



International Civil Aviation Organization

**EIGHTEENTH MEETING OF THE METEOROLOGY  
SUB-GROUP (MET SG/18) OF APANPIRG**

ICAO Regional Sub-Office, Beijing, China  
18 – 21 August 2014

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**Agenda Item 5:           Planning and monitoring**

**AIR NAVIGATION REPORTING FORMS, SEAMLESS REPORTING AND  
MONITORING OF REGIONAL PROGRESS**

(Presented by the Secretariat)

**SUMMARY**

This paper presents an overview of the Seamless ATM planning and reporting required by States, and provides an update on the progress towards the performance-based monitoring regime being implemented during 2014.

**1.       Introduction**

1.1           APANPIRG/24 noted that although the Global Air Navigation Plan (GANP) had a global perspective, all ASBU modules may not be applicable to every State or Region. Some of the modules were specialized packages that should be applied only where specific operational requirements or corresponding benefits existed. Implementation priorities for Air Traffic Management (ATM) enhancements would vary between regions, as each had different operational environments, traffic volumes etc. Prioritization could be determined by individual states and regionally by APANPIRG. Guided by the GANP, APANPIRG/24 acknowledged that the regional planning process required the full involvement of States, service providers, airspace users and other stakeholders, thus ensuring commitment by everyone for implementation.

1.2           APANPIRG/24 further noted that the PIRG–RASG Global Coordination Meeting held on 19 March 2013 requested PIRGs to establish regional priorities and set targets and report to ICAO by May 2014. APANPIRG/24 also noted that the APAC Seamless ATM Plan spelt out the six regional ASBU priorities, which are aligned to GANP (ASBU modules) and adopted Conclusion 24/2:

***Conclusion 24/2 — Establishing Regional Priorities and Targets***

*That, following the PIRG - RASG Global Coordination meeting held in March 2013 APANPIRG/24 invited the Chairpersons of ATM, RASMAG, CNS, and MET sub groups to establish regional priorities and targets for the APAC Region in alignment with the GANP and APAC Seamless ATM Plan by December 2013 in order to facilitate submission to ICAO by May 2014.*

1.3 In accordance with APANPIRG Conclusion 24/2, the Chairpersons of Sub-Groups (ATM, RASMAG, CNS and MET) and the Asia Pacific Seamless ATM Planning Group (APSAPG) were invited to consider the further development of Asia/Pacific Regional Priorities and Targets (discussed also in WP/8 for MET SG/18).

1.4 The Chairpersons of the Sub Groups agreed on the regional priorities and targets for the APAC Region which was based on the highest priority elements. In addition, all 42 Seamless ATM elements were assigned priorities.

## 2. Discussion

### Seamless ATM Implementation Guidance

2.1 The Seamless ATM plan version 1.0 was endorsed by APANPIRG in June 2013 under Conclusion 24/54. Informal Seamless ATM Implementation Guidance was developed from April to June 2013 and comments had been received from States and ICAO since then. The Seamless ATM Implementation Guidance provides valuable guidance on the expected impacts and on documents to be used when implementing any of the ASBU/Seamless elements. The latest version (version 4.3, May 2014) of the guidance material is available on the ICAO Asia/Pacific Regional Office website at:

<http://www.icao.int/APAC/Documents/edocs/Seamless%20ATM%20Implementation%20Guidance%20v4-3.pdf>.

### Air Navigation Reporting Forms (ANRF)

2.2 APANPIRG/23 noted the developments in revising the Global Air Navigation Plan and agreed to take the revised edition of the Global Plan into account in planning and implementation of regional and national air navigation systems. APANPIRG/23 also noted that as ICAO would be migrating to the ASBU framework, consequently the Performance Framework Form would be modified to the Air Navigation Report Form (ANRF) effective from 2013.

2.3 The Asia/Pacific Region had to now progress the implementation of the 42 Seamless ATM items. The ANRF acted as high level regional planning documents (and are intended for APANPIRG Sub-Groups to complete, not States), while a web-based report process and graphical dashboard would allow tracking of progress.

2.4 The ANRFs have replaced the earlier Performance Framework Forms (PFF). The ANRF are intended to be a means of setting milestones, targets, and metrics for each of the key planning elements (at first, the APAC regional priorities agreed by the Chairpersons of Sub-Groups as discussed in WP/8 for MET SG/18). The ANRF also identifies the implementation challenges. A total of 18 ANRF corresponding to the 18 ASBU modules have to be developed at the regional level and presented to APANPIRG and its Sub-Groups as appropriate for review. It should be noted that States are not expected to fill ANRF for global or regional purposes; however they are a practical solution for planning the ANS improvements at the national level.

