



ICAO

International Civil Aviation Organization

The Second Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/2)

Bangkok, Thailand, 20 – 24 March 2023

## Agenda Item 4: Implementation of CNS-ATM Systems

### AIS – AIM IMPLEMENTATION TASK FORCE OUTCOMES

(Presented by the Secretariat)

#### SUMMARY

This paper presents an update on Aeronautical Information Services (AIS) and Aeronautical Information Management (AIM) implementation, including the outcomes of the Sixteenth Meeting of the ICAO Aeronautical Information Services – Aeronautical Information Management Implementation Task Force.

## 1. INTRODUCTION

1.1 The Seventeenth Meeting of the ICAO Aeronautical Information Services (AIS) – Aeronautical Information Management (AIM) Implementation Task Force (AAITF/17) was held by Video Teleconference (VTC) from 20 to 23 June 2022. 195 participants were registered for the AAITF/17 VTC, from Australia, Bangladesh, Bhutan, Cambodia, China, Hong Kong China, Macao China, Fiji, India, Indonesia, Japan, Lao PDR, Malaysia, Maldives, Mongolia, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, United States, Viet Nam, CANSO, IATA, IFAIMA, Industry Partners and ICAO.

1.2 14 Working Papers (WPs), 11 Information Papers (IPs) six presentations and two flimsies were presented to AAITF/17.

1.3 AAITF/17 formed three Draft Conclusions that were subsequently agreed by ATM/SG/10 (17 – 21 October 2022).

1.4 The full report of the meeting is available on the ICAO Asia/Pacific (APAC) Regional Office web-page at <https://www.icao.int/APAC/Meetings/Pages/2022-AAITF17.aspx>.

## 2. DISCUSSION

### Asia/Pacific ATM and Airspace Safety Deficiencies in the AIS/AIM Field

2.1 There are three AIS/AIM-related deficiencies in the list agreed by APANPIRG/33 (22 – 24 November 2022):

- WGS-84 not implemented (nine States);
- AIP Format (two States); and
- Quality Management System not implemented (20 States).
- Aeronautical data promulgation within the State's area of responsibility (one State)

2.2 The AAITF/17, ATM/SG/10 and APANPIRG/33 meetings were, once again, invited to note the ongoing, deep concern about poor quality management of aeronautical information in the APAC Region, and the apparent lack of organizational priority for this safety-critical obligation of all States that are signatory to the Convention on International Civil Aviation.

2.3 No new AIS/AIM-related deficiencies had been identified since APANPIRG/32 (2021)

2.4 ATM/SG/10 recommended, and APANPIRG/33 agreed to, deletion of the following AIS/AIM-related deficiency:

- Bangladesh – WGS-84 not implemented;

2.5 ICAO is currently analyzing information provided by Philippines supporting the withdrawal of the deficiency recorded for non-implementation of AIS quality management. No other State has provided any evidence or corrective action plan supporting the deletion of AIS/AIM-related deficiencies.

2.6 The criteria used by the Regional Office to determine whether an AIS QMS deficiency may be recommended for deletion are provided in **Attachment 1**.

2.7 The list of AIS/AIM-related deficiencies as reviewed by APANPIRG/33 is included in WP/5 to this meeting.

#### Regional Implementation Status of AIM Performance Expectations

2.8 The implementation status of AIM performance expectations detailed in the Performance Improvement Plan of the *APAC Regional Plan for Collaborative AIM* is expected to be reported by the revised, common date of 28 February each year, using the Regional AIM Implementation Status Report Form available on the ICAO Asia/Pacific eDocuments web-page. ***Conclusions ATM/SG/10-1: Revised Reporting Date for ATM Regional Plans' Implementation Status Monitoring*** and ***ATM/SG/7-16: Amendment to the Regional Plan for Collaborative AIM*** refer.

2.9 The performance expectations are arranged in three phases:

**Phase I**, expected to be implemented immediately (ATM/SG/6, August 2018);

**Phase II**, expected to be implemented by 7 November 2019, and

**Phase III**, expected to be implemented by 27 November 2025.

2.10 States that have never provided information on their implementation status were:

Brunei Darussalam, Marshall Islands, Micronesia and Nauru.

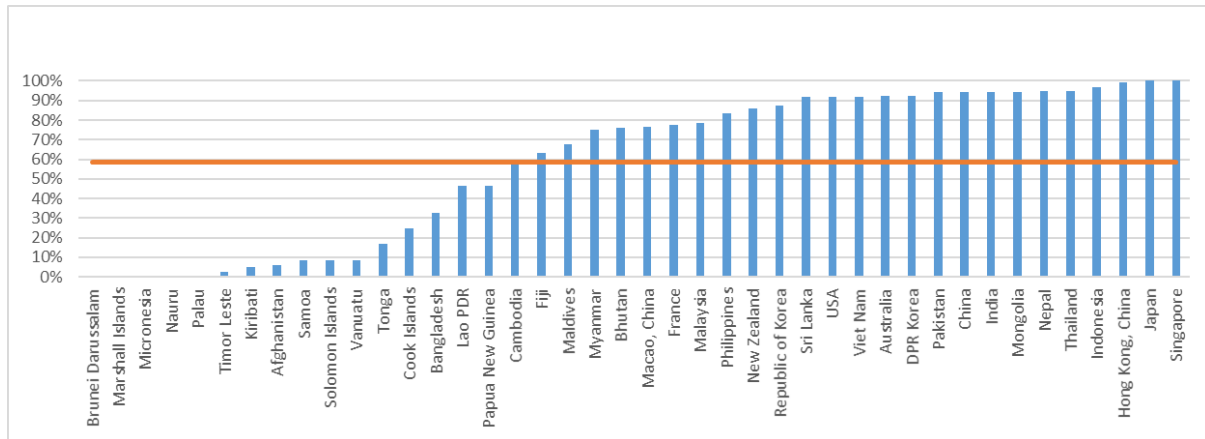
2.11 The 22 Administrations that provided their annual implementation status report by 28 February 2023 were:

Australia, Bangladesh, Bhutan, Cambodia, Hong Kong China, Macao China, DPR Korea, Fiji, France – French Polynesia, Indonesia, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, United States, Viet Nam.

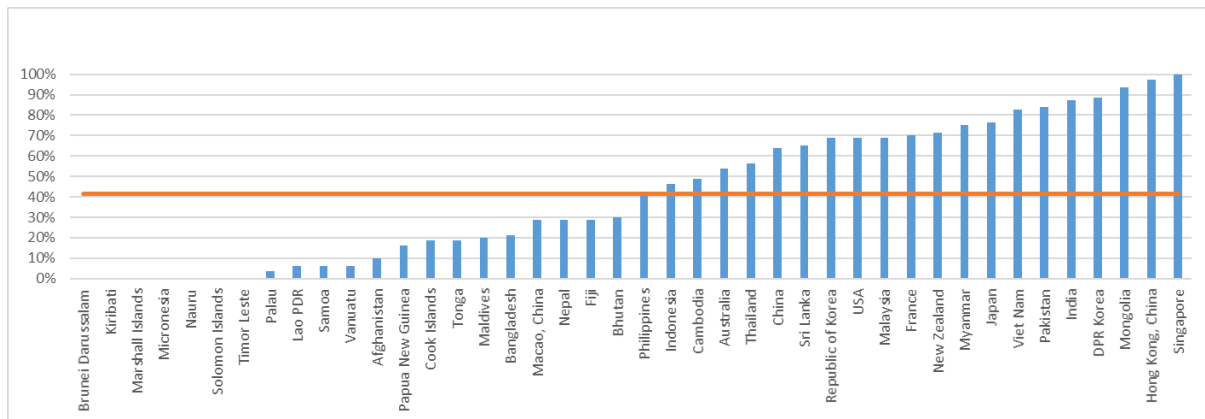
2.12 The latest update of regional implementation status of the AIM performance expectations is provided in **Attachment 2**.

2.13 Japan and Singapore reported implementation of all Phase I elements. Only Singapore reported implementation of all Phase II elements. No Administration reported implementation of all Phase III elements.

2.14 **Figures 1 and 2** illustrate overall regional implementation of Phase I and II elements of the Regional Plan for Collaborative AIM; approximately 59% for Phase I and 42% for Phase II, both minor increases from 2022 (56% and 40% respectively reported to ATM/SG/10). Combined progress towards implementation of Phases I and II was 52%, also a minor increase above the 50% reported to ATM/SG/10).



**Figure 1:** Regional Phase I Implementation Progress (updated 10 March 2023)



**Figure 2:** Regional Phase II Implementation Progress (updated 10 March 2023)

2.15 **Regional** implementation of Phase III elements, expected to be implemented by 2025, was approximately 15%, increased from 13% from 2022.

2.16 **The meeting is invited to note there has been very little overall regional progress in AIS/AIM implementation for several years.**

AIS Workshop – WGS-84 and Data Accuracy

2.17 The AIS Workshop – WGS-84 and Data Accuracy included the following presentations:

- ICAO Global and Regional Provisions;
- WGS-84 – What is it – Maintaining Data and the Impacts Related; and
- Aeronautical Data Quality.

2.18 Discussion outcomes of the workshop included inter alia a proposed regional WGS-84 sampling program to be conducted by the ICAO Regional Office, the reasons for re-collection of WGS-84 data, the impact of non-maintained WGS-84 data on terminal procedures and aircraft Terrain Awareness Warning Systems (TAWS), various methods of maintaining and revalidating data, and Data Quality Requirements (DQR) for aeronautical information WGS-84 Data Revalidation

2.19 AAITF/17 discussed a Draft Conclusion arising from discussion in the Workshop on WGS-84 and Data Accuracy (AAITF/17 Agenda Item 2). The workshop presentation *WGS-84 – What is it – Maintaining Data and the Impacts Related* had discussed the reasons that data revalidation was necessary, and recommended that data be revalidated every five years, after a major natural event, or following construction of critical airport elements.

2.20 The meeting noted that ICAO Doc 9674 *WGS-84 Manual*, which had not been updated since 2002, did not provide guidance in this regard. However, it was also noted that Annex 11 Appendix 7 required the State to ensure that maintenance and periodic review of instrument flight procedures for aerodromes and airspace under the authority of the State were conducted, and that State must establish an interval for periodic review of instrument flight procedures not exceeding five years.

