INTERNATIONAL CIVIL AVIATION ORGANIZATION

FINAL

REPORT OF THE FOURTEENTH MEETING OF THE FANS INTEROPERABILITY TEAM-ASIA (FIT-ASIA/14)

BANGKOK, THAILAND
16 – 19 JULY 2024

The views expressed in this Report should be taken as those of the Meeting and not the Organisation

Approved by the Meeting
and published by the ICAO Asia and Pacific Office, Bangkok

CONTENTS

APPENDIXES

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INTRODUCTION

Meeting

1.1 The Fourteenth Meeting of the FANS Interoperability Team – Asia (FIT–Asia/14) was held in Bangkok, Thailand from 16 to 19 July 2024.

Attendance

2.1 A total of 43 participants from 11 States/Administrations, one International Organisation, and two Industry partners, including Cambodia, China, Indonesia, Japan, Malaysia, New Zealand, Singapore, Sri Lanka, Thailand, United States, Viet Nam, Boeing, Inmarsat, and ICAO were participated in the FIT-Asia/14 meeting. The list of participants is provided at **Appendix A** to this report.

Officers and Regional Office

3.1 Mr. Hong Yang, Engineer, China Regional Monitoring Agency, chaired the meeting.

3.2 Mr. Hiroyuki Takata, Regional Officer ATM, ICAO Asia/Pacific (APAC) Office, was Secretary of the meeting. He was assisted by Mr. Ying Weng Kit, ATM Officer, Mr. Tak Chuen Chui, AIM/ATM Officer and Dr. Prakayphet Chalayonnawin, Programme Analysis Associate ATM.

Opening of the Meeting

4.1 On behalf of Mr. Tao Ma, Regional Director, ICAO Asia and Pacific Region, Mr. Hiroyuki Takata welcomed all participants.

Documentation and Working Language

5.1 The working language of the meeting and all documentation was English. There were 20 Working Papers (WP), four Information Papers (IP), and four flimsies were presented for considered by the meeting.

5.2 A list of papers is included at **Appendix B** to this report.

Draft Conclusions, Conclusions, Draft Decisions and Decisions of FIT-Asia – Definition

6.1 FIT-Asia records its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

a) **Draft Conclusions** deal with matters that, according to APANPIRG terms of reference, require the attention of States, or action by the ICAO in accordance with established procedures;

b) **Conclusions** deal with matters of a technical nature relating to regional guidance material for publication on the ICAO Asia/Pacific Regional Office website;

c) **Draft Decisions** deal with the matters of concern only to APANPIRG and its contributory bodies; and

d) **Decisions** of FIT-Asia that relate solely to matters dealing with the internal working arrangements of FIT-Asia.

List of Draft Conclusions/Decisions and Conclusions/Decisions

7.1 List of Draft Conclusions and Draft Decisions

<table>
<tr><td colspan="3">Draft Conclusion FIT-Asia/14-1: Revised Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region and Additional PBCS Guidance Material NAT Doc 011</td></tr>
<tr><td colspan="2">What: That,

1. the revised Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region at Appendix D to the report be uploaded to the Asia/Pacific Regional Office eDocuments webpage to replace the existing version; and

2. the EUR NAT Doc 011 – PBCS Monitoring and Reporting Guidance, 1st Ed.- Amdt. 2, at WP/15 Attachment 1 be uploaded on the ICAO Asia/Pacific Regional Office eDocuments webpage.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To conduct review of the Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region to update information, references and remove duplicated information and to provide additional guidance for PBCS monitoring.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 22-Aug-24</td><td colspan="2">Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: XXXX</td></tr>
</table>

<table>
<tr><td colspan="3">Draft Conclusion FIT-Asia/14-2: Revised colour key codes for Asia/Pacific PBCS reporting templates</td></tr>
<tr><td colspan="2">What: That,

the following PBCS reporting templates and example were revised to correctly reflect the criteria colour key code for yellow acceptable performance.
1. Data Link Performance Report Template – ANSP to FIT (Appendix F to the report);
2. EXAMPLE - Data Link Performance Report Template – ANSP to FIT (Appendix G to the report); and
3. Aggregated Regional Data Link Performance Report Template - FIT to RASMAG (Appendix H to the report).

The above files to be uploaded on the ICAO Asia/Pacific Regional Office eDocuments webpage.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To reflect the correct colour key code in the Asia/pacific PBCS reporting templates to be consistent with other FIT.</td><td colspan="2">Follow-up: ☒Required from States</td></tr>
<tr><td>When: 22-Aug-24</td><td colspan="2">Status: Draft to be adopted by Subgroup</td></tr>
<tr><td colspan="3">Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: XXXX</td></tr>
</table>

7.2 List of Conclusions and Decisions

Nil

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REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda

Adoption of Agenda

1.1 The FIT-Asia/14 agenda (WP/1) was adopted by the meeting.

Agenda Item 2: Central Reporting Agency Reports

FANS Interoperability Team (FIT) Central Reporting Agency (CRA) Problem Report Briefing (WP/2)

2.1 The FIT-Asia CRA provided information describing the investigation and resolution of submitted Air Traffic Services (ATS) data link problem reports relevant to the FIT-Asia States. ATS data link stakeholders could submit Problem Reports (PRs) for investigation through the FANS-CRA website (http://www.fans-cra.com/). The meeting was also informed that the website was used by multiple organisations, namely FIT-Asia, the Informal South Pacific ATS Coordinating Group (ISPACG) FIT, the Informal Pacific Air Traffic Control (ATC) Coordinating Group (IPACG) FIT, and the North Atlantic (NAT) Technology and Interoperability Group (TIG).

2.2 **Figure 1** illustrated the number of PRs submitted by the FIT-Asia States per calendar year since 2016.

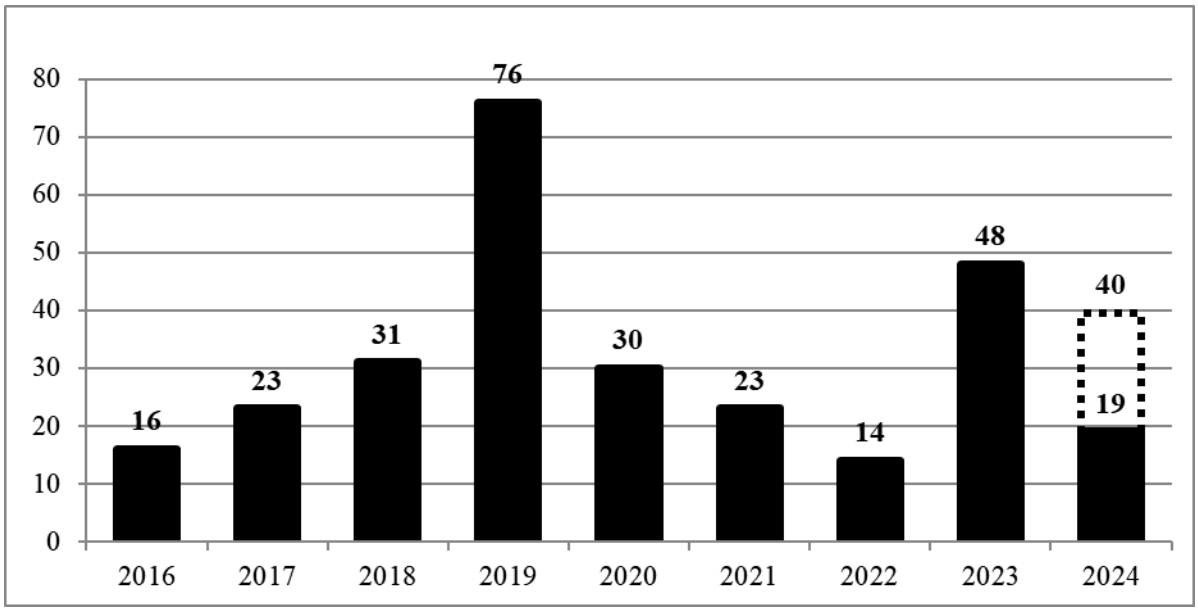

Figure 1 PRs per Year

2.3 The FIT-Asia CRA updated the status or progress of the following old PRs that had occurred in the FIT-Asia States.

- 1516-GS and 2123-GS: resolved by 757/767 Pegasus I FMC Bp11 software
- 3497-NI: closed/Air-Technical

2.4 The meeting was informed that the following software were expected to become available which would resolve some PRs previous reported.

- 777 AIMS BPV18 software: Q4 2024
- 747 NG FMC BP4.1 software: Q1 2025
- 787 CMF BPv7 software: Q1 2026

2.5 The FIT-Asia CRA investigated the following significant new PRs that occurred in the FIT-Asia States.

- 3528-RA, 3529-NI, 3584-RA, 3594-RA, 3606-RA, 3608-RA, 3609-RA, 3610-RA, 3615-RA, 3616-RA, 3621-RA, 3635-RA, and 3639-RA, Closed as Duplicate/Multiple
- 3531-RP, Closed - Monitoring/Air–Technical
- 3532-MM, Closed as Multiple
- 3541-NI, Closed - Monitoring/Ground – Procedural
- 3564-MM, Active/TBA
- 3604-MM, Closed/TBA
- 3607-CJ, Closed/Network
- 3611-MM, Open/Air–Technical; 3613-MM, 3619-MM, 3636-NW, 3645-NW, and 3650-NW, Closed as Duplicate/Air–Technical
- 3617-RP, Closed/Multiple
- 3625-MM, 3626-MM, 3627-MM, 3628-MM, 3629-MM, 3633-MM, 3640-MM, and 3643-MM, Closed / None
- 3638-RP, 3644-RP, and 3646-RP, Closed/None
- 3641-MM and 3642-MM, Closed/None

2.6 The FIT-Asia CRA investigated the following significant new PRs that occurred in the FIT-Asia States.

- 3550-MM, 3599-RA, 3659-MM, and 3572-RP, Closed/Network

2.7 The FIT-Asia CRA also informed the meeting of less significant new PRs relevant to FIT Asia.

2.8 The meeting was recommended by the FIT-Asia CRA that ICAO Doc 9869 Appendix D guidance should be referred to when submitting PRs, including PBCS data filtering to eliminate duplicate data. The meeting was reminded that analysing performance by individual aircraft and by aircraft operator/aircraft type combination had proven to be significantly more effective than analysing performance by ground station identifier, instilling confidence in the process.

2.9 Singapore, Japan, and New Zealand provided information on how they filtered out the duplicated data before assessing the calculation/assessment. FIT-Asia CRA informed the meeting that the last four characters of the Cyclic Redundancy Check (CRC) might help filter out duplications.

2.10 The meeting was updated on the transition from VHF to SATCOM issue over the South China Sea. Decommissioning of NTX VHF ground stations at Natuna-Ranai Airport caused a gap in VHF datalink coverage over the South China Sea, affecting PBCS time requirements. Indonesia informed the meeting that the process for NTX reactivation was under process for final approval from the military.

2.11 FIT-Asia CRA expected the ACARS RAT1 function to enhance PBCS time performance during transitions from VHF to SATCOM in areas with limited VHF coverage. This function would be available in newer software for various aircraft models like A320, A330, A340, A350, A380, 737, 747, 757, 767, MD-11, 777, and 787. Boeing provided a timeline for the availability of the ACARS RAT1 function in newer software, with the update for 777 aircraft expected in the fourth quarter of 2024 and for 787 aircraft in the first quarter of 2026. The FIT-Asia CRA informed the meeting that RAT1 background information provided at the previous FIT-Asia meeting was available at FIT-Asia/13 IP2.

Current Central Reporting Agency (CRA) Services in the Asia-Pacific (APAC) Region (IP/2)

2.12 In response to the FIT-Asia Task 13/1, the FIT-Asia CRA provided information regarding the CRA service agreement with the States/Administrations in the APAC region.

2.13 Boeing provided information regarding the contractual status for CRA services with:

a) FIT-Asia FIRs;

b) Informal South Pacific Air Traffic Services (ATS) Coordinating Group (ISPACG); and

c) Informal Pacific Air Traffic Control (ATC) Coordinating Group (IPACG)

2.14 **Appendix C to the report –** Competent Airspace Safety Monitoring Organisation List Update Error! Reference source not found.illustrated the Central Reporting Agencies and FITs (Data link) for APAC Region.

CRA for South-East Asia (IP/3)

2.15 Singapore presented an update of her continuous role as South-East Asia Safety Monitoring Agency (SEASMA) Central Reporting Agency for Singapore, Ho Chi Minh and Manila FIR.

2.16 Singapore provided information regarding the new contract with Boeing to support the responsibilities as the CRA for South-East Asia with no change to the Term of Reference (TOR) and area of services.

2.17 Singapore encouraged FIT-Asia members under the SEASMA CRA to continue submit PRs to Boeing via https://www.fans-cra.com.

Agenda Item 3: PBCS Developments and Implementation

Regional PBCS Implementation Update (WP/3)

3.1 The Secretariat provided an update on the status of PBCS implementation among Asia/Pacific Administrations, as reported using the APAC regional *Survey of the Status of Current and Planned Implementation of Performance-Based Horizontal Separation Minima* form. The meeting was reminded of relevant Conclusions of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) and the Regional Airspace Safety Monitoring Advisory Group (RASMAG):

Conclusion APANPIRG/27-7: PBCS Operator Requirements

Conclusion RASMAG/22-3: Performance-Based Separation Implementation Survey

Conclusion APANPIRG/28-11: PBCS Operational Authorisations

Conclusion RASMAG/23-1: PBCS Compliance

Conclusion RASMAG/27-2: Updated Reporting of PBCS Implementation Status and Performance Monitoring Data

3.2 The survey form had been uploaded to the ICAO APAC Regional Office eDocuments web-page (https://www.icao.int/APAC/Pages/eDocs.aspx), for initial reporting by August 2017 and subsequent reporting by no later than 28 February each year.

3.3 The meeting was informed that the following 17 APAC Administrations submitted completed report forms for the 2024 update and report to FIT-Asia/14:

China, Hong Kong China, Fiji, Indonesia, Japan, Malaysia, Mongolia, Nepal, New Zealand, Papua New Guinea, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, United States, Viet Nam

3.4 **FIT-Asia/14 WP/3 Attachment B** summarised the current implementation of performance-based separations as reported in survey responses since 2017.

3.5 The secretariat informed the meeting that they would communicate with some States/Administrations that might put incorrect information in the reporting to correctly reflect the current PBCS implementation status in the Region before the upcoming RASMAG.

3.6 The meeting was also invited to note that ICAO Asia/Pacific Regional Office would continue to monitor regional implementation, and raise APANPIRG Air Navigation Deficiencies or take other action as necessary in cases where States do not comply with relevant ICAO provisions.

Competent Airspace Safety Monitoring Organisations List (WP/4)

3.7 To supplement IP/2 and IP/3, the secretariat presented the RASMAG *List of Competent Airspace Safety Monitoring Organisations* (Last updated 07 June 2023) was reviewed and updated by the meeting. The list as reviewed is provided at **Appendix C to the report**.

3.8 The meeting was reminded that APANPIRG/34 agreed the following Conclusion proposed by RASMAG/28.

Conclusion APANPIRG/34/8: Formal Service Arrangements with CRA

That, States are urged to ensure that formal service arrangements are made with an APANPIRG-recognised, competent Central Reporting Agency for the submission and analysis of data link problem reports.

3.9 The United States informed the meeting that the FAA contract for IPACG, ISPACG, and NAT would be expanded to include FIT-Asia States without formal service arrangements with a CRA.

3.10 The secretariat stated that they would reach out to each State to assess the suitability of the United States' proposed arrangement.

3.11 The meeting recognised and appreciated the United States for its support of FIT-Asia.

Survey Results for Asia Pacific States PBCS Approval Process (WP/5)

3.12 ICAO provided the outcome of the survey conducted in 2023 for PBCS Approval Process in APAC States. There were 12 responses to the survey and showed that seven administrations had aircraft operators with PBCS approvals and of which six administration conducted direct Approvals.

3.13 Two administrations did not issue specific operational approvals for PBCS. One example showed that for aircraft to be eligible for PBCS separation, they must have achieved RCP 240 and RSP 180 requirements and registered on the FANS central Reporting Agency Website. Another State required that any pilot in command intending to file a PBCS indicator in their flight plan were to meet a set of regulatory requirements.

3.14 Due to the current situation where there were aircraft operating in the APAC PBCS airspace that did not require PBCS approvals by the State, it would present some challenges for En-route monitoring agencies to conduct their duties and responsibilities relating to checks of approval status of aircraft operating in the relevant airspace where horizontal-plane separation is applied. Therefore, the monitoring agencies should note that aircraft from some States do not contain PBCS approvals and may consider the current operations and determine the need to perform PBCS approval checks within their airspace of responsibility.

3.15 In response to the survey, New Zealand updated that they had aircraft operators with PBCS approvals and conduct direct Approvals.

Agenda Item 4: Review of ADS-C/CPDLC Operations and Performance

Data Link Performance Report for China (WP/6)

4.1 Data link performance data for the Lanzhou (ZLLL) and Urumqi (ZWWW) FIRs for the period from January to December 2023 was presented by China. CPDLC and ADS-C system performance was measured against the RCP240 and RSP180 specifications.

4.2 While the overall 95% requirements for RSP180 and RCP240 requirements were met (Table 1**, Table** 2 and **Table** 3), the 99.9% requirements were not, especially for RCP240 within the Lanzhou FIR.

Table 1: ADS-C Performance per Media Type (ZLLL)

FIR	ZLLL					
Criteria	RSP180					
Period	Jan-June 2023			July-December 2023		
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	sage Counts	95%	99.84%	Message Counts	95%	99.90%
		% < = 90sec	% <= 180sec		% < = 90sec	% <= 180sec
By Media Type						
VHF	187951	99.48	99.79	277218	99.47	99.79
SATCOM	135190	97.38	99.54	186223	97.2	99.51
HF	25	24	48	34	26.47	47.05
ALL	323166	98.6	99.7	463475	98.5	99.6

Table 2: CPDLC Performance per Media Type January - June 2023 (ZLLL)

FIR	ZLLL				
Criteria	RCP240				
Period	Jan - Jun 2023				
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark	
		ACP	ACTP	ACP	ACTP
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec
By Media Type					
SAT	892	98.31	99.1	98.43	99.32
VHF	224	98.66	99.55	98.66	99.55
SV	40	85	95	87.5	97.5
VS	20	100	100	100	100
HS	2	100	100	100	100
ALL	1178	97.96	99.06	98.13	99.32

Table 3: CPDLC Performance per Media Type July - December 2023 (ZLLL)

FIR	ZLLL				
Criteria	RCP240				
Period	Jul - Dec 2023				
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark	
		ACP	ACTP	ACP	ACTP
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec
By Media Type					
SAT	1135	98.06	99.03	98.14	99.47
VHF	286	98.6	99.65	98.6	99.65
SV	29	89.65	96.55	93.1	96.55
VS	23	100	100	100	100
HS	2	100	50	100	100
ALL	1475	98.03	99.05	98.16	99.45

4.3 Overall 95% requirements for RSP180 and RCP240 requirements were met (**Table 4, Table** 5 and **Table** 6) within the Urumqi FIR.

Table 4: ADS-C Performance per Media Type (ZWWW)

FIR	ZWWW					
Criteria	RSP180					
Period	Jan-June 2023			July-December 2023		
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95%	99.90%	Message Counts	95%	99.90%
		% < = 90sec	% <= 180sec		% < = 90sec	% <= 180sec
By Media Type						
VHF	113215	99.56	99.82	151399	99.48	99.79
SATCOM	80174	97.43	99.58	100755	97.23	99.46
HF	17	52.94	64.7	14	21.42	64.28
ALL	193406	98.6	99.7	252168	98.5	99.6

Table 5: CPDLC Performance per Media Type January - June 2023 (ZWWW)

FIR	ZWWW				
Criteria	RCP240				
Period	Jan - Jun 2023				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark	
		ACP	ACTP	ACP	ACTP
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec
By Media Type					
SAT	8	100	100	100	100
VHF	5	100	100	100	100
ALL	13	100	100	100	100

Table 6: CPDLC Performance per Media Type July - December 2023 (ZWWW)

FIR	ZWWW				
Criteria	RCP240				
Period	Jul - Dec 2023				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark	
		ACP	ACTP	ACP	ACTP
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec
By Media Type					
SAT	19	100	100	100	100
VHF	0				
ALL	19	100	100	100	100

4.4 The meeting was informed that China would follow up on the issue of IG1 and IGW1, which provided services to both FIRs, from the monitoring perspective. China also informed that B77W, B77L, and B774 would be given extra attention due to their recent low performance.

Data Link Performance Report for Indonesia (WP/8)

4.5 Indonesia presented the data link performance data for 1 January to 31 December 2023 for the Ujung Pandang FIR, and information on actions taken to identify and rectify the causes of performance issues.

4.6 Concisely, ADS-C performance by SATCOM and VHF were able to meet the 95% criterion but failed for 99.90% criterion as shown in **Table 7**. However, ADS-C performance by HF failed to meet the 95% and 99 % criterion in the first semester and data was not available for the second semester. For ADS-C differentiated by RGS/GES, 2 stations had failed to meet 95% and 99.9% criteria (AYQ1 and IG1).

