



International Civil Aviation Organization

**SIXTEENTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND
METEOROLOGY SUB-GROUP (CNS/MET SG/16) OF APANPIRG**

Bangkok, Thailand, 23 – 27 July 2012

Agenda Item 16: Review and update Regional Performance Framework Objectives and Forms

**REGIONAL PERFORMANCE FRAMEWORK FORMS (PFF)
AND CNS RELATED PFFs**

(Presented by Secretariat)

SUMMARY

This paper presents the updated Performance Framework Forms (PFF) on CNS for review

This paper relates to –

Strategic Objectives:

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: All

Action by the meeting is at Para 3 to this paper.

1. Introduction

1.1 The ICAO planning objective is to achieve a performance based global air traffic management system through the implementation of air navigation systems and procedures in a progressive, cost-effective and cooperative manner. APANPIRG/20 adopted the Asia Pacific Regional Performance Objectives and the associated Performance Framework Forms (PFFs) under Conclusion 20/2.

1.2 APANPIRG/22 reviewed the updated status of the Performance Framework Forms based on the updates from the ATM/AIS/SAR SG/22 (June 2012) and CNS/MET SG16 (July 2012).

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2. Discussion

2.1 ADS-B SITF/11 in April and ATNICG/7 in March 2012 further reviewed and updated the relevant PFF on implementation of ADS-B and ATN/AMHS.

2.2 The Attachment to this paper contains the CNS related Performance Framework Forms to be reviewed by the meeting and updated if necessary.

Aviation System Block Upgrade (ASBU) Methodology

2.3 The 37th Session of the ICAO General Assembly held in 2010 directed ICAO to double its efforts to meet the global requirements for airspace interoperability while maintaining its focus on safety. Furthermore, the need was recognized to integrate the air, ground and regulatory parts in the air navigation planning by addressing flight trajectories as a whole, distributing the decision-making process, taking into account safety risks and recognizing changing role of the human element. In response to these developments, ICAO initiated the ASBU methodology as a global framework.

2.4 The ASBU initiative will be integrated in the revised Global Air Navigation Plan with intent to seek the endorsement of AN-Conf/12 scheduled from 19 to 30 November 2012 under the concept of One Sky. The revised GANP will also include related technology roadmaps such as CNS, AIM, and Avionics. Consequential amendments will also take place in the Regional and National Performance Framework for Air Navigation Systems and reflected appropriately in the air navigation plans.

2.5 As ICAO will be migrating to the ASBU framework, consequently, the Performance Framework Form will be modified called Air Navigation Report Form (ANRF). The new form would become effective from 2013.

3. Action by the Meeting

3.1 The meeting is invited to:

- a) note information provided in this paper; and
- b) review and update PFFs in the CNS fields as provided in the **Attachment** to this paper.

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Attachment 2 to the Report on Agenda Item 3.0

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PERFORMANCE FRAMEWORK FORM
(REGIONAL)

(Amended in March 2012)

REGIONAL PERFORMANCE OBJECTIVE: - <u>APAC Objective 8</u>				
IMPLEMENTATION OF AERONUTICAL TELECOMMUNICATION NETWORK (ATN) FOR GROUND – GROUND COMMUNICATION NETWORK				
Benefits				
Safety	<ul style="list-style-type: none"> Will provide reliable means of communication for Air Navigation Services, with the provision of automatic switching capability, in the event of failure of current media 			
Efficiency	<ul style="list-style-type: none"> Routers will have the capability of choosing between different media based on defined criteria. Multiplicity of protocols used for different communication requirements will be avoided; Provision for lower case characters and graphic message included; 			
Strategy				
Implementation strategy, short term (2009-2012)				
ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
SDM <i>(ATM Service Delivery Management)</i>	Ensure implementation of Ground to Ground Aeronautical Telecommunication Network (ATN) in the Asia and Pacific Regions			
	<ul style="list-style-type: none"> <u>Review the ATN Implementation Strategy</u>, revise it when necessary taking into account the current developments. 	2013	ATNICG.	Strategy needs to be revised to take into account the emerging communication services like SWIM.
	<ul style="list-style-type: none"> <u>Review the Status</u> of implementation of dual stack ATN at the Backbone Boundary Intermediate System hubs. 	2011	ATNICG	Completed 8/9
	<ul style="list-style-type: none"> <u>States hosting Backbone Boundary Intermediate Stations</u> to organize Testing of their system on bilateral basis 	2012	States hosting Backbone Boundary Intermediate Systems	Planner has been developed to provide up to date implementation and testing status in the region.

