



ICAO

UNITING AVIATION

NO COUNTRY LEFT BEHIND



Agenda Item -2

WP-01

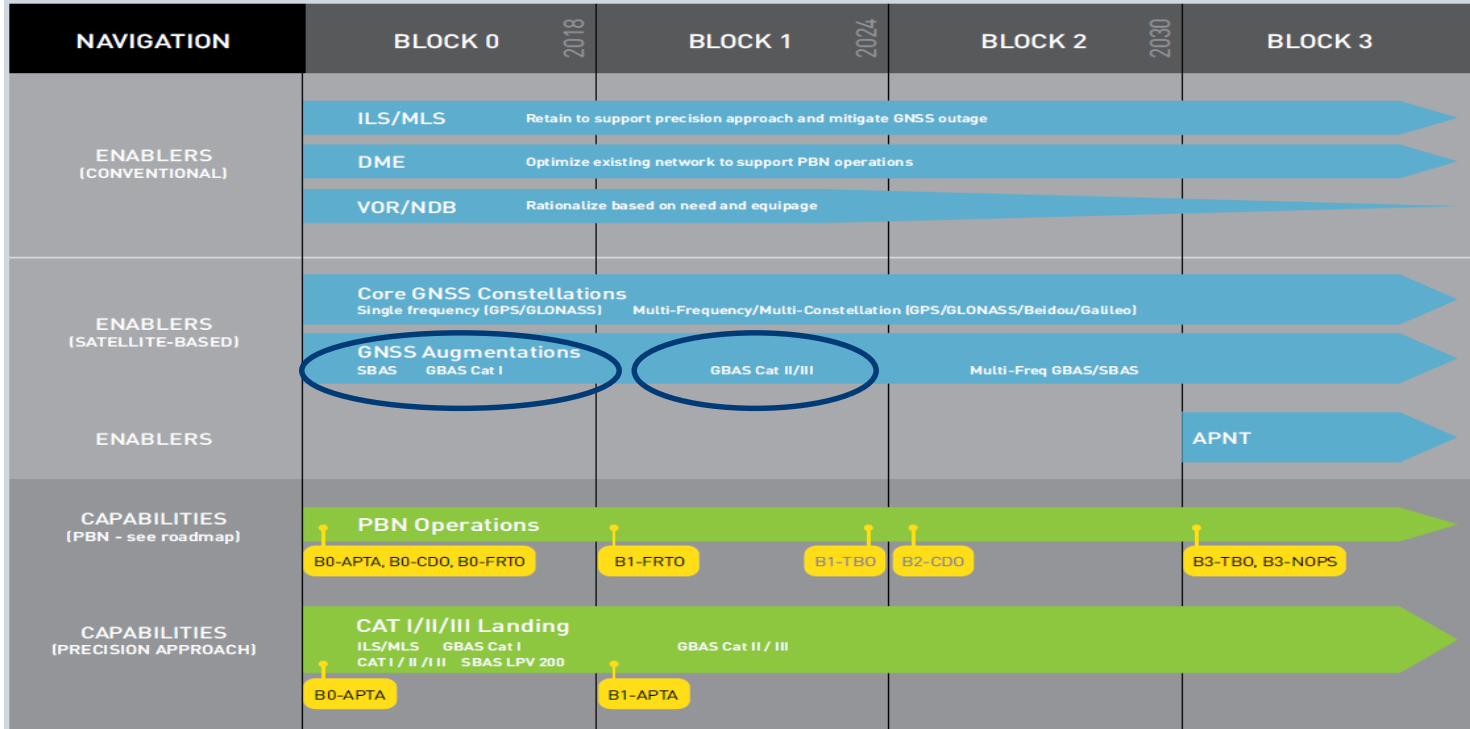
Presented by Secretariat

GBAS-SBAS Information Sharing Platform

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Regional Officer, PBN,
ICAO APAC RSO**