2.5 Proposed draft ANRFs for the ASBU module B0-AMET are provided in **the Attachments 2 and 3** to this paper. The first is drafted to report on elements in close alignment with the structure of the module B0-AMET. The second is drafted to report on elements in close alignment with the structure of the Seamless ATM Plan. Along with other ANRF corresponding to the other ASBU modules under the relevant Sub-Groups of APANPIRG, it is envisaged that an ANRF for B0-AMET will be developed under the auspices of the MET SG and submitted for further consideration and possible endorsement at APANPIRG/25.

2.6 During the planning process which took place in 2012 and 2013 in the APAC Region and led to the adoption by APANPIRG/24 of the Seamless ATM Plan version 1.0, all objectives and targets pertaining to ATM performance were discussed and planned accordingly.

#### Endorsing Bodies

2.7 **Attachment 1** to this paper provides a draft matrix of Seamless ATM responsibilities for APANPIRG bodies, which has been developed by the ICAO Regional Office to allocate the ASBU modules and corresponding seamless ATM elements to the different technical subgroups of APANPIRG. The role of the endorsing body is to endorse the amendments to the ANRF, and review and discuss the progress implementation, using the monitoring tools for this purpose.

2.8 While the table presents the allocated endorsing body; MET SG is allocated ASBU module B0-AMET/Seamless ATM Plan element 310, it is understood that other technical sub-groups would be consulted as necessary.

2.9 APANPIRG/24 also adopted the following Conclusion and Decision:

#### ***Conclusion 24/55: State Seamless ATM Planning***

*That, given the urgency and priority of Seamless ATM planning for the Asia/Pacific as acknowledged by the 46<sup>th</sup> Conference of Directors General of Civil Aviation (DGCA, Osaka, Japan, 12-16 October 2009) and APANPIRG/22 (05-09 September 2011), States should be urged to:*

- a) review Version 1.0 of the Asia/Pacific Seamless ATM Plan and utilise the Plan to develop planning for State implementation of applicable Seamless ATM elements;*
- b) ensure relevant decision-makers are briefed on the Seamless ATM Plan;*
- c) submit the first Regional Seamless ATM Reporting Form to the ICAO Regional Office by 01 March 2014; and*
- d) where possible, participate and contribute to Seamless ATM system collaborative training and research initiatives.*

#### ***Decision 24/56: Seamless ATM Seminars/Workshops***

*That, ICAO be urged to facilitate Asia/Pacific Seamless ATM Planning and Implementation Seminars/ Workshops for Asia/Pacific and trans-regional States.*

#### Seminars

2.10 In accordance with APANPIRG Decision 24/56, the Asia/Pacific Regional Office had conducted a number of Seminars or presentations to States and organisations on Seamless ATM:

- 10 September 2013: Bangkok, Thailand (ASEAN Air Transport Working Group - (ATWG));

- 23 – 25 September 2013, Beijing, China (Europe – Asia Trans-regional Special Coordination Meeting);
- 21 October 2013: Hyderabad, India (Bay of Bengal, Arabian Sea and Indian Ocean Region - BOBASIO);
- 26 November 2013, Bangkok, Thailand (Collaborative Development of Operational Safety and Continuing Airworthiness Programme-Southeast Asia - COSCAP-SEA);
- 27 November 2013, Bangkok, Thailand Meteorological Requirements Task Force (MET-R/TF);
- 28 November 2013: Bangkok, Thailand (Civil Air Navigation Services Organisation - CANSO); and
- 24 March 2014: Singapore (Inaugural ATM Research Institute Seminar).

#### State Seamless ATM Plans

2.11 The State Seamless ATM Plans were intended to be high-level and concise, so that each of the Seamless ATM elements that were applicable to the State could be elucidated in a brief paragraph, explaining the basic benefits and costs, barriers and steps to implementation, and an outline of the expected result. A template of a State Seamless ATM Plan is available on the same web page that the Seamless ATM Plan is located. It was not necessary to submit the State Seamless ATM Plan to the Regional Office at this juncture, although this may become necessary in the future.

