Enhance global civil aviation safety
C: Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment

Global Plan Initiatives:
GPI – 21 Navigation systems

1. INTRODUCTION

1.1 Twentieth meeting of APANPIRG, held from 7 to 11 September 2009 noted that characterization of ionosphere in the region will be a useful step in the implementation of GNSS applications including GBAS and SBAS. The meeting, after reviewing the effects of ionosphere and

solar activities on the performance of GNSS agreed with the need to conduct a study to establish a regional characterization suitable for use in aeronautical system.

1.2 Requirement of characterization of ionosphere came up for discussion once again in the Twenty First meeting of APANPIRG held from 6 to 19 September, 2010. It was agreed that cooperative efforts in developing a standard ionospheric model for the region should be promoted to facilitate implementation of GNSS. After reviewing the information presented by the States on the subject, meeting invited Japan to provide technical leadership with ICAO providing support for the development of a measurement campaign coordinated through the points of contact nominated by the States.

1.3 To progress the efforts towards collection, sharing and analysis of ionospheric data a two-day Workshop on 'Ionospheric Data Collection, Analysis and Sharing in Support of GNSS Implementation' was organized on 5 and 6 May 2011 in ICAO Asia/Pacific Office, Bangkok. Dr. Susumu Saito, nominated expert from Japan acted as the facilitator of the Workshop which was attended by 20 participants from 9 Administrations. This paper presents a brief report on the Workshop and outcome of CNS/MET/15 and APANPIRG/22 meetings on the recommendations made by it.

2. DISCUSSION

2.1 A two-day Workshop on 'Ionospheric Data Collection, Analysis and Sharing in Support of GNSS Implementation' was held on 5 and 6 May 2011. It was held to meet the following significant objectives:

a) To enhance the understanding of ionospheric issues in GNSS operation;

b) To exchange information and experience gained on GNSS and ionosphere related activities by each Administration;

c) To understand the need to carry out ionospheric studies;

d) To discuss a common procedure for collecting ionospheric data by Administrations;

e) Ultimate outcome should be a standard ionospheric model for GNSS operations applicable throughout the region; and

f) The final goal is to facilitate GNSS implementation in Asia and Pacific Regions by mitigating ionospheric issues.

2.2 Experts from the Administrations discussed issues related to ionospheric effects on GNSS performance, exchanged information/experience on the subject and developed following recommendations:

a) States were urged to coordinate with the relevant national organizations for sharing available GNSS data to facilitate characterization of ionosphere to support the implementation of GNSS applications for aviation.

Based on the recommendation made by the Workshop and endorsed by the CNS/MET SG/15, APANPIRG adopted following Conclusion:

Conclusion 22/27 – Sharing of Ionospheric Data

That, States be urged to coordinate with their relevant national organizations for sharing of available GNSS data with the relevant civil aviation agencies to facilitate characterization of ionosphere to support GNSS implementation in the region.

Through State Letter dated 24 November, 2011 States were reminded about the Conclusion adopted by APANPIRG and were urged to coordinate with other relevant national organizations for sharing of the ionospheric data.

b) a Task Force needs to be established with an objective to identify the need for a Regional Ionospheric Threat Model for GBAS and SBAS and create them if required.

Based on the recommendation made by the Workshop, Fifteenth meeting of CNS/MET Sub-Group of APANPIRG adopted following Decision establishing a Task Force.

Draft Decision 15/13 – Ionospheric Studies Task Force

That, an Ionospheric Studies Task Force, with the Terms of Reference provided in ***Appendix L*** *to this report be established.*

Subsequently, establishment of the Task Force was informed to APANPIRG in its Twenty Second Meeting. A copy of the Terms of Reference for the Task Force is provided in the Attachment. Meeting is invited to review it and recommend any changes if required to be made.

c) ICAO Regional Office to coordinate with APEC GIT for the initiative being carried out for ionospheric data collection, analysis and sharing. APEC Economies be requested to support this initiative by encouraging relevant agencies in each Economy to share data collected with civil aviation.

Workshop outcome was included in the presentation made to the Fifteenth meeting of Asia Pacific Economic Cooperation (APEC) GNSS Implementation Team (GIT/15), which was held in Brisbane, Australia from 13 to 17 June, 2011. APEC GIT and some Administrations agreed to support the Ionospheric Data Collection activity of ICAO APAC Region. APEC GIT/15 outcome relevant to the subject was included in the report presented to the CNS/MET SG/15 and APANPIRG/22 meetings.

2.3 Workshop developed following Action Items to support progress of data collection, sharing and analysis activities

a) Japan to develop Template for Ionospheric Data Collection in coordination with the other States and get it distributed through ICAO APAC Office before first week of June 2011.

A copy of the Template developed by Japan and reviewed by the other participating States of the Workshop was circulated through APAC Office State Letter T 8/5.10, T8/5.11:APO83/11 (CNS) dated 15 June, 2011 and the States were urged to collect and compile the ionospheric data in the prescribed Template, share it with other participating States and cooperate in the analysis. The meeting is invited to review the progress made in the collection of data in the prescribed Template.

b) Concerned with the quantum of data, data level, archival data etc. some States were of the opinion that data for worst case scenario only should be taken into account. It was expressed that the common regional model to be developed should be provided to the data providing States and should be provided to the GBAS vendors upon request.

The meeting is invited to develop a consensus on the issues brought out in the Workshop.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the developments that have taken place on the recommendations of the Workshop. The meeting is also invited to:

a) review the Terms of Reference for the Task Force and recommend changes if required;

b) assess the need for developing a Regional Ionospheric Threat Model for GBAS and SBAS;

c) review the progress on data collection in the prescribed format; and

d) address the concerns raised in the Workshop regarding the quantum of data and security issues, if relevant.

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DRAFT TERMS OF REFERENCE for
IONOSPHERIC STUDY TASK FORCE

1) Take the responsibility for identification of the available GNSS data source;

2) Make recommendation on sharing scenario for Inonospheric data collected;

3) Make recommendations on selecting ionospheric data sources and sharing scenario for the collected data;

4) Steer process for evaluation of the data analysis;

5) Study the need for development of Regional Ionospheric Threat Models for GBAS and SBAS;

6) Provide guidance on the development of a common regional Ionospheric Threat Model if the need is identified; and

~~7) Manage the result of study for non-commercial purpose.~~

8) Establish rules for use of the result of study for non-commercial purpose.

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