International Civil Aviation Organization

The Third Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (APAC ATMAS TF/3)

Video Tele-Conference, 8 - 10 June 2022

Agenda Item 3: Global and Regional ATM Automation System Updates

REPOSITORY OF THE ATMAS IN APAC

(Presented by Indonesia and the Secretariat)

SUMMARY

This paper presents the Table of the ATMAS Status in APAC region proposed by Indonesia and invites States/Administrations to review and take necessary actions to make the regional repository.

1. INTRODUCTION

1.1 The ICAO Asia Pacific Regional ATM Automation System Symposium (APAC RATMS) was held in Nanjing, China, from *22 to 23 November 2018*. The symposium recognized a need for States/Administrations to take stock of fallback systems available for all of their ATM automation systems and for the ICAO to conduct a survey on States regarding their provisions of main and fallback ATM automation systems, their functionality/capability/capacity, and any future resilience improvement plan.

1.2 The First Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (ATMAS TF/1) was held from *27 to 30 October 2020*. In this meeting, Indonesia presented IP/03: *ATM Automation System in Indonesia* and introduced the phased approach in ATMAS implementation from System Plan and Design System, Installation and Commissioning to Operational Transition.

1.3 Based on Indonesia's sharing, the meeting recalled the proposal by ATM automation System Symposium held in 2018 to establish a repository of the ATM automation systems implemented by States. The meeting agreed to develop this further with inputs from States/Administrations as **ACTION ITEM 1-1:** *Develop a table to list the current ATMAS status for all states* for this task force.

1.4 The Second Meeting of the Asia/Pacific Air Traffic Management Automation System Task Force (ATMAS TF/2) was held from *14-16 September 2021*. In order to follow up the **ACTION ITEM 1-1** of ATMAS TF/1 to build a repository of ATMAS implementation status in APAC, Indonesia has worked on the table design and proposed a draft Table of Current ATMAS Status, which is based on the Appendix A (Recommended Functions and Performances of Air Traffic Management Automation System) of the ATMAS TF/1 report.

1.5 The ATMAS TF/2 meeting further discussed the draft table and agreed to create an ad-hoc group led by Indonesia, including China, Hong Kong China, the Republic of Korea, and Singapore with

the support of the ICAO Secretariat to consider the above suggestions and work out a revised version of the survey which resulted into **Action Item 2-2** of ATMAS TF/2.

2. DISCUSSION

2.1 The ATMAS TF/2 meeting provided serval suggestions regarding the draft Table of Current ATMAS Status as follows:

- Use generic descriptions and avoid using some of the acronyms which are used by some vendors;
- Make reference to the revised version of the ATMAS IGD and align the survey content to the IGD and consider adding another column to map the corresponding chapters in the IGD;
- Consider including DMAN in the table of system optional functions;
- Relocate the CLAM and RAM as part of the system baseline function instead of optional function.

2.2 To follow up the Action Item 2-2 of ATMAS TF/2, based on the suggestions from ATMAS TF/2 and the latest version of the ATMAS IGD, the table of ATMAS status in APAC region was re-designed and re-formatted by the ad-hoc group which is provided in **Appendix A** to this paper.

2.3 The meeting is invited to review this table and make further amendments if necessary. The Member States are suggested to use the table during the meeting and propose feedback to the Secretariat. While filling the table, the Member States are recommended to refer to the explanation of the table, which is provided in **Appendix B** to this paper, and the corresponding chapter of ATMAS IGD to get further information.

2.4 Once the table is discussed and agreed upon by the meeting, the ICAO Secretariat will take necessary actions in due course to circulate the table to collect information in order to build the repository of the ATM automation systems for APAC Region.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) review the table of ATMAS status in APAC region provided in **Appendix A** to this paper and the explanation of the table provided in **Appendix B** to this paper**,** amend if necessary and fill the table; and

c) discuss any relevant matter as appropriate.