#### Seamless ATM Reporting Forms

2.12 The reporting of implementation progress of the Seamless ATM Plan elements in accordance with APANPIRG Conclusion 24/55 c) was crucial for:

- airspace users (for planning of equipage and fleets);
- neighbouring Flight Information Regions (FIRs, for harmonisation of progress);
- Regional Office (to update the Seamless ATM Plan and for APANPIRG); and
- ICAO HQ (to update the GANP in response to regional implementation feedback).

2.13 Whilst guidance is provided for each and every action of the Seamless ATM Plan, only a very limited subset of actions needed a periodic implementation report from Asia/Pacific States at the regional level to keep all stakeholders coordinated. Through the Seamless ATM Reporting Form, available as a spreadsheet in Excel format on the ICAO Asia/Pacific Regional Office website at (<http://www.icao.int/APAC/Documents/edocs/Regional%20Seamless%20ATM%20Reporting%20Form%20-%20v4.xlsx>) and soon as a web-based reporting form, States were invited to report their progress on implementation and issues encountered. In this way, potential delays may be anticipated and managed.

2.14 The Seamless ATM Reporting Form enabled a formal process of regional planning that could identify areas where greater support for States was required. In this regard, the scope of support and desired timeframe should be specified in the column “Remarks” of the Seamless ATM Reporting Form. The Reporting Form was also used for collecting and analysing data from States from a global perspective. This allowed planning that supported the GANP, and reporting of the overall progress of Asia/Pacific Seamless ATM implementation to appropriate bodies.

2.15 Since APANPIRG/24, only 13 States and administrations (Australia, Bangladesh, China, French Polynesia, Hong Kong China, India, Japan, Republic of Korea, Malaysia, New Zealand, Singapore, Thailand, and the United States) had submitted their first Seamless ATM reporting form. The remaining States/Administrations that had not reported were reminded to submit a Seamless ATM reporting form as soon as possible, using the attached reporting form, in accordance with ICAO State letter T 8/5.1 & T 3/10.1.2- AP101114 dated 1 July 2014 (copy provided in **the Attachment 3** to this paper).

#### Web-based Reporting Process

2.16 The ICAO Asia/Pacific Regional Office had developed a web-based tool in an effort to ease the submission of Seamless ATM reports in the future for States, and reap the benefits of data analysis for ICAO. This tool will be available on the ICAO Regional Office website using a secure webpage dedicated to the States and administrations, and would provide the ability to submit up to four reports times a year, as well as exporting and archiving functions. It would be possible for users to prepare a report based on the previous submissions, which should minimize the input workload.

2.17 The ICAO State letter in **the Attachment 3** also requested States and administrations to nominate a Point of Contact (POC) and a substitute POC before 31 August 2014, who will be in charge of preparing and submitting the form online at least once per year on behalf of their State or administration.

2.18 Once the tool is online, States/Administrations would submit their Seamless ATM reporting forms through the web-based tool. The estimated date for the cut-over was September 2014, and registered POCs would be informed by email.

#### Monitoring

2.19 Two levels of monitoring are desirable:

- monitoring of the regional performance gains, through the Regional Performance Dashboard, allowing global correlation of status and expectations for selected priority items; and
- monitoring of regional implementation progress through a Regional Picture, one level below, allowing corrective actions by APANPIRG on the implementation. The monitoring would be done for all 42 Seamless ATM items.

2.20 In the discussions of the Chairpersons meetings, the added value of having two levels of monitoring (the high level regional performance dashboard and the process-orientated regional picture, focusing on the 42 Seamless ATM elements) to steer the air navigation improvements was acknowledged. It was envisaged that the monitoring tools (regional picture and regional performance dashboard) could serve a more streamlined project-oriented process for the Asia/Pacific Region by identifying issues, challenges or risks and speeding up the decision-making process to take corrective actions and adapt plans.

#### Regional Performance Dashboard

2.21 The Performance Dashboards presented up-to-date regional implementation results, highlighting what States and groups of States were achieving in collaboration with their respective Planning and Implementation Regional Groups (PIRGs) and Regional Aviation Safety Groups (RASGs). Their ultimate intention, besides ICAO's basic measurement, accountability and transparency goals, was to help motivate aviation groups and stakeholders to continue to participate in and improve upon the applicable cooperative programmes being implemented at the regional level. The dashboards were available at: <http://www.icao.int/safety/Pages/Regional-Targets.aspx>. This link would be provided in the dedicated State/administration web-based Reporting Process Home page as well.