Table 7: ADS-C Performance for the Ujung Pandang FIR per Media Type

Criteria		RSP180					
Period		Jan-June 2023			July-Des 2023		
		Message Counts	95% % <=90sec	99,90% % <=180sec	Message Counts	95% % <=90sec	99,90% % <=180sec
FIR	By Media Type						
WAAF	SATCOM	26128	98,87%	99,73%	30904	99,14%	99,84%
	HF	196	46,77%	64,92%			
	VHF	143313	99,02%	99,42%	127376	99,16%	99,53%
	ALL	169637	98,94%	99,43%	158280	99,16%	99,59%

4.7 The meeting was informed that ANSP had monitored RGS/GES performance from the beginning until the latest 2023 period. Then, the service provider confirmed that numerous ground stations experienced failures during this period. Consequently, SSP needed to initiate close coordination with ANSP as a follow-up action to address the connection issues.

4.8 **Table 8** summarised overall CPDLC performance per Media Type within the Ujung Pandang FIR during 2023.

Table 8: CPDLC Performance for the Ujung Pandang FIR per Media Type

FIR												
Criteria	RCP240											
Period	Jan - Jun 2023						Jul - Dec 2023					
	Message Counts	95% benchmark ACP % <= 180sec	95% benchmark ACTP % <= 120sec	99,9% benchmark ACP % <= 210sec	99,9% benchmark ACTP % <= 180sec	95% PDRT	Message Counts	95% benchmark ACP % <= 180sec	95% benchmark ACTP % <= 120sec	99,9% benchmark ACP % <= 210sec	99,9% benchmark ACTP % <= 180sec	95% PDRT
By Media Type												
SATCOM	5.682	99,23%	99,75%	99,43%	99,82%	96,67%	6715	99,31%	99,68%	99,43%	99,72%	96,68%
SV	316	99,15%	99,69%	99,37%	99,69%	96,88%	386	97,80%	99,77%	97,95%	99,81%	93,52%
VHF	21.305	99,31%	99,83%	99,47%	99,88%	97,35%	23312	99,40%	99,73%	99,57%	99,77%	97,76%
ALL	27303	99,29%	99,81%	99,46%	99,86%	97,20%	30413	99,36%	99,72%	99,51%	99,76%	97,74%

4.9 Indonesia informed the meeting that the ACP for messages sent via Satellite and VHF meet the 95% criteria but marginally fall below the 99.9% criteria. As for CPDLC differentiated by RGS and GES, 7 stations had failed to meet 99.9% criteria as follows EUA2, IG1, SRG1, TWU1 (from period of January to June 2023) and APK2, IG1, SRG, ZAM (from period of July to December 2023).

4.10 The meeting was informed that Indonesia had identified the differentiations based on observation during the period 2023. The result also showed that the ACP that did not meet the criteria

was caused by the low percentages of pilot operational response time (PORT). Therefore, ANSP would notify the airline operators to review procedures to reduce the pilot operational response time (PORT).

4.11 Indonesia's response to the annual regional *Survey of the Status of Current and Planned Implementation of Performance-Based Horizontal Separation Minima* was provided in **FIT-Asia/13 WP/8 Attachment A**.

Data Link Performance Report for Malaysia (WP/9)

4.12 The data link performance report for the Kuala Lumpur FIR for January to December 2023 was presented to the meeting by Malaysia.

4.13 Malaysia informed the meeting that the summary of the ADS-C performance by SATCOM and VHF met the 95% requirement but failed marginally under the 99.9% performance criteria, and the HF media type failed to achieve both performance criteria. The IGW1 performance failed all the criteria for the whole year 2023. Limited VHF Coverage over the Bay of Bengal within Kuala Lumpur FIR may affect the transition duration from VHF to SATCOM. The assessment for ADS-C performance on HF was not statistically significant due to the low amount of data available for analysis. (**Table 9**)

Table 9: Kuala Lumpur FIR ADS-C Downlink Latency per Media Type

FIR	**Kuala Lumpur**					
Criteria	**RSP180**					
Period	**Jan-Jun 2023**			**Jul-Dec 2023**		
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	**Message Counts**	**95%** **% < = 90sec**	**99.90%** **% <= 180sec**	**Message Counts**	**95%** **% < = 90sec**	**99.90%** **% <= 180sec**
By Media Type						
SATCOM	256,849	98.28%	99.54%	239,367	98.56%	99.65%
VHF	246,836	99.44%	99.82%	248,089	99.45%	99.82%
HF	57	51.75%	88.22%	50	61.67%	88.48%
ALL	503,742	98.85%	99.68%	487,506	99.01%	99.73%

4.14 Malaysia informed the meeting that the overall CPDLC performance per Media Type, RGS and GES for messages sent within the Kuala Lumpur FIR during 2023, where performance did not meet the RCP240 performance criteria. (**Table 10** and **Table** 11)

Table 10: Kuala Lumpur FIR CPDLC Performance Latency per Media Type – January-June 2023

FIR	Kuala Lumpur					
Criteria	RCP240					
Period	Jan-Jun 2023					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	%<60secs
By Media Type						
SATCOM	31,937	98.39%	98.54%	99.00%	99.19%	95.68%
VHF	51,286	99.43%	99.65%	99.57%	99.76%	97.57%
HF	353	87.13%	87.68%	90.42%	95.09%	78.47%
ALL	83,576	98.98%	99.18%	99.31%	99.52%	96.77%

Table 11: Kuala Lumpur FIR CPDLC Performance Latency per Media Type – July-December 2023

FIR	Kuala Lumpur					
Criteria	RCP240					
Period	Jul-Dec 2023					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP	ACTP	ACP	ACTP	PORT
		% < =180sec	% <= 120sec	% < = 210sec	% <= 150sec	%<60secs
By Media Type						
SATCOM	32,586	98.36%	98.65%	98.99%	99.24%	95.38%
VHF	58,260	99.47%	99.67%	99.61%	99.77%	97.52%
HF	310	90.86%	91.81%	93.68%	94.68%	85.16%
ALL	91,156	99.04%	99.28%	99.37%	99.56%	96.71%

4.15 Malaysia informed the meeting that limited VHF Coverage over the Bay of Bengal within Kuala Lumpur FIR may affect the transition duration from VHF to SATCOM. Malaysia would continuously monitor RCP240 performance and stressed the need for local operators to improve their avionic.

4.16 The meeting was informed that Malaysia, taking a proactive approach, would evaluate ACTP performance and its data link system capabilities, as the data indicates that ACTP and PORT were the leading causes of delayed CPDLC performance. Malaysia would actively engage with operators, especially local ones.

4.17 The meeting was also informed that AIC 01/24 was published to support the PBCS implementation plan and airline fleet readiness, focusing on Malaysia Airlines B738 and Air Asia A333 as the local operators during our internal stakeholder engagement. Furthermore, Malaysia initiated talks on ADS-B data exchange with neighbouring States to explore the potential of implementing Space-Based ADS-B as an enhancement strategy for operations in the Bay of Bengal within the Kuala Lumpur FIR.

Data Link Performance Report for Sri Lanka (WP/10)

4.18 The data link performance of ADS-C/CPDLC data in Colombo FIR (VCCF) for January to December 2023 was provided to the meeting.

4.19 The overall ADS-C performance per media type, Remote Ground Station (RGS), and Ground Earth Station (GES) for downlinks sent within the VCCF FIR during 2023 showed that the messages sent met the RSP180 95% criterion but marginally fell below the 99.9% criterion in the year 2023. (**Table 12**)

Table 12: VCCF FIR ADS-C Downlink Latency per Media Type

FIR	VCCF					
Criteria	RSP180					
Period	Jan-June 2023			July-December 2023		
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95% % < = 90sec	99.90% % <=180sec	Message Counts	95% % < = 90sec	99.90% % <= 180sec
By Media Type						
SATCOM	199915	97.84%	99.38%	239966	98.23%	99.58%
VHF	55670	99.75%	99.80%	81531	98.95%	99.89%
HF	-	-	-	-	-	-
ALL	255585	98.79%	99.59%	321497	98.59%	99.73%

4.20 **Table 13** and **Table** 14 summarised overall CPDLC performance per Media Type, messages sent within the VCCF FIR during 2023. In summary, the CPDLC performance by SATCOM and VHF were able to meet the 95% criterion but failed marginally for 99.9% criterion. There was no message count for HF.

Table 13: VCCF FIR CPDLC Performance Latency per Media Type – January-June 2023

FIR	VCCF				
Criteria	RCP 240				
Period	Jan - Jun 2023				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark	
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec
By Media Type					
SATCOM	13826	98.85%	99.85%	99.21%	99.92%
VHF	3942	99.53%	99.91%	99.79%	99.95%
HF	-	-	-	-	-
ALL	17768	99.19%	99.88%	99.50%	99.94%

Table 14: VCCF FIR CPDLC Performance Latency per Media Type – July-December 2022

FIR	VCCF				
Criteria	RCP 240				
Period	Jul - Dec 2023				
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark	
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec
By Media Type					
SATCOM	19775	99.37%	99.85%	99.57%	99.87%
VHF	6718	99.61%	99.91%	99.71%	99.95%
HF	-	-	-	-	-
ALL	26493	99.49%	99.88%	99.64%	99.91%

4.21 Sri Lanka informed the meeting that a few airline operators failed to meet the required performance. The ANSP had taken measures to notify the CAASL (Civil Aviation Authority of Sri Lanka) to take appropriate corrective actions.

4.22 The meeting was informed that the ATM system was being upgraded to display the PBCS capability on the target label. The letter P would be displayed on the target label for those compliant with RSP180/RCP 240 criteria. Sri Lanka emphasised the importance of conducting a safety assessment and obtaining regulatory approval before implementing PBCS operations, to ensure the audience feels secure about the upcoming changes.

Data Link Performance Report for Singapore FIR (WP/11)

4.23 The data link performance data for 2023 for the Singapore FIR (WSJC), and the information on actions taken to identify and rectify the causes of performance issues were presented to the meeting.

4.24 The ADS-C performance by SATCOM and VHF were able to meet the 95% criteria and HF had failed the criteria as shown in **Table 15**. The assessment for ADS-C performance by HF was not statistically significant due to the low number of data points, Singapore had reminded the airline operators to use SATCOM and VHF in WSJC FIR.

Table 15: WSJC FIR ADS-C Downlink Latency per Media Type

FIR	**WSJC**					
Criteria	**RSP180**					
Period	**Jan-Jun 2023**			**Jul-Dec 2023**		
Colour Key Meets Criteria 99.0%-99.84% Under Criteria	**Message Counts**	**95%** **% < = 90sec**	**99.90%** **% <= 180sec**	**Message Counts**	**95%** **% < = 90sec**	**99.90%** **% <= 180sec**
By Media Type						
SATCOM	113059	95.83%	99.29%	132555	95.96%	99.41%
VHF	581779	99.61%	99.90%	680335	99.68%	99.92%
HF	134	65.42%	89.18%	114	61.07%	88.21%
ALL	694972	98.99%	99.80%	813004	99.07%	99.84%

4.25 Singapore informed the meeting that six stations did not meet the 95% and 99.9% criteria for ADS-C differentiated by RGS/GES. Singapore reported the issue to the CRA, and the investigation revealed that the aircraft experiencing problems were operating in an area with limited VHF coverage over the South China Sea. The delay could be attributed to the switch from VHF to SATCOM. Additionally, it was observed that other air navigation service providers reported satisfactory ADS-C performance on the same aircraft within their respective FIR.

4.26 It was reported that two types of aircraft operators did not meet the 95% and 99% RSP180 criteria in the first half of 2023, while three types failed to meet the same criteria in the second half of the year. Singapore presented its analysis at the meeting and stated that it would keep monitoring the performance of these five aircraft operators. If any of them failed to meet the three-month moving average for the RSP180 criteria, Singapore would contact the operators through their EMAs and submit a problem report to the CRA.

4.27 The CPDLC performance by SATCOM and VHF were able to meet the 95% criterion but failed marginally for 99.9% criterion as shown in **Table 16** and **Table 17**. There was no message count for HF in 2023.

Table 16: WSJC FIR CPDLC Performance Latency per Media Type – January-June 2023

FIR	WSJC					
Criteria	RCP240					
Period	Jan-Jun 2023					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark		
		ACP	ACTP	ACP	ACTP	
		% < = 180sec	% <= 120sec	% < = 210sec	% <= 150sec	
By Media Type						
SATCOM	12165	98.59%	98.50%	99.17%	99.09%	
SV	4488	98.66%	99.00%	98.90%	99.36%	
VHF	27935	99.21%	99.40%	99.29%	99.48%	
VS	1029	96.60%	96.02%	97.52%	99.50%	
HF						
ALL	45547	98.94%	99.05%	99.19%	99.32%	

Table 17: WSJC FIR CPDLC Performance Latency per Media Type – July-December 2022

FIR	WSJC					
Criteria	RCP240					
Period	Jul-Dec 2023					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	95% Benchmark		99.9% Benchmark		
		ACP	ACTP	ACP	ACTP	
		% < =180sec	% <= 120sec	% < = 210sec	% <= 150sec	
By Media Type						
SATCOM	16510	98.94%	98.72%	99.35%	99.23%	
SV	5129	98.75%	98.92%	99.33%	99.31%	
VHF	34248	99.49%	99.59%	99.56%	99.68%	
VS	1271	97.14%	96.02%	97.94%	97.97%	
HF						
ALL	52029	99.25%	99.22%	99.45%	99.50%	

4.28 It was mentioned that Singapore had submitted a problem report to the CRA and would keep an eye on the performance of SIA/B38M and BAV/B789. If these aircraft failed to meet the RCP240 criteria over a three-month period, Singapore would contact the airline through their EMAs and submit a problem report to the CRA.

4.29 The meeting was informed that Singapore experienced two datalink outages in 2023. The first outage occurred on March 3, 2023, due to a failed restart during a planned change on the ATC Gateway. The second outage happened between April 17 and 18, caused by an INMARSAT services outage on April 16, which was resolved on April 19 at 1454 UTC. Performance-based separation was reinstated on April 20 after ARINC confirmed the restoration of INMARSAT services and the stabilisation of the datalink connection with aircraft.

Asia/Pacific Region Combined PBCS Monitoring Report (WP/12)

4.30 Japan presented the aggregated data link performance monitoring report for the Asia/Pacific Region, prepared by Japan. **Table 18** listed the FIRs for which data link performance reports were provided and included in the regional report.

Table 18: 2023 Data Performance – Reporting FIRs

Reporting FIRs		
State	**FIR**	**Location Indicator**
United States	Anchorage Oceanic	PAZA
Japan	Fukuoka	RJJJ
United States	Oakland Oceanic	KZAK
Fiji	Nadi*1	NFFF
French Polynesia	Tahiti	NTTT
New Zealand	Auckland Oceanic	NZZO
Australia	Brisbane	YBBB
	Melbourne	YMMM
Philippines	Manila	RPHI
Sri Lanka	Colombo	VCCF
India	Mumbai*2	VABF
	Chennai	VOMF
	Kolkata	VECF
Viet Nam	Ho-Chi-Minth	VVTS
Indonesia	Ujung Pandang	WAAF
Singapore	Singapore	WSJC
China	Lanzhou	ZLLL
	Urumqi	ZWWW
Malaysia	Kuala Lumpur	WMFC

*1 Nadi: January-October data only
*2 Mumbai: August-December data only

4.31 The meeting was reminded that the performance criteria and the colour codes used by FIT-Asia (shown in **Table 19** and **Table** 20) were slightly different from other FITs.

Table 19: Performance Criteria

CRITERIA		
	95%	99.90%
ASP	% < = 90sec	% <= 180sec
ACP	% <= 180sec	% <= 210sec
ACTP	% <= 120sec	% <= 150sec
PORT	% < 60sec	

Table 20: Colour Codes

Actual data	FIT-Asia	IPACG	CRA (PAC)
98.94%	98.94%	98.94%	98.9%
98.95%	98.95%	98.95%	99.0%
99.00%	99.00%	99.00%	99.0%
99.84%	99.84%	99.84%	99.8%
99.85%	99.85%	99.85%	99.9%
99.90%	99.90%	99.90%	99.9%

4.32 **Table 21** showed the combined data for RSP across all media types in 2023. The 95 percent standard was achieved in all FIRs. None of the FIRs met the 99.9 percent standard, but all FIRs except Chennai achieved a clearance rate of 99.0 percent.

Table 21: RSP Aggregated Data (All Media Types)

ACTUAL SURVEILLANCE PERFORMANCE - FIR AGGREGATE (ALL MEDIA TYPES)						
Region	Asia-Pacific Region					
Performance Criteria	RSP180					
Time Period	2023 January-June			2023 July-December		
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria	Message Counts	Criteria		Message Counts	Criteria	
		95%	99.90%		95%	99.90%
FIR		% < = 90sec	% <= 180sec		% < = 90sec	% <= 180sec
PAZA	1510971	98.85%	99.65%	1774333	98.33%	99.48%
RJJJ	2371615	98.41%	99.62%	3057643	98.43%	99.58%
KZAK	5103764	98.85%	99.73%	5040555	98.68%	99.58%
NFFF	271083	99.11%	99.61%	197629	98.99%	99.53%
NTTT	95276	99.58%	99.80%	103928	99.56%	99.82%
NZZO	414330	98.97%	99.70%	471687	98.81%	99.64%
YBBB	1116402	99.52%	99.83%	1286584	99.50%	99.82%
YMMM	846180	99.05%	99.55%	913946	99.50%	99.81%
RPHI	431079	98.39%	99.31%	563565	98.37%	99.35%
VCCF	255585	98.79%	99.59%	321497	98.59%	99.73%
VABF				522944	97.49%	99.15%
VOMF	226298	97.16%	98.72%	287769	99.11%	99.14%
VECF	470003	98.21%	99.23%	417838	98.36%	99.25%
VVTS	227123	98.85%	99.75%	254460	98.92%	99.75%
WAAF	169637	98.94%	99.43%	158334	99.14%	99.58%
WSJC	694972	98.99%	99.80%	813004	99.07%	99.84%
ZLLL	323166	98.60%	99.70%	463475	98.50%	99.60%
ZWWW	193406	98.60%	99.70%	252168	98.50%	99.60%
WMFC	503742	98.85%	99.68%	487506	99.01%	99.73%

4.33 The meeting was informed that **Figure 2** illustrated the numbers of RSP message counts in most FIRs increased from the first half of 2023 to the second half of 2023. The FIRs which recorded more than 20 percent increase were Fukuoka, Manila, Colombo, Chennai, Lanzhou and Urumqi.

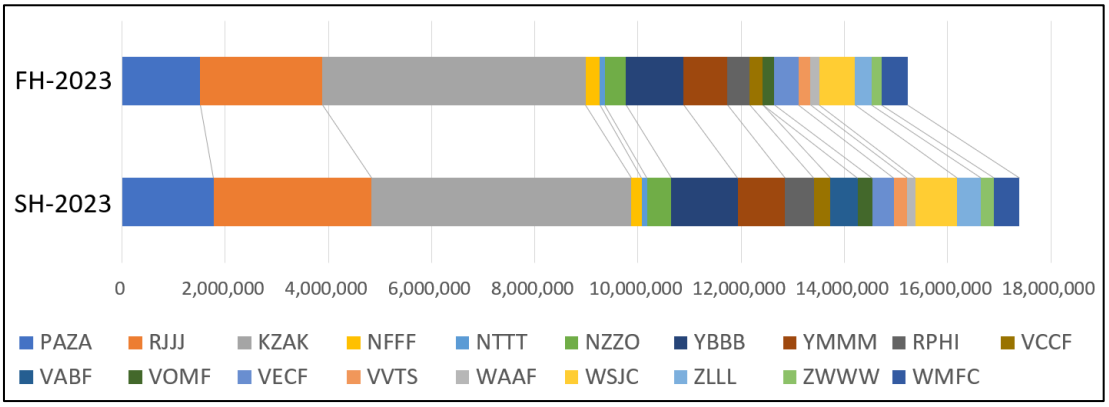

Figure 2: RSP Message Counts of Each FIR in 2023

4.34 In the latter part of 2023, the number of RSP message counts surpassed 17 million, surpassing the count from 2019 prior to the COVID-19 outbreak. (**Figure 3**)

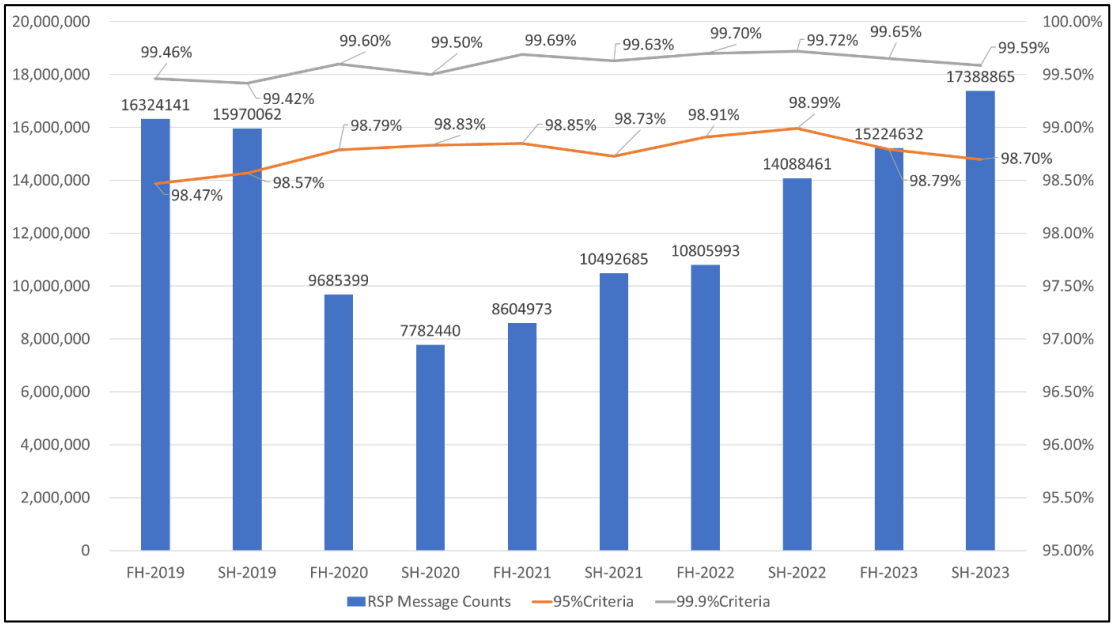

Figure 3: Number of RSP Message Counts and Percentage of Meeting 95% and 99.90% Criteria in 2023

4.35 The 95 percent ACP criteria were met in all FIRs except for the second half of 2023 in Ho Chi Minh FIR. Although Urumqi FIR achieved all criteria in the whole of 2023, the numbers of message counts were below one hundred (**Table 22**).

