57th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

Incheon, Republic of Korea
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AGENDA ITEM 4: AIR NAVIGATION

IMPLEMENTATION OF FIRST LPV APPROACH IN INDIA AND APAC REGION AND EXPANSION OF GAGAN RELATED SERVICES TO COUNTRIES WITHIN GAGAN GEO FOOTPRINT

Presented by India

SUMMARY

India has successfully implemented first Localizer Performance with Vertical Guidance (LPV) procedures in India and also the first LPV procedure in the APAC region and planning to implement these procedures in all regional airports in coming years. India is in a position to share its experience and knowledge with the countries interested in developing the LPV procedures by using the GPS Aided GEO Augmented Navigation (GAGAN) Signal which is available from Africa to Australia through three GAGAN GEO satellites GSAT-8, GSAT-10 & GSAT-15.

IMPLEMENTATION OF FIRST LPV APPROACH IN INDIA AND APAC REGION AND EXPANSION OF GAGAN RELATED SERVICES TO COUNTRIES WITHIN GAGAN GEO FOOTPRINT

1. INTRODUCTION

1.1 India has successfully implemented first Localizer Performance with Vertical Guidance (LPV) procedures in India and also the first LPV procedure in the APAC region. The procedures are published by AIP supplement as RNP Z RWY 05 and RNP Z RWY 23 - KISHANGARH AIRPORT. The LPV approach procedures at Kishnagarh airport is effective from 14th July 2022. These procedures have been implemented after the successful conduct of simulator trials on 23.04.2022 at FSTC Hyderabad, ATR 72/600 simulator and successful flight trials were conducted by ATR 72/600 on 28.04.2022 with active participation from DGCA India.

1.2 This milestone is achieved under the proactive contribution and guidance from DGCA India.

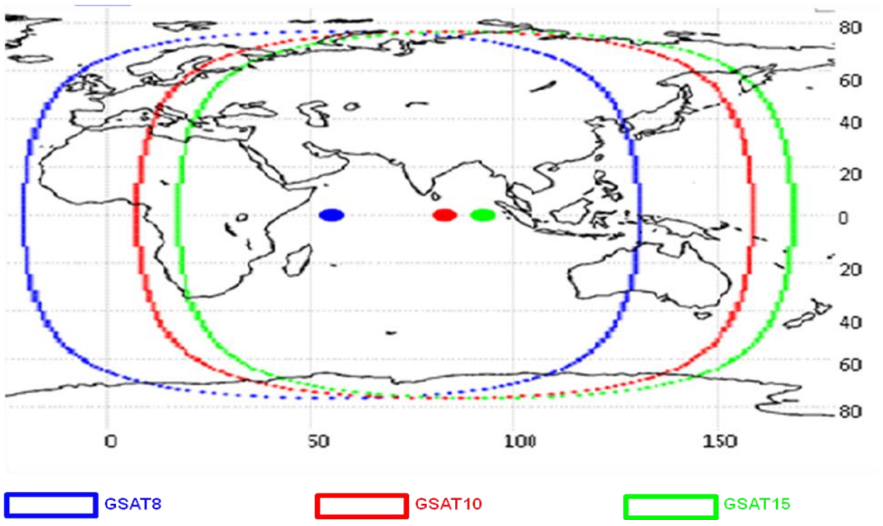
1.3 In addition to above mentioned achievement, many LPV procedures are in design stage and some of them are in advanced phase of implementation.

1.4 India is planning to implement these procedures in all regional airports consisting of Tier 2 and tier 3 cities. The main thrust is given to cities which are not equipped with ILS approaches.

1.5 India has developed inhouse capability to design, validate and implement the LPV procedures and has achieved an important milestone in PBN implementation.

1.6 We have used "The GPS Aided GEO Augmented Navigation (GAGAN)" a regional Satellite Based Augmentation System (SBAS) developed by the Government of India for this purpose with the goal of improving its accuracy, integrity, and availability for all phases of flight, including APV1 approaches to any airport within its coverage area.

1.7 GAGAN system has capability to cater 45 reference stations (Currently only 15 are being used). interoperable with other SBAS systems. The signals from Indian GEOs are capable of providing service to all neighboring countries such as Myanmar, Bangladesh, Nepal, Bhutan, etc., and countries of South-East Asia, such as Thailand, Indonesia, Malaysia, Singapore and others over Australia and Africa falling within its GEO foot print subject to installation of Indian Reference Stations (INRES) at strategic locations within the states.



1.8 India is in a position to share its experience and knowledge with the countries interested in developing these procedures using GAGAN signal which is available from Africa to Australia through three GAGAN GEO satellites GSAT-8, GSAT-10 & GSAT-15.

2. DISCUSSION

In order to demonstrate the benefits of expanding GAGAN coverage to neighboring countries of India, a data collection and analysis project is recommended whereby data will be collected from specific sites installed in surrounding countries and analyzed in conjunction with the GAGAN equatorial ionospheric algorithm, to determine the actual benefit to aviation over the regions covered by the data collection sites.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

a) Take a note of the information contained in the paper;

b) Encourage neighbouring member States to consider:

- use of latest advanced technologies and infrastructure developed by India

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