2.21 AAITF/17 drafted the following Conclusion, subsequently agreed by ATM/SG/10:

***Conclusion ATM/SG/10-9: Revalidation of Coordinate Data***

*That, noting the factors that cause WGS-84 coordinate data to change over time, States are urged to ensure that all surveyed and calculated coordinate data published in AIP or used in Instrument Flight Procedure design is revalidated:*

- 1. each five years; or*
- 2. after a major natural event such as an earthquake or volcanic eruption; or*
- 3. following construction of critical airport elements,*

*whichever is the sooner, by ground survey, Light Detection and Ranging (LIDAR) survey, or imagery collection.*

2.22 The meeting noted that the cooperation of other entities such as aerodrome operators and flight procedure design agencies would be necessary. The Draft Conclusion was endorsed by the Sixth Meeting of the Aerodromes Operations and Planning Sub-Group (AOP/SG/6, 27 to 30 Jun3 2022), and noted by the 26<sup>th</sup> Meeting of the Communications, Navigation and Surveillance Sub Group (CNS SG/26 05 to 09 September 2022) before being presented to ATM/SG/10

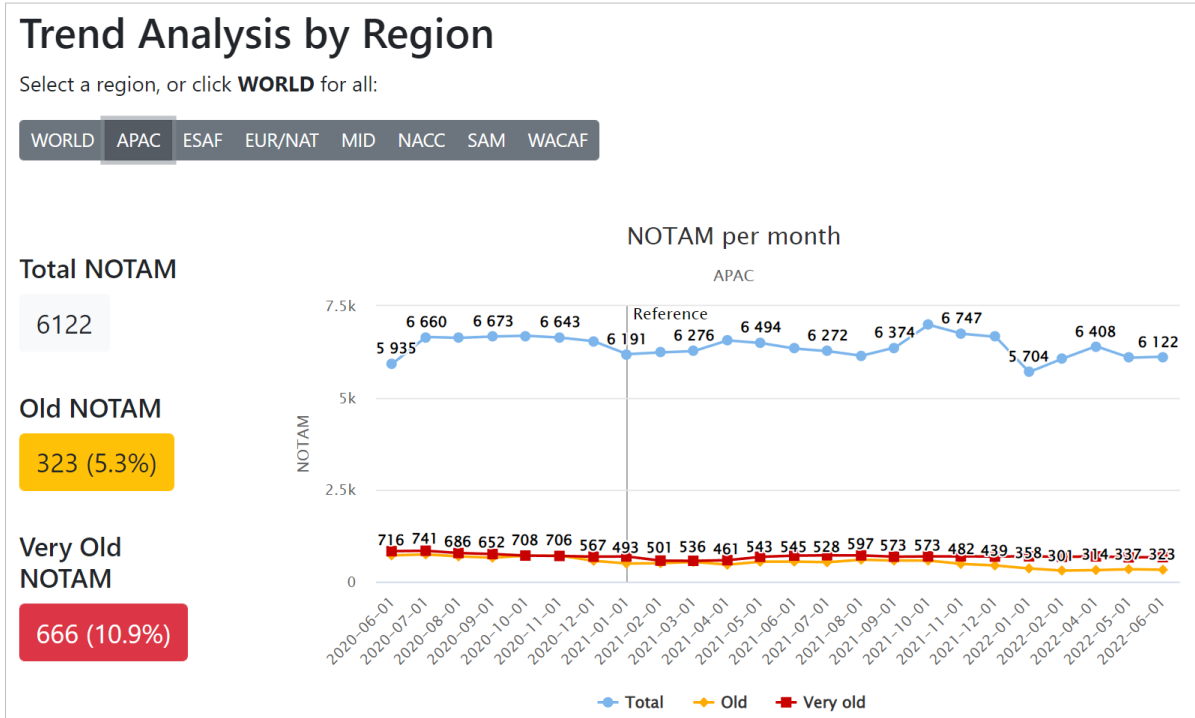
NOTAM Proliferation Analysis

2.23 IFAIMA, in collaboration with the Secretariat, provided a regional analysis of NOTAM proliferation.

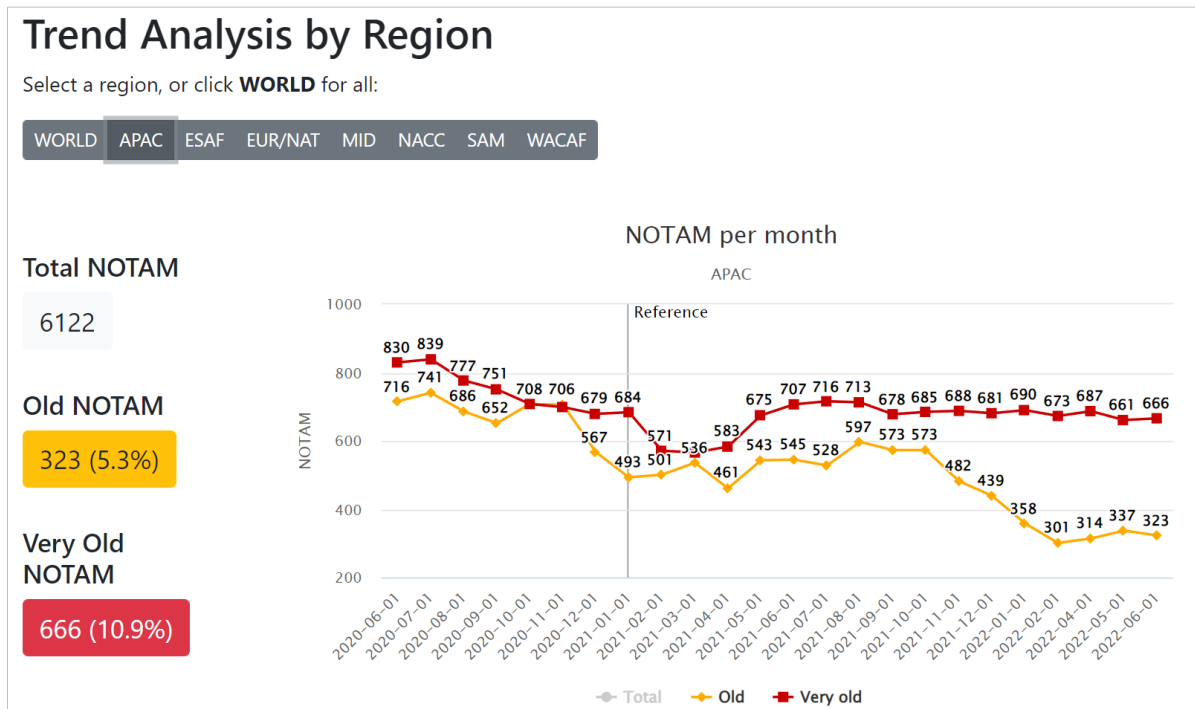
2.24 AAITF/13 in 2018 had discussed the continuing existence of NOTAM containing information of permanent validity that had not been transferred to AIP in a timely manner, and had developed a Draft Conclusion on the subject, subsequently agreed by ATM/SG/6: ***Conclusion ATM/SG/6-14: Management of NOTAMs.***

2.25 AAITF/13 had also agreed to a related action item in the AAITF Task List for the periodic sampling of NOTAM Pre-flight Information Bulletins (PIBs) to examine the proliferation of PERM and long-term temporary NOTAMs.

2.26 **Figures 3 and 4** illustrated APAC NOTAM statistics since June 2020. At 01 June 2022, a total of 6122 NOTAMs were active in the APAC Region. 323 (5.3%) of these were *old* (i.e. more than three months but less than one year), and 666 (10.9%) were *very old* (one year or more).