Table 22: RCP Aggregated Data (All Media Types) in 2023

ACTUAL COMMUNICATION PERFORMANCE - FIR AGGREGATE (ALL MEDIA TYPES)										
Region	Asia-Pacific Region									
Performance Criteria	RCP240									
Time Period	2023 January-June					2023 July-December				
Colour Key: Meets Criteria; 99.0%-99.84%; Under Criteria	Message Counts	ACP Criteria		ACTP Criteria		Message Counts	ACP Criteria		ACTP Criteria	
		95%	99.90%	95%	99.90%		95%	99.90%	95%	99.90%
FIR		% < = 180sec	% <= 210sec	% < = 120sec	% <= 150sec		% < = 180sec	% <= 210sec	% < = 120sec	% <= 150sec
PAZA	96168	99.24%	99.51%	99.35%	99.55%	108973	99.22%	99.47%	99.32%	99.52%
RJJJ	51322	99.70%	99.83%	99.74%	99.81%	64259	99.67%	99.80%	99.72%	99.80%
KZAK	319665	99.32%	99.57%	99.52%	99.68%	362176	99.31%	99.54%	99.49%	99.65%
NFFF	10739	99.43%	99.66%	99.65%	99.73%	6856	99.64%	99.75%	99.72%	99.78%
NTTT	9370	99.55%	99.59%	99.80%	99.83%	9848	99.63%	99.70%	99.77%	99.80%
NZZO	78677	99.07%	99.36%	99.53%	99.71%	84773	99.13%	99.40%	99.49%	99.65%
YBBB	31567	99.53%	99.67%	99.54%	99.70%	36095	99.45%	99.67%	99.45%	99.60%
YMMM	38482	99.44%	99.60%	99.45%	99.62%	39375	99.69%	99.81%	99.71%	99.80%
RPHI	16263	98.01%	98.26%	98.74%	98.91%	34167	98.04%	98.30%	98.60%	98.77%
VCCF	17768	99.19%	99.50%	99.88%	99.94%	26493	99.49%	99.64%	99.88%	99.91%
VABF						84996	98.66%	99.16%	99.38%	99.68%
VOMF	92927	99.72%	99.81%	99.79%	99.85%	103692	99.74%	99.83%	99.83%	99.88%
VECF	22343	98.63%	98.98%	99.01%	99.15%	27550	99.15%	99.36%	99.42%	99.60%
VVTS	70225	95.19%	95.78%	99.41%	99.60%	76131	94.76%	95.37%	99.60%	99.74%
WAAF	27512	99.19%	99.73%	99.36%	99.80%	30676	99.28%	99.44%	99.65%	99.72%
WSJC	45547	98.94%	99.19%	99.05%	99.32%	57158	99.21%	99.44%	99.31%	99.53%
ZLLL	1178	97.96%	98.13%	99.06%	99.32%	1475	98.03%	98.16%	99.05%	99.45%
ZWWW	13	100.00%	100.00%	100.00%	100.00%	19	100.00%	100.00%	100.00%	100.00%
WMFC	83576	98.98%	99.18%	99.31%	99.52%	91156	99.04%	99.28%	99.37%	99.56%

4.36 **Figure 4** illustrated the RCP message counts for each FIR in 2023, while **Table 22** indicated that the majority of FIRs saw an increase in message counts from the first to the second half of the year. FIRs such as Fukuoka, Manila, Colombo, Kolkata, Singapore, Lanzhou, and Urumqi experienced over a 20 percent rise. Notably, the Manila FIR saw its message counts more than double during this period.

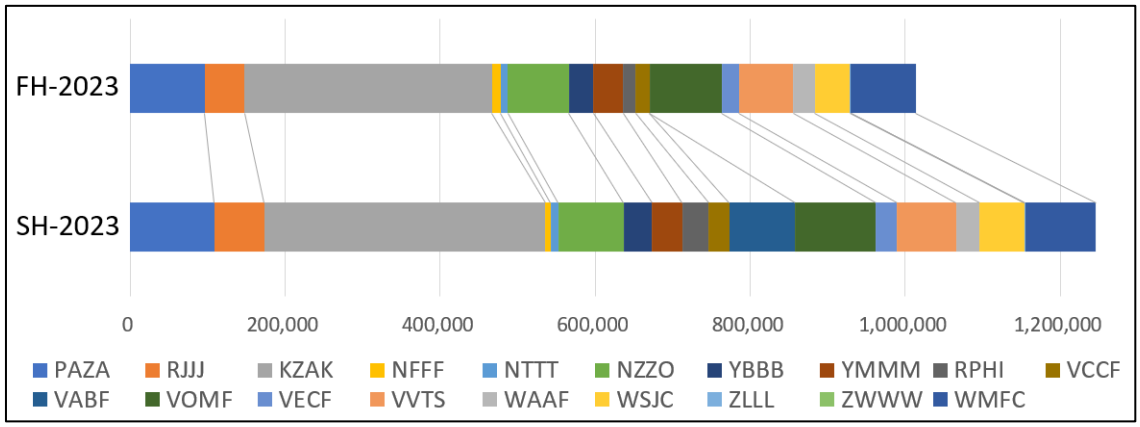

Figure 4: RCP Message Counts of Each FIR in 2023

4.37 The data presented in **Figure 5** and **Figure** 6 showed that the RCP message counts for ACP and ACTP were at their lowest in the latter part of 2020. Subsequently, there was a noticeable increase in these counts, reaching their peak in the latter part of 2023. By the second half of 2023, the RCP message counts had surpassed 1.2 million, significantly higher than the counts in 2019 prior to the COVID-19 outbreak.

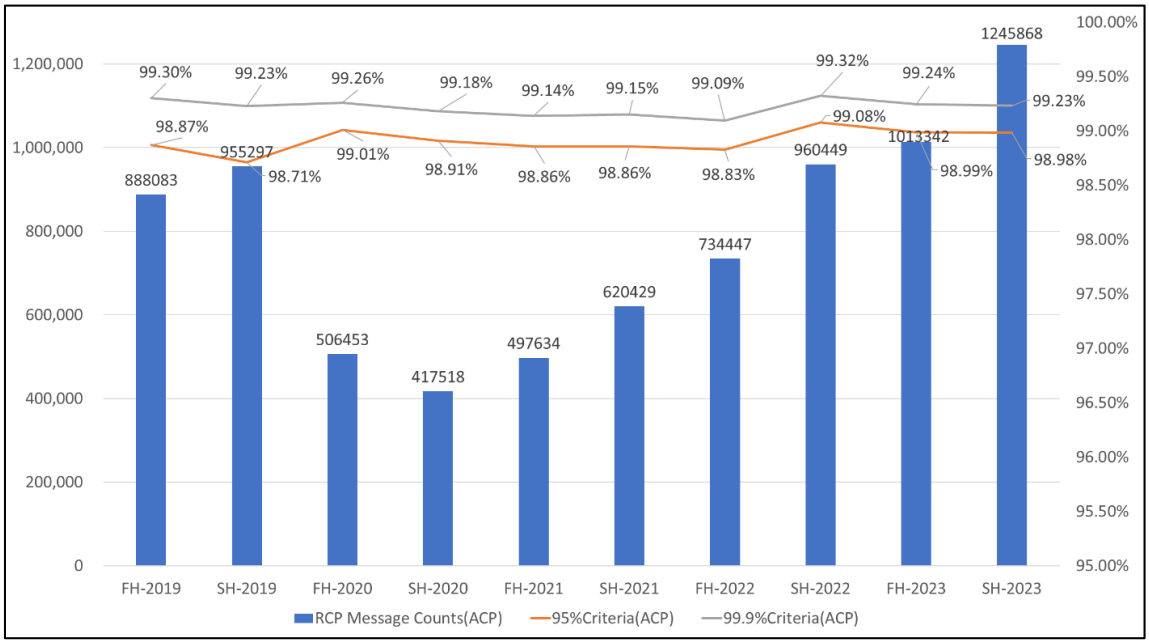

Figure 5: Number of RCP Message Counts, and Percentage Meeting 95% and 99.90% Criteria (ACP)

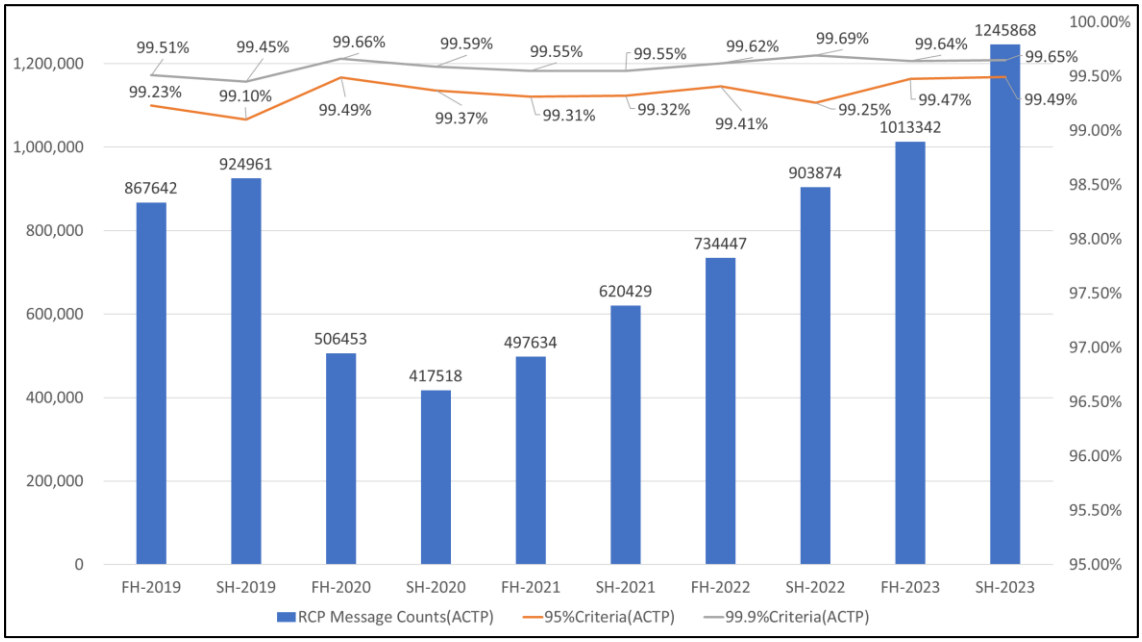

Figure 6: Number of RCP Message Counts, and Percentage Meeting 95% and 99.90% Criteria (ACTP)

4.38 Regarding RCP issues extracted by designators and media types from January to June 2023, the meeting was informed that the numbers of RCP issues of VHF were the worst, and the RCP issues of SAT were the second and approximately 30 to 40 percent.

4.39 **Table 23** provided a detailed breakdown of the combinations of airlines and aircraft types that did not meet PORT compliance, with message counts exceeding one thousand in the first or second half of 2023. During FIT-Asia/13, the MD11 operated by FedEx Express (FDX) had poor PORT performance in the Pacific Ocean airspace in 2022 at KZAK, RJJJ, and PAZA. However, the PORT performance of these specific aircraft has since improved, meeting PORT criteria in 2023. The A359 operated by Singapore Airlines (SIA) had PORT issues in RPHI throughout 2023, starting from the second half of 2022.

Table 23: Combinations of Aircraft Operators and Types Confirmed Non-Compliance of PORT

Performance Criteria		RCP240											
Period		2023 January-June						2023 July-December					
Colour Key: Meets Criteria / 99.0%-99.84% / Under Criteria		Message Counts	ACP Criteria		ACTP Criteria		PORT	Message Counts	ACP Criteria		ACTP Criteria		PORT
			95%	99.90%	95%	99.90%	95%		95%	99.90%	95%	99.90%	95%
			% < = 180sec	% <= 210sec	% < = 120sec	% <= 150sec	% <= 60sec		% < = 180sec	% <= 210sec	% < = 120sec	% <= 150sec	% <= 60sec
FIR	Aircraft Operator / Type	By Aircraft Operator / Type (only message counts >100 recorded)											
PAZA	CPA/B748	2594	96.34%	97.88%	95.99%	97.19%	95.07%	2926	98.02%	99.32%	98.80%	99.08%	94.74%
KZAK	UAL/B738	4801	97.58%	98.46%	98.33%	99.29%	94.42%	6815	97.42%	98.33%	98.33%	99.22%	94.42%
KZAK	MIL/C17	3100	98.55%	98.71%	99.74%	99.81%	94.48%	3841	98.13%	98.41%	99.66%	99.82%	94.32%
KZAK	MIL/K35R	1574	98.28%	98.73%	99.49%	99.49%	92.76%	1517	98.75%	99.14%	99.80%	99.80%	91.30%
KZAK	VOZ/B38M							1091	96.70%	97.98%	98.35%	98.53%	94.50%
RPHI	CAL/A359	980	95.56%	96.08%	95.05%	95.82%	94.56%	1344	94.72%	95.24%	94.70%	95.16%	93.38%
RPHI	CSN/B789	1009	97.57%	97.68%	96.45%	96.86%	95.98%	2282	95.97%	96.33%	95.57%	96.01%	93.73%
RPHI	SIA/A359	1247	96.44%	96.74%	97.34%	97.79%	93.10%	2354	95.16%	95.77%	95.13%	95.80%	92.82%
RPHI	SIA/B78X	645	96.51%	96.74%	95.87%	96.35%	94.57%	1402	95.86%	96.14%	95.76%	96.14%	93.44%
VCCF	ETD_B77W	774	99.90%	99.90%	100.00%	100.00%	99.95%	1012	99.54%	99.54%	99.80%	99.80%	93.17%
VCCF	GIA_B77W	892	99.77%	99.91%	100.00%	100.00%	99.92%	1826	99.81%	99.93%	100.00%	100.00%	90.06%
VCCF	LNI_A333	1493	99.89%	99.94%	100.00%	100.00%	99.95%	1593	100.00%	100.00%	100.00%	100.00%	90.06%
VCCF	MAS_B738	552	99.33%	99.49%	99.67%	100.00%	99.62%	1477	99.41%	99.41%	99.85%	99.85%	94.63%
VCCF	QTR_A388	626	97.81%	97.81%	98.74%	99.66%	94.78%	1041	99.69%	100.00%	100.00%	100.00%	93.40%
VCCF	SVA_B77W	914	99.69%	99.79%	100.00%	100.00%	99.85%	2281	95.61%	99.10%	97.82%	99.24%	94.17%
VABF	ALK/A333							1287	98.95%	99.32%	99.71%	100.00%	94.02%
VABF	ETD/A320							1006	95.56%	96.92%	98.93%	99.24%	88.87%
VABF	ETD/A321							1481	94.73%	96.60%	98.67%	98.91%	87.58%
VABF	QTR/A333							1393	98.38%	98.99%	99.85%	99.95%	93.54%
VABF	SVA/A333							1640	97.41%	98.35%	99.88%	99.91%	86.46%
VVTS	CAL	1762	95.52%	96.00%	99.82%	99.96%	92.19%	1086	95.27%	95.95%	99.55%	99.85%	91.48%
VVTS	CES	355	92.92%	93.75%	98.92%	99.06%	90.14%	1009	95.14%	95.76%	99.43%	99.50%	92.41%
VVTS	CPA	2018	92.63%	93.26%	99.86%	99.89%	88.73%	2720	94.19%	94.67%	99.92%	99.97%	89.85%
VVTS	EVA	1931	96.79%	97.16%	99.74%	99.85%	94.41%	1361	96.03%	96.39%	99.87%	100.00%	92.65%
VVTS	KAL	3649	94.71%	95.47%	99.47%	99.70%	91.26%	2748	92.83%	93.51%	99.54%	99.76%	88.83%
VVTS	MAS	1647	95.90%	96.77%	99.40%	99.50%	93.14%	2285	95.65%	96.39%	99.26%	99.40%	93.26%
VVTS	SCO	2739	96.89%	97.20%	99.89%	99.98%	94.93%	3616	95.60%	96.02%	99.92%	99.95%	93.86%
VVTS	SIA	1225	93.55%	94.60%	98.86%	99.53%	90.86%	1699	93.47%	95.00%	98.68%	99.35%	90.64%
VVTS	XAX	966	95.31%	95.65%	99.72%	99.83%	92.34%	1706	94.57%	95.01%	99.56%	99.78%	91.44%
WAAF	CPA/B77W	395	98.88%	99.23%	100.00%	100.00%	91.14%	1088	98.53%	99.51%	100.00%	100.00%	94.12%
WMFC	MAS/B738	2127	96.10%	97.46%	97.13%	98.92%	91.07%	2617	94.31%	96.22%	95.91%	98.24%	89.49%
WMFC	SIA/B38M	1345	97.11%	97.81%	98.14%	98.71%	93.83%	1527	96.23%	97.31%	98.15%	98.85%	92.53%
WMFC	SVA/B78X	885	98.66%	98.98%	99.47%	100.00%	95.25%	1022	97.85%	99.07%	99.66%	100.00%	94.72%
WMFC	THY/B77W	2809	98.50%	99.06%	98.97%	99.42%	95.09%	1562	98.44%	99.24%	98.58%	99.17%	92.38%

4.40 The meeting was informed that the details, including PBCS data provided by States/Administrations, could be found in **FIT-Asia/14 WP/12 Attachment A - E**.

4.41 States/Administrations were invited to double-check the data before submission each year to avoid format errors and consistency issues.

4.42 The meeting acknowledged Japan for its contribution to the forum.

Procedure for the Asia Pacific Region Combined PBCS Monitoring Report (WP/13)

4.43 The secretariat informed the meeting that the USA, China and Japan, as part of our collaborative efforts, volunteered to provide the aggregated regional data as the Asia/Pacific Region Combined PBCS Monitoring Report previously.

4.44 The meeting reaffirmed that one of the FIT-Asia Task List stated *prepare aggregated Regional Data Link Performance Data for submission to FIT-Asia and RASMAG*, and FIT-Asia/12 agreed one of the FIT-Asia's State would take over the charge from 2025.

4.45 The meeting agreed that Indonesia and Malaysia had volunteered for task to compile the data jointly for two years from 2025.

4.46 In response to a query, Japan agreed to close coordination for the smooth transition of the task.

Sharing of SATCOM-related Investigation (Flimsy/1)

4.47 This flimsy presented the annual technical matters review for CPDLC and ADS-C over Lanzhou and Urumqi FIR. China noted the performance of APK2 was above the SATCOM half-year average whereas the XXP, with less data count, failed to meet the 95% benchmark in the whole year despite both services were provided through the same satellite. China explained the performance difference lay with different ACARS service providers.

4.48 China reported on their follow-up actions to the RAT1 function in response to the IP/02 of FIT-Asia/13. They examined the data of several underperformed B777 aircraft and noted by the operators that those underperformed fleet had updated the system and software to the latest version which would solve the issue.

Monitoring Comparison APK vs XXA SATCOM (Flimsy/3)

4.49 In response to points raised in Flimsy/1, New Zealand provided additional information on a comparison between ARINC/SITA SATCOM performance using ADS-C downlinks in NZZO FIR and the use of such data by Airways New Zealand.