GBAS/SBAS implementation in the GANP





ASIA/PACIFIC SEAMLESS ANS PLAN V3.0 Asia/Pacific ASBU Block 0 Priority- GBAS-SBAS

ASBU Element	Priority
APTA-B0/1 – 2: Basic PBN SID and STAR procedures, PBN non-precision approaches (PARS 7.4, 7.5, 7.10, 7.13, 7.14, 7.21) Preferred Aerodrome/Airspace and Route Specifications (PARS)	1
APTA-B0/3 and 6: SBAS/GBAS CAT I precision approach procedures, and PBN Helicopter PinS Operations (PARS 7.5, 7.6, 7.10, 7.14, 7.21)	3
APTA-B0/4 – 5, 7 – 8: CDO (Basic) and CCO (Basic), and performance-based aerodrome operating minima for advanced/basic aircraft (PARS 7.14, 7.19, 7.21)	2
APTA-B1/1 – 5: advanced capability PBN approaches, PBN SID and STAR procedures and performance-based aerodrome operating minima for advanced aircraft with SVGS, CDO and CCO (Advanced) (PARS 7.14, 7.21, 7.22, 7.23)	3



GBAS-SBAS Information Sharing Platform

For the benefit of States an Information Sharing Platform about GBAS-SBAS concept, Reference documents, Systems and Procedures in the APAC States has been created on ICAO APAC webpage on the following link:

<https://www.icao.int/APAC/Pages/GBAS-SBAS.aspx>



GBAS-SBAS Information Sharing Platform

Following Information is available on this platform:-

- Applicable and Reference Documents - List
- Introduction of GBAS and SBAS concept
- Update on the GBAS and SBAS Program per APAC State
- List of National Focal Points
- Map of GBAS-SBAS procedures- Planned & Published



Applicable and Reference Documents - List

- [Global Strategy](#) - Global Air Navigation Plan (Doc 9750)

<https://www.icao.int/airnavigation/Pages/GANP-Resources.aspx>

- [Regional Strategy](#) - Asia/Pacific Seamless ATM Plan (V3.0) -

<https://www.icao.int/APAC/Documents/edocs/Asia%20Pacific%20Seamless%20ATM%20Plan%20V%203.0.pdf>



Applicable and Reference Documents - List

System requirements and testing –

- Annex 10 Vol I - Radio Navigation Aids
- ICAO Doc 8071 Vol II
 - Testing of Satellite-based Radio Navigation Systems
- EUROCAE ED114B
 - Minimum Operational Performance Standards (MOPS) for GBAS ground facility
- FAA Order 6884.1
 - GBAS ground facility siting criteria
- SL 2019/87 from ICAO to States
 - SBAS channel number management



Applicable and Reference Documents - List

System requirements and testing –

- RTCA DO229F
-Minimum Operational Performance Standards for GPS/SBAS Airborne Equipment
- ICAO- GUIDE FOR GBAS IMPLEMENTATION
Guide for Ground Based Augmentation System Implementation (icao.int)
- GBAS safety assessment guidance related to anomalous ionospheric conditions
<https://www.icao.int/APAC/Documents/edocs/GBAS%20safety%20assessment%20guidance.pdf#search=ionospheric%20model>
- SBAS safety assessment guidance related to anomalous ionospheric conditions
<https://www.icao.int/APAC/Documents/edocs/SBAS%20safety%20assessment%20guidance%20-anomalous%20ionospheric.pdf#search=ionospheric%20model>
- GBAS Ionospheric Threat Model for APAC Region (APAC)
APANPIRG Iono TM GBAS.pdf (icao.int)



Applicable and Reference Documents - List

Procedure design and validation –

1. ICAO Doc 8168 Vol II - Construction of Visual and Instrument FPs
2. ICAO Doc 9906 Vol I – Flight Procedure Design Quality Assurance System
3. ICAO Doc 9906 Vol V - IFP validation
4. ICAO Doc 8697 – Specimen Charts
5. Satellite-Based Augmentation System Channel Assignment Tool (SBAS-CAT)
<https://www.icao.int/safety/OPS/OPS-Tools/Pages/SBAS.aspx>
6. EUROCONTROL SBAS FAS Data Block Tool-
<https://fasdb.eurocontrol.int/fasdb/app/about.htm>



