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Agenda Item 2: Review of the Current and Planned CNS/ATM Capabilities and Identifying Associated Reduced Horizontal Separation

**REVIEW OF REGIONAL ATM REQUIREMENTS IN
ICAO APAC e-ANP AND SEAMLESS ANS PLAN**

(Presented by the Secretariat)

SUMMARY

This paper presents ATM-related regional requirements specified in ICAO APAC e-ANP and Seamless ANS Plan (Version 3.0, November 2019). The SCS member States are invited to review the data affecting their administration and provide feedback to ICAO on the data's accuracy in requisite format to update the relevant requirements.

1. INTRODUCTION

1.1 The Asia/Pacific Regional Electronic Air Navigation Plan (eANP) Volume I and II (State Letters Ref.: T 11/2.1 – AP034/16 and T 11/2.1 – AP051/16 referred), had adopted a common, new ANP template, which had been approved by the ICAO Council for use by all ICAO Regions. The e-ANP containing Volume I, II and III can be accessed at <http://www.icao.int/APAC/Pages/APAC-eANP.aspx>.

1.2 The responsibility for the preparation and publication of ANPs rests with Regional Offices and Headquarters. Revised editions are published on the basis of the formally approved material supplied by the Regional Offices and on information available at Headquarters from other sources.

1.3 APANPIRG/30 in 2019 had reviewed and adopted the Asia/Pacific Seamless ANS Plan Version 3.0 as APANPIRG Conclusion 30/5: Asia/Pacific Seamless ANS Plan, which is available at <https://www.icao.int/APAC/Documents/edocs/Asia%20Pacific%20Seamless%20ATM%20Plan%20V%203.0.pdf>.

1.4 This paper reviews and consolidates the ATM requirements specified in the ICAO APAC Regional e-ANP and the ICAO APAC Seamless ANS Plan (Version 3.0, November 2019).

2. DISCUSSION

Objective of APAC e-ANP

2.1 The APAC e-ANP represents the bridge between, on one side, the global provisions in the ICAO SARPs and the GANP, and on the other side, the States' air navigation plans and implementation status.

2.2 The GANP represents a rolling, 15-year strategic methodology, which leverages existing technologies and anticipates future developments based on State/industry-agreed operational

objectives. The GANP is an overarching framework that includes key aviation policy principles to assist ICAO Regions, subregions and States with the preparation of their regional and State air navigation plans and to support the establishment of air navigation priorities.

Overview of ATM-related Regional Requirements

2.3 **APAC e-ANP Volume I Part IV ATM** constitutes the agreed **regional requirements** considered to be the minimum necessary for effective planning and implementation of ATM facilities and services in the Asia and Pacific Region and complements the provisions of ICAO SARPs related to ATM. It contains **stable plan elements** related to:

- **the assignment of responsibilities to States** for the provision of ATM facilities and services within the ICAO Asia and Pacific Regions in accordance with Article 28 of the Convention on International Civil Aviation (Doc 7300); and
- **mandatory requirements** related to the ATM facilities and services to be implemented by States in accordance with regional air navigation agreements.
- Such elements are Flight Information Regions (FIR) boundaries (Table and Charts); Search and Rescue Regions (SRR) boundaries (Table and Charts); Volcanic Ash Advisory Centres (VAAC); Tropical Cyclone Advisory Centres (TCAC); and Volcano Observatories (VO).

2.4 The amendment of these elements requires approval by the Council and the material to be included in Volume I should minimize the requirement for frequent amendment.

2.5 **APAC e-ANP Volume II Part IV ATM** complements the provisions in ICAO SARPs and PANS related to air traffic management (ATM), which requires the approval of the APANPIRG . It contains **dynamic plan elements** related to:

- **the assignment of responsibilities to States** for the provision of ATM facilities and services within a specified area in accordance with Article 28 of the Convention on International Civil Aviation (Doc 7300); and
- **mandatory requirements** related to ATM facilities and services to be implemented by States in accordance with regional air navigation agreements. Such agreement indicates a commitment on the part of the State(s) concerned to implement the requirement(s) specified.