4.50 With the information from New Zealand, it was concluded that the poor performance through an RGS was likely to be related to the individual aircraft performance using the RGS.

4.51 For comparison purpose, New Zealand shared the ADS-C Performance data and noted no performance difference between SITA/ARINC RGS in NZZO.

Agenda Item 5: Data Link Developments and Guidance Material

PBCS Long-Term Monitoring Mechanism in China (WP/14)

5.1 China presented an introduction to PBCS Long-Term Monitoring and actions taken in China.

5.2 In accordance with ICAO Doc 9869 and ICAO Doc 10037, strict safety oversight of air traffic services and ongoing monitoring are essential for the successful implementation of RCP and RSP specifications. Since the initial implementation, ongoing efforts have been to create a sustainable

monitoring system. In October 2022, the CAAC Air Traffic Management Bureau (ATMB) introduced the PBCS Regulation, which details the monitoring responsibilities. This document seeks to outline the process of long-term monitoring in China.

5.3 China informed the meeting that the regulation specified different aspects of PBCS monitoring in China, covering four main categories of requirements: general requirements, approval management, problem reporting, and operational assessments.

5.4 The meeting was informed that China RMA reached out to the States to initiate a discussion, urging all parties involved to approach the issues from a new angle and take proactive steps towards resolving the problem.

PBCS Monitoring Guidance (WP/15)

5.5 New Zealand presented information on current PBCS performance monitoring by Airways New Zealand, including a case study for illustration. In addition, it was recommended that the guidance material on PBCS monitoring NAT Doc 011 guidance to be incorporated into the Asia Pacific Guidance Material for end-to-end safety and performance monitoring of ATS data link systems.

5.6 The NAT guidance focused on the reporting and filtering of under-performing airframes and providing guidance for State Oversight Authorities. The guidance is broken down into three phases namely: Phase 1 – ATSP, Phase 2 – RMA and Phase 3 – State Oversight Authority, and is reliant on the positive participation of aircraft operators in accordance with the PBCS Global Charter.

Review of Guidance Material for End-To-End Safety and Performance Monitoring of ATS Data Link Systems in the Asia/Pacific Region (WP/16)

5.7 As an outcome of Task item RASMAG28/1, ICAO proposed amendments to the Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region. A summary of the proposed amendments presented were listed below:

Section 1 – Background

- *Paragraph 1.7* – Added rationale of PBCS monitoring and non-compliance reporting [From RASMAG28 WP 21]

Section 2 – Requirements for Safety and Performance Monitoring

- *Paragraph 2.XX* (in between 2.7 and 2.8) – Added additional guidance for reporting and filtering of under-performing airframes by ANSPs as well as guidance for State Oversight Authorities from the EUR NAT Doc 011.
- *Paragraph 2.8 to 2.XX*– Added PBCS Non-Compliance Reporting and actions of various stakeholders namely: monitoring agencies and ANSP. The process of PBCS non-compliance reporting was adopted by *APANPIRG/34 - Conclusion RASMAG/28-4 Removal of EMA handbook Appendix A and Guidance for PBCS Non-Compliance Reporting* refers.

Section 4 – Establishment and Operation of an Interoperability Team and CRA

- *Paragraph 4.1d)* – added the APANPIRG Conclusion 34/8 - Formal Service Arrangements with CRA refers.

Section 5 – Interoperability Teams

- *Paragraph 5.5 and 5.6* – Updated the Role of the Interoperability Teams from Fit-Asia/13 TOR.
- *Paragraph 5.7* – Deleted. Please see rationale below under Appendix B

Section 7 – Working Principles for Central Reporting Agencies

- *Paragraph 7.XX* (in between 7.16 and 7.17) – Added the purpose of standardising the presentation of performance data and to provide guidance in the steps for analysis and reporting of PBCS performance Reporting templates and guidance. Conclusion RASMAG/23-2: PBCS Action List for ANSPs and Conclusion RASMAG/23-3 refers.
- *Paragraph* 7.16, 7.18 and 7.19) – Amended to reflect the current process.

Appendix B: Model Terms of Reference for an Interoperability Team

- Deletion of Appendix B. Since FIT-Asia had evolved from FIT-SEA and FIT-BOB and had been established for many years. The current FIT-Asia TOR in Section 5 should suffice.

Appendix D: System Performance Criteria

- To be renumbered as Appendix C
- Added background information of Doc 9869 and its references to System Performance Criteria of RCP and RSP.
- Deletion of the tables in section D.1 Required Communication Performance Specifications and D.2 Surveillance Performance Specifications which contained duplicate information found in Doc 9869.

5.8 The meeting agreed to the changes in the Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region, inclusion of EUR NAT Doc 011 on the ICAO APAC eDocument and the following draft conclusion:

Draft Conclusion FIT-Asia/14-1: Revised Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region and Additional PBCS Guidance Material NAT Doc 011

That, the revised Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region at **Appendix D to the report** be adopted and uploaded to the Asia/Pacific Regional Office eDocuments webpage to replace the existing version;

and the EUR NAT Doc 011 – PBCS Monitoring and Reporting Guidance, 1st Ed.- Amdt. 2, at **WP/15 Attachment 1** be uploaded on the ICAO Asia/Pacific Regional Office eDocuments webpage.

Inmarsat Aeronautical Satellite Safety Communications Update (IP/04)

5.9 Inmarsat presented an update of their satellite network and services for aeronautical communications to support Air Traffic Management and safety operations as an ICAO Charter stakeholder.

5.10 The meeting was informed on the satellite fleet arrangement carried out in 2023 and the upcoming plans for the L-band satellite strategy. Inmarsat also provided information regarding their network and system updates to enhance resiliency and performance monitoring.

5.11 The meeting raised concerns on the issue of satellite I4F1 being relocated for contingency use only and the single satellite coverage over part of the Pacific Ocean. Inmarsat claimed that due to technical issue, satellite I4F1's capability was reduced requiring relocation to provide contingency service only while another satellite took over the service. Inmarsat supplemented that more satellites were planned to launch and expected in 2026, the Pacific would be supported with dual coverage.

A Quick Review of Outage Monitoring (Flimsy/02)

5.12 China shared the mechanism adopted to manage system outage. The meeting was introduced with the concept in reviewing availability and the ways to quantify parameters for evaluation. China stressed on the importance of Long-term Monitoring and the presence of an Operational Notification Mechanism to provide adequate service level and notification to stakeholders.

5.13 A series of questions were raised to seek information and experience in improving the understanding over the availability and the impacts of the outage. China invited member States to provide feedback for those questions before the next meeting.

Agenda Item 6: Data Link-related ANS Deficiencies

Air Navigation Deficiencies Relating to Data Link Performance Monitoring and Analysis (WP/17)

6.1 The Secretariat presented an update on the status of Asia/Pacific engagement in data link problem reporting through the FANS-CRA website, and performance analysis reporting to a recognised FIT.

6.2 The Secretariat presented the relevant excerpt of the APANPIRG ATM and Airspace Safety Deficiencies List (**Appendix E**) for review by the meeting.

Maldives: Problem reports not provided to CRA. Performance monitoring and analysis not reported to FIT.

India: Performance monitoring and analysis not reported for Mumbai FIR.

6.3 The meeting was informed that India provided the PBCS Performance Monitoring Analysis and Reporting for Mumbai FIR for five months last year (i.e., August – December 2023) with ICAO APAC. However, India did not respond to the survey on the Status of Current and Planned Implementation of Performance-Based Horizontal Separation Minima in 2024. This lack of response, along with the absence of a WP on the Data Link Performance Report to FIT-Asia/14, had left FIT-Asia/14 without sufficient data/evidence to discuss the deficiency.

6.4 The meeting was also informed that Maldives had not provided PRs to CRA or reported performance monitoring and analysis to FIT. However, as far as ICAO secretariat understood, Maldives had disabled the ADS-C function from the ATM system due to an application issue, and CPDLC/HF is used beyond VHF coverage.

6.5 The meeting agreed that India's deficiency remained current.

6.6 The meeting also agreed that since Maldives did not attend the FIT-Asia/14, ICAO secretariat would further investigate the matter for follow-up discussion at the upcoming RASMAG/29 meeting in August 2024 to determine if the deficiency would be appropriate.

Agenda Item 7: Any Other Business

Future Direction of FIT-Asia (WP/18)

7.1 The secretariat provided information on the history and progress of FIT-Asia, and proposes changes under consideration.

7.2 The number of Working Papers (WP) and Information Papers (IP) provided by States/Administrations, International Organisations, CRA, and RMAs at the previous FIT-Asia meetings was introduced. Additionally, many of the WPs provided by States/Administrations were Data Link Performance Reports, and a few papers addressed technical matters to be discussed at the FIT-Asia meetings by the champion States in the region.

7.3 The Secretariat proposed the following considerations, and sought the views of the meeting:

- FIT-Asia participating Administrations having advanced PBCS capability should be encouraged to host FIT-Asia meetings and/or related seminars/workshops to take advantage of opportunities to demonstrate advanced systems and processes;
- FIT-Asia should develop a systematic programme of seminars/workshops in collaboration with participating Administrations and industry partners;
- FIT-Asia participating Administrations that are active in the Communication Panel - Operational Data Link Working Group (OPDLWG)) should be encouraged to keep FIT-Asia informed of developments; and
- Future FIT-Asia meetings may be reduced to three days from the current four or three-day meeting in conjunction with a one-day workshop/seminar.

7.4 The meeting agreed to conduct a workshop/seminar in conjunction with the FIT-Asia meeting, at least in 2025, including the subjects such as safety risk assessment for PBCS implementation, PBCS Charter, etc.

7.5 China, Japan, New Zealand, USA, Boeing, and Inmarsat expressed their support for the future seminar/workshop. Additionally, New Zealand mentioned that they would be pleased to support the PBCS implementation individually if a State required it, particularly in PBCS data analysis. Subsequently, States were encouraged to reach out to New Zealand.

ATM Points of Contact (WP/19)

7.6 The meeting was requested to include relevant FIT Points of Contact (POCs) under the SAF (Airspace Safety Monitoring and FIT) category, for coordination and/or clarification of air navigation and airspace safety issues.

Asia/Pacific PBCS Reporting Templates (Flimsy/4)

7.7 It was noted from WP12 paragraph 2.3, that the colour codes used by FIT-Asia were slightly different to other FIT's therefore this flimsy proposed a correction to the templates to resolve this error.

7.8 The current colour key was incorrect and a revised yellow acceptable performance showing as between 99.0% and 99.89% was proposed (**Figure 7**).

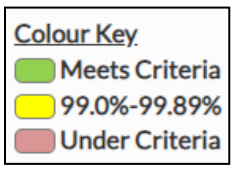

Figure 7: Revised Colour Key Code for Yellow Acceptable Performance

7.9 FIT-Asia agreed to revised colour key codes in the following files on the ICAO APAC eDocument webpage shown below and the following draft conclusion.

Draft Conclusion FIT-Asia/14-2: Revised colour key codes for Asia/Pacific PBCS reporting templates

That, the following PBCS reporting templates and example were revised to correctly reflect the criteria colour key code for yellow acceptable performance and be uploaded to the Asia/Pacific Regional Office to replace the existing ones.

1. Data Link Performance Report Template – ANSP to FIT (**Appendix F**);
2. EXAMPLE - Data Link Performance Report Template – ANSP to FIT (**Appendix G**); and
3. Aggregated Regional Data Link Performance Report Template - FIT to RASMAG (**Appendix H**)

Agenda Item 8: FIT-Asia Task List

FIT-Asia Terms of Reference and Task List (WP/20)

8.1 The FIT Asia Terms of Reference (TOR, **FIT-Asia/14 WP/20 Attachment A**) and Task List were provided for review and update by the meeting.

8.2 The FIT-Asia Task List as updated by the meeting was provided at **Appendix I to the Report**.

Agenda Item 9: Date and Venue of the Next Meeting

9.1 The next meeting of FIT-Asia was tentatively planned to be held in Bangkok, Thailand, in June 2025, a few weeks before the normal schedule for the RASMAG/30 meeting.

9.2 States/Administrations considering hosting future FIT-Asia meetings were invited to contact the Secretariat.

Closing of the Meeting

9.3 In closing the meeting, the Chair thanked the meeting participants for their support and contributions.

— END —

List of Participants

	STATE/NAME		TITLE/ORGANIZATION
1.	**CAMBODIA (1)**		
	1.	Mr. Chhun Sivorn	Director of Air Navigation Standard and Safety Department State Secretariat of Civil Aviation – Cambodia **CAMBODIA**
2.	**CHINA (5)**		
	2.	Mr. Wang Pengyu	Assistant ATMB of CAAC **CHINA**
	3.	Mr. Zhang Zhiyuan	Assistant ATMB of CAAC **CHINA**
	4.	Mr. Chen Yongyue	Manager of the China RMA Technology Team China RMA **CHINA**
	5.	Mr. Hong Yang	Engineer China RMA **CHINA**
	6.	Mr. Zhang Zhe	Associate Prof. Civil Aviation Administration of China **CHINA**

	STATE/NAME		TITLE/ORGANIZATION
3.	**INDONESIA (5)**		
	7.	Mr. Arian Nurahman	Air Navigation Inspector Ministry of Transportation of Indonesia **INDONESIA**
	8.	Mr. Lanang Wibisono	AirNav Indonesia **INDONESIA**
	9.	Mr. Gatut Nugraha	Planning & Evaluation of ACC Manager AirNav Indonesia **INDONESIA**
	10.	Mr. Samsul Teguh Pratama	Technician AirNav Indonesia **INDONESIA**
	11.	Ms. Ranieta Shifa Fauziah	Staff of Facility Readiness Division Perum LPPNPI (AirNav Indonesia) **INDONESIA**
4.	**JAPAN (1)**		
	12.	Mr. Hajime Aoto	Special Assistant to the Director Japan Civil Aviation Bureau **JAPAN**

	STATE/NAME		TITLE/ORGANIZATION
5.	**MALAYSIA (4)**		
	13.	Mr. Hafizuddin Bin Mohamed	Assistant Director Air Navigation Services and Aerodrome Division Civil Aviation Authority Malaysia **MALAYSIA**
	14.	Mr. Ahmad Kusairi Bin Abdul Wahab	Assistant Director Air Navigation Services Technical Division Civil Aviation Authority of Malaysia **MALAYSIA**
	15.	Mr. Nik Izat Amir	Assistant Director Air Navigation Services Operation Division Civil Aviation Authority of Malaysia **MALAYSIA**
	16.	Mr. Muhamad Fozi Musapar	Engineer Advanced Air Traffic Systems (M) Sdn. Bhd. **MALAYSIA**
6.	**NEW ZEALAND (2)**		
	17.	Mr. Paul Radford (Online)	Oceanic Systems Development Specialist Airways New Zealand **NEW ZEALAND**

	STATE/NAME		TITLE/ORGANIZATION
	18.	Mr. Edmund Heng	Technical Specialist Aeronautical Services Civil Aviation Authority of New Zealand **NEW ZEALAND**
7.	**SINGAPORE (3)**		
	19.	Mr. Mohamed Ruzaini Bin Mohamed Ismail	Senior Air Traffic Control Manager (Operations Technology) Civil Aviation Authority of Singapore **SINGAPORE**
	20.	Mr. Eng Soon Lim	Principal Engineer (Air Traffic Management Engineering Operations) Civil Aviation Authority of Singapore **SINGAPORE**
	21.	Mr. Aloysius Ang	Head (Ops Tech Planning) Civil Aviation Authority of Singapore **SINGAPORE**
8.	**SRI LANKA (2)**		
	22.	Mr. Indika Bandupriya	Senior Manager ATS Airport & Aviation Services (Sri Lanka) Ltd **SRI LANKA**
	23.	Mr. Prasanna Wijeratne	Electronics Engineer Airport & Aviation Services (Sri Lanka) **SRI LANKA**

	STATE/NAME		TITLE/ORGANIZATION
9.	**THAILAND (7)**		
	24.	Capt. Pawin Techawiboonwong	Flight Operations Inspection Officer The Civil Aviation Authority of Thailand **THAILAND**
	25.	Mr. Sikarate Tarasak	Air Navigation Operations Officer The Civil Aviation Authority of Thailand **THAILAND**
	26.	Mr. Napatra Chuepan	Air Navigation Operations Officer The Civil Aviation Authority of Thailand **THAILAND**
	27.	Ms. Chariya Jitsuwantaya	Avionic Aircraft Engineer Avionic Engineer Group Technical Department Thai Airways International Public Company Limited **THAILAND**
	28.	Capt. Polawat Asvaraksh	Pilot Management Operations Department **THAILAND**
	29.	Mr. Parinya Ruangsiripaisan	Engineering Manager (Business) Aeronautical Radio of Thailand Ltd. **THAILAND**

	STATE/NAME		TITLE/ORGANIZATION
	30.	Mr. Dolsarit Somseang	Senior Systems Engineer (Safety Management System) Aeronautical Radio of Thailand Ltd. **THAILAND**
10.	**UNITED STATES (1)**		
	31.	Mr. Shayne Campbell	Senior Air Traffic Representative, Asia Pacific Federal Aviation Administration **SINGAPORE**
11.	**VIET NAM (4)**		
	32.	Mr. Nguyen Manh Thang	Deputy Director Safety & Quality Department Civil Aviation Authority of Viet Nam **VIET NAM**
	33.	Mr. Nguyen Huu Son	Deputy Director ATS Department Civil Aviation Authority of Viet Nam **VIET NAM**
	34.	Mr. Trinh Dinh Loc	Manager IT Group Ho Chi Minh Area Control Center, Southern Region Air Traffic Services Company Vietnam Air Traffic Management **VIET NAM**

	STATE/NAME		TITLE/ORGANIZATION
	35.	Mr. Ngo Manh Ha	Communication Division, CNS Department Vietnam Air Traffic Management **VIET NAM**
12.	**BOEING (2)**		
	36.	Mr. Michael Matyas	Boeing Commercial Airplanes – Avionics The Boeing Company **UNITED STATES**
	37.	Mr. Rami Ayari	Design Engineer Boeing Commercial Airplanes **UNITED STATES**
13.	**INMARSAT (2)**		
	38.	Ms. Lisa Bee	Director, Air Traffic Services Inmarsat Aviation **UNITED STATES**
	39.	Ms. Siu Min Lee	Business Development Director Inmarsat Aviation **SINGAPORE**
14.	**ICAO (4)**		
	40.	Mr. Hiroyuki Takata	Regional Officer, Air Traffic Management ICAO Asia and Pacific Regional Office **THAILAND**

	STATE/NAME		TITLE/ORGANIZATION
	41.	Mr. Weng Kit Ying	Air Traffic Management Officer ICAO Asia and Pacific Regional Office **THAILAND**
	42.	Mr. Tak Chuen Chui	Aeronautical Information Management/ Air Traffic Management Officer ICAO Asia and Pacific Regional Office **THAILAND**
	43.	Dr. Prakayphet Chalayonnawin	Programme Analysis Associate, Air Traffic Management ICAO Asia and Pacific Regional Office **THAILAND**

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LIST OF WORKING AND INFORMATION PAPERS

WORKING PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	2	FIT Central Reporting Agency (CRA) Problem Report Briefing	Boeing (FIT-Asia CRA)
WP/3	3	Regional PBCS Implementation Update	Secretariat
WP/4	3	Competent Airspace Safety Monitoring Organizations List	Secretariat
WP/5	3	Survey Results for Asia Pacific States PBCS Approval Process	Secretariat
WP/6	4	Data Link Performance Report for China	China
WP/7	4	*Not used*	
WP/8	4	Data Link Performance Report for Ujung Pandang FIR	Indonesia
WP/9	4	Data Link Performance Report for Malaysia	Malaysia
WP/10	4	Data Link Performance Report for Sri Lanka	Sri Lanka
WP/11	4	Data Link Performance Report for Singapore	Singapore
WP/12	4	Asia/Pacific Region Combined PBCS Monitoring Report	Japan
WP/13	4	Procedure for the Asia Pacific Region Combined PBCS Monitoring report	Secretariat
WP/14	5	PBCS Long-Term Monitoring Mechanism in China	China
WP/15	5	PBCS Monitoring Guidance	New Zealand
WP/16	5	Review of Guidance Material for End-To-End Safety and Perf Monitoring of ATS Data Link Systems in the APAC	Secretariat
WP/17	6	Air Navigation Deficiencies Relating to Data Link Performance Monitoring and Analysis	Secretariat
WP/18	7	Future Direction of FIT-Asia	Secretariat
WP/19	7	FIT Points of Contact	Secretariat
WP/20	8	FIT-Asia Terms of Reference and Task List	Secretariat

INFORMATION PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
IP/1	-	List of Papers	Secretariat
IP/2	2	Current Central Reporting Agency (CRA) Services in the Asia-Pacific (APAC) Region	FIT-Asia CRA
IP/3	2	CRA for South-East Asia	Singapore
IP/4	5	Inmarsat Aeronautical Satellite Safety Communications Update	Inmarsat

FLIMSIES

NUMBER	AGENDA	TITLE	PRESENTED BY
Flimsy/1	4	Sharing of SATCOM-related Investigation	China
Flimsy/2	5	A Quick Review of Outage Monitoring	China
Flimsy/3	5	Monitoring Comparison APK vs XXA SATCOM	New Zealand
Flimsy/4	4	Asia/Pacific PBCS Reporting Templates	New Zealand

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APANPIRG Asia/Pacific Airspace Safety Monitoring

RASMAG LIST OF COMPETENT AIRSPACE SAFETY MONITORING ORGANISATIONS

The Regional Airspace Safety Monitoring Advisory Group of APANPIRG (RASMAG) is required by its terms of reference to recommend and facilitate the implementation of airspace safety monitoring and performance assessment services and to review and recommend on the competency and compatibility of airspace monitoring organisations. In order to assist in addressing these requirements, RASMAG updates and distributes the following list of competent airspace safety monitoring organizations for use by States requiring airspace safety monitoring services. In the context of the list, abbreviations have meanings as follows:

- RMA – Regional Monitoring Agency – safety assessment and monitoring in the vertical plane (i.e. RVSM);
- EMA – En-route Monitoring Agency – safety assessment and monitoring in the horizontal plane (i.e. RSP, RCP, RNP for performance-based horizontal separations);
- CRA – Central Reporting Agency – technical performance of data link systems (i.e. ADS/CPDLC); and
- FIT – FANS 1/A Interoperability/Implementation Team – parent body to a CRA.