Applicable and Reference Documents - List

Operations

1. ICAO Doc 8168 Vol I - Flight Procedures
2. ICAO Doc 9613 - PBN Manual
3. ICAO Doc 9849 - GNSS Manual
4. ICAO Doc 4444 - Air Traffic Management



Applicable and Reference Documents - List

Meetings & Workshops on GBAS-SBAS Implementation

GBAS-SBAS Workshop 2019 Seoul, ROK-

<https://www.icao.int/APAC/APAC-RSO/GBASSBAS%20Implementation%20Workshop/Forms/AllItems.aspx>

GBAS-SBAS ITF-1

<https://www.icao.int/APAC/Meetings/Pages/2020-GBAS-SBAS-ITF1.aspx>

GBAS-SBAS IF-2

<https://www.icao.int/APAC/Meetings/Pages/2020-GBAS-SBAS--ITF2.aspx>



Map of SBAS procedures- Planned & Operational

LPV (SBAS) Implementation Map (Zoom Airport Icon to View Procedure Type and Status)

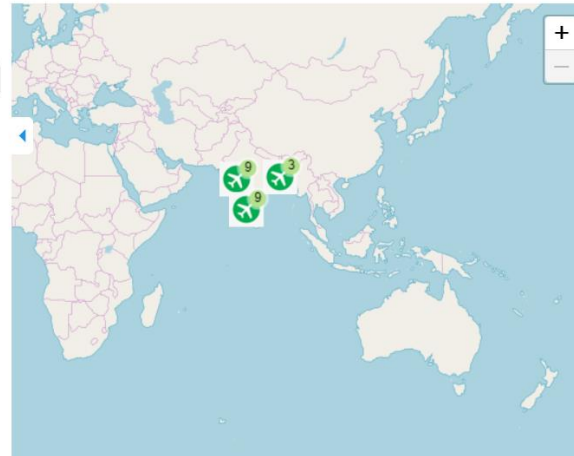
LPV Planned	LPV Operational
	



SEARCH MAP

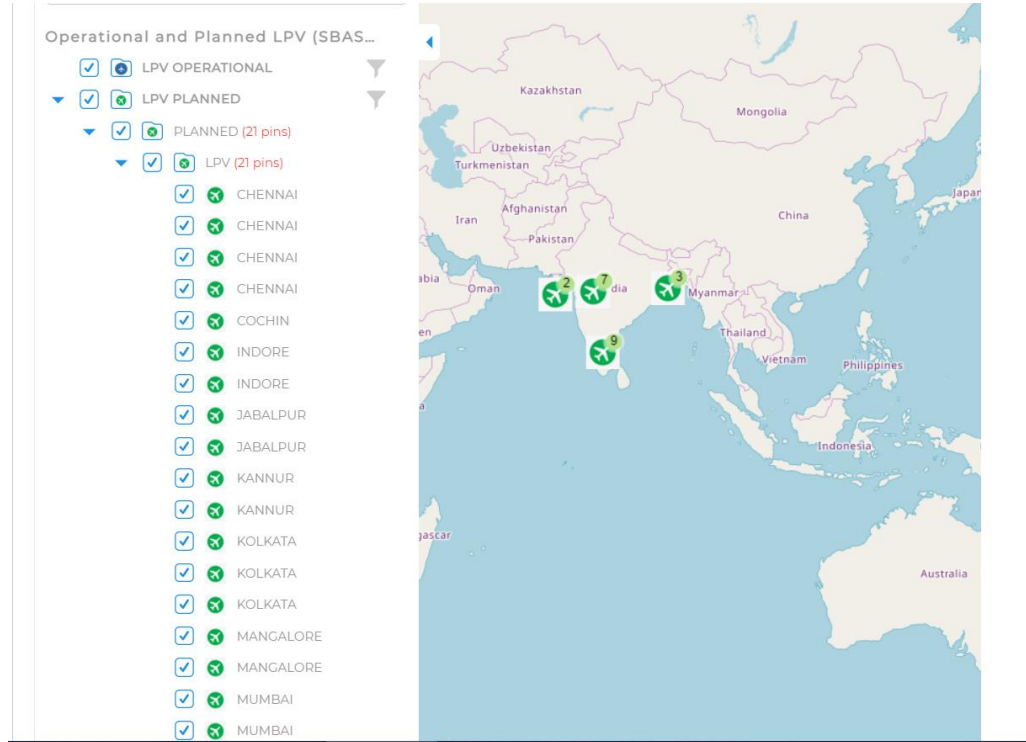
Operational and Planned LPV (SBAS...