2.22 The targets and metrics (discussed also in WP/8 for MET SG/18) were expected to be recommended to ICAO/HQ for inclusion and use in the public ICAO Asia/Pacific Regional Performance Dashboard until further update. Some of the Dashboard indicators would be calculated using the data collection obtained through the web-based Reporting Process.

### **3. Action by the Meeting**

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) propose a strategy to further develop the ANRF in the Attachment 2 to this paper for submission to and possible adoption by APANPIRG/25; and
- c) discuss any relevant matters as appropriate.

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**Proposed matrix of responsibilities for APANPIRG bodies**

ASBU Module	ASBU - Module title	Regional Priority	Seamless ATM Specification title	Seamless Reference	Endorsing body (Proposal)
B0-ACDM	Improved Airport Operations through Airport-CDM	2	Airport Collaborative Decision-Making (ACDM)	70	<b>AOP WG</b>
B0-NOPS	Improved Flow Performance through Planning based on a Network-Wide view	1	Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	80	<b>ATFM SG</b>
B0-RSEQ	Improve Traffic flow through Sequencing (AMAN/DMAN)	2	Arrival Manager/Departure Management (AMAN/DMAN)	50	<b>ATFM SG</b>
B0-DATM	Service Improvement through Digital Aeronautical Information Management	1	Aeronautical Information Management	300	<b>ATM SG</b>
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	1	Civil Military use of SUA	360	<b>ATM SG</b>
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles using Continuous Descent Operations (CDOs)	2	Continuous Descent Operations (CDO)	90	<b>ATM SG</b>
B0-CCO	Improved Flexibility and Efficiency Departure Profiles – Continuous Climb Operations (CCO)	2	Continuous Climb Operations (CCO)	100	<b>ATM SG</b>
B0-FRTO	Improved Operations through Enhanced En-Route Trajectories	2	Performance-based Navigation (PBN) Routes	140	<b>ATM SG</b>
B0-APTA	Optimization of Approach Procedures including vertical guidance	2	ATM systems enabling optimal PBN/ATC operations	250	<b>ATM SG</b>
B0-FRTO	Improved Safety and Efficiency through the initial application of Data Link En-Route	3	UPR and DARP	290	<b>ATM SG</b>
B0-WAKE	Improved Access to Optimum Flight Levels through Climb/Descent Procedures using ADS-B	3	Nil	-	<b>ATM SG</b>
B0-OPFL	Increased Runway Throughput through Optimized Wake Turbulence Separation	3	Nil	-	<b>ATM SG</b>
B0-APTA	Optimization of Approach Procedures including vertical guidance	1	Performance-based Navigation (PBN) Approach	110	<b>CNS SG</b>
B0-ASUR	Initial Capability for Ground Surveillance	1	ATS Surveillance	180	<b>CNS SG</b>
B0-FICE	Increased Interoperability Efficiency & Capacity through Ground-Ground Integration	1	ATS Inter-facility Data-link Communications (AIDC)	220	<b>CNS SG</b>
B0-ASUR	Initial Capability for Ground Surveillance	1	ATS surveillance with data integrated	270	<b>CNS SG</b>

B0-TBO	Improved Safety and Efficiency through the initial application of Data Link En-Route	1	ADS-C and CPDLC	280	<b>CNS SG</b>
B0-CCO B0-CDO	Optimization of Approach Procedures including vertical guidance	2	Standard Instrument Departures/Standard Terminal Arrivals (SID/STAR)	120	<b>CNS SG</b>
B0-SNET	Increased effectiveness of ground-based safety nets	2	Safety Nets	160	<b>CNS SG</b>
B0-ACAS	Airborne Collision Avoidance Systems (ACAS) Improvements	2	Airborne Safety Systems	170	<b>CNS SG</b>
B0-ASEP	Air Traffic Situational Awareness (ATSA)	2	Nil	-	<b>CNS SG</b>
B0-SURF	Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)	3	Safety and Efficiency of Surface Operations	40	<b>CNS SG</b>
B0-AMET	Meteorological information supporting enhanced operational efficiency and safety	2	Meteorological Information	310	<b>MET SG</b>



**1. AIR NAVIGATION REPORT FORM (ANRF)**

**APAC Regional planning for ASBU Modules**

<b>2. REGIONAL PERFORMANCE OBJECTIVE – ASBU B0-AMET: Meteorological Information Supporting Enhanced Operational Efficiency and Safety</b>					
<b>Performance Improvement Area 2: Globally Interoperable Systems and Data</b>					
<b>3. ASBU B0-AMET: Impact on Main Key Performance Areas</b>					
	<b>Access &amp; Equity</b>	<b>Capacity</b>	<b>Efficiency</b>	<b>Environment</b>	<b>Safety</b>
<b>Applicable</b>	Y	Y	Y	Y	Y