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ATM Automation System Repository in APAC Region

														Safety Net Function												Extended Alerts and Warning																	
State/Administration	FIR	ATS Unit / Location	Number of ATS positions	Manufacturer / Brand / Version	System Status	Surveillance Data Processing Function (SDP)	Bypass Surveillance Data Processing (BSDP)	Flight Data Communication Network	Flight Data Processing Function (FDP)	Flight Strip	Mode S conspicuity code Identification	Correlation of surveillance and flight data	Emergency code warning (7500,7600,7700)	Short Term Conflict Alert (STCA)	Minimum Safe Altitude Warning (MSAW)	Area Proximity Warning (APW)	Approach Path Monitoring (APM) Warning	Route Adherence Monitoring (RAM)	Cleared Level Adherence Monitoring (CLAM)	Meteorological Information Processing	Air Ground Data Link Function (AGDL)	System Parameter Management Function	ATS Inter-facility Data Communication Function (AIDC)	Human Machine Interface Function (HMI)	Recording and Playback Function	System Monitoring and Control Function	GNSS Time Synchronization	Departure No TRANSGRESSION Zone (DTZ)	No Transgression Zone (NTZ)	Medium Term Conflict Detection Warning (MTCD)	Similar Callsign Advisory (SCA)	Reduce Vertical Separation Minimum (RVSM) Warning	Position Report Monitoring (PMON) Warning	Last Known Position Display	SSR Inconsistency Warning	Corrected Level information Display prompt	PBN Capability Indication	Downlink Aircraft Parameters Processing and Display	Integrated Technology	System Log Management	Interoperability	Operational Data Synchronization Function	Statistics and Analysis Function	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
State 1	FIR 1	ACC1/City1	40	INDRA Aircon 2100	Main	PSR+Mode A/C+Mode S+ADS-B+WAM	Yes	AFTN+AMHS	Flight Message Processing+ Life Cycle Management+ 4D Profile Trajectory+ SSR Code Management+Sec Manage&Posting Comput	Paper+Electronic	Yes	SSR code+24-bit Address+ACID	Yes	Basic+Aircraft Intention+ATC practices	Yes	Yes	Yes	Yes	Yes	Flight data+Surveillance data	ADS-C+CPDLC+DLC	Online+Offline	Basic	Yes	Basic+ Enhancement	Monitor +Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Track Fusion+Related Warnings+Downlink Data Window	AMAN+DMAN+AST	Yes	Integated Tower System+A-SMGCS+ Tower Electronic Strip System	flight data+ operational setting data	Yes	

Explanation of the Table of ATMAS Status in APAC Region

Note:

If the ATM Automation System has the capability on certain function listed below but not implement yet, please marked in red; if the ATM Automation System has already implemented certain function listed below, please keep it in black.

Column	Element	Explanation	Reference Chapter in ATMAS IGD	Relevant ASBU Block
1.	State/Administration	Name of the State/Administration		
2.	FIR	Name of the Flight Information Region (FIR)		
3.	ATS Unit / Location	Location of the ATM Automation System		
4.	Number of ATS positions	Number of ATS positions in this ATM Automation System (to evaluate the system workload)		
5.	Manufacturer / Brand / Version	Manufacturer / Brand / Version of the system		
6.	System Status	the system is used as Main, Backup, or Emergency		
7.	Surveillance Data Processing Function (SDP)	Surveillance data can be processed by the system, including PSR, Mode A/C, Mode S, ADS-B, WAM, or others	Chapter 3.1.1 & 3.2.1	ASUR B0/1, ASUR B0/2
8.	Bypass Surveillance Data Processing （BSDP）	BSDP is a redundancy module of SDP, which can independently receive, process and distribute surveillance data independently to SDP. When the SDPs fail, the system will switch to BSDP automatically. When the system switches to bypass mode, the HMI should clearly indicate if controller is working in BSDP mode.	Chapter 3.1.3	
9.	Flight Data Communication Network	Type of Flight Data Communication Network used by the system (AFTN, AMHS, or both)		COMI B0/7
10.	Flight Data Processing Function (FDP)	The system can support flight data processing, including Flight Message Processing, Life Cycle Management, 4D Profile Trajectory, SSR Code Management, Sector Management and Posting Computation	Chapter 3.1.2	