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	<ul style="list-style-type: none"> <u>Implementation of AMHS Off Line Directory Service.</u> Availability of off-line support by Eurocontrol AMC considered essential for the efficient management of AMHS Addresses. ICAO HQ has directed the States to register the operating personnel with AMC. <u>Update information by the States/Administrations in AMC</u> 	2010	ICAO Asia/Pacific Office, AEROTHAI.	Completed. Off line support by EUROCONTROL AMC established Ongoing. 20 Administrations have registered as on the date of ATNICG/7
	<ul style="list-style-type: none"> <u>Completion of Networking with the BIS States</u> 	Ongoing	States	
	<ul style="list-style-type: none"> <u>Review if implementation objectives have been met.</u> 	2013	Asia and Pacific Regions States	Some States started implementation and conducted operational trials
		2009 - 2013	ATNICG	ATNICG to periodically review the status and direction in which the implementation is progressing and to ensure that the implementation efforts are leading towards the defined objectives
GPIs	GPI/17: Data link applications, GPI/22: Communication infrastructure			
References	<ul style="list-style-type: none"> <i>Annex 10, Aeronautical Telecommunications, Volume III (Part I – Digital Data Communication Systems)</i> <i>Manual on Detailed Technical Specifications for the Aeronautical Telecommunications Network (ATN) using ISO/OSI (Doc 9880)</i> <i>ICAO Aeronautical Telecommunication Network (ATN) Manual for ATN using IPS Standards and Protocols (Doc 9896)</i> <i>Manual on Required Communication Performance (Doc 9869)</i> <i>Manual of Technical Provisions for the Aeronautical Telecommunication Network (Doc 9705)</i> <i>Regional Implementation guidance materials adopted by APANPIRG</i> 			

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**PERFORMANCE FRAMEWORK FORM
(REGIONAL)**

(Amended in July 2011)

REGIONAL PERFORMANCE OBJECTIVE: <u>APAC Objective 9</u>				
ENHANCED COMMUNICATIONS AND SURVEILLANCE CAPABILITY IN OCEANIC AREAS				
Benefits				
Environment	<ul style="list-style-type: none"> • reductions in fuel consumption and gaseous emissions as a result of efficiency gains; 			
Safety	<ul style="list-style-type: none"> • improved monitoring of airspace will result in safety enhancement 			
Efficiency	<ul style="list-style-type: none"> • facilitate utilization of advanced technologies (e.g. area navigation, UPRs, DARPs) and ATC decision support tools (e.g., vertical and lateral adherence monitors, short and medium term conflict detection), thereby enhancing safety and increasing efficiency. • enable aircraft to conduct flight more closely to preferred trajectories; • increase airspace capacity by enabling implementation of RHSM using data link; 			
Strategy				
Short term (2009-2011)				
ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
AOM <i>(Airspace Organization and Management)</i> CM <i>(Conflict Management)</i> AUO <i>(Airspace Users Operations)</i>	Improve provision of satellite based communications and surveillance capabilities to enable FANS 1/A data link (ADS-C, CPDLC) to RNP 4 and RCP 240 specifications.			
	<ul style="list-style-type: none"> • codify/quantify existing anecdotal information and combine with available end-to-end system performance data; to summarise current satellite data link performance; 	2009	Regional ANSPS, operators, FITS, CRAs. Communications Service providers (CSP)	Reported to Satellite Operational Continuity Meeting (SOCM/1), Bangkok, Thailand, August 2009
	<ul style="list-style-type: none"> • identify non conformities in current satellite data link performance against; <ul style="list-style-type: none"> ○ specifications in Global Operations Data Link Document (GOLD); ○ specifications in RCP Manual (Doc 9869); and ○ specifications in Oceanic SPR) 	2009	Regional ANSPS, operators, FITS, CRAs.	reviewed status and identify issues at Satellite Operational Continuity Meeting (SOCM/1), August 2009