<b>4. ASBU B0-AMET: Planning Targets and Implementation Progress</b>	
<b>5. Elements</b>	<b>6. Targets and implementation progress (Ground and Air)</b>
1. WAFS	
2. IAVW	
3. Tropical cyclone watch	
4. Aerodrome warnings	
5. Wind shear warnings and alerts	

<b>7. ASBU B0-AMET: Implementation Challenges</b>				
<b>Elements</b>	<b>Implementation Area</b>			
	<b>Ground System Implementation</b>	<b>Avionics Implementation</b>	<b>Procedures Availability</b>	<b>Operational Approvals</b>
1. WAFS				
2. IAVW				
3. Tropical cyclone watch				
4. Aerodrome warnings				
5. Wind shear warnings and alerts				

<b>8. ASBU B0-AMET Performance Monitoring and Measurement</b>	
<b>8A. ASBU B0-AMET: Implementation Monitoring</b>	
<b>Elements</b>	<b>Performance Indicators/Supporting Metrics</b>
1. WAFS	
2. IAVW	
3. Tropical cyclone watch	
4. Aerodrome warnings	
5. Wind shear warnings and alerts	

<b>8. ASBU B0-AMET. Performance Monitoring and Measurement</b>	
<b>8 B. ASBU B0-AMET: Performance Monitoring</b>	
<b>Key Performance Areas</b>	<b>Metrics ( if not indicate qualitative Benefits)</b>
Access & Equity	
Capacity	
Efficiency	
Environment	
Safety	

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## 1. AIR NAVIGATION REPORT FORM (ANRF)

### APAC Regional planning for ASBU Modules

<b>2. REGIONAL PERFORMANCE OBJECTIVE – ASBU B0-AMET: Meteorological Information Supporting Enhanced Operational Efficiency and Safety</b>					
<b>Performance Improvement Area 2: Globally Interoperable Systems and Data</b>					
<b>3. ASBU B0-AMET: Impact on Main Key Performance Areas</b>					
	<b>Access &amp; Equity</b>	<b>Capacity</b>	<b>Efficiency</b>	<b>Environment</b>	<b>Safety</b>
<b>Applicable</b>	Y	Y	Y	Y	Y

<b>4. ASBU B0-AMET: Planning Targets and Implementation Progress</b>	
<b>5. Elements</b>	<b>6. Targets and implementation progress (Ground and Air)</b>
Implementation of meteorological forecasts, warnings and alerts	November 2015 (Seamless ATM Plan Phase 1): All ATM systems should be supported by appropriate meteorological information reporting systems, providing, <i>inter-alia</i> , observations, forecasts, warnings and alerts (Seamless element 310)
Provision of relevant meteorological data to meteorological authorities	November 2015 (Seamless ATM Plan Phase 1): All ATM systems should provide information to meteorological authorities or offices where required (Seamless element 310).

<b>7. ASBU B0-AMET: Implementation Challenges</b>				
<b>Elements</b>	<b>Implementation Area</b>			
	<b>Ground System Implementation</b>	<b>Avionics Implementation</b>	<b>Procedures Availability</b>	<b>Operational Approvals</b>
Implementation of forecasts	Data exchange with ATM systems	AIREP	NIL	
Implementation of warnings				
Implementation of alerts				

<b>8. ASBU B0-AMET Performance Monitoring and Measurement</b>	
<b>8A. ASBU B0-AMET: Implementation Monitoring</b>	
<b>Elements</b>	<b>Performance Indicators/Supporting Metrics</b>
	Indicator: Percentage of FIRs within which
	Supporting metric: Number of FIRs within which

**8. ASBU B0-AMET. Performance Monitoring and Measurement**

**8 B. ASBU B0-AMET: Performance Monitoring**

<b>Key Performance Areas</b>	<b>Metrics ( if not indicate qualitative Benefits)</b>
Access & Equity	Improved airspace capacity, separation standards and ATC situational awareness permit better opportunity for access to airspace by all users.
Capacity	Benefits: x.
Efficiency	Benefits: reduced diversions through improved probabilistic terminal area forecasting x.
Environment	Benefits: x.
Safety	Benefits: x.

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