11.	Flight Strip	the system can support print Paper Flight Progress Strip, display Electronic Flight Strip, or both		
12.	Mode S conspicuity code Identification	The flight plan with A1000 will use a 24-bit address or ACID to correlate with system tracks, and warnings/alerts should not be generated when SSR duplication occurs due to Mode S conspicuity code.	Chapter 3.1.2.4	
13.	Correlation of surveillance and flight data	the system can perform an automatic correlation between the flight plan and the system track based on the SSR code, aircraft 24-bit address, or Aircraft Identification (ACID)	Chapter 3.1.4 & 3.2.2	ASUR-B0/3
	Safety Net Function	Essential alerts or warnings can be generated automatically		
14.	Emergency code warning (7500,7600,7700)	Once the emergency codes were received, the system is suggested to process it and display the Emergency on the concerned positions.	Chapter 3.1.5.2	
15.	Short Term Conflict Alert (STCA)	The system will alert controllers of a potential or actual infringement of separation minima between aircraft to avoid collision as basic STCA, using aircraft intent parameters (Selected Flight Level), considering ATC practices (level-off prediction test and turn prediction test).	Chapter 3.1.5.3	SNET-B0/1 & SNET-B1/1 & SNET-B1/2
16.	Minimum Safe Altitude Warning (MSAW)	The system will assist controllers with alerts of the potential risk of an aircraft infringing a defined minimum safe altitude over a concerned region.	Chapter 3.1.5.4	SNET-B0/2
17.	Area Proximity Warning (APW)	The system will alert controllers of any potential or actual unauthorized penetration of aircraft into Special Use Airspaces (SUA).	Chapter 3.1.5.5	SNET-B0/3
18.	Approach Path Monitoring (APM) Warning	The system will monitor the aircraft's vertical and lateral deviation from the final approach	Chapter 3.1.5.6	SNET-B0/4

		profile in ATMAS, and generate visual and/or aural alerts when an aircraft exceeds or is predicted to exceed the defined tolerance of deviation.		
19.	Route Adherence Monitoring (RAM)	The system will monitor if an aircraft (i.e., surveillance track) is following the planned route, as stated in the associate flight plan.	Chapter 3.2.3.4	FRTO B0/4
20.	Cleared Level Adherence Monitoring (CLAM)	The system will monitor the conformance of the Actual Flight Level (AFL) of an aircraft to the Cleared Flight Level (CFL) issued by the air traffic controller and provide warnings if the deviation between the two levels (i.e. Level Bust) was found after the aircraft has been level-off.	Chapter 3.2.3.5	FRTO B0/4
21.	Meteorological Information Processing	The system is capable of receiving, processing, and displaying meteorological information from flight data, surveillance data, or both	Chapter 3.1.6	AMET
22.	Air Ground Data Link Function (AGDL)	The AGDL function mainly processes the information based on the data link communication, including ADS-C (Automatic Dependent Surveillance-Contract), CPDLC (Controller-Pilot Data Link Communication), and DCL (Departure Clearance).	Chapter 3.1.7	COMS
23.	System Parameter Management Function	The system is capable of managing the variable system parameters through a user/ops orientated adaptation interface used by trained adaptors.	Chapter 3.1.8	
24.	ATS Inter-facility Data Communication Function (AIDC)	The system can support ATS-related information exchanges within the ATMAS of adjacent Control Units and Flight Information Regions adopted in the Asia-Pacific region, including Handover and Coordination	Chapter 3.1.9	FICE B0/1
25.	Human Machine Interface Function (HMI)	Operational users can monitor air traffic situations and modify flight plans and other relevant information through physical	Chapter 3.1.10	