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	<ul style="list-style-type: none"> provide summary information on non conformities in current satellite data link performance to all affected parties in the end-to-end communications chain. 	2009	Satellite Operational Continuity Meeting (SOCM) August 2009 to summarize and circulate information to affected parties, including CSP, Ground Earth Station (GES) providers, equipment suppliers and satellite service providers.	Issues identified have been summarized in the report of the first meeting of Satellite Operational Continuity Meeting (SOCM/1).
	<ul style="list-style-type: none"> develop a regional strategy and work programme to identify/design suitable long term mitigations and solutions to non conformities that will enable continuous operational compliance with specifications for RNP4 and RCP 240. 	2012	Regional ANSPs, operators, FITS, CRAs, CSP, Ground Earth Station (GES) providers, equipment suppliers and satellite service providers.	The Satellite Communication Datalink Service has been improved since late 2009 to some extent. But still does not meet operational requirements satisfactorily.
	<ul style="list-style-type: none"> Develop a sample service level agreement for possible use by ANSPs 	2012	Regional ANSPs, operators, FITS, CRAs, CSP	SOCM/2 was held in Feb.12. Information has been incorporated in GOLD
	<ul style="list-style-type: none"> Implement mitigations and solutions in accordance with timelines in regional strategy 	2010	Regional ANSPs, operators, FITS, CRAs, CSP, Ground Earth Station (GES) providers, equipment suppliers and satellite service providers.	State Letter dated 12 July 2010 issued conveying mitigation solution suggested by ICAO
	<ul style="list-style-type: none"> monitor implementation progress 	2011	Regional FITS, CRAs provide feedback to all affected parties	Assess implementation of mitigation solution in the next SOCM meeting
GPIs	GPI/5: RNAV and RNP, GPI/7: dynamic and flexible ATS route management, GPI/17: data link applications and GPI/22: Communication Infrastructure;			
References	<ul style="list-style-type: none"> <i>Manual on Required Communication Performance (Doc 9869)</i> <i>RTCA DO-306/EUROCAE ED-122, Safety and Performance Standard for Air Traffic Data Link Services in Oceanic and Remote Airspace (the "Oceanic SPR")</i> <i>FANS-1/A Operations Manual (FOM)</i> <i>Global Operational Data Link Document (GOLD)</i> <i>Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region</i> <i>CEANS Report(2008) on ANS Infrastructure</i> <i>APANPIRG Conclusion 19/24, 20/31, 20/32/20/33, 20/34 and 20/73</i> 			

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(Amended in April 2012)