DISCLAIMER: The presentation of material in this report does not imply the expression of any opinion whatsoever on the part of ICAO, APANPIRG or the ATM Sub-Group of APANPIRG concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

(Last updated 23 July 2024)

Organisation *(including contact officer)*	**State**	**Competency**	**Status**	**Airspace assessed (FIRs)**
Australian Airspace Monitoring Agency (AAMA) - Airservices https://www.airservicesaustralia.com/about-us/our-services/aama/ Dr. Amelia Gontar, Risk Intelligence Specialist Safety and Risk Airservices Australia Email: amelia.gontar@airservicesaustralia.com; or aama@airservicesaustralia.com;	Australia	RMA	Current	Brisbane, Honiara, Jakarta, Melbourne, Nauru, Port Moresby and Ujung Pandang (including Timor-Leste) FIRs
		EMA	Current	Brisbane, Melbourne, Honiara,-Nauru, and Port Moresby FIRs

Organisation *(including contact officer)*	State	Competency	Status	Airspace assessed (FIRs)
China RMA - **Air Traffic Management Bureau, (ATMB) of Civil Aviation Administration of China (CAAC)** http://www.chinarma.cn Mr. Yongyue Chen (Monsoon), Coordinator of China RMA, ADCC, ATMB of CAAC Email: rmachina@rmachina.cn;	China	RMA & EMA	Current	RMA for: Beijing, Guangzhou, Kunming, Lanzhou, Pyongyang, Sanya, Shanghai, Shenyang, Urumqi, and Wuhan FIRs. EMA for: Lanzhou and Urumqi FIRs
India Bay of Bengal Arabian Sea Indian Ocean Safety Monitoring Agency (BOBASMA) http://www.aai.aero/public_notices/aaisite_test/bobasma_index.jsp Mr. A. P. Udayanarayanan Joint General Manager (ATM) Phone No:+ 91 44 22561253 Fax No: +91 44 22561740 Email: bobasmachennai@gmail.com; bobasma@aai.aero;	India	EMA	Current	Chennai, Colombo, Delhi, Dhaka, Kabul, Karachi, Kolkata, Lahore, Male, Mumbai, Yangon,
Japan Airspace Safety Monitoring Agency (JASMA) - Japan Civil Aviation Bureau (JCAB) https://www.jasma.jp ~~Mr. Yasuhiro MARUTSUKA~~ Mr. Eijiro SUNOUCHI, Special Assistant to the Director, Flight Procedures and Airspace Program Office, Japan Civil Aviation Bureau,	Japan	RMA and EMA	Current	Fukuoka FIR

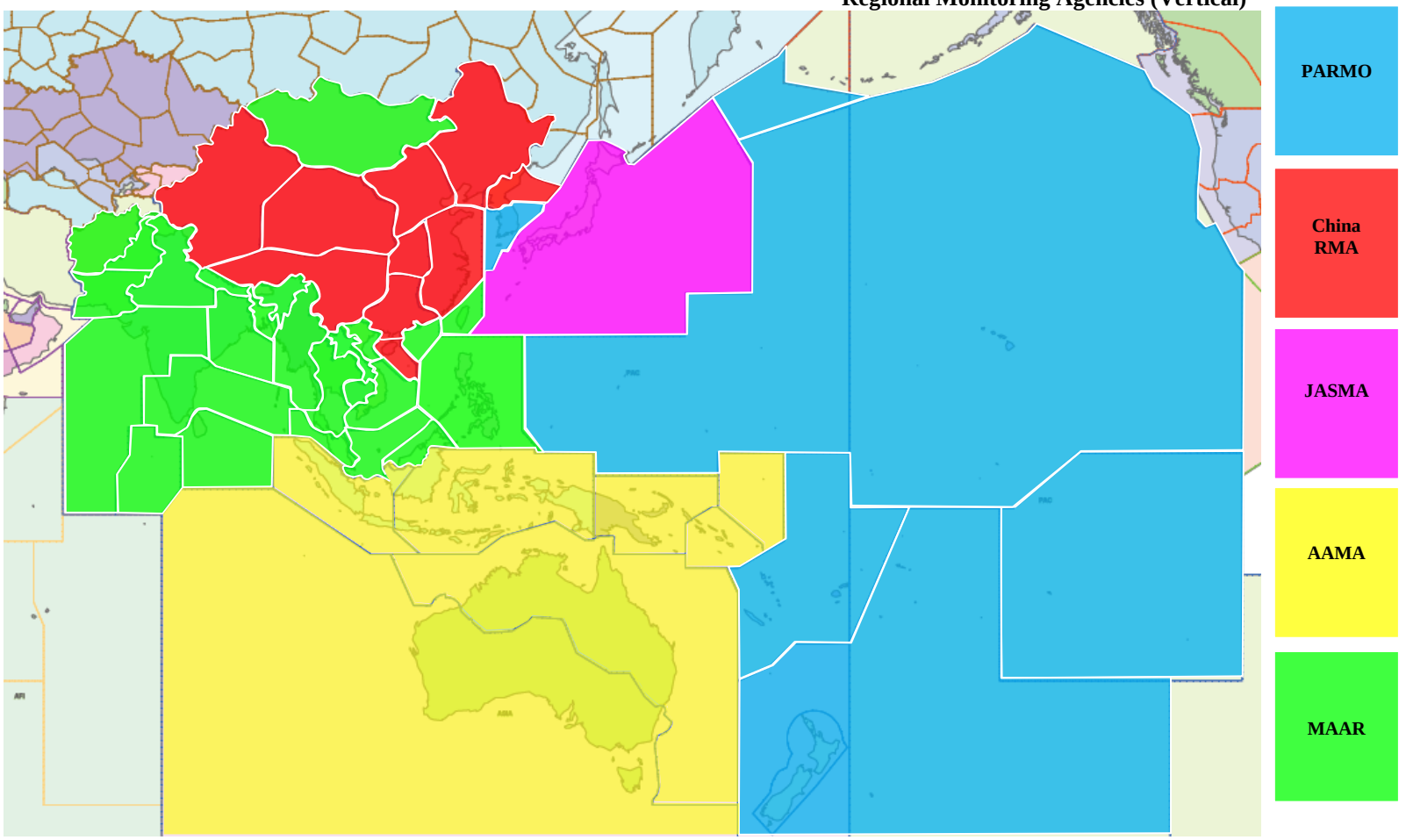
Organisation *(including contact officer)*	State	Competency	Status	Airspace assessed (FIRs)
Email : ~~marutsuka-y0799@mlit.go.jp;~~ sunouchi-e24qz@mlit.go.jp; hqt-JASMA@gxb.mlit.go.jp; jasma-hq@jasma.jp; Central Reporting Agency Japan (CRA Japan) ~~Mr. Yukio IMADA~~ Mr. Hajime AOTO, Special Assistant to the Director, Air Navigation Services Planning Division, Civil Aviation Bureau, MLIT Email: ~~imada-y037c@mlit.go.jp;~~ aoto-h074i@mlit.go.jp;		CRA	Current	Fukuoka FIR
Monitoring Agency for the Asia Region (MAAR) **Aeronautical Radio of Thailand LTD** (AEROTHAI) http://www.aerothai.co.th/maar Miss Saifon Obromsook Director, Safety Management Department & MAAR AEROTHAI Email: maar@aerothai.co.th;	Thailand	RMA	Current	Bangkok, Kolkata, Chennai, Colombo, Delhi, Dhaka, Hanoi, Ho Chi Minh, Hong Kong, Kabul, Karachi, Kathmandu, Kota Kinabalu, Kuala Lumpur, Lahore, Male, Manila, Mumbai, Phnom Penh, Singapore, Taibei, Ulaan Bataar, Vientiane, Yangon FIRs
Pacific Approvals Registry and Monitoring Organization (PARMO) – Federal Aviation Administration (US FAA) http://www.faa.gov/air_traffic/separation_standards/parmo/ Christine Falk Federal Aviation Administration Separation Standards Analysis Branch Safety Analysis Subject Matter Expert Email: parmo@faa.gov;	USA	RMA and EMA	Current	RMA for Anchorage Oceanic, Auckland Oceanic, Incheon, Nadi, Oakland Oceanic, Tahiti FIRs EMA for Anchorage Oceanic, Auckland Oceanic, Nadi, Oakland Oceanic, Tahiti FIRs

Organisation *(including contact officer)*	State	Competency	Status	Airspace assessed (FIRs)
South East Asia Safety Monitoring Agency (SEASMA) - Civil Aviation Authority of Singapore (CAAS) Mr. Goh Wen Pei, Air Traffic Control Manager (ANS Safety & Security), Air Navigation Services Group, Email: goh_wen_pei@caas.gov.sg; https://www.caas.gov.sg/operations-safety/airspace/south-east-asia-safety-monitoring-agency	Singapore	EMA and CRA	Current	EMA for Hong Kong, Ho Chi Minh, Kota Kinabalu, Kuala Lumpur, Manila, Jakarta, Sanya, Singapore and Ujung Pandang FIRs CRA for Singapore, Viet Nam and Philippines
FIT-ASIA ICAO Asia and Pacific Regional Office Email: apac@icao.int; htakata@icao.int; Mr. ~~Kwek Chin Lin~~ Mr. Hong Yang Chair, FIT-Asia Email: ~~kwek_chin_lin@caas.gov.sg~~ hongyang@adcc.com.cn; Mr. Michael Matyas Boeing Engineering Email: michael.matyas@boeing.com; Mr Rami Ayari Boeing Engineering Email: rami.ayari@boeing.com	FIT-Asia States Boeing USA	FIT CRA	Current Current	FIRs in the Asian Region not covered by IPACG/FIT and ISPACG/FIT FIRs in the Asian Region not covered by IPACG/FIT, ISPACG/FIT, JASMA or SEASMA
	Japan and USA	FIT	Current	

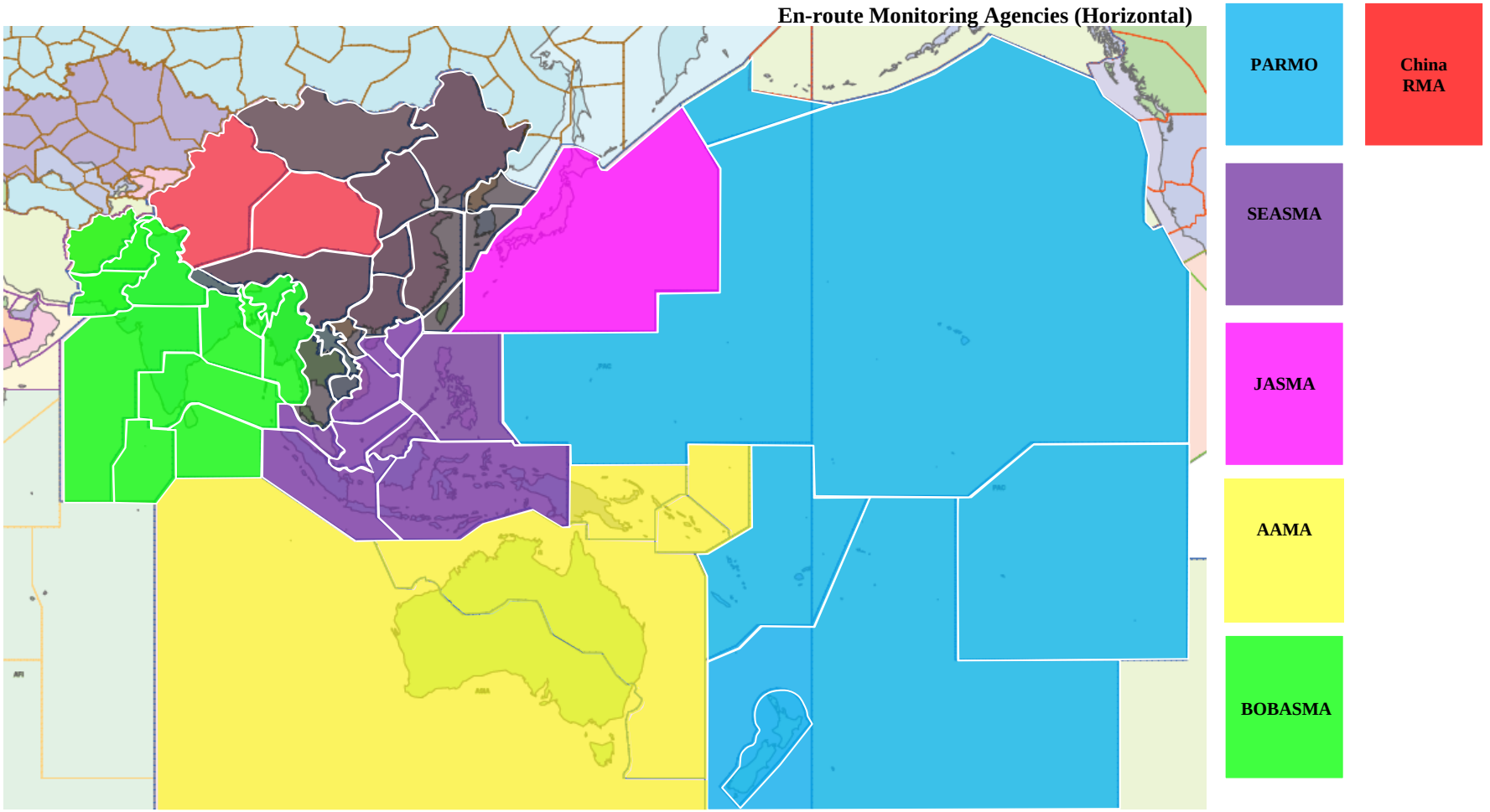
Organisation *(including contact officer)*	State	Competency	Status	Airspace assessed (FIRs)
IPACG/FIT ~~Mr. Yukio IMADA~~ Mr. Hajime AOTO IPACG/FIT Co-Chair (JCAB) Email : ~~imada-y037c@mlit.go.jp;~~ aoto-h074i@mlit.go.jp; Mr. John Roman FAA IPACG/FIT Co-Chair (FAA) Email: john.roman@faa.gov; Mr. Michael Matyas, Boeing Engineering IPACG CRA Email: michael.matyas@boeing.com; Mr Noah Inahara Boeing Engineering IPACG CRA Email: noah.inahara@boeing.com	Boeing USA	CRA		North & Central Pacific (Oceanic airspace within Fukuoka FIR, and Anchorage & Oakland FIRs) Oakland Oceanic, Anchorage Continental, and Anchorage Oceanic FIRs.
ISPACG/FIT Mr. Todd Kendall Airways New Zealand ISPACG Co-Chair Email: Todd.Kendall@airways.co.nz; Mr. Ahmad Usmani	ISPACG States	FIT&CRA	Current	South Pacific FIRs and members of the Informal South Pacific ATS Coordination Group (ISPACG)

Organisation *(including contact officer)*	**State**	**Competency**	**Status**	**Airspace assessed (FIRs)**
FAA ISPACG Co-Chair Email: ahmad.usmani@faa.gov;				
Ms. Lisa Bee, Inmarsat Aviation ISPACG/FIT Chair Email: Lisa.Bee@inmarsat.com;	Inmarsat	FIT		
Mr. Michael Matyas, Boeing Engineering ISPACG ~~lead~~ CRA Email: michael.matyas@boeing.com;	Boeing USA	CRA		
Mr Christopher Jirucha Boeing Engineering ISPACG CRA Email: christopher.j.jirucha@boeing.com				

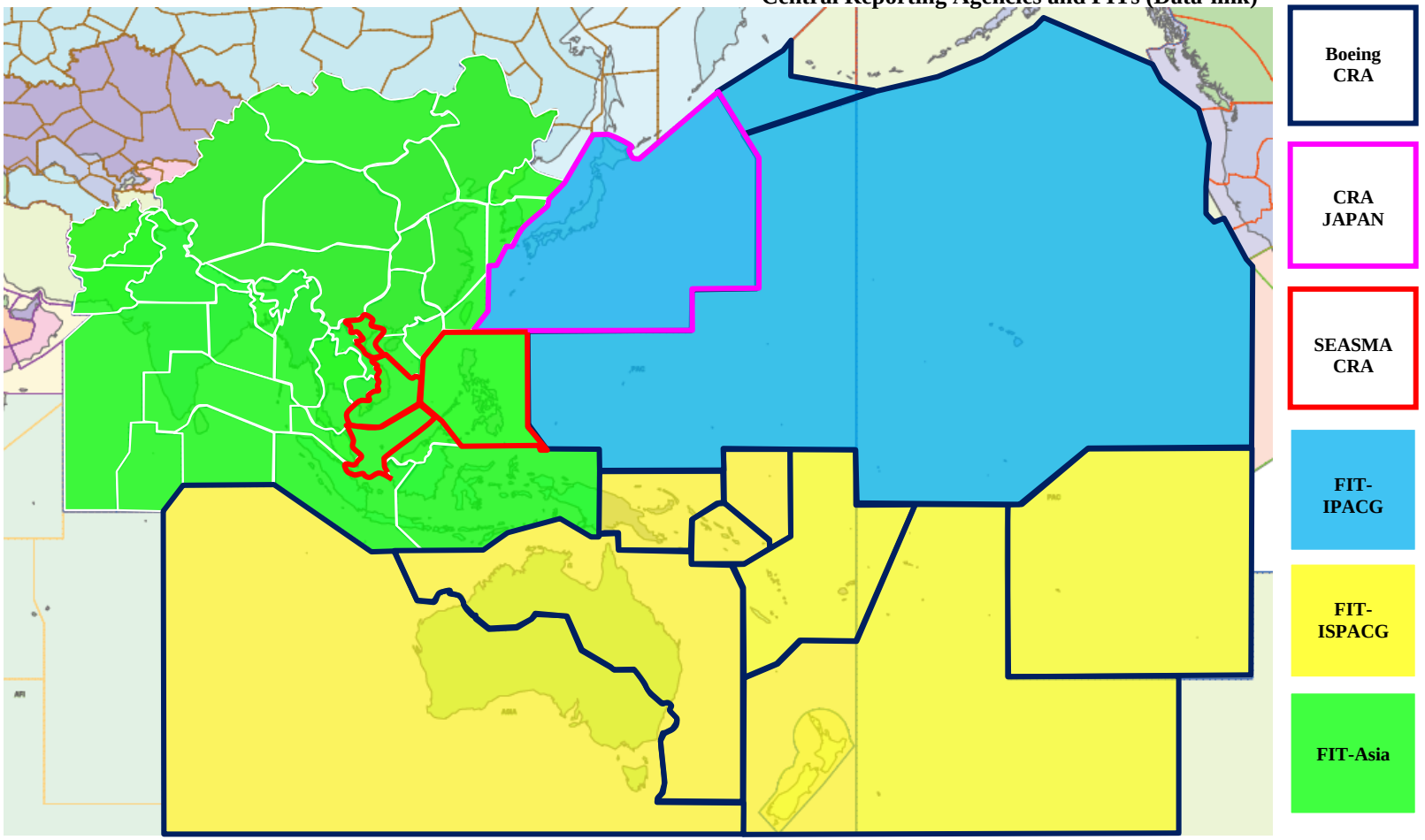
Regional Monitoring Agencies (Vertical)



En-route Monitoring Agencies (Horizontal)



Central Reporting Agencies and FITs (Data-link)



INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA AND PACIFIC OFFICE

GUIDANCE MATERIAL FOR

END-TO-END SAFETY AND PERFORMANCE MONITORING OF

AIR TRAFFIC SERVICE (ATS) DATA LINK SYSTEMS

IN THE ASIA/PACIFIC REGION

Version ~~4~~5.0 – ~~February 2011~~
XXX 2024

Issued by the ICAO Asia and Pacific Office, Bangkok

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1. Background

1.1. The Asia Pacific Airspace Safety Monitoring (APASM) Task Force established by the Asia Pacific Air Navigation Planning Implementation Regional Group (APANPIRG) during 2001 noted that requirements for monitoring aircraft height-keeping performance and the safety of reduced vertical separation minimum (RVSM) operations had been more comprehensively developed than for other Air Traffic Management (ATM) services, such as reduced horizontal separation based on required navigation performance (RNP) and the monitoring of ATS data link systems.