**Figure 3:** APAC NOTAM Statistics (Total, old and very old)



**Figure 4:** APAC NOTAM Statistics (old and very old)

2.27 There had been a good downward trend in old NOTAMs, but the number of very old NOTAMs remained high, possibly indicating that many previously ‘old’ NOTAMs had not been cancelled or migrated into AIP, but rather had aged to the point of being now ‘very old’ NOTAMs..

2.28 Detailed statistical data was provided for Asia/Pacific Administrations. **Table 1** listed the 10 top NOTAM-promulgating APAC Administrations at 10 June 2022.

No	Administrations	Total NOTAM	Old NOTAM	Very Old NOTAM	Percent of old and very old NOTAM
1	China	1145	125	41	14.5%
2	Japan	1113	3	1	0.4%
3	India	935	73	394	49.9%
4	Australia	585	64	1	11.1%
5	Republic of Korea	583	1	0	0.2%
6	Philippines	471	54	43	20.6%
7	Malaysia	283	16	2	6.4%
8	Indonesia	191	0	83	43.5%
9	Thailand	163	1	9	6.1%
10	New Zealand	132	5	0	3.8%
		<b>5601</b>	<b>342</b>	<b>574</b>	<b>16.4%</b>

**Table 1:** Top 10 NOTAM-producing Administrations – June 2022

2.29 **Table 2** listed the top 10 poorest-performing Administrations (percentage of old and very old NOTAMS), which were also responsible for the promulgation of 92.6% of old and very old NOTAMS in the APAC Region.

No	Administrations	Total NOTAM	Old NOTAM	Very Old NOTAM	Percent of old and very old NOTAM
1	DPR Korea	10	0	10	100.0%
2	Nepal	1	0	1	100.0%
3	Lao PDR	35	0	32	91.4%
4	Nauru	29	1	21	75.9%
5	India	935	73	394	49.9%
6	Indonesia	191	0	83	43.5%
7	Samoa	5	0	2	40.0%
8	Timor Leste	19	4	3	36.8%
9	Papua New Guinea	84	20	7	32.1%
10	Viet Nam	59	14	0	23.7%
		<b>1368</b>	<b>112</b>	<b>553</b>	<b>48.6%</b>

**Table 2:** Top 10 Poorest Performing Administrations – Percentage of Old and Very Old NOTAM – June 2022

2.30 The oldest current NOTAM in the APAC Region was published in **2008**.

2.31 The above information will be updated for reporting to AAITF/18 in June 2023.

2.32 Both the ICAO NOTAMeter and the Regional NOTAM Analysis use the USA’s Defense Internet NOTAM Service (DINS, [www.notams.faa.gov](http://www.notams.faa.gov)) as a primary source of NOTAM information. The NOTAMS stored in DINS are sourced from the USA NOTAM service, providing a valuable, publicly available resource for all stakeholders.