REGIONAL PERFORMANCE OBJECTIVE: <u>APAC Objective 10</u>					
IMPROVED SITUATIONAL AWARENESS AND SURFACE SURVEILLANCE- IMPLEMENTATION OF THE ADS-B TO GROUND SURVEILLANCE					
Benefits					
Environment	<ul style="list-style-type: none"> • Reductions in fuel consumption and subsequent lower gas emissions 				
Efficiency	<ul style="list-style-type: none"> • Increased flexibility and flow of traffic operations • Ultimately, when performing <i>radar-like</i> control, potential redesign of airspace taking into account the application of reduced separation minima, integrate use of aircraft navigation and surveillance capability 				
Safety	<ul style="list-style-type: none"> • Introduction of surveillance in a non-radar environment • Support to search and rescue operations 				
<i>Strategy Medium Term (2011-2015) Short term (2010)</i>					
ATM OC COMPONENTS	TASKS	TIME FRAME STARTED	RESPONSIBILITY	STATUS	REMARKS
AOM <i>(Airspace Organization and Management)</i> CM <i>(Conflict Management)</i> AUO <i>(Airspace Users Operations)</i>	Implementation of ADS-B based surveillance service in the sub-regions.				
ATM SDM (ATM Service Delivery Management)	<ul style="list-style-type: none"> • Compare current technologies with respect to concept of operations, relative costing, technical and operational performance and maturity of alternative technology/solutions (primary, secondary radar including Mode-S, ADS-B, multilateration, ADS-C) 	2009	ADS-B Study and Implementation Task Force (ADS-B SITF)	COMPLETED	Regional Guidance material on comparison of technologies developed and issued

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	<ul style="list-style-type: none"> • Develop an implementation plan for near-term ADS-B applications in the Asia Pacific Region including implementation target dates taking into account: <ul style="list-style-type: none"> ○ available equipment standards; readiness of airspace users and ATS providers; ○ identifying sub-regional areas (FIRs) where there is a positive cost/benefit outcome expected for near-term implementation of ADS-B OUT; ○ developing a standardized and systematic task-list approach to ADS-B OUT implementation; and ○ holding educational seminars and provide guidance material to educate States and airspace users on what is required to implement ADS-B OUT. 	2009-12	ADS-B Study and Implementation Task Force	In progress	<p>The FASID Table CNS 4A and 4B – surveillance and ATM automation being updated; ADS-B Seminar conducted annually in conjunction with Task Force meetings.</p> <p>Potential sub-regions for using ADS-B identified;</p> <p>Requirements for avionics specification for the near-term application are developed based on AMC2024 and Australian CASA document.</p>
	<ul style="list-style-type: none"> • Develop Guidance Material to support harmonized regulation of ADS-B systems required on board the aircraft. 	2010	ADS-B Study and Implementation Task Force	Completed	<p>DGCA Conf.45 through its Action Item 45/3 invited ICAO APANPIRG ADS-B SITF to develop the Guidance material. The GM was developed by Regulators Workshop and ADS-B SITF/9 held in Aug. 2010</p>

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	<ul style="list-style-type: none"> • Study and identify applicable multilateration applications in the Asia and Pacific Region considering: <ul style="list-style-type: none"> - Concept of use/operations; - Required site and network architecture; - Expected surveillance coverage; Cost of system; Recommended separation minima; & - If multilateration can be successfully integrated into an ADS-B OUT system for air traffic control 	2012	ADS-B Study and Implementation Task Force	In progress	<p>Concept of using multilateration has been developed; Some states have plan in place to introduce multilateration in particular integrate it with A-SMGCS and Terminal area and en-route surveillance application</p>
	<ul style="list-style-type: none"> • Coordinate ADS-B implementation plan and concept of operations with other ICAO regions where ADS-B implementation is going on and with relevant external bodies such as EUROCONTROL, EUROCAE, RTCA and Industry. 	2013	ADS-B Study and Implementation Task Force	On- going	<p>Information on ADS-B in Europe and North American Regions is provided to Task Force Meeting annually; Some Industry representatives provide input at ADS-B Seminar and meetings</p>