2.6 The amendment of these elements does not require approval by the Council and the Approval of ANP Volume II is under the responsibility of the relevant PIRG.

2.7 The APANPIRG, through regional air navigation agreement, are responsible for the optimization of the traffic flows through the continuous improvement of the regional ATS route network and organized track systems and implementation of random routing areas and free route airspace in the Region(s) through the set-up of appropriate mechanisms for regional and inter-regional planning and coordination.

2.8 Whenever practicable, States should be in close coordination with operators, establish the most efficient routings.

2.9 The requirements for regional ATS route network, in particular, for ATS routes over the high seas and airspace of undetermined sovereignty, should be agreed upon through regional air navigation agreement.

2.10 **APAC e-ANP Volume III** contains dynamic/flexible plan elements related to the implementation of the air navigation system and its modernization in line with the ICAO Aviation System Block Upgrades (ASBUs) and associated technology roadmaps described in the Global Air Navigation Plan (GANP, Doc 9750).

2.11 Volume III should be used as a tool for monitoring and reporting the status of implementation of the elements planned here above, through the use of tables/databases and/or references to online monitoring tools, as endorsed by APANPIRG. The status of implementation is updated on a regular basis as endorsed by APANPIRG.

2.12 The ANP Volume III would also include appropriate **additional guidance**, particularly with regard to **implementation**, to complement the material contained in the ANP Volumes I and II. The amendment of Volume III would not require approval by the Council.

APAC Seamless ANS Plan and its Regional Elements

2.13 The Asia/Pacific Seamless ANS Plan (formerly known as Seamless ATM Plan) defines goals and the means of meeting State planning objectives for a Regional Seamless ANS Performance Framework, with a focus on technological and human performance.

2.14 To be aligned with the 6th Edition of GANP, APANPIRG/30 in 2019 reviewed and adopted the Asia/Pacific Seamless ANS Plan Version 3.0 as **APANPIRG Conclusion 30/5 Asia/Pacific Seamless ANS Plan**.

2.15 In the latest version 3.0 of the Plan in 2019, there are **16 Priority-1 [ASBU Block 0 and 1 and Regional] Regional Seamless ANS Elements** identified, an increase from 10 elements compared to version 2.0. Priority-1 items are critical upgrade assignment based on whether the implementation of an element could bring most benefit to the region or regional upgrade by States and is essential to achieve the service level required globally. These 16 Elements are listed as follows with ATM-related element highlighted:

- a) Aeronautical Meteorology: AMET-B0/1 – 4;
- b) Aeronautical Information Management: DAIM-B1/1 – 6;
- c) Airport CDM: ACDM-B0/1 – 2;
- d) **ANSP human and simulator performance (Regional);**
- e) **ATS Inter-facility Datalink Communications: FICE-B0/1;**
- f) **Ballistic launches/space re-entry management (Regional);**
- g) **Civil-Military Special Use Airspace (SUA) management (Regional);**
- h) **Civil-Military strategic and tactical coordination (Regional);**
- i) Core data communications: VDL Mode O/A and AMHS COMI-B0/3, 7;
- j) **Direct and Free Route Operations: FRTO-B0/1 – 4;**
- k) Enhanced SAR systems (Regional);
- l) Ground-based Surveillance: ASUR-B0/1 – 3;
- m) **Network Operations: NOPS-B0/1 – 5;**
- n) **Performance-based Navigation Approach Procedures: APTA-B0/1 – 2;**
- o) Runway Sequencing: RSEQ-B0/1 – 2; and
- p) **Safety Nets SNET-B0/1 – 4.**

2.16 Details of ASBU elements could be referred on GANP portal (<https://www4.icao.int/ganportal/ASBU>).

2.17 **Table 1** provides a summary of the regional Seamless ANS elements, and the expected priority for implementation within the Asia/pacific Region. The allocation of priority was based on factors including its importance in promoting Seamless ANS.