1.2. For example, to assist RVSM operations a handbook with detailed guidance on the requirements for establishing and operating Regional Monitoring Agencies (RMA) was developed by the ICAO Separation and Airspace Safety Panel (SASP). There was no comparable document under development by ICAO for ATS data link applications and so the APASM Task Force developed draft guidance material covering safety and performance monitoring for ATS data link applications.

1.3. The experience gained by the Informal Pacific ATC Coordinating Group (IPACG) and the Informal South Pacific ATS Coordinating Group (ISPACG) FANS Interoperability Teams (FITs) and the supporting Central Reporting Agencies (CRAs) to monitor automatic dependent surveillance - contract (ADS-C) and controller pilot data link communication (CPDLC) performance for both aircraft and ground systems was used as a resource from which to develop monitoring guidance material.

1.4. From 2004, the APASM Task Force was succeeded by the Regional Airspace Safety Monitoring Advisory Group (RASMAG) of APANPIRG, which decided to adopt and extend the APASM material to become the standard guidance material for end-to-end safety and performance monitoring of ATS data link systems in the Asia/Pacific region. Following significant development of the material, APANPIRG/16 (2005) adopted the Guidance Material for the End-to-End Monitoring of ATS Data Link Systems in the Asia/Pacific Region under the terms of Conclusion 16/20.

1.5. Within the remainder of the Asia/Pacific Region, the Bay of Bengal and South East Asia ATS Coordination Groups are following the lead of IPACG and ISPACG and have created FANS-1/A implementation teams and data link CRAs to accomplish this activity. These implementation teams also perform the interoperability activities which will continue after the implementation of CPDLC and ADS-C is complete. This guidance material focuses on interoperability issues, both prior to and following implementation of a data link system.

1.6. During 2008, agreement was reached between Asia/Pacific and North Atlantic data link interoperability/implementation groups that the global harmonization of data link monitoring activities was desirable. Accordingly, the APANPIRG, NAT SPG and ICAO Secretariat would coordinate to the extent possible in order to develop proposals to implement required monitoring infrastructure and arrangements that would be global and cost effective.

1.7. The regional Performance-Based Communications and Surveillance (PBCS) monitoring program requires continuous performance monitoring of data link operations utilizing separation standards where Required Communications Performance (RCP) or Required Surveillance Performance (RSP) specifications are required under the provisions of ICAO Annex 11 Air Traffic Services and Doc 4444 Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM). In accordance with the supporting guidance provided in ICAO Doc 9869 PBCS Manual, the Air Navigation Service Provider (ANSP) should perform an analysis of actual communication performance (ACP) and actual surveillance performance (ASP) at an interval suitable to verify system performance, and to enable continuous performance improvement. The established lines of communication between airspace safety monitoring organisations and their respective States are the most effective and efficient means for transmission of problem or non-compliance reports between the ANSP detecting/reporting the problem or non-compliance and the State of Operator/Registry of the aircraft concerned.

2 Requirements for Safety and Performance Monitoring

2.1. Annex 11, at paragraph ~~2.27.5~~ 2.29, states:

> "Any significant safety-related change to the ATC system, including the implementation of a reduced separation minimum or a new procedure, shall only be effected after a safety assessment has demonstrated that an acceptable level of safety will be met and users have been consulted. When appropriate, the responsible authority shall ensure that adequate provision is made for post- implementation monitoring to verify that the defined level of safety continues to be met."

2.2. The Manual of Air Traffic Services Data Link Applications (Doc 9694) describes ATS data link applications as including ~~DLIS~~ DLIC, ADS, CPDLC, DFIS, AIDC and ADS-B. ATS data link applications, such as ADS-C, CPDLC and ATS interfacility data communication (AIDC), are increasingly being used in support reduced horizontal separation minima. It is therefore necessary to apply the safety monitoring requirements of Annex 11 to these data link services.

> ***Note:*** *For the purposes of this guidance material, 'data link systems' (or applications) generally refer to CPDLC, ADS-C and/or AIDC.*

2.3. Data link applications comprise both a technical and an operational element. The guidelines in this document - which apply only to the technical element - propose a structure and methodology for monitoring the technical end-to-end safety performance of air-ground and ground-air data link services. The operational aspects of data link monitoring – such as reviewing the correct use of CPDLC message elements - are carried out by the appropriate safety monitoring agency.

2.4. Ground-ground data link systems supporting applications such as AIDC are essentially simpler and more direct than air-ground systems and monitoring can be achieved directly between the concerned ATSUs. However, it should be noted that States have a responsibility to ensure that monitoring of ground-ground data link systems is carried out in support of the implementation of reduced separation minima. Monitoring of ground-ground AIDC performance is outlined in **Appendix A**.

2.5. The requirement for on-going monitoring after implementation of a data link system is based on several factors, including:

a) degradation of performance with time,

b) increasing traffic levels, and

c) changes to equipment and/or procedures which may occur from time to time.

2.6. On-going monitoring also permits the detection of errors that may have been introduced by a third party (e.g. a communications service provider).

2.7. The use of ADS-B to support separation and the introduction of the Aeronautical Telecommunication Network (ATN) will bring significant changes to operational systems that will also require the establishment of monitoring programmes.

2.xx ICAO Doc. 9869 Performance-based Communication and Surveillance Manual offers the reader guidance on the establishment of a PBCS monitoring program, with detailed guidance in Appendix D for compilation and handling of the data to support monitoring. Significant revisions are being coordinated to provide clarification in Appendix D for Edition 3. Additional guidance can be found in NAT Doc 011, 1st Ed. Amdt. 2, located on the ICAO website - ICAO APAC eDocuments>>ATM>> Safety monitoring.

2.xx The NAT Doc011 focused on the reporting and filtering of under-performing airframes as well as guidance for State Oversight Authorities. The guidance is divided into three phases and reliant on the positive participation of the aircraft operators in accordance with the PBCS Global Charter:

Phase 1 - ATSP: This phase covers initial monitoring and reporting by the Air Traffic Service Provider (ATSP) at a local level. The ATSP is responsible for the collection, analysis and, if possible, classification of under-performance data as well as the transmission of that data, in the agreed format, to the Regional Monitoring Agency (RMA). (Refer to NAT Doc 011 Chapter 2).

Phase 2 - RMA: This phase captures the administration of the regional monitoring requirements and the mechanism to achieve global reporting. The RMA is responsible for the collection and collation of the data reported by ATSPs for transmission to, either the States within their region of responsibility, or to other RMAs for transmission to States within their own regions of responsibility. (Refer to NAT Doc 011 Chapter 3).

Phase 3 - State Oversight Authority: This phase covers the State Oversight Authority's role in the management of reports of under-performance. The State Oversight Authority is responsible for the oversight of all aircraft operators registered in their respective states and ensuring that the performance of their airframes meets the required standards. (Refer to NAT Doc 011 Chapter 4).

PBCS Non-Compliance Reporting

2.8. The En-route Monitoring Agency (EMA) or Regional Monitoring Agency (RMA) with responsibility for the airspace associated with the ANSP reporting a non-compliance would notify the EMA/RMA that has responsibility for the State of Operator/Registry associated with the aircraft/fleet observed with non-compliant data link performance. The EMA/RMA receiving the notification would then provide the report to the State of Operator/Registry of the aircraft/fleet observed with non-compliant data link performance. It is possible that all EMAs/RMAs may have a role associated with Step 3 of Figure 1 to assist in initial contact due to the familiarity of State POC with RMAs.

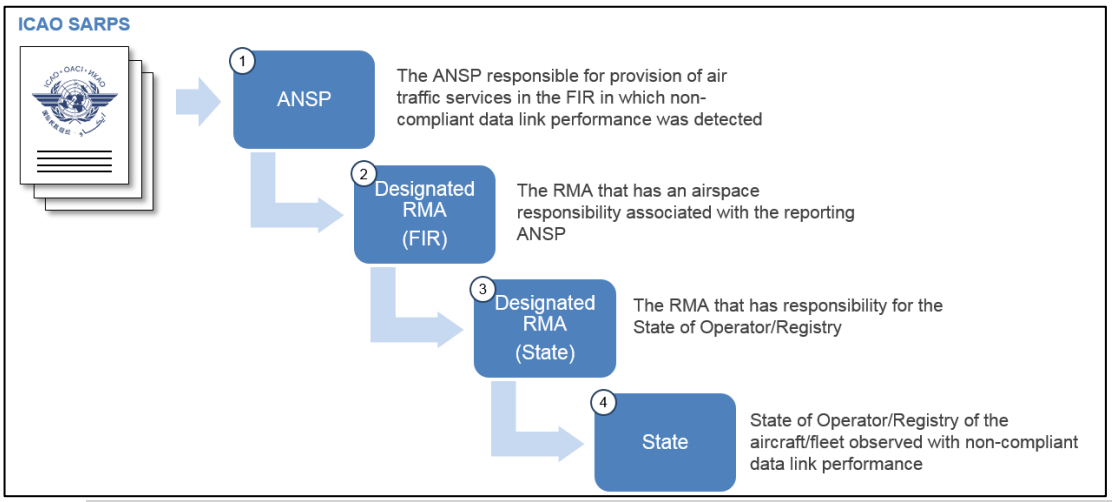


Figure 1: Communication flow for reports of non-compliance with PBCS performance requirements (Source: *RASMAG24 WP/19 - RMA Contribution to the PBCS Monitoring Program and Documentation Development, Bangkok, Thailand, 09-12 July 2019*)

2.XX The process of PBCS non-compliance reporting was adopted by APANPIRG/34 and the various actions by the stakeholders are detailed below. The PBCS non-compliance report submission (including Nil Occurrence reports) and handling processes by various stakeholders is shown in **Figure 2**. The guidance noted by APANPIRG/34 in *Conclusion RASMAG/28-4 Removal of EMA handbook Appendix A and Guidance for PBCS Non-Compliance Reporting* refers.

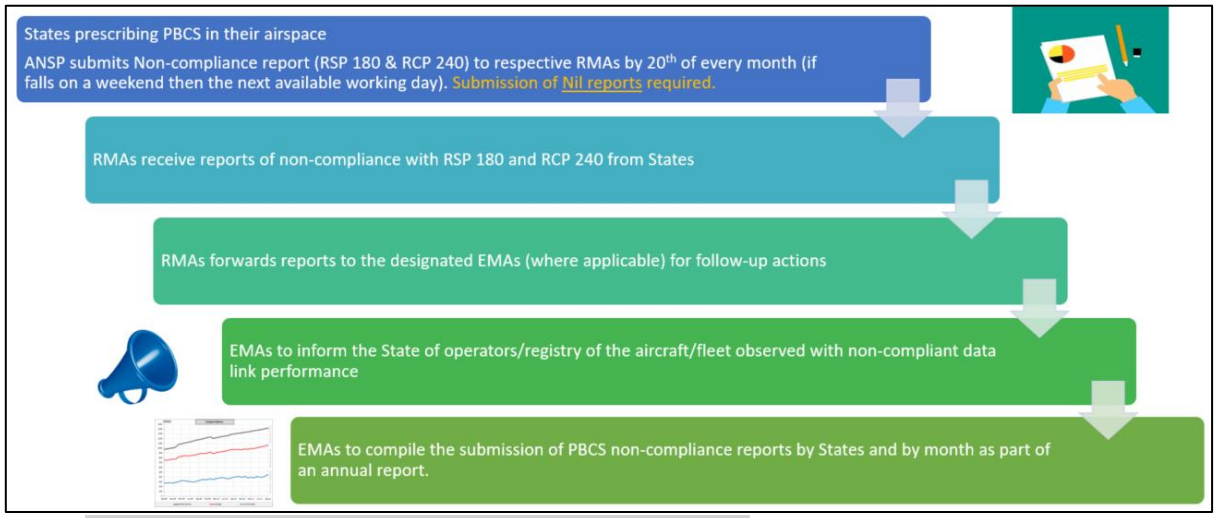


Figure 2 - PBCS non-compliance submission flow chart

EMA/RMA actions

2.XX En-route Monitoring Agency (EMA) handbook

item: k) to coordinate/establish appropriate contacts for PBCS via RMA POCS for PBCS non-compliance, compile PBCS non-compliance reports received from States each month and, where necessary, propose APANPIRG ATM Deficiencies, for lack of reporting; and

ANSP action items

2.XX PBCS Action List for ANSPs found in ICAO APAC e Documents

Paragraph 1.15 –Submit PBCS non-compliance report to designated EMA/RMA by 20th of every month (if falls on a weekend then the next available working day), e.g. Submission of PBCS non-compliance report Jan ~~Mar~~ by 20th Feb ~~Apr~~.

Paragraph 1.16 –Submission of Nil report is required.

3. Purpose of Guidance Material

3.1 The purpose of this guidance material is to:

a) Provide a set of working principles common to all Asia/Pacific States Implementing ATS data link systems;

b) Provide detailed guidance on the requirements for establishing and operating a FANS-1/A implementation/interoperability team (FIT);

c) Provide detailed guidance on the requirements for establishing and operating a Central Reporting Agency (CRA);

d) Promote a standardized approach for implementation and monitoring within the Asia/Pacific Region; and

e) Promote interchange of information among different Regions to support common operational monitoring procedures.

4. Establishment and Operation of an Implementation/Interoperability Team and CRA

4.1 Recognising the safety oversight responsibilities necessary to support the implementation and continued safe use of ATS data link systems, the following standards apply to any organization

intending to fill the role of an implementation/interoperability team:

a) The organisation must receive authority to act as an implementation/ interoperability team as the result of a decision by a State, a group of States or a regional planning group, or by regional agreement.

b) States should appoint a CRA that has the required tools and personnel with the technical skills and experience to carry out the CRA functions.

c) States should ensure that the CRA is adequately funded to carry out its required functions.

d) States are urged to ensure that formal service arrangements are made with an APANPIRG-recognized, competent Central Reporting Agency for the submission and analysis of data link problem reports. *APANPIRG Conclusion 34/8 - Formal Service Arrangements with CRA* refers.

5. Interoperability Teams

5.1 ATS data link functionality exists in several different domains (e.g. aircraft, satellite, ground network, air traffic service units and human factors) and these elements must be successfully integrated across all domains. Airborne and ground equipment from many different vendors, as well as the sub-systems of several different communication networks, must inter-operate successfully to provide the required end-to-end system performance. In addition, standardised procedures must be coordinated among many different airlines and States to provide the desired operational performance. Technical and operational elements must then combine to allow the various applications to demonstrate mature and stable performance. It is only when this has been achieved that benefits can start being realized.

5.2 A team approach to interoperability is essential to the success of any ATS data link implementation, an important lesson learned by ISPACG, whose members were the first to implement CNS/ATM applications using FANS-1/A systems. Stakeholders had worked closely together during the initial development and subsequent certification of FANS-1/A. However, even though a problem-reporting system was in place when FANS-1/A operations commenced, many problems went unresolved. Consequently, it was not possible in the short term to adopt the new operational procedures that would provide the expected benefits of higher traffic capacity and more economic routes.

5.3 An interoperability team (the 'FIT') was formed and tasked to address both technical and operational issues and to assist in ensuring that benefits would result. Because daily attention and occasional significant research would be required, ISPACG realized that a traditional industry team approach would not be effective. To address these concerns, the FIT created a dedicated sub-team, the CRA, to perform the daily monitoring, coordination, testing and investigation of the problem reports submitted by the team. This approach aligns with that taken for RVSM implementations where specialist supporting groups provide height keeping monitoring services.

5.4 Although the monitoring process described above was developed for FANS-1/A based CPDLC and ADS-C applications, it applies equally to AIDC and to ATN-based ATS applications. The latter was validated during the Preliminary EUROCONTROL Test of Air/ground data Link (PETAL) implementation of ATN-based ATS data link services in Maastricht ACC.

Role of the Interoperability Team

5.5 The FANS Interoperability Team (FIT) shall be responsible for overseeing system configuration and the end-to-end monitoring process of datalink systems to ensure they are implemented and continue to meet performance, safety, and interoperability requirements within the Asian Region. ~~The role of the interoperability team is to address technical and operational problems affecting the transit of data link aircraft through international airspace. To do this, the interoperability team must oversee the end-to-end monitoring process to ensure the data link system meets, and continues to meet, its performance, safety and interoperability requirements and that~~

~~operations and procedures are working as specified.~~

5.6 The specific tasks of an interoperability team are to: [specific tasks of an interoperability team updated from FIT-asia/13 – WP18]

Implementation

a) support the implementation and operational benefits of CPDLC and ADS-C;

Reporting and problem resolution processes

b) establish a problem reporting system;
c) review problem reports, identify trends and determine appropriate resolution;
d) develop interim operational procedures to mitigate the effects of problems until resolution;
e) monitor the progress of problem resolution;
f) prepare summaries of problems encountered and their operational implications;

System performance and monitoring processes

g) establish a performance monitoring system;
h) assess system performance based on information from the CRA, and reported by States;
i) coordinate system testing and trials;
j) identify accountability for each element of the end-to-end system;
k) develop, document and implement a quality assurance plan that will provide a stable system;
l) ensure that such configurations are maintained by all stakeholders;

New procedures

m) coordinate testing in support of implementation of enhanced operational procedures

Reporting

n) oversee the reporting of safety-related issues to the appropriate State or regulatory authorities for action;
o) provide reports to relevant ATM coordinating groups;
p) coordinate the collation and analysis of aggregated regional data link performance data; and
q) report to RASMAG.

~~5.7 Initiate and oversee problem reporting and problem resolution processes;~~

~~b) Establish a CRA to undertake performance monitoring on its behalf;~~

~~c) Initiate and oversee end-to-end system performance monitoring processes;~~

~~d) Oversee the implementation of new procedures;~~

~~e) Report to the appropriate State regulatory authorities and to the appropriate ATS coordinating group; and~~

~~f) Provide reports to the RASMAG.~~

~~The section on CRAs below shows that a CRA requires considerable technical resources and skills. It is likely to be more efficient to employ one of the existing CRAs than to set up a new CRA; this would also improve the standardisation of methods and results across the Region.~~

~~5.7 A Model Terms of reference for an interoperability team are shown at **Appendix B.**~~

Interoperability Team Members

5.8 The principal members of an interoperability team are the major stakeholders of the sub-systems that must interoperate to achieve the desired system performance and end-to-end operation. In the case of ATS data link systems, the major stakeholders are aircraft operators, air navigation services providers (ANSPs) and communication services providers (CSPs). Other stakeholders such as international organizations, and airframe and avionics manufacturers also play an important role and should be invited by the major stakeholders to contribute their expertise.

6. Central Reporting Agencies

6.1 Work must be conducted on a daily basis for an interoperability team to achieve its important goals of problem resolution, system performance assurance, and planning and testing of operations that will enable benefits. A dedicated sub-team, the CRA, is required to do the daily monitoring, coordination, testing and problem research tasks for the interoperability team. **Appendix C** shows a table of CRA tasks and the associated resource requirements.

6.2 A CRA should be established in order to determine the safety performance of the ADS-C and CPDLC data link systems before the implementation of reduced separation minima in a particular area, and it should remain active throughout the early stages of implementation. However, as the performance of the systems stabilises to a satisfactory level, it should be possible to reduce the number of CRAs in the region by combining responsibility for different areas.

6.3 The functions of a CRA are:

a) To develop and administer problem report processes;

b) To maintain a database of problem reports;

c) To receive and process monthly end-to-end system performance reports from air navigation service providers;

d) To coordinate and test the implementation of new procedures resulting from ATS data link systems for a given region;

e) To administer and monitor an informal end-to-end configuration process;

f) To manage data confidentiality agreements as required;

g) To identify trends; and

h) To provide regular reports to the interoperability team.

CRA Resource Requirements

6.4 To be effective, the CRA must have dedicated staff and adequate tools. Staffing requirements will depend on the complexity of the region being monitored. There are several factors that affect regional complexity from an ATS monitoring standpoint such as dimensions of the airspace,

variety in operating procedures, number of airlines, number of airborne equipment variants, number of ANSPs, number of ground equipment variants and number of CSPs.

6.5 The CRA must be able to simulate an ATS ground station operational capability to the extent of exercising all combinations and ranges of CPDLC uplinks and ADS-C reports. The CRA must also have access to airborne equipment: a test bench is adequate, though engineering simulators that can be connected to either the ARINC or SITA communication network can offer additional capability for problem solving. In support of the data link audit analysis task, the CRA must have software that can decode CSP audit data and produce usable reports. Without these tools it is virtually impossible for a CRA to resolve problems or monitor system performance.