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	<ul style="list-style-type: none"> • Develop Terms of Co-operation for SEA which will include: <ul style="list-style-type: none"> • Establishing model documents for possible use by States when <ul style="list-style-type: none"> - Agreeing to share ADS-B data and DCPC (such as VHF radio voice communication) capability between adjoining States for various ADS-B applications (including a sample letter of agreement); or - Establishing ADS-B avionics fitment mandates Identifying optimum coverage for ADS-B ground stations and associated VHF radio voice communication in the sub-regional FIR boundary areas. 	2012	South East Asia and Bay of Bengal (SEA/BOB) Sub-Regional ADS-B Implementation Working Group	In progress	<p>Terms of co-operation updated; sample agreement of data sharing developed further updated</p> <p>Some location for ADS-B ground stations identified. CBA for SEA project has been completed; Implementation plan for Australia-Indonesia and South China Sea Data and VHF communication capacity sharing projects developed .</p>
	<ul style="list-style-type: none"> • Develop an implementation plan for near- term ADS-B application in SEA which will deliver efficient airspace and increased safety on a sub-regional basis that includes: <ul style="list-style-type: none"> • Schedule and priority dates to bring into effect ADS-B based services taking into account: <ul style="list-style-type: none"> - Timing of any equipage mandates; - Timing of any ATC automation upgrades to support ADS-B; - Timing of commissioning of any ADS-B data sharing and associated VHF radio voice communication facilities; • Consideration of major traffic flows. 	2013	(SEA/BOB Sub-Regional ADS-B Implementation Working Group	In progress	<p>Major traffic flow from Australia to Singapore through Indonesia and Singapore to Hong Hong along L642 and M771 in South China Sea being progressed. Milestones and timelines have been established.</p> <p>The WG was renamed into SEA/BOB ADS-B WG by APANPIRG/22</p>

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linkage to GPIs	GSI-12 Use of Technology to Enhance Safety; GPI/9 Situational Awareness; GPI/5: RNAV and RNP, GPI/7: dynamic and flexible ATS route management, GPI/17: data link applications and GPI/22: Communication Infrastructure;
References	<ul style="list-style-type: none">• <i>Report of AN CONF/11;</i>• <i>Global ATM Operational Concept (Doc 9854);</i>• <i>Global Air Navigation Plan (Doc 9750);</i>• <i>Technical Provisions for Mode S Services and Extended Squitter (Doc 9871)</i>• <i>APANPIRG/16, 17, 19, 20,21 reports on ADS-B</i>• <i>ADS-B related regional guidance materials adopted by APANPIRG</i>

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**PERFORMANCE FRAMEWORK FORM
(REGIONAL)**

(Amended in July 2011)

REGIONAL PERFORMANCE OBJECTIVE: <u>APAC Objective II</u>				
IMPLEMENTATION OF ATS INTER-FACILITY DATA COMMUNICATION (AIDC) IN ASIA/PACIFIC REGION				
Benefits				
Safety	<ul style="list-style-type: none"> • Will provide efficient and more reliable means of communication between ACCs in adjacent FIRs for the exchange of traffic coordination related operational messages. • Significantly reduce the coordination errors observed in controller to controller verbal communication across FIR boundaries thus enhance flight safety 			
Efficiency	<ul style="list-style-type: none"> • Increased efficiency for air traffic handover between ATS units • Will improve ATS direct communication between ATS units along the major traffic • Will improve the speed and capacity ; • Will facilitate inter-automation systems communication. 			
<i>Strategy</i> Short term (2009-2015)				
ATM OC COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
AOM <i>(Airspace Organisation and Management)</i> CM (Conflict management) SDM (ATM service delivery management)	Facilitate implementation of ATS Inter-facility Data Communication in the Asia and Pacific Regions			
	<ul style="list-style-type: none"> • Review the Status of Implementation 	2009	ATNIGC. ADS-B SITF	The status to reviewed and updated by ATNIGC/4 and ADS-B SITF Meetings held in May 2009
	<ul style="list-style-type: none"> • Review the Options available for the implementation of AIDC in the region. Discuss options adopted by different states. 	2010	SIP AIDC Seminar	Options available were reviewed at AIDC Seminar in October 2010
	<ul style="list-style-type: none"> • Review implementation issues related to ATS automation systems and recommend methods of mitigating those issues 	2009	ADS-B SITF CNS/MET SG	The automation issues discussed in the ADS-B SIFT/8
	<ul style="list-style-type: none"> • AIDC Seminar: A Seminar to be conducted to discuss various implementation issues and promote implementation 	2010	ICAO Asia/Pacific Office	SIP Seminar was conducted from 12-13 Oct. 2010 in Bangkok