Functional Category	Regional Seamless ANS Element	Priority
Operational	Aerodrome management and coordination (PARS 7.1)	2
	Optimization of runway capacity facilities (PARS 7.2)	3
	ADS-B, SSR Mode S and PBN Airspace (PARS 7.8, 7.9, 7.10)	2
	Flight Level Orientation Scheme (FLOS) (PARS 7.15)	2
	Civil-Military SUA management (PARS 7.16)	1
	Unmanned Aircraft Systems (PARS 7.17)	2
	Adjacent ATS sector coordination (PASIL 7.24)	2
	Airspace classification (PASIL 7.33)	2
	ATC horizontal separation (PASIL 7.34)	2
	Flight Level Allocation Schemes (FLAS) (PASIL 7.35)	2
	ATC sector capacity (PASIL 7.37)	2
	Electronic Flight Progress Strips (PASIL 7.39)	2
	Enhanced SAR systems (PASIL 7.42)	1
	ANSP human and simulator performance (PASIL 7.43)	1
	Civil-Military strategic and tactical coordination (PASIL 7.44)	1
Civil-Military common procedures and training (PASIL 7.44)	2	
Ballistic launches/space re-entry management (PASIL 7.45)	1	
CNS Technology and Services	ATS surveillance data sharing (PASIL 7.28)	2
	Civil-Military integrated systems and facilities (PASIL 7.44)	2
	Departure Clearance (DCL) (PASIL 7.49)	2

Table 1: Asia/Pacific Seamless Regional Elements Priority (Note. PARS: Preferred Aerodrome/Airspace and Route Specification, PASL: Preferred ANS Service Level)

2.18 **Table 2** provides a summary of the Block 0 and Block 1 elements with APAC Priority.