6.6 Coordination is an important component of the CRA's function. In the pursuit of problem resolution, action item resolution, monitoring and testing, many issues arise that require coordination among the various stakeholders. The CRA has a primary responsibility to provide this coordination function as delegated by the implementation/interoperability team. Coordination between CRAs is also important, particularly to expand the information database on problems and trends; there may be a need for CRA coordination within the region and with CRAs in other regions. An incident may appear to be an isolated case, but the collation of similar reports by a number of CRAs might indicate an area that needs more detailed examination.

7. Working Principles for Central Reporting Agencies

7.1 The working principles in this guidance material result from the combined experience of the North Atlantic Technology and Interoperability Group (NAT TIG), ISPACG FIT, IPACG FIT, and the ATN implementation in Maastricht ACC.

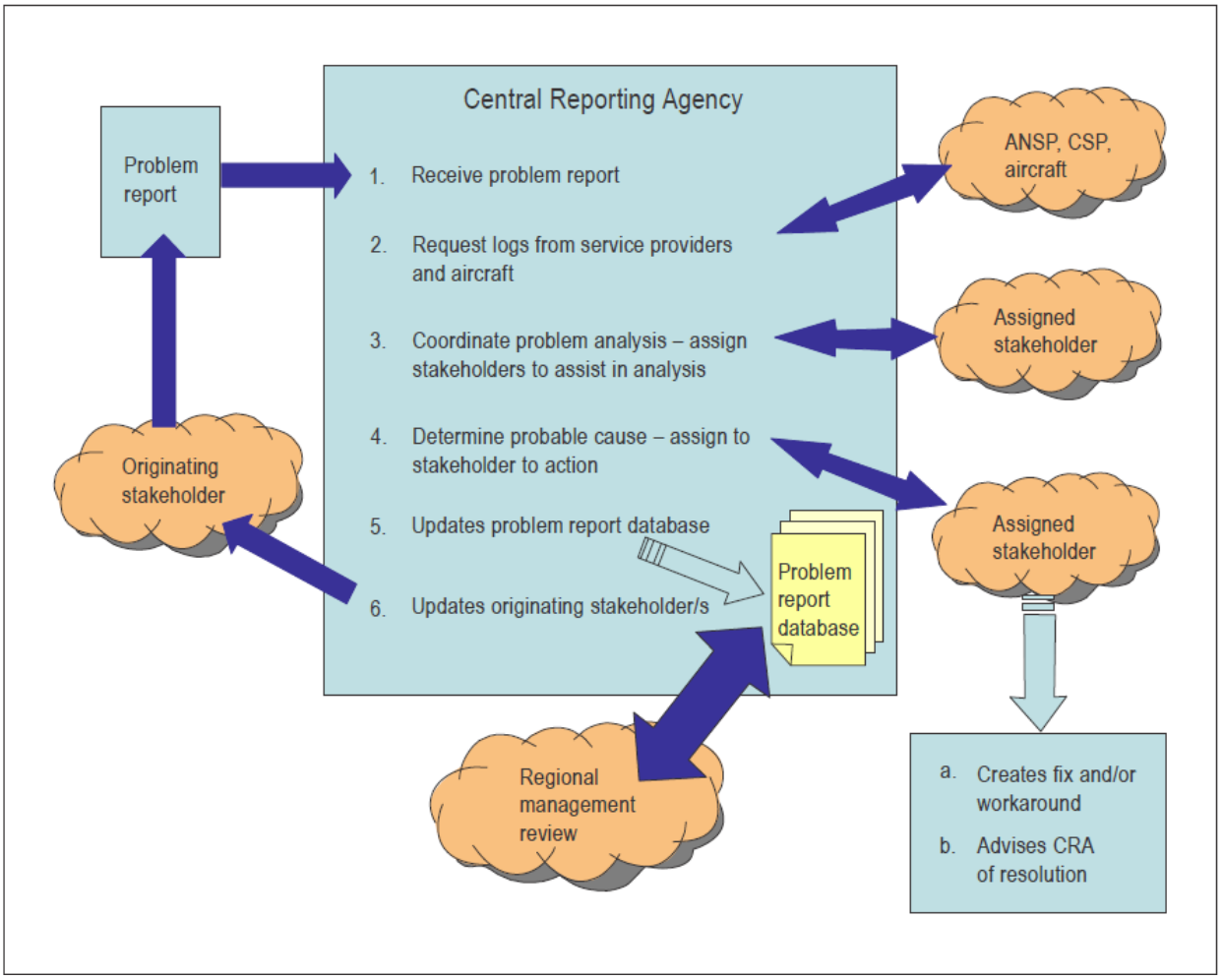
Confidentiality Agreements

7.2 Confidentiality of information is an established principle for problem reporting, and so reports must be de-identified before being made accessible to other agencies. However, it is necessary for the CRA to retain the identity of the original reports so that problem resolution and follow-up action can be taken.

7.3 The CRA must initiate and maintain confidentiality agreements with each entity providing problem reports.

Problem Identification and Resolution

7.4 The problem identification and resolution process, as it applies to an individual problem, consists of a data collection phase, followed by problem analysis and coordination with affected parties to secure a resolution, and recommendation of interim procedures to mitigate the problem in some instances. This is shown in the diagram below (Doc 9869 - PBCS manual 2nd Ed.).



7.5 The problem identification task begins with receipt of a report from a stakeholder, usually an operator, ANSP or CSP. If the person reporting the problem has used the problem reporting form provided in the appropriate regional manual, then data collection can begin. If not, additional data may have to be requested from the reporter.

7.6 The data collection phase consists of obtaining message logs from the appropriate parties, which will depend on which service providers were being used and the operator service contracts in place at the time. Today, this usually means obtaining logs for the appropriate period from the CSPs involved. In the future, with ATN development, additional providers will become involved and airborne recordings as per EUROCAE ED-112 should become available. Usually, a log for a few hours before and after the event that was reported will suffice but, once the analysis has begun, it is sometimes necessary to request additional data, perhaps for several days prior to the event if the problem appears to be an on-going one.

7.7 Additionally, some airplane-specific recordings may be available that may assist in the data analysis task. These are not always requested initially as doing so would be an unacceptable imposition on the operators but may occur when the nature of the problem has been clarified enough to indicate the line of investigation that needs to be pursued. These additional records include:

- Aircraft maintenance system logs, and
- Built-In Test Equipment data dumps for some airplane systems, and
- SATCOM activity logs.

7.8 Logs and printouts from the flight crew and recordings/logs from the ATSUs involved in the problem may also be necessary. It is important that the organization collecting data for the analysis task requests all this data in a timely manner, as much of it is subject to limited retention.

7.9 Once the data has been collected, the analysis can begin. For this, it is necessary to be able to decode all the messages involved, and a tool that can decode every ATS data link message type used in the region is essential. These messages include:

- AFN (ARINC 622), ADS-C and CPDLC (RTCA DO-258A/EUROCAE ED-100A) in a region operating FANS-1/A;
- Context Management, ADS-C and CPDLC applications (ICAO Doc 9705 and RTCA DO-280/ED-110) in a region using ATN; and
- FIS or ARINC 623 messages used in the region.

7.10 The analysis of the decoded messages requires a thorough understanding of the complete message traffic, including:

- Media management messages;
- Relationship of ground-ground and air-ground traffic; and
- Message envelope schemes used by the particular data link technology (ACARS, ATN, etc).

7.11 The analyst must also have a good understanding of how the aircraft systems operate and interact to provide the ATS data link functions, as many reported problems are airplane system problems.

7.12 This information will enable the analyst to determine a probable cause by working back from the area where the problem was noticed to where it began. In some cases, this may entail manual decoding of parts of messages based on the appropriate standard to identify particular encoding errors. It may also require laboratory testing using the airborne equipment (and sometimes the ground networks) to reliably assign the problem to a particular cause.

7.13 Once the problem has been identified, the task of coordination with affected parties begins. The stakeholder who is assigned responsibility for fixing the problem must be contacted and a corrective action plan agreed.

7.14 This information (the problem description, the results of the analysis and the plan for corrective action) is then entered into a database covering data link problems, both in a complete form to allow continued analysis and monitoring of the corrective action and in a de-identified form for the information of other stakeholders. These de-identified summaries are reported at the appropriate regional management forum.

Mitigating Procedures

7.15 The CRA's responsibility does not end with determining the cause of the problem and identifying a fix. Procedural methods to mitigate the problem may have to be developed because a considerable period may elapse while a solution is being developed and implemented, particularly if software updates are to be applied to all aircraft in a fleet. The CRA should identify the need for such procedures and develop recommendations for implementation by the service providers and operators involved.

Routine Data Link Performance Reporting

7.16 An important part of data link safety performance is the measurement of the end-to-end performance. This should be carried out prior to implementation of new separation minima, but should continue regularly to provide assurance that the safety requirements continue to be met. Routine ~~D~~data link performance assessment by ANSPs, usually carried out monthly, is based on regular measurement of the continuity and availability ~~round-trip time, availability, integrity, reliability and continuity, and ANSPs should provide the CRA with regular measurements of these~~ parameters.

7.xx For the purpose of standardising the presentation of performance data and to provide guidance in the steps for analysis and reporting of PBCS performance Reporting templates and guidance such as Data link performance analysis reporting, and PBCS action list for ANSPs were developed by FIT/Asia 8 and agreed by RASMAG/28 , *Conclusion RASMAG/23-2: PBCS Action List for ANSPs and Conclusion RASMAG/23-3: Data Link Performance Analysis Reporting Templates* refers located on the ICAO website. ICAO APAC eDocuments>>ATM>> Datalink.

7.17 ~~The CRA will use the information supplied by ANSPs to produce a performance assessment against the established data link requirements for the region~~. The implementation of Required Communication Performance (RCP) and Required Surveillance Performance (RSP) in a region will assist the regulatory oversight ~~CRA~~ by providing a statement of the performance requirements for operational communication in support of specific ATS functions. These requirements are set according to the separation minima being applied, and so may differ within different areas according to usage. The Regional FANS1/A Interoperability Teams (FIT) will use the information supplied by their ANSPs to produce the Regional Combined PBCS Monitoring Report against the established data link requirements for their region.

7.18 The Regional Combined PBCS Monitoring Report ~~The CRA performance assessment~~ should be made available to the RVSM RMA and horizontal plane En-route Monitoring Agency (EMA) for their calculation of system performance against the minimum values defined in the Oceanic SPR Standard (RTCA DO-306/EUROCAE ED-122 Safety and Performance Standard for Air Traffic Data link Services in Oceanic and Remote Airspace). The system performance criteria are ~~included~~ referenced in **Appendix C ~~D~~**.

7.19 ADS-C round-trip times are normally measured as the time between sending a contract request and receiving the associated Acknowledgement (ACK) or Message Assurance (MAS) message. CPDLC round-trip times are normally determined from the ATSU end-system time stamps for

transmission of the uplink message and reception of the associated MAS.

7.20 ADS-C and CPDLC downlink one-way times are defined by the difference between the aircraft time stamp and the ASTU end-system reception time stamp.

7.21 ADS-C and CPDLC success rates are only available for uplink messages. The success rate is expressed as the percentage of messages that receive a successful ACK or MAS within a specified time.

7.22 CPDLC Actual Communications Performance (ACP) used for monitoring the RCP TRN (transaction) is the difference between the time stamp on the CPDLC uplink from the ATSU requiring a WILCO/UNABLE response to reception of the associated downlink from the aircraft.

> ***Note 1.*** *TRN is the overall transaction time, and denotes that part of the operational communication used to define start and end points for monitoring; it does not include uplink message composition or reviewing of the downlink message response by the Controller.*
>
> ***Note 2.*** *When monitoring RCP only those transactions requiring a WILCO/UNABLE response are assessed in order to provide the best modelling of the performance of a CPDLC message used for intervention in a reduced separation scenario.*

7.23 CPDLC Actual Communications Technical Performance (ACTP) used for monitoring RCTP is the sum of the following two time intervals:

1. The difference between the time stamp on the CPDLC uplink and the ATSU end-system reception time stamp of the corresponding MAS divided by two; and
2. The associated CPDLC downlink transit time (calculated by determining the difference between the aircraft time stamp and the ATSU end-system reception time stamp).

7.24 CPDLC Crew Performance (sometimes referred to as Pilot Operational Response Time - PORT) is the difference between ACP and ACTP for the same transaction.

7.25 Communication transaction time - The maximum time for the completion of the operational communication transaction after which the initiator should revert to an alternative procedure.

7.26 Position report delivery time – The maximum time for the delivery of a position report from the aircraft to the ATSU.

7.27 Monitored operational performance (TRN) - The portion of the operational communication transaction (used for intervention) that does not include message composition or recognition of the operational response.

7.28 Required Communication Technical Performance (RCTP) – The technical portion of the operational communication transaction (used for intervention) that does not include message composition, operational response, and recognition of the operational response times.

7.29 Continuity - The probability that an operational communication transaction or position report delivery can be completed within the communication transaction time.

- The proportion of intervention messages and responses that can be delivered within the specified TRN for Intervention.
- The proportion of intervention messages and responses that can be delivered within the specified RCTP for Intervention.

7.30 AIDC round trip times may be obtained from the difference between message transmission and reception of the associated application response (Logical Acknowledgement Message (LAM), or Logical Rejection Message (LRM)). The success rate is expressed as the percentage of messages that are delivered to the destination ATSU.

7.31 The integrity of AIDC messaging is not normally monitored, although an analysis of operational data over a long period could reveal undetected errors and their effects. It may also reveal interoperability issues between ground systems in adjoining ATSUs.

Time Standards

7.32 It is critical to the successful measurement and analysis of the data link performance that all elements of the system use a common time system and that the system time is maintained within the required tolerance. In accordance with Annexes 2 and 11, all times used in data link communications must be accurate to within 1 second of UTC.

7.33 It is important to note that, at the time of publishing this guidance material, GPS time is more than 10 seconds ahead of UTC; where GPS time is used as the source, the system time must be corrected to UTC.

Configuration Monitoring

7.34 A variety of technical systems are involved in the data link process and changes, particularly to software and/or software parameters, are not infrequent. Any system change may have an impact on the overall performance of the data link, and it is therefore important that the CRA is kept informed of each change of configuration to each system. With this information it is often possible to identify changes that result it improvements or deteriorations in data link performance or that may be associated with particular problems.

7.35 All ANSPs, CSPs, aircraft operators and avionics suppliers should therefore report all system configuration changes to the CRA. The CRA will then maintain a database of configuration changes for each system or sub-system. It is not necessary for the CRA to know the details of changes, but where a change is expected to affect performance, information on the likely effect should be provided.

New Procedures and Improved Performance Requirements

7.36 The CRA may recommend new end-to-end data link system performance requirements, either to accommodate new operational procedures or to take account of recognised problems.

7.37 The CRA may recommend the testing and implementation of new procedures.

APPENDIX A METHODOLOGY FOR MONITORING AIDC

1 Introduction

1.1 AIDC plays an important role in ATC coordination and may become a significant element of ATC in the support of reduced separation minima. The performance of AIDC operations should therefore be monitored as part of the required monitoring process prior to the implementation of reduced separation minima.

1.2 AIDC operates essentially over fixed networks and generally has only two or three involved parties, generally comprising the ATSUs at either end of the network and the network provider. It is therefore generally unnecessary to develop a FIT-type approach to safety monitoring; instead such monitoring and problem identification and resolution can be carried out directly by the concerned parties.

1.3 Because fixed networks are used for AIDC, continuous performance monitoring after the implementation of reduced separation minima is not generally necessary, though annual performance and availability checks are recommended. Monitoring should also take place after any changes to the network or the end-user equipment. This will be particularly important during the implementation of the ATN.

2 AIDC Technical Performance

2.1 Two major criteria for monitoring AIDC technical performance are the achievement of acceptable delivery times and the reliability of message delivery. Delivery times can best be measured in terms of the end-to-end round trip time. Reliability is measured as the AIDC message delivery success rate.

3 End-to-End Round-Trip Time

3.1 The end-to-end round trip message time may be measured as the time difference between the transmission of an AIDC message and the reception of the corresponding Logical Acknowledgement Message (LAM) or Logical Rejection Message (LRM). If the originating AIDC system receives neither a LAM nor an LRM from the receiving system within a specified time limit (a variable system parameter, typically between 1 and 3 minutes), it will declare a time-out, and the time-out parameter must be used as the round-trip time.

3.2 All AIDC message requiring a LAM response may be used; measuring results from a variety of message types should give a more representative overall result.

3.3 Because of variations in circuits used for AIDC, separate measurements should be made and reported for each ATSU with which AIDC messages are exchanged.

3.4 A large number of measurements of round-trip times should be averaged for performance reporting.

Note: *If it is not practical to measure end-to-end times, one-way trip times may be measured by comparing the time stamps of the outgoing AIDC message and the received LAM or LRM. The reverse path may be measured from the time stamps of the received AIDC message and the corresponding LAM or LRM.*

4 Message Delivery Success Rate

4.1 The Message Delivery Success Rate is expressed as the percentage of messages successfully delivered to the destination ATSU.

4.2 Unsuccessful delivery is indicated by a time-out due to non-reception of either a LAM or LRM within a specified time.

Note: *For the purpose of this measurement, even if an AIDC message is responded to with an LRM, it is considered to have been "successfully delivered".*

4.3 The time-out indicates non-delivery of the message (and initiates various actions within the AIDC system).

$$\text{Message Delivery Success Rate} = 1 - \frac{TO}{TOT}$$

Where:

TO = number of Time Outs

TOT = total number of messages

4.4 A large number of measurements of delivery success rates should be averaged for performance reporting. Non-typical extensive transit times should also be investigated.

5 Results

5.1 An ANSP should share the results of AIDC performance monitoring with relevant ANSPs. This will enable problems to be identified and remedial actions agreed upon.

6 Caution

6.1 It is known that there are incompatibilities between some ATS end-systems leading to a situation in which a satisfactorily received message may not be able to be properly processed. In at least one case, the receiving system has been programmed to send neither LAM nor LRM in response to such messages.

6.2 This will result in a distortion of the average round-trip time and success rate for the originating end-system.

6.3 It is recommended that ANSPs ensure that all involved parties are aware of such situations so that affected messages may be excluded from the performance measurement data.

~~APPENDIX B~~ ~~MODEL TERMS OF REFERENCE FOR AN INTEROPERABILITY TEAM~~

~~Reporting and problem resolution processes~~

- ~~To establish a problem reporting system;~~
- ~~To review de-identified problem reports and determine appropriate resolution;~~
- ~~To identify trends;~~
- ~~To develop interim operational procedures to mitigate the effects of problems until such time as they are resolved;~~
- ~~To monitor the progress of problem resolution; and~~
- ~~To prepare summaries of problems encountered and their operational implications.~~

~~System performance and monitoring processes~~

- ~~To determine and validate system performance requirements;~~
- ~~To establish a performance monitoring system;~~
- ~~To assess system performance based on information from the CRA;~~
- ~~To authorise and coordinate system testing;~~
- ~~To identify accountability for each element of the end-to-end system;~~
- ~~To develop, document and implement a quality assurance plan that will provide a path to a more stable system; and~~
- ~~To identify configurations of the end-to-end system that provide acceptable data link performance, and to ensure that such configurations are maintained by all stakeholders.~~

~~New procedures~~

- ~~To coordinate testing in support of implementation of enhanced operational procedures~~

~~Reporting~~

- ~~To report safety-related issues to the appropriate State or regulatory authorities for action;~~
- ~~To provide reports to each meeting of the implementation team or ATS coordinating group, as appropriate; and~~
- ~~To provide reports to RASMAG.~~

APPENDIX ~~C~~ B CRA TASKS AND RESOURCE REQUIREMENTS

CRA Task	Resource Requirement
Manage data confidentiality agreements as required.	Legal services Technical expertise
Develop and administer problem report process: • de-identify all reports, • enter de-identified reports into a database, • keep the identified reports for processing, • request audit data from communication service providers, • assign responsibility for problem resolution where possible, • analyse the data, and • identify trends.	Problem reporting data base, ATS audit decode capability and Airborne test bench as a minimum, simulator highly recommended as well as ATS simulation capability (CPDLC and ADS-C)
Coordinate and test the implementation of new procedures	Airborne test bench as a minimum, simulator capability highly recommended ATS simulation capability (CPDLC and ADS-C) ATS audit decode and report capability. Technical expertise Operational expertise
Administer and monitor an informal end-to-end configuration process.	Technical expertise
Report to the interoperability team.	Technical expertise

APPENDIX ~~D~~ C SYSTEM PERFORMANCE CRITERIA

In 2008, the ANC approved a work programme to reconvene the OPLINKP, and tasked the panel to update the *Manual on Required Communication Performance (RCP)* (Doc 9869) by taking into account significant advances by ICAO Member States and regions, in the areas of qualification and monitoring, commercial service contracts/agreements and operational approvals, thereby also avoiding the imposition of regional or State-specific criteria on aircraft operators and aircraft/avionics manufacturers.