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	<ul style="list-style-type: none"> • Develop implementation strategy to decide whether to continue pursuing AFTN AIDC or to choose ATN AIDC over OSI or IPS 	2010	APANPIRG	ATN AIDC implementation deferred.
	<ul style="list-style-type: none"> • Trials to be conducted. Monitoring mechanism to be developed 	2011	APANPIRG	State Letter be issued urging the States to expedite implementation and status to be monitored.
	<ul style="list-style-type: none"> • Review to ensure implementation objectives are met. 	2009 - 2015	APANPIRG	APANPIRG to periodically review the status and direction in which the implementation is progressing and to ensure that the implementation efforts are leading towards the defined objectives
GPIs	GPI/17: Data link applications, GPI/22: Communication infrastructure			
References	<ul style="list-style-type: none"> • <i>Air Traffic Management</i> (Doc 4444) • <i>Manual of Air Traffic Services Data Link Applications</i> (Doc 9694) • <i>Manual of Technical Provisions for the Aeronautical Telecommunication Network</i> (Doc 9705) • <i>Asia/Pacific Regional Interface Control Document (ICD) for ATS Inter-facility Data Communication (AIDC)</i> 			

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(Amended July 2011)

REGIONAL PERFORMANCE OBJECTIVE: <u>APAC Objective 18</u>	
IMPLEMENTATION OF ICAO PERFORMANCE BASED NAVIGATION PROVISIONS FOR TERMINAL AREA OPERATIONS	
Implement ICAO Performance Based Navigation (PBN) provisions for terminal area operations in collaboration with stakeholders based on the Regional PBN Implementation Plan agreed by APANPIRG, to improve terminal area safety and efficiency by use of advanced navigation specifications for SIDs, STARs and instrument approach procedures.	
Benefits	
Environment	<ul style="list-style-type: none"> • reduction in fuel consumption and resulting emissions
Safety	<ul style="list-style-type: none"> • enhance safety by use of modern capabilities onboard aircraft; • implementation of more precise approach, departure, and arrival paths that will reduce dispersion and will foster smoother traffic flows; • increased airspace safety through the implementation of continuous and stabilized descent procedure using vertical guidance; • improved airport and airspace arrival paths in all weather conditions; and • decrease ATC and pilot workload by utilizing RNAV/RNP procedures and airborne capability and reduce the need for ATC-pilot communication and radar vectoring
Efficiency	<ul style="list-style-type: none"> • allows for more efficient use of airspace and increase airspace capacity through reduction of lateral and longitudinal separation between aircraft; • increase of predictability of the flight path; • reduced delays in high density airspace and airports through the implementation of additional parallel routes and additional arrival and departure points in terminal areas; • reduces the possibility of missed approaches due to lower approach minima and straight-in procedures; • ability of air navigation service providers to make maximum use of aircraft capabilities; • ability of aircraft to conduct flights more closely to their preferred trajectories; • reduced aircraft flight time due to the implementation of optimal flight paths; • facilitate utilization of advanced technologies thereby increasing efficiency; • optimized demand and capacity balancing through the efficient exchange of information; • reduces the need to maintain sensor-specific route and procedures, and their associated costs; • avoids the need for developing sensor-specific operations with each new evolution of navigation system, which would be cost prohibitive; • GNSS and area navigation based PBN reduces the need for expensive ground-based navigation aids; • clarifies how RNAV systems are used; and • facilitate the operational approval process for operators by providing a limited set of navigation specifications intended for global use.

