

# ACTION PLAN

GBAS SBAS Implementation TF

Last Updated:

ACTION ITEM		PRIORITY	OWNER	DUE	STATUS	NOTES ( ICAO Document ref)	Decision by the meeting
1 Develop awareness and information sharing							
1.1	Organize a workshop with airspace users of the APAC region ( expected benefits, comparison with ILS and Baro VNAV, operational concept, coverage of SBAS and GBAS, programmes in the region, fleet readiness, cockpit interface, business case, retrofit, mandates, inviting air operators already using SBAS or GBAS procedures)	HIGH	ICAO/IATA	Early 2023		ICAO and IATA as main organizers, with the host State. First choice would be to have a <b>face-to-face workshop</b> , in India for example, as Gagan has been put in place. Second choice is to organize a small webinar. To be decided in Dec 2020.	Wait until COVID-19 situation to allow international travel.
1.2	Organize a specific meeting with APAC regulators interested in GBAS SBAS ( update of regulation, certification of provider, certify pilot training and standard operating procedures., approval of procedures,...)	HIGH	ICAO and some States to conduct a survey first			Australia is supporting	To wait for meeting in Dec2022
1.3	Create a brochure to summarize main aspects of GBAS and SBAS systems	HIGH	1) ICAO to collect information already available and put on the website 2)See whether we do need a	S1 2021	Closed	With input from other actions, <b>may be</b> combined with 1.4 Brochure in a second stage	Already available on Information Sharing Platform, TF members are encouraged to see and suggest for any changes
1.4	Make reference to existing information about benefits of GBAS and SBAS vs ILS and APV Baro	MEDIUM	ICAO	12/31/2020	Closed	What is already available from ICAO or from other regions ? From FAA : <a href="https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/">https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/</a> <a href="https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/library/factsheets/media/RNAV_QFacts_final_06122012.pdf">https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/library/factsheets/media/RNAV_QFacts_final_06122012.pdf</a> From ICAO EUR/NAT <a href="https://www.icao.int/EURNAT/EUR%20and%20NAT%20Documents/EUR%20Documents/EUR%20Documents/025%20-%20EUR%20RNP%20APCH%20Guidance%20Material/EUD%20Doc%20025%20RNP%20APCH.pdf">https://www.icao.int/EURNAT/EUR%20and%20NAT%20Documents/EUR%20Documents/EUR%20Documents/025%20-%20EUR%20RNP%20APCH%20Guidance%20Material/EUD%20Doc%20025%20RNP%20APCH.pdf</a>	Already available on Information Sharing Platform, TF members are encouraged to see and suggest for any amendments.
1.5	Develop a list of GBAS and/or SBAS focal points in each APAC State	HIGH	ICAO / Action of the GBAS SBAS ITF/2 for ICAO RO to send a State Letter	9/30/2020- for dispatch of SL	Closed	Information to be put on the website	Already available on Information Sharing Platform, TF members are encouraged to see and suggest for any changes
1.6	Develop a synthetic list of the on going development of GBAS SBAS systems in the APAC region ( coverage, date of entry into service)	HIGH	ICAO / Information to put on the website / Action Focal point to provide GBAS SBAS programme information to ICAO	12/31/2020	Closed	Reuse the format of the information presented at the workshop in Republic of Korea in 2019	Already available on Information Sharing Platform, TF members are encouraged to see and suggest for any changes
1.7	Develop a synthetic list of GBAS and SBAS fleet readiness	MEDIUM	ICAO/IATA/Eurocontrol	End of Q1 2021	Closed	Public information from IGWG and aircraft manufacturers. ( <a href="https://ext.eurocontrol.int/analytics/saw.dll?Dashboard">https://ext.eurocontrol.int/analytics/saw.dll?Dashboard</a> ) <b>The IGWG information is available at the EUROCONTROL's One Sky Team website (registration required).</b>	Can be accessed through One Sky Team website and Airbus and Boeings presentation in ICAO APAC GBAS-SBAS workshop contents.