2.33 APAC Administrations are invited to take immediate action to ensure full compliance with NOTAM procedures in ICAO Doc 10066 *Procedures for Air Navigation Services – Aeronautical Information Management* (PANS-AIM) and **Conclusion ATM/SG/6-14**, and to ensure the consistent distribution of NOTAMN, NOTAMR, NOTAMC and NOTAM Checklists to international NOTAM Offices and multinational NOTAM processing units.

#### ICAO Activities Related to NOTAM Proliferation

2.34 ICAO global and regional activities to eliminate unnecessary NOTAMs are intended Annex 15 *Aeronautical Information Services* section 5.2.6 PANS-AIM section 6.1.4

2.35 The ICAO Global Campaign on NOTAM Improvement (NOTAM2021) Phase 1 was focused on the elimination of old NOTAMs. Three webinars were held between April and October 2021. Further details are available on the Campaign website at:

<https://www.icao.int/airnavigation/information-management/Pages/GlobalNOTAMcampaign.aspx>

2.36 The meeting is also reminded of previous AAITF and ATM/SG discussion of NOTAM proliferation. ICAO Regional Office plans to conduct analysis and action regarding the incorrect use of NOTAM which contributes not only to NOTAM proliferation but also to safety risks:

- ‘Bad’ NOTAMs promulgating information that Annex 15 Standards require to be promulgated by AIP Amendment under the Aeronautical Information Regulation and Control (AIRAC) system;
- Unnecessary NOTAMs promulgating information that should not be promulgated in operational information (i.e. administrative or other non-operational matters); and
- ‘Recycled’ NOTAMs of three months’ duration that are replaced more than once by another identical NOTAM of three months’ further duration to ‘work around’ PANS-AIM 6.1.4 provisions.

#### Asia/Pacific Region ICARD Status and 5LNC Duplicate Resolution

2.37 ICAO provided an update to AAITF/17 and ATM/SG/10 on the use of the ICAO International Codes and Route Designators (ICARD) application in the APAC Region and the resolution status of 5-letter name code (5LNC) duplicates.

2.38 Annex 11 – *Air Traffic Services* defines a *significant point* as a *specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes*. It goes on to state that significant points shall be established and identified in accordance with the principles set forth in Annex 11 Appendix 2, which include the requirement for that 5LNCs be globally unique.

2.39 The ICARD application is the sole repository of 5LNCs ensuring global uniqueness, and is the only means by which the requirements of Annex 11 Appendix 2 paragraph 3.5 may be met.

2.40 In all cases where any personnel of a State Regulator or Air Navigation Service Provider are responsible for the allocation of 5LNC for ATS routes, Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs) or Instrument Approach and Landing (IAL, including RNAV/RNP approaches), at least one person, and preferably two or more, must be registered as an ICARD\_5LNC\_PLANNER to ensure compliance with Annex 11 requirements.

2.41 Several APAC Region Administrations do not have any registered ICARD\_5LNC\_PLANNER. If these Administrations allocate 5LNC outside the ICARD system, they are not compliant with the requirements of Annex 11.

2.42 ICAO Headquarters compiled a full global list of duplicated 5LNC in 2018. There were **3,905** duplicated 5LNCs worldwide, of which **2,733** were within the APAC region.

2.43 The Regional Office presented a State 5LNC status report for each Administration to the AAITF/15 meeting in 2020. The status reports were again presented to AAITF/16 in 2021 and AAITF/17 in 2022. The reports summarized the number and purpose of 5LNC registered in ICARD, and the number and status of duplicated 5LNC published in each Administration's AIP, and full lists of duplicated 5LNC published by the Administration, arranged according to whether or not that Administration had priority to retain the 5LNC.

2.44 In order to improve the process and tracking of duplicate resolution, APAC Administrations were requested at AAITF/15 to review and maintain their status reports, and send an update to the ICAO Regional Office at least once per year. This would allow the monitoring of regional duplication resolution progress and the generation of accurate reports to AAITF and ATM/SG.

2.45 Noting that no States had provided the requested updates to their status reports, AAITF/17 drafted the following Conclusion that was later agreed by ATM/SG/10:

***Conclusion ATM/SG/10-10: State Reports of 5LNC Status***

*That, States are urged to provide an annual update on the status of duplicated 5LNCs in ATM/SG/10 WP/44 Attachment 3 to the ICAO APAC Regional Office by not later than 28 February each year.*

2.46 The following Administrations have subsequently provided updated information:

Australia, Bhutan, Cambodia, Fiji, France (French Polynesia), Hong Kong China, India, Indonesia, Maldives, Mongolia, New Zealand, Pakistan, Philippines, Republic of Korea, Sri Lanka, USA, Viet Nam.