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SAFETY COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
<p><u>APANPIRG Conclusion 18/52</u></p>	<p>Establishment of a Regional Performance Based Navigation Task Force (PBN/TF)</p> <p>An Asia/Pacific PBN Task Force, with terms of reference as outlined in Appendix A to the APANPIRG/18 Report on Agenda Item 3.5, be established to develop a PBN implementation plan for the Asia/Pacific Region and address related regional PBN implementation issues.</p>	<p>PBN TF – As soon as practicable</p> <p>Regional PBN Implementation Plan – by 2008 (Before APANPIRG-19)</p>	<p>APANPIRG</p> <p>PBN Task Force</p>	<p>Regional PBN/TF established in 2007.</p> <p>PBN T/F meetings: 1st 9–11 Jan 2008 2nd 1 – 3 April 2008 3rd 14-17 July 2008 4th 4-6 March 2009 5th 15-17 July 2009 6th 3-5 Feb..2010 7th 1-3 Sep.2010 8th 12-13 May 2011</p> <p>APANPIRG/19 approved the Regional PBN Plan Interim Edition</p> <p>RASMAG reviewed the Plan in Dec 2008 suggested some changes.</p> <p>PBN/TF 4 reviewed RASMAG proposals and incorporated comments in the Version 0.2 of the Plan</p> <p>Plan was further reviewed by: ATM/AIS/SAR/SG/19 ; and CNS/MET/SG /13</p> <p>Asia/Pac Regional PBN Plan Ver.1.0 was adopted by APANPIRG/20</p> <p>PBN TF/6 developed revision to the Plan Ver.2.0</p> <p>PBN TF/8 developed PBN Plan Ver. 3.0</p>

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<p>APANPIRG Conclusion 18/53</p>	<p>Development of State PBN Implementation Plans</p> <p>The Regional Office should encourage States to begin development of their State PBN implementation plans in harmony with the development of the Asia/Pacific Regional PBN implementation plan being coordinated by the Asia/Pacific PBN Task Force for submission to APANPIRG/19 (2008).</p>	<p>State PBN Implementation Plan - 2009</p>	<p>STATES PBN TF APAC Office</p>	<p>State PBN Implementation Plan/Road map received from 21 States prior to PBNTF/7.</p> <p>9 national PBN plans assessed by the PBN Plan Review Team as robust by TF/8, 12 plans reviewed.</p> <p>States have not done so, were encouraged to provide their plan in 2010.</p>
<p>APANPIRG Conclusion 18/55</p>	<p>Designation of Contact Person for PBN Implementation</p> <p>States designate a focal contact person responsible for performance based navigation implementation and provide details of the contact person to ICAO Asia/Pacific Regional Office accordingly.</p>	<p>31 December 2007</p>	<p>STATES APAC Office</p>	<p>28 States and 3 Int'l Organizations have nominated Focal Points</p> <p>As at PBN TF/8, 13 administrations have not provided their PBN Point of Contact (POC). Of these administrations, 12 are small Pacific Island/Rim States.</p>
<p>PBN/TF Report</p> <p>PBN Report</p>	<p>Develop detailed Status (database) regarding current and planned implementation of PBN terminal instrument procedures (SIDs and STARs) and Approaches</p> <p>Data Collection – Runway ends /International Aerodromes</p> <p>Data Collection – Runway ends /Domestic Aerodromes</p> <p>Template developed by PBN TF for reporting progress:</p> <ul style="list-style-type: none"> - Common Template will help in harmonizing the reporting process; - States requested to submit PBN Implementation Progress Report by 15 August 2009 for submission to APANPIRG 20. 	<p>30 June 2008</p> <p>31 December 2008</p> <p>15 August 2009 and prior to each future PBN/TF Meeting</p>	<p>STATE Focal Point</p> <p>STATE Focal Point</p> <p>STATE</p>	<p>ONLY 8 States have provided information</p> <p>Reminders are being sent regularly</p> <p>PBN TF/8 developed an implementation response form to provide information on States PBN procedure development</p> <p>18 States have submitted PBN Implementation Progress on the new Template.</p>