Functional Category	Element	Priority
Information	AMET-B0/1 – 4: Meteorological observations, forecast, warning, climatological and historical products, and dissemination (PASIL 7.41)	1
	AMET-B1/1 – 4: Meteorological products supported by automated decision systems or aids using IWXXM (PASIL 7.56)	2
	DAIM-B1/1 – 6: Provision of quality-assured digital aeronautical data and information, including AIP, terrain and obstacle, aerodrome and instrument flight procedure data sets (PASIL 7.40)	1
	DAIM-B1/7: Provision of digital NOTAM improvements (PASIL 7.55)	2
	FICE-B0/1: Automated basic AIDC (PASIL 7.26)	1
Operational	ACDM-B0/1-2: ACIS (PARS 7.3)	1
	ACDM-B1/1 – 2: Airport CDM Integration with ATM Network, AOP and APOC (PARS 7.18)	2
	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)	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
	CSEP-B1/1 – 4: basic airborne situational awareness AIRB and VSA, and performance-based horizontal separations (PARS 7.20)	2
	FRTO-B0/1 – 4: Direct routing, Airspace Planning and FUA, Flexible Routings, and basic conflict detection and conformance monitoring (PASL 7.29, 7.31, 7.36)	1
	FRTO-B1/1 – 7: Free Route Airspace, RNP routes, Advanced FUA and Airspace Management (ASM), Dynamic Sectorisation, Enhanced Conflict Detection Tools and Conformance Monitoring, and Multi-Sector Planner Function (PASL 7.29, 7.51)	2
	NOPS-B0/1 – 5: Initial integration of ASM with ATFM, Collaborative Network Flight Updates, Basic Network Operation Planning and Initial Airport/ATFM slots, A-CDM Network Interface and Dynamic Slot Allocation (PASL 7.38)	1
	NOPS-B1/1 – 10: Short Term ATFM measures, Enhanced NOPS Planning, Enhanced integration of airport operations and NOPS planning, Enhanced Traffic Complexity Management, Full integration of ASM with ATFM, Initial Dynamic Airspace 3configurations, Enhanced ATFM slot swapping, Extended Arrival M3management, ATFM Target Times and Collaborative Trajectory OptLions Programme (PASL 7.52)	2
	OPF3L-B0/1: ITP	3
	OPFL2-B1/1: CDP	3
	RATS-1B1/1 – Remotely Operated Aerodrome Air Traffic Services	3
	RSEQ-B20/1 – 2: Arrival and Departure Management (PASL 7.32)	1
	RSEQ-B02/3 – Point merge	3
	RSEQ-B1/12 – Extended arrival metering (PASL 7.46)	2
	SNET-B0/1 – 2 4: STCA, MSAW, APW, APM (PASL 7.31)	1
	SNET-B1/1 – 22: Enhanced STCA with aircraft parameters and in complex TMAs (PASL 7.50)	2
	SURF-B0/1 – 3: Basic ATC surface operations tools, comprehensive situational awareness, situational awareness, alerting service (PASL 7.47)	2
	SURF-B1/1 – 5: Advanced surface traffic management visual aids, pilot comprehensive awareness and runway alerting, enhanced ATC alerting, routing service to support ATC and EVS for taxiing (PASL 7.48)	2
	TBO-B0/1: Introduction of time-based management within a flow centric approach (PASL 7.52)	2
	TBO-B1/1 – Initial Integration of time-based decision making processes (PASL 7.52)	2
CNS Technology and Services	ASUR-B0/1 – 3: ADS-B, MLAT, SSR-DAPS (PARS 7.8, 7.11, PASL 7.26, 7.28, 7.30)	1
	ASUR-B1/1 – Reception of aircraft ADS-B signals from space (SB ADS-B) (PASL 7.54)	2
	COMI-B0/1 – 2, 4 – 6: ACARS, ATN/OSI, VDL Mode 2 Basic, SATCOM Class C Data, HFDL (PASL 7.54)	2
	COMI-B0/3, 7: VDL Mode O/A, AMHS (PASL 7.25)	1
	COMI-B1/1 – 4: VDL Mode 2 Multi-Frequency, SATCOM Class B (SB-S) Voice and Data, ATN/IPS and AeroMACS Ground-Ground (PASL 7.53)	2
	COMS-B0/1 – 2: CPDLC (FANS 1/A & ATN B1) for domestic and procedural airspace and ADS-C (FANS 1/A) for procedural airspace (PARS 7.14, PASL 7.29, 7.53)	2
	COMS-B0/1 – 3: PBCS approved CPDLC (FANS 1/A+), ADS-C and SATVOICE for domestic and procedural airspace (PARS 7.14, PASL 7.53)	2

	NAVS-B0/1 – 4: SBAS, GBAS, ABAS, MON (PARS 7.7)	2
	NAVS-B1/1: Extended GBAS	3

Table 1: Asia/Pacific Seamless Regional Elements Priority (*Note. PARS: Preferred Aerodrome/Airspace and Route Specification, PASL: Preferred ANS Service Level*)

2.19 Given that the overall implementation progress of former Seamless ATM/Block 0 elements had been slow, the Asia/Pacific Seamless ANS Plan V3.0 proposed to place greater emphasis on ‘robust’ status of National Air Navigation Plans (NANPs), developed by a whole-of-government approach, which was dependent on whether the NANP included the expected NANP Basic Planning Elements (BPEs) of the Regional Air Navigation Plan.

2.20 The review process of the Asia/Pacific Seamless ANS Plan has started for 2022.

PfA Process

2.21 The template for PfA to the ICAO Asia and Pacific Regions Air Navigation Plan (e-ANP) all volume can be accessed at the link: <https://www.icao.int/APAC/Pages/APAC-eANP.aspx>.

2.22 All States/Administrations are invited to review all facilities listed and ATM requirements specified in the e-ANP to verify that the information provided for their States/Administration is up-to-date and correct. In case of updates of any information required, States should submit the updates to ICAO APAC Regional Office via PfA Process.

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:
- a) note the information contained in this paper;
 - b) discuss any relevant matters as appropriate.

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