**Regional Guidance Document – Postponement of Aeronautical Information Distributed under AIRAC**

2.47 Following the presentation of the final draft of the Asia/Pacific Regional Guidance for Postponement of Changes to Aeronautical Information, developed by the AAITF Small Working Group (AAITF SWG, Rapporteur Singapore) ATM/SG/10 agreed to the following Conclusion drafted by AAITF/17:

***Conclusion ATM/SG/10-11: Regional Guidance for Postponement of Changes to Aeronautical Information***

*That, the Asia/Pacific Regional Guidance for Postponement of Changes to Aeronautical Information at ATM/SG/10 WP/44 Attachment 4 be adopted, and uploaded to the Asia/Pacific Regional Office website.*

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Update on ICAO AIS/AIM Guidance Documents (ICAO provided an update on the status of global guidance material).

2.48 The following ICAO global guidance documents are now available through the ICAO Secure Portal:

- Doc 8126 *AIS Manual* (updated);
- Doc 9839 *Manual on the Quality Management System for AIS*; and
- Doc 9991 *Manual on AIS Training*.

2.49 The availability of these long awaited manuals is expected to result in greater efforts by States to improve their AIS and resolve related APANPIRG Deficiencies.

2.50 ICAO will also propose to the AAITF/18 meeting in June 2012 that the group now undertake a task to consolidate regional guidance documents in light of the availability of the global guidance.

### 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the ATM and Airspace Safety Deficiencies in the AIS/AIM field, and particularly the continuing deep concern about poor quality management of aeronautical information in the APAC Region;
- b) note the continuing overall poor implementation of the Phase I and II performance expectations of the Regional Plan for Collaborative AIM;
- c) note the outcomes from the AIS Workshop on WGS-84 and Data Accuracy, and ***Conclusion ATM/SG/10-9: Revalidation of Coordinate Data;***
- d) take all necessary steps to eliminate old and very old NOTAMs;
- e) note the ongoing need for resolution of duplicated 5-letter name codes, ICARD registration of all 5LNCs that are published in AIP, and ***Conclusion ATM/SG/10-10: State Reports of 5LNC Status.***
- f) Note ***Conclusion ATM/SG/10-11: Regional Guidance for Postponement of Changes to Aeronautical Information;*** and
- g) discuss any relevant matters as appropriate.

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**ICAO ASIA/PACIFIC REGIONAL OFFICE**

Checklist of Evidence Supporting Withdrawal of APANPIRG ANS Deficiency – AIS Quality Management System (QMS)

The relevant authority should write to the ICAO Asia/Pacific Regional Director ([apac@icao.int](mailto:apac@icao.int)), requesting withdrawal of the APANPIRG ANS Deficiency and including the following supporting information:

AIS QM Area	Evidence	Purpose
<p><b>Quality Management Scope and Process</b> <i>Annex 15 Section 3.6</i> <i>PANS-AIM Chapter 3</i></p>	<p><b>Provide a copy of:</b></p> <ol style="list-style-type: none"> <li>1. the AIS Quality Management Manual; <i>or</i></li> <li>2. Other equivalent document or formal procedures detailing: <ul style="list-style-type: none"> <li>• Scope of QMS; and</li> <li>• QM processes; <i>or</i></li> </ul> </li> <li>3. Other procedure document detailing processes for rectification of non-conformities.</li> </ol>	<ol style="list-style-type: none"> <li>1. To provide evidence that: <ul style="list-style-type: none"> <li>• formal documentation of the scope of the QMS, and its processes have been developed; and</li> <li>• QMS documentation and processes are formally approved by the accountable authority, and are subject to regular review; and</li> <li>• that the QMS is formally applied to the aeronautical information production activities of all AIS and associated entities in the preparation and publication of aeronautical information products (AIP, AIP Amendments, AIP SUPs, AICs, NOTAMs). Example: in some states, the CAA retains responsibility for AIP production, but the Air Navigation Service Provider is responsible for NOTAMs); <i>or</i></li> </ul> </li> <li>2. To demonstrate the application of quality management processes to the management of non-conformities including detection, reporting, rectification, recording and procedure improvement.</li> </ol>
<p><b>ISO Certification</b> (optional) <i>Annex 15 Section 3.6</i> <i>(Recommendation)</i></p>	<ol style="list-style-type: none"> <li>4. Provide a copy of the ISO 9001 QMS Certificate (optional)</li> </ol>	<p>To provide evidence that the State has achieved ISO certification of its QMS. <i>Note that ISO certification of AIS QMS is recommended, but is not mandatory. ISO certification is not a sole means of demonstrating effective QMS implementation.</i></p>

<p><b>Other Critical AIS QM Areas</b> <i>Annex 15 Sections 2.1, 3.2, 3.3 and 3.6</i></p> <p><i>PANS-AIM Section 2.1.3</i></p>	<p><b>Provide a <u>statement</u> confirming that the State has established:</b></p> <ol style="list-style-type: none"> <li>1. Formal arrangements with originators of aeronautical data and aeronautical information in relation to the timely and complete provision of aeronautical data; <i>Note: originators of aeronautical data include aerodrome operators, ATS units, geospatial agencies military agencies and any other agency or authority providing aeronautical data or aeronautical information for publication in aeronautical information products.</i></li> <li>2. Verification and validation procedures which ensure that upon receipt of aeronautical data and aeronautical information, quality requirements are met.</li> <li>3. Quality check procedures to ensure compliance with product specifications (PANS-AIM Chapter 5).</li> <li>4. Competency, knowledge, skill and ability criteria for personnel engaged in:             <ol style="list-style-type: none"> <li>a. production of aeronautical information products;</li> <li>b. AIS training delivery; and/or</li> <li>c. AIS competency assessment;</li> </ol> </li> <li>5. AIS training and competency assessment plan</li> </ol>
<p><b><i>Note: ICAO Asia/Pacific Regional Office will also conduct sampling of aeronautical information products before then making a recommendation to APANPIRG to remove the ANS Deficiency, where appropriate.</i></b></p>	