<i>Strategy</i> Short term (2008 – 2012)				
• TMA- Arrival	<p>1. RNAV 1 in radar environment and with adequate navigation infrastructure.</p> <p>2. Basic-RNP 1 in non-radar environment</p>	<p>RNAV 1 STAR for 50% of international airports by 2010 and 75% by 2012.</p> <p>Priority should be given to airports with RNP Approach</p>	STATES APANPIRG PBN TF	
• TMA- Departure	<p>1. RNAV 1 in radar environment and with adequate navigation infrastructure.</p> <p>2. Basic-RNP 1 in non-radar environment</p>	<p>RNAV 1 SID for 50% of international airports by 2010 and 75% by 2012.</p> <p>Priority should be given to airports with RNP Approach</p>	STATES APANPIRG PBN TF	
• Approach	<p>1. RNP APCH with Baro-VNAV in most possible airports</p> <p>2. RNP AR APCH in airport where there are obvious operational benefits.</p>	<p>RNP APCH (with Baro-VNAV) in 30% of instrument runways by 2010 and 50% by 2012.</p> <p>Priority should be given to airports with operational benefits</p>	STATES APANPIRG PBN TF	

<i>Strategy</i> Medium Term (2013 – 2016)				
SAFETY COMPONENTS	TASKS	TIME FRAME	RESPONSIBILITY	STATUS
<ul style="list-style-type: none"> • TMA–Arrival 	<ol style="list-style-type: none"> 1. Expand RNAV 1 or RNP 1 Application 2. Mandate RNAV 1 or RNP 1 approval for aircraft operating in higher air traffic density TMAs 	<p>RNAV 1 or RNP 1 STAR for 100% of international airports by 2016</p> <p>RNAV 1 or RNP 1 STAR for 70% of busy domestic airports where there are operational benefits</p>	<p>STATES PBN TF APANPIRG</p>	
<ul style="list-style-type: none"> • TMA-Departure 	<ol style="list-style-type: none"> 1. Expand RNAV 1 or RNP 1 Application 2. Mandate RNAV 1 or RNP 1 approval for aircraft operating in higher air traffic density TMAs 	<p>RNAV 1 or RNP 1 SID for 100% of international airports by 2016</p> <p>RNAV 1 or RNP 1 SID for 70% of busy domestic airports where there are operational benefits</p>	<p>STATES PBN TF APANPIRG</p>	
<ul style="list-style-type: none"> • Approach 	<ol style="list-style-type: none"> 1. Expansion of RNP APCH (with Baro-VNAV) and APV 2. Expansion of RNP AR APCH where there are operational benefits 3. Introduction of landing capability using GNSS and its augmentations 	<p>RNP APCH with Baro-VNAV or APV in 100% of instrument runways by 2016</p>	<p>STATES APANPIRG PBN TF</p>	<p>This requirement has been modified by Assembly Resolution A37-11, which allows LNAV procedures for airports with no VNAV capable aircraft 5700kg+</p>

<i>Strategy</i> Long Term (2016 and beyond)	
<p>In this phase, GNSS is expected to be a primary navigation infrastructure for PBN implementation. States should work co-operatively on a multinational basis to implement GNSS in order to facilitate seamless and inter-operable systems and undertake coordinated research and development programmes on GNSS implementation and operation.</p> <p>During this phase, States are encouraged to consider segregating traffic according to navigation capability and granting preferred routes to aircraft with better navigation performance.</p> <p>With the expectation that precision approach capability using GNSS and its augmentation systems will become available, States are encouraged to explore the use of such capability where there are operational and financial benefits.</p>	
GPIs	<p>GPI/5: Performance based navigation, GPI/9: Situational awareness, GPI/11: RNP and RNAV SIDs & STARs,</p>
References	<ul style="list-style-type: none"> • <i>APANPIRG Decisions and Conclusions n</i> • <i>ICAO Guidance Material – Performance-Based Navigation Manual Doc 9613 AN/937 Third Edition – 2008</i> • <i>Assembly Resolution 36-23; Resolution A37-11</i>