- LPV OPERATIONAL
- LPV PLANNED
- PLANNED (21 pins)
- LPV (21 pins)





Map of SBAS procedures- Planned & Operational





Map of GBAS procedures- Planned & Operational

GLS (GBAS) Implementation Map (Zoom Airport Icon to View Procedure Type and Status)

GLS Planned	GLS Operational

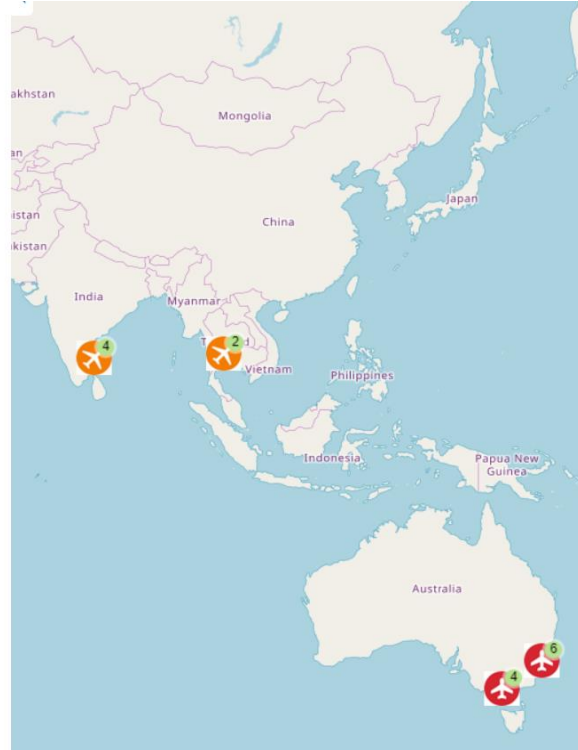
GLS(GBAS) Procedure Map

- GLS PROCEDURE
- OPERATIONAL (10 pins)
- GLS (10 pins)
- PLANNED (6 pins)
- GLS (6 pins)



Map of GBAS procedures- Planned & Operational

- ▼ GLS PROCEDURE
- ▼ OPERATIONAL (10 pins)
 - ▼ GLS (10 pins)
 - MELBOURNE
 - MELBOURNE
 - MELBOURNE
 - MELBOURNE
 - SYDNEY (KINGSFORD SM)
 - SYDNEY (KINGSFORD SM)
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 - SYDNEY (KINGSFORD SM)
 - SYDNEY (KINGSFORD SM)
 - SYDNEY (KINGSFORD SM)
 - ▼ PLANNED (6 pins)
 - CHENNAI
 - CHENNAI
 - CHENNAI
 - CHENNAI
 - DON MUEANG INTERNAT
 - SUVARNABHUMI AIRPOF





GBAS-SBAS Information Sharing Platform

Following update is expected from States to keep the information current on this platform:-

- Update on the GBAS and SBAS Program in each APAC State
- Update of National Focal Point

ICAO will update List of National Focal points and Map of GBAS-SBAS procedures based on the information received from States.



THANK YOU!