Regional Implementation Status of AIM Performance Expectations

Date Last Amended: March 10, 2023

	Phase 1																		Phase 2						Phase 3				Average Implementation				
	1				2	3	4	5	6	7	8	9	10	11	12	13	14			15	16	17	18	Phase 1	Phase 2	Phase 3	Phase 1&2	Overall					
	1a	1b	1c	1d													14a	14b	14c														
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%					
Afghanistan	0%	0%	0%	0%	0%	0%	40%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	6%	10%	0%	8%	7%					
Australia	100%	100%	100%	100%	50%	100%	100%	60%	100%	100%	100%	100%	100%	70%	100%	60%	0%	100%	0%	0%	100%	0%	0%	93%	54%	33%	77%	71%					
Bangladesh	70%	30%	0%	0%	0%	50%	0%	30%	0%	30%	80%	100%	50%	0%	0%	0%	0%	90%	0%	30%	0%	0%	33%	21%	0%	28%	24%						
Bhutan	100%	100%	100%	100%	0%	100%	40%	20%	50%	100%	100%	100%	50%	50%	50%	40%	10%	10%	20%	10%	100%	0%	0%	76%	30%	33%	58%	54%					
Brunei Darussalam	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%					
Cambodia	50%	100%	50%	70%	10%	90%	50%	30%	50%	50%	50%	100%	50%	50%	30%	80%	50%	50%	10%	70%	10%	30%	58%	49%	30%	55%	51%						
China	100%	100%	100%	80%	100%	100%	100%	100%	100%	60%	100%	90%	40%	70%	100%	100%	0%	50%	50%	100%	30%	10%	10%	94%	64%	17%	82%	73%					
Hong Kong, China	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	100%	100%	100%	100%	100%	100%	100%	100%	80%	100%	70%	50%	99%	98%	57%	99%	93%						
Macao, China	100%	100%	100%	100%	0%	100%	100%	100%	50%	0%	100%	70%	0%	50%	50%	50%	0%	0%	0%	80%	0%	0%	77%	29%	0%	58%	50%						
Cook Islands	0%	100%	0%	0%	0%	0%	100%	0%	30%	0%	0%	70%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	25%	19%	0%	23%	20%						
DPR Korea	100%	100%	100%	100%	60%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	70%	100%	90%	20%	20%	93%	89%	23%	91%	82%						
Fiji	100%	100%	30%	0%	30%	100%	10%	100%	100%	30%	100%	60%	100%	50%	70%	10%	0%	0%	0%	0%	0%	0%	63%	29%	0%	50%	43%						
India	100%	100%	100%	100%	30%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%	0%	0%	94%	88%	0%	92%	80%							
Indonesia	100%	100%	100%	100%	80%	80%	100%	100%	100%	100%	100%	100%	70%	70%	100%	50%	10%	10%	50%	50%	50%	0%	97%	46%	33%	77%	71%						
Japan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	80%	80%	100%	80%	80%	90%	0%	100%	0%	0%	100%	76%	0%	91%	79%						
Kiribati	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	3%	3%						
Lao PDR	100%	100%	100%	100%	0%	100%	0%	0%	0%	30%	0%	30%	0%	0%	20%	0%	0%	30%	0%	0%	0%	0%	47%	6%	0%	31%	27%						
Malaysia	100%	100%	100%	70%	0%	100%	50%	50%	100%	100%	100%	70%	0%	50%	100%	100%	70%	70%	70%	90%	0%	0%	78%	69%	17%	75%	67%						
Maldives	100%	80%	50%	100%	0%	100%	50%	50%	60%	50%	100%	70%	0%	50%	60%	0%	0%	0%	0%	50%	0%	0%	68%	20%	0%	49%	42%						
Marshall Islands	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%					
Micronesia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%					
Mongolia	100%	100%	100%	100%	30%	100%	100%	100%	100%	100%	100%	100%	100%	50%	100%	100%	100%	100%	100%	100%	100%	50%	94%	94%	60%	94%	90%						
Myanmar	100%	100%	100%	100%	0%	100%	0%	100%	30%	100%	100%	100%	0%	50%	50%	100%	100%	100%	100%	100%	0%	0%	75%	75%	33%	75%	70%						
Nauru	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%					
Nepal	100%	100%	100%	100%	100%	100%	50%	100%	100%	90%	100%	100%	30%	0%	50%	0%	50%	50%	50%	0%	0%	0%	95%	29%	0%	69%	60%						
New Zealand	100%	100%	100%	100%	0%	100%	50%	100%	80%	100%	100%	100%	0%	80%	100%	90%	100%	80%	40%	80%	0%	60%	86%	71%	47%	80%	76%						
Pakistan	100%	100%	100%	100%	100%	100%	70%	100%	100%	60%	100%	100%	70%	70%	100%	100%	70%	100%	60%	100%	70%	50%	94%	84%	57%	90%	86%						
Palau	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	4%	0%	0%	2%	1%					
Papua New Guinea	50%	100%	50%	50%	0%	100%	50%	50%	30%	50%	0%	30%	0%	50%	50%	30%	0%	0%	0%	0%	0%	47%	16%	0%	35%	30%							
Philippines	100%	100%	100%	100%	0%	50%	100%	100%	100%	50%	100%	100%	100%	0%	100%	100%	0%	0%	0%	30%	50%	0%	83%	41%	17%	67%	60%						
Republic of Korea	100%	100%	100%	100%	50%	0%	100%	100%	100%	100%	100%	100%	100%	0%	100%	50%	50%	50%	100%	100%	0%	0%	88%	69%	33%	80%	74%						
Samoa	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	70%	0%	0%	0%	0%	0%	0%	50%	0%	0%	8%	6%	0%	8%	7%							
Singapore	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	100%	100%	0%	100%	87%						
Solomon Islands	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%	0%	5%	4%						
Sri Lanka	100%	100%	100%	100%	100%	100%	70%	60%	100%	70%	100%	100%	100%	70%	70%	90%	40%	40%	20%	90%	10%	10%	92%	65%	10%	81%	72%						
Thailand	100%	100%	100%	100%	80%	100%	90%	100%	100%	80%	100%	90%	100%	100%	100%	30%	20%	0%	0%	100%	30%	20%	95%	56%	23%	80%	72%						
Timor Leste	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	1%						
Tonga	0%	100%	0%	0%	0%	0%	0%	0%	30%	0%	0%	70%	0%	0%	100%	0%	0%	0%	0%	50%	0%	0%	17%	19%	0%	18%	15%						
Vanuatu	0%	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	70%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	8%	6%	0%	8%	7%						
Viet Nam	100%	100%	100%	100%	70%	100%	100%	70%	80%	80%	100%	100%	80%	80%	100%	80%	80%	70%	70%	80%	0%	0%	92%	83%	0%	88%	77%						
USA	100%	100%	100%	70%	70%	100%	90%	100%	100%	100%	100%	70%	70%	50%	100%	100%	0%	80%	60%	90%	70%	90%	92%	69%	77%	83%	82%						
France	100%	100%	80%	100%	50%	0%	80%	80%	80%	100%	60%	100%	80%	100%	100%	80%	50%	50%	0%	100%	60%	60%	78%	70%	47%	75%	71%						
	66%	72%	61%	60%	31%	60%	52%	55%	60%	53%	62%	70%	43%	40%	60%	46%	29%	38%	25%	53%	21%	12%	59%	42%	15%	52%	47%						