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1.8	Develop a list/map of published GBAS and SBAS procedures in the APAC region	MEDIUM	ICAO with input from focal points	Next meeting	Closed	The flygls.net website (Airbus/Eurocontrol) lists the GBAS stations worldwide SBAS : FAA LPV approaches: <a href="https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/approaches/media/LPVs.xlsx">https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/approaches/media/LPVs.xlsx</a> EGNOS LPV <a href="https://egnos-user-support.essp-sas.eu/new_egnos_ops/resources-tools/lpv-procedures-map">https://egnos-user-support.essp-sas.eu/new_egnos_ops/resources-tools/lpv-procedures-map</a> Europe through Eurocontrol access <a href="https://www.eurocontrol.int/platform/performance-based-navigation-map-tool">https://www.eurocontrol.int/platform/performance-based-navigation-map-tool</a>	Already available on Information Sharing Platform, TF members are encouraged to see and suggest for any changes
1.9	Develop a list of APAC States' mandates (existing and planned) related to GBAS and SBAS	MEDIUM	ICAO with input from focal points	On going			Remind focal points to respond.
2 Experience sharing							
2.1	Organize a discussion and a visit if possible of States/Airports who have already implemented Gbas or Sbas systems (all subjects including siting,performance demonstration, safety assessment..)	HIGH	ICAO / When possible	To be discussed in the next meetings		Could be done in : - Australia as Melbourne and Sydney have published procedures on GBAS stations. - Japan : a GBAS operational trial procedure has been published at Tokyo Haneda and is applicable from 16 July 2020.	Wait until COVID-19 situation to allow international travel.
3 Technical issues							
3.1	Review of the previous ionosphere studies published in 2016 ( also look at how to use SBAS coverage for GBAS)	HIGH	Expert Subgroup 3-1	2022/12/1		Coordination/harmonization with the ad hoc group of ICAO NSP GWG (GBAS Working Group) working on iono guidance for GBAS in low latitude regions.	At least GBAS guidance needs update to include GAST-D. ICAO NSP GWG is working on developing a manual on GBAS including iono mitigation. SBAS guidance should be reviewed, maybe to add some on DFMC SBAS.
3.2	Management of SBAS Channel	MEDIUM	States to contact ICAO to get the SBAS channel numbers as per SL 2019/87		Closed	Handled by ICAO HQ SL 2019/87 from ICAO to States to nominate contact point and then can access the ICAO tool	Already available on Information Sharing Platform
3.3	VDB frequency assignment and coordination in APAC	HIGH	Hong Kong China to coordinate with other States and ICAO	Next meeting	Closed	ICAO Doc 9718 is under revision to include VDB frequency compatibility criteria. To coordinate with Spectrum Review WG and Navigation System Panel (NSP). <b>Mr Susumu Saito offered to help in coordination with NSP.</b>	WP07 from HK in ITF/3 and WP09 from Cochair in ITF/4
3.4	ATC interface and NOTAM matters ( both for GBAS and SBAS) (Ref essential navigation means in Annex 10 ??)	MEDIUM	ICAO/ WP and discussion for a future meeting	Next meetings in Dec2022		Based from ICAO provision and experience of other regions	
3.5	SBAS coverage extension to neighboring States (simulation, adding ground station and associated costs, certification,Service Level Agreement)	HIGH	States operating SBAS should present WP	Next meetings	Closed	India / USA are willing to contribute to this WP	India and USA presented in ITF/3. Completed
3.6	GBAS and SBAS safety assessment	HIGH	States to share their experience	Next meetings		Presented by Australia on GBAS in ITF/3	GBAS Completed, SBAS Safety Assessment presented by India in ITF/4(IP06)
3.7	GBAS SBAS performance demonstration (acc,int,avail,cont,time to alarm, data collection, simulation,...)	HIGH	States to share their experience	Next meetings		Also addressed in IGWG	States to respond
3.8	GNSS signal monitoring (legal recording,...)	MEDIUM	States to share their experience	Next meetings	Closed	Ref ICAO GNSS Manual	Already available on Information Sharing Platform
3.9	GBAS siting criteria	MEDIUM			Closed	EUROCAE ED114B and FAA <b>Order 6884.1</b> ( <a href="http://www.faa.gov/documentLibrary/media/Order/6884_1.pdf">http://www.faa.gov/documentLibrary/media/Order/6884_1.pdf</a> )	Already available on Information Sharing Platform

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3.1	Information to be provided in the flight plan and information into AIP	MEDIUM			Closed	ICAO DOC 4444	Already available on Information Sharing Platform
3.1	Final Approach Segment Data Block : 1) Tool to elaborate the FAS DB ; 2) How to validate FAS DB during the ground and flight inspection	MEDIUM	States to share their experience	Next meetings	Closed	Same for SBAS and GBAS? Ref Eurocontrol tool to create FAS DB : EUROCAE ED114B for GBAS	Completed
3.1	Phraseology	LOW			Closed	ICAO DOC 4444	Already available on Information Sharing Platform
3.1	Lack of PRN numbers for SBAS Geo Satellites	MEDIUM	Mainly for new SBAS providers		Closed	Annex 10 / NSP and receiver standards RTCA DO229F	Already available on Information Sharing Platform
3.1	Interference management ( but this is not only specific to GBAS SBAS)	MEDIUM	States to share their experience		Closed		Refer to GNSS manual (Doc9849) on website
4 Quick guides and references							
4.1	ICAO and others document review ( Top Down)	HIGH	ICAO / Website		Closed	Source : ICAO presentation given at the first workshop in ROK in 2019	Already available on Information Sharing Platform
4.2	Develop High Level guide on Implementation Process for GBAS and SBAS	HIGH	Expert Sub group 3-2	1st draft to be presented at the next meeting in March 2023		What is already available from ICAO or from other regions ? Ref- GBAS Guide- ICAO SAM Region	Expert Sub Group 3-2 working on this
4.3	Technical support for system certification and operation certification	TBD		Next meeting in Dec2022		To be decided after meeting with regulators Linked with 1.2 and 3.6 above.	SBAS to be covered
4.4	Complement the "PBN in a page"	LOW	ICAO to assess what could be done		Closed	<a href="https://www.icao.int/APAC/Documents/edocs/PBN-in-a-page%20V2.pdf">https://www.icao.int/APAC/Documents/edocs/PBN-in-a-page%20V2.pdf</a> GBAS is not part of PBN but rather comparable with ILS	Already available on APAC website
5 Training							
5.1	Develop syllabus for ATCOs	MEDIUM	To be confirmed	Next meeting			
5.2	Develop one day/two day training workshop for ATCOs (Use of GBAS/SBAS for approach and landing : mixity of traffic, ATC interface, Notam,...)	MEDIUM	To be confirmed				WP08-ATC perspective from Australia in ITF/4, IP05-ATSEP training for SBAS by JAPAN in ITF/4;WP04-USA on GBAS in ITF/4
5.3	Deliver a training module on GBAS and SBAS instrument flight procedure design	MEDIUM	ICAO TCB Flight Procedure Programme (FPP)			Training conducted by FPP on 13-17 July 2020	Report to the next meeting (if conducted)