		peripherals and/or onscreen control interfaces.		
26.	Recording and Playback Function	The system has the basic, enhancement, none, or both recording and playback function.	Chapter 3.1.11 & 3.2.8	
27.	System Monitoring and Control Function	The system can provide the monitoring and controlling function, and the failure of the monitoring and controlling function should not affect the operation of other modules.	Chapter 3.1.12	
28.	GNSS Time Synchronization	The system can synchronize with the external GNSS signals or not	Chapter 3.1.13	
	Extended Alerts and Warning			
29.	Departure No TRANSGRESSION Zone (DTZ)	The DTZ function informs the controller if a track is predicted to infringe a Departure No Transgression Zone area within a predefined time interval, or has already infringed a Departure No Transgression Zone area. The DTZ function also may suppress improper STCA generate between two normal flights in DMA (Departure Monitoring Area).	Chapter 3.2.3.1	
30.	No Transgression Zone (NTZ)	The system will warn controllers of a predicted or actual unauthorized penetration of NTZ by aircraft during final approach.	Chapter 3.2.3.2	
31.	Medium Term Conflict Detection Warning (MTCD)	The system will provide warnings to controllers for potential conflict for “aircraft-to aircraft” or “aircraft-to-airspace” encounters up to a looking ahead time.	Chapter 3.2.3.3	FRTO B0/4
32.	Similar Callsign Advisory (SCA)	The system will provide advisory to alert controllers when an aircraft carries a similar callsign with another one in the same jurisdiction controlled by a controller.	Chapter 3.2.3.6	
33.	Reduce Vertical Separation Minimum (RVSM) Warning	The system will provide alerts to controllers when a non-RVSM approved/compliant aircraft is within or is predicted to enter RVSM airspace.	Chapter 3.2.3.7	

34.	Position Report Monitoring (PMON)	The system will monitor ATO/ETO and provide warnings to controllers accordingly.	Chapter 3.2.3.8	
35.	Last Known Position Display	Last Known Position Display occurs when correlated tracks, uncorrelated, or ADS-C tracks with critical alerts are lost.	3.2.3.9	
36.	SSR Inconsistency Warning	For correlated flight plan tracks, when the Mode 3/A code in the surveillance data is inconsistent with the SSR code in the flight plan, the system is suggested to raise ASSR Inconsistency Warning.	3.2.3.10	
37.	Corrected Level Information Display prompt	The system is recommended to be capable of displaying the Mode C level or QNH corrected barometric altitude on track labels with distinction.	3.2.3.11	
38.	PBN Capability Indication	The system will provide PBN indicator and/or PBN route mismatch indication for controllers in order to indicate whether the aircraft match the RNAV/RNP Route or Arrival.	Chapter 3.2.3.12	APTA
39.	Downlink Aircraft Parameters Processing and Display	The system have the capability to process and display aircraft downlink aircraft parameters (DAPs) in Track Fusion, Related Warnings, or Downlink Data Window	Chapter 3.2.4	ASUR-B0/3
40.	Integrated Technology	the system has integrated some new technologies, including Arrival Manager (AMAN), Departure Manager (DMAN), or Enhanced Wake Turbulence Separation and Approach Spacing Tool, or None	Chapter 3.2.5 & 3.2.6 & 3.2.9	RSEQ, WAKE
41.	System Log Management	The system is able to collect and manage operational logs and error messages.	Chapter 3.2.7	
42.	Interoperability	The system supports exchange messages with other external systems, including Integrated Tower System, A-SMGCS, Tower Electronic Strip System,		SURF, SWIM

		Others, or None, to implement information sharing		
43.	Operational Data Synchronization	The system can synchronize operational data to the backup system when in master mode, including flight data, operational setting data.	Chapter 3.2.10	
44.	Statistics and Analysis Function	The system can generate reports on the surveillance data, flight plan, alarm information and traffic flow data.	Chapter 3.2.11	
45.	Remarks	Any other need to be mentioned		