Phase 1

- Developed policy and enacted primary legislation and supporting regulations for Annex 4 and Annex 15 SARPS, and PANS-AIM Procedures including:
  - establishment of an organizational structure for the safety oversight of aeronautical information service providers;
  - requirements for monitoring of differences from Annex 4 and Annex 15 SARPS;
  - Requirements for aeronautical information/data originators;
  - Requirement for AIS quality management systems and processes to be established by all entities in the end-to-end AIS data chain.
- Ensured National ATM Plans include implementation planning for each of the performance expectations of the Regional Plan for Collaborative AIM.
- Established AIS either as a separate entity within, or separated from the civil aviation administration.
- Developed competency requirements for AIS personnel, including English language proficiency requirements, supported by a program of regular performance assessment.
- Established regular programs of engagement with all stakeholders.
- Established quality management processes for aeronautical information.
- Established formal agreements between AIS providers and aeronautical data originators.
- Provided full access to relevant ICAO Annexes and Documents to all personnel having responsibility for the reception, management, publication and/or distribution of aeronautical information and aeronautical data.
- Ensured compliance of all aeronautical products with common reference systems WGS-84, MSL/EGM-96 and UTC

Phase 2

- Adapted policy, primary legislation and supporting regulations to support digital data sets of aeronautical information and associated products
- Adapted training, competency and performance assessment of AIS personnel for digital data sets and eAIP
- Implemented and maintained quality management systems encompassing all functions of the AIS
- Established and maintained digital databases of aeronautical information (PANS-AIM Appendix 1)
- Managed terrain, obstacle and aerodrome mapping data through the establishment of:
  - a terrain database, from which terrain data sets conforming with Annex 15 Section 5.3.3.3 may be generated
  - an obstacle database, from which obstacle data sets conforming with Annex 15 Section 5.3.3.4 may be generated
  - an aerodrome mapping database, from which aerodrome mapping data sets conforming with Annex 15 Section 5.3.4 may be generated
- Implemented internet-accessible electronic AIP generated from digital database of aeronautical information

Phase 3

- Adapted policy, primary legislation and supporting regulations to support automated exchange of aeronautical data
- Adapted competency development and performance assessment of AIS personnel to support the automated exchange of aeronautical data and production of electronic charts and digital NOTAM.
- Commenced aeronautical information exchange through digital data sets, digital NOTAM, integrated briefing and electronic charts

Color Code:

- Green - Increased implementation
- Red - Decreased implementation
- Blue - No Change