In 2010, OPLINKP reconvened and agreed to develop an amendment to Doc 9869, renaming it to the *Performance-based Communication and Surveillance (PBCS) Manual*, and expanding its scope by incorporating parts of the GOLD and SVGM, and other material that was developed by the regions since 2007. ~~The Global Operational Datalink Document (GOLD), which is published as Regional Guidance Material, contains the detailed safety and performance requirements for data link services that need to be met and verified. These requirements are derived from *RTCA DO-306/EUROCAE ED-122 Safety and Performance Standard for Air Traffic Data link Services in Oceanic and Remote Airspace* (Oceanic SPR Standard). This does not prevent ATS service providers from negotiating more constraining contractual requirements with their communication service providers if necessary.~~

The RCP and RSP specifications are described within the performance-based communication and surveillance (PBCS) framework, thereby providing the means to prescribe the appropriate RCP and RSP specifications and initially qualify different subsystems, as well as manage operational (end-to-end) system performance in continued operations.

Refer to ~~The tables below summarise the requirements in Appendices B and C of the GOLD~~ ICAO DOC 9869 Appendix B contains a "merged" version of the RCP specifications taken from the regional guidance material (GOLD and SVGM), Appendix B in each document. These specifications are considered a requirement when they are prescribed or guidance if applied only to PBCS monitoring programmes. Appendix C contains a "merged" version of the RSP specifications taken from the regional guidance material (GOLD and SVGM), Appendix C in each document. These specifications are considered a requirement when they are prescribed or guidance if applied only to PBCS monitoring programmes.

~~D.1 Required Communication Performance Specifications~~

~~The rationale for the criteria provided in these specifications can be found in ICAO Annex 11, ICAO Doc 4444, ICAO Doc 9689 and RTCA DO-306/ED-122.~~

~~**RCP specification**~~	
~~**Term**~~	~~**Description**~~
~~RCP expiration time (ET)~~	~~The maximum time for the completion of the operational communication transaction after which the initiator is required to revert to an alternative procedure.~~
~~RCP nominal time (TT 95%)~~	~~The maximum nominal time within which 95% of operational communication transactions is required to be completed.~~
~~RCP continuity (C)~~	~~The required probability that an operational communication transaction can be completed within the communication transaction time, either ET or TT 95%, given that the service was available at the start of the transaction.~~
~~RCP availability (A)~~	~~The required probability that an operational communication transaction can be initiated when needed.~~

RCP integrity (I)	The required probability that an operational communication transaction is completed with no undetected errors. *Note – Whilst RCP integrity is defined in terms of the "goodness" of the communication capability, it is specified in terms of the likelihood of occurrence of malfunction on a per flight hour basis, e.g. 10^{-5}, consistent with RNAV/RNP specifications.*
/D transaction time	
Term	**Description**
Monitored operational performance (TRN)	The portion of the transaction time (used for intervention) that does not include the times for message composition or recognition of the operational response.
Required communication technical performance (RCTP)	The portion of the (intervention) transaction time that does not include the human times for message composition, operational response, and recognition of the operational response.
Responder performance criteria	The operational portion of the transaction time to prepare the operational response, and includes the recognition of the instruction, and message composition, e.g. flight crew/HMI for intervention transactions.
$RCTP_{ATSU}$	The summed critical transit times for an ATC intervention message and a response message, allocated to the ATSU system.

RCP specification	
Term	**Description**
$RCTP_{CSP}$	The summed critical transit times for an ATC intervention message and a response message, allocated to the CSP system.
$RCTP_{AIR}$	The summed critical transit times for an ATC intervention message and a response message, allocated to the aircraft system.

D.1.1 RCP 240

RCP communication transaction time and continuity criteria		
Specification: RCP 240/D	**Application: CPDLC**	
Transaction Time Parameter	**ET (sec) C = 99.9%**	**TT (sec) C = 95%**
Transaction Time Value	240	210
RCP Time Allocations		
Initiator	30	30
TRN	210	180
TRN Time Allocations		
Responder	60	60
RCTP	150	120
RCTP Time Allocation		
$\mathbf{RCTP_{ATSU}}$	15	10
$\mathbf{RCTP_{CSP}}$	120	100
$\mathbf{RCTP_{AIR}}$	15	10

RCP availability criteria		
Specification: RCP 240/D	**Application: CPDLC**	
Availability parameter	**Efficiency**	**Safety**
Service availability (A_{CSP})	0.9999	0.999
Unplanned outage duration limit (min)	10	10
Maximum number of unplanned outages	4	48
Maximum accumulated unplanned outage time (min/yr)	52	520
Unplanned outage notification delay (min)	5	5
Note 1 – DO 306/ED 122 specifies an availability value based on safety assessment of the operational effects of the loss of the service. The more stringent (efficiency) value is based on an additional need to maintain orderly and efficient operations. *Note 2 – DO 306/ED 122 specifies a requirement to indicate loss of the service. Unplanned outage notification delay is an additional time value associated with the requirement to indicate the loss to the ATS provider.*		

RCP integrity criteria	
Specification: RCP 240/D	**Application: CPDLC**
Integrity (I)	Malfunction = 10^{-5} per flight hour

D.1.2 RCP 400

RCP communication transaction time and continuity criteria		
Specification: RCP 400/D	**Application: CPDLC**	
Transaction Time Parameter	**ET (sec)** **C = 99.9%**	**TT (sec)** **C = 95%**
Transaction Time Value	400	350
RCP Time Allocations		
Initiator	30	30
TRN	370	320
TRN Time Allocations		
Responder	60	60
RCTP	310	260
RCTP Time Allocation		
$RCTP_{ATSU}$	15	10
$RCTP_{CSP}$	280	240
$RCTP_{AIR}$	15	10

RCP availability and integrity criteria	
Specification: RCP 400/D	**Application: CPDLC**
Availability (A) 0.999	**Integrity (I)** Malfunction= 10^{-5} per flight hour

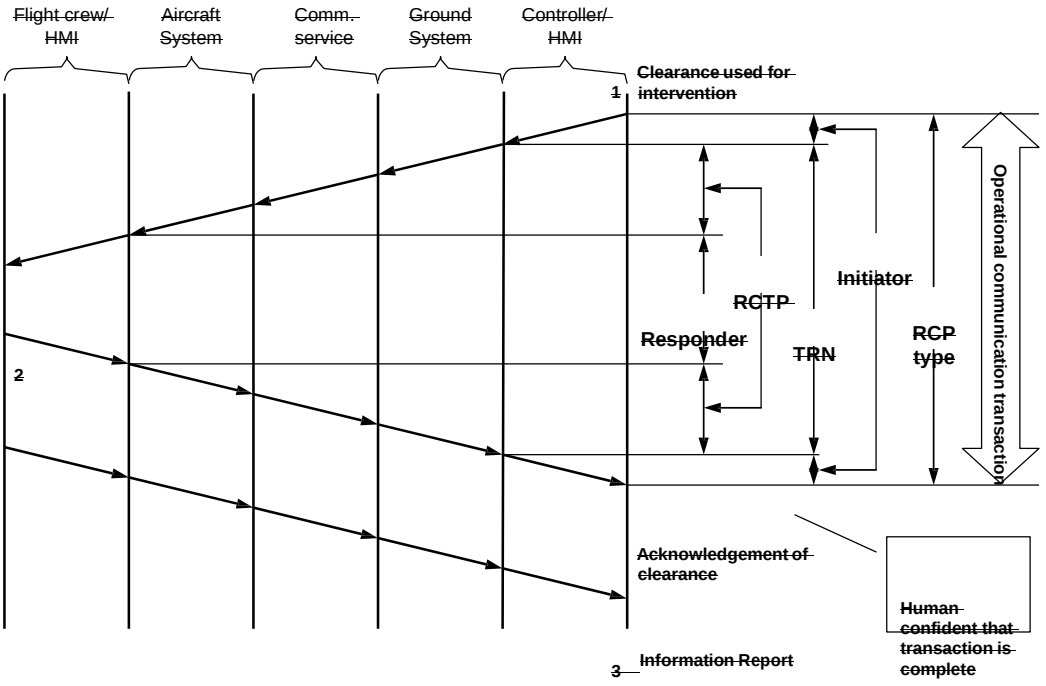


***Figure 1:** RCP allocations for intervention capability (DO-306/ED-122, Figure 5-3)*

D.2 Surveillance Performance Specifications

The rationale for the criteria provided in these specifications can be found in ICAO Annex 11, ICAO Doc 4444, ICAO Doc 9689, and RTCA DO-306/ED-122.

Surveillance performance specification and related terms	
Term	**Description**
Surveillance overdue delivery time (OT)	The maximum time for the successful delivery of surveillance data after which the initiator is required to revert to an alternative procedure.
Surveillance nominal delivery time (DT 95%)	The maximum nominal time within which 95% of surveillance data is required to be successfully delivered.
Surveillance continuity (C)	The required probability that surveillance data can be delivered within the surveillance delivery time parameter, either OT or DT 95%, given that the service was available at the start of delivery.
Surveillance availability (A)	The required probability that surveillance data can be provided when needed.
Surveillance integrity (I)	The required probability that the surveillance data is delivered with no undetected error. *Note Surveillance integrity includes such factors as the accuracy of time, correlating the time at aircraft position, reporting interval, data latency, extrapolation and/or estimation of the data.*
Surveillance data transit time criteria	
Term	**Description**
$RSTP_{ATSU}$	The overdue (OD) or nominal (DT) transit time for surveillance data from the CSP interface to the ATSU's flight data processing system.
$RSTP_{AIR}$	The overdue (OD) or nominal (DT) transit time for surveillance data from the aircraft's avionics to the antenna.
$RSTP_{CSP}$	The overdue (OD) or nominal (DT) transit time for surveillance data allocated to the CSP.

D.2.1 Surveillance performance type 180 specification

Surveillance data transit time and continuity criteria		
Specification: Type 180/D	**Application: ADS-C, FMC WPR**	
Data Latency Parameter	**OT (sec)** **C = 99.9%**	**DT 95%(sec)** **C = 95%**
Delivery Time Value	180	90
RSTP Time Allocation		
$RSTP_{ATSU}$	5	3
$RSTP_{CSP}$	170	84
$RSTP_{AIR}$	5	3
Surveillance availability and integrity criteria		
Availability (A)	**Integrity (I)**	
0.999 0.9999 (efficiency) *Note. The surveillance availability criteria for type 180/D are the same as the for RCP 240/D. See D.1.1 above.*	**Navigation FOM**	*The navigation figure of merit (FOM) is specified based on the navigation criteria associated with this spec. For example, if RNP 4 is prescribed, then for ADS-C surveillance service, the FOM level would need to be 4 or higher.*
	Time at position accuracy	+/- 1 sec (UTC)
	Data integrity	Malfunction = 10^{-5} per flight hour

D.2.2 Surveillance performance type 400 specification

Surveillance data transit time and continuity criteria		
Specification: Type 180/D	**Application: ADS-C, FMC WPR**	
Data Latency Parameter	**OT (sec)** **C = 99.9%**	**DT 95%(sec)** **C = 95%**
Delivery Time Value	400	300
RSTP Time Allocation		
$RSTP_{ATSU}$	30	15
$RSTP_{CSP}$	340	270
$RSTP_{AIR}$	30	15
Surveillance availability and integrity criteria		
Availability (A)	**Integrity (I)**	
0.999	**Navigation FOM**	*The navigation figure of merit (FOM) is specified based on the navigation criteria associated with this spec. For example, if RNP 10 is prescribed, then for ADS-C surveillance service, the FOM level would need to be 3 or higher.*
	Time at position accuracy	+/- 1 sec (UTC)
	Data integrity	Malfunction = 10^{-5} per flight hour

ATM and Airspace Safety Deficiencies List (Updated 28 November 2023)

	Deficiencies			**Corrective Action**		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
	WGS-84 Requirements of Paragraph 1.2.1 of Annex 15					
Afghanistan	WGS-84 - Not implemented	24/6/2014		Afghanistan	TBD	A
~~Bhutan~~	~~WGS-84 - Not implemented~~	~~2/7/1999~~	~~Data conversion completed, but not published~~	~~Bhutan~~	~~TBD~~	~~A~~
Brunei Darussalam	WGS-84 - Not implemented	24/6/2014		Brunei Darussalam	TBD	A
Marshall Islands	WGS-84 - Not implemented	24/6/2014		Marshall Islands	TBD	A
Micronesia	WGS-84 - Not implemented	24/6/2014		Micronesia	TBD	A
Nauru	WGS-84 - Not implemented		Conferring with consultant	Nauru	TBD	A
Palau	WGS-84 - Not implemented	24/6/2014		Palau	TBD	A
Samoa	WGS-84 - Not implemented	24/6/2014		Samoa	TBD	A
Vanuatu	WGS-84 – Not implemented	2/7/1999	Implemented at main airports	Vanuatu	1999	A
	AIP Format Requirements of Chapter 5 of Annex 15					
Kiribati	AIP Format - Not implemented	7/7/99	ATM/AIS/SAR/SG/18 (June 2009) was advised AIP in draft stage	Kiribati		A
Nauru	AIP Format - Not implemented	7/7/99	ATM/AIS/SAR/SG/18 (June 2008) was advised work soon to start	Nauru		A
	AIS Quality Management System Requirements of Paragraph 3.6.1 of Annex 15 Quality Management System - Not implemented					

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
Afghanistan	AIS Quality Management System - Not implemented	24/6/2014		Afghanistan	TBD	A
Bangladesh	AIS Quality Management System - Not implemented	24/6/2014		Bangladesh	TBD	A
Bhutan	AIS Quality Management System - Not implemented	24/6/2014		Bhutan	TBD	A
Brunei Darussalam	AIS Quality Management System - Not implemented	24/6/2014		Brunei Darussalam	TBD	A
Cambodia	AIS Quality Management System - Not implemented	24/6/2014		Cambodia	TBD	A
Kiribati	AIS Quality Management System - Not implemented	24/6/2014		Kiribati	TBD	A
Lao PDR	AIS Quality Management System - Not implemented	24/6/2014		Lao PDR	TBD	A
Maldives	AIS Quality Management System - Not implemented	24/6/2014		Maldives	TBD	A
Marshall Islands	AIS Quality Management System - Not implemented	24/6/2014		Maldives	TBD	A
Micronesia	AIS Quality Management System - Not implemented	24/6/2014		Micronesia	TBD	A
Myanmar	AIS Quality Management System - Not implemented	9/6/2016		Myanmar	TBD	A
Nauru	AIS Quality Management System - Not implemented	24/6/2014		Nauru	TBD	A
Nepal	AIS Quality Management System - Not implemented	24/6/2014		Nepal	TBD	A

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
Palau	AIS Quality Management System - Not implemented	24/6/2014		Palau	TBD	A
Philippines	AIS Quality Management System - Not implemented	24/6/2014		Philippines	TBD	A
Samoa	AIS Quality Management System - Not implemented	24/6/2014		Samoa	TBD	A
Solomon Islands	AIS Quality Management System - Not implemented	24/6/2014		Solomon Islands	TBD	A
Sri Lanka	AIS Quality Management System - Not implemented	9/6/2016		Sri Lanka	TBD	A
Timor-Leste	AIS Quality Management System - Not implemented	24/6/2014		Timor-Leste	TBD	A
Vanuatu	AIS Quality Management System - Not implemented	24/6/2014		Vanuatu	TBD	A
	Aeronautical Data Area of Responsibility - requirements of Paragraph 2.1.2 of Annex 2 to ensure that the provision of aeronautical data and aeronautical information covers its own territory and those areas over the high seas for which it is responsible for the provision of ATS					
Bangladesh	Aeronautical Data Promulgation Within the State's Area of Responsibility - Not implemented	29/03/2019 SAIOACG /9		Bangladesh	TBD	A

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
	<u>Designation of Restricted Areas</u> - requirements of Annex 2 (Definitions) to ensure that restricted areas are designated above the land areas or territorial waters of a State					
Australia	Designation of Restricted Areas Above the Land Areas or Territorial Waters of a State - Not implemented	29/03/2019 SAIOACG /9	Danger areas within international airspace that is part of a State's responsibility is acceptable	Australia	December 2022	A
India	Designation of Restricted Areas Above the Land Areas or Territorial Waters of a State - Not implemented	29/03/2019 SAIOACG /9	Danger areas within international airspace that is part of a State's responsibility is acceptable	India	TBD	A
	<u>Airspace Classification</u> Requirements of Paragraph 2.6 of Annex 11					
China	Airspace Classification - Not implemented	7/7/99	Difference to Annex 11 is published in AIP, China.	China	APANPIRG/19 updated, implementation planned by end 2010.	A
Macau, China	Airspace Classification - Not implemented	05/09/2018		Macau, China	TBD	A
Nauru	Airspace Classification - Not implemented	7/7/99		Nauru	TBD	A
Solomon Islands	Airspace Classification - Not implemented	7/7/99		Solomon Islands	TBD	A

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
	<u>ATS Message Addressing</u> Requirements of Doc 4444 PANS-ATM Section 11.4 (Message Types and their Application)		Note: the threshold for a Deficiency is 5% or more DEP messages reported to have not been sent, and where the analysed data provided evidence of a systemic (either systems or human factors) failure to send the message			
Maldives	DEP message transmission	09/08/2019	DEP messages inconsistently transmitted Conclusion APANPIRG/27/12 and ICAO correspondence	Maldives	TBD	A
	<u>SAR capability</u>: Requirements of Annex 12 as defined in the Regional Air Navigation Plan Volume II Part I – GENERAL PLANNING ASPECTS Section 3 SPECIFIC REGIONAL REQUIREMENTS, failure to reach 90% or more implementation of the Asia/Pacific SAR Plan					
Afghanistan	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/6 56%	Afghanistan	2019	U
Bangladesh	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/6 67%~~ APSAR/WG/8 65%	Bangladesh	2019	U
Bhutan	Asia/Pacific SAR Plan	6/07/2015	~~APSAR/WG/4 34%~~ APSAR/WG/8 28%	Bhutan	2019	U
Brunei Darussalam	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/4 63%	Brunei	2019	U
Cambodia	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 76%	Cambodia	2019	U
Cook Islands	Asia/Pacific SAR Plan	6/07/2015	~~APSAR/WG/5 44%~~ APSAR/WG/8 62%	Cook Islands	2019	U

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
DPR Korea	Asia/Pacific SAR Plan	6/07/2015	~~APSAR/WG/4 66%~~ APSAR/WG/8 71%	DPR Korea	2019	U
French Polynesia	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/5 82%~~ APSAR/WG/8 84%	French Polynesia	2019	U
Kiribati	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 26%	Kiribati	2019	U
Lao PDR	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 57%	Lao PDR	2019	U
Macau, China	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 85%	Macao, China	2019	U
Malaysia	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/7 76%~~ APSAR/WG/8 85%	Malaysia	2019	U
Maldives	Asia/Pacific SAR Plan	6/07/2015	~~APSAR/WG/6 71%~~ APSAR/WG/8 78%	Maldives	2019	U
Marshall Islands	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 17%	Marshall Islands	2019	U
Micronesia	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 17%	Micronesia	2019	U
Mongolia	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/5 73%	Mongolia	2019	U
Myanmar	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 67%	Myanmar	2019	U
Nauru	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%	Nauru	2019	U
Nepal	Asia/Pacific SAR Plan	6/07/2015	~~APSAR/WG/5 56%~~ APSAR/WG/7 56%	Nepal	2019	U
New Caledonia	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/7 75%~~ APSAR/WG/8 78%	New Caledonia	2019	U
Pakistan	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/7 88%~~ APSAR/WG/8 89%	Pakistan	2019	U
Palau	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 17%	Palau	2019	U

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
Papua New Guinea	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/7 54%	Papua New Guinea	2019	U
Philippines	Asia/Pacific SAR Plan	6/07/2015	~~APSAR/WG/6 88%~~ APSAR/WG/8 86%	Philippines	2019	U
Samoa	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%	Samoa	2019	U
Solomon Islands	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%	Solomon Islands	2019	U
Sri Lanka	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/7 80%~~ APSAR/WG/8 83%	Sri Lanka	2019	U
Thailand	Asia/Pacific SAR Plan	17/05/2019	~~APSAR/WG/5 78%~~ APSAR/WG/8 82%	Thailand	2019	U
Timor-Leste	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%	Timor-Leste	2019	U
Tonga	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 70%	Tonga	2019	U
Tuvalu	Asia/Pacific SAR Plan	28/05/2022	APSAR/WG/7 0%	Tuvalu	2024	U
Vanuatu	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%	Vanuatu	2019	U
	Non Provision of Safety-related Data Requirement of Paragraph 3.3.5.1 of Annex 11 (provision of data for monitoring the height-keeping performance of aircraft) and APANPIRG Conclusion 16/6 – Non Provision of safety related data by States					
Afghanistan	Non-provision of safety related data	12/07/2019	Failure to submit Kabul LHD data for January-December 2018 and 2020. Afghanistan had submitted data for the period January to July 2021, but no further LHD reports were received after August 2021.	Afghanistan	RASMAG/27	U

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
~~Brunei Darussalam~~	~~Non-provision of safety-related data~~	~~25/08/2022~~	~~Failure to submit RVSM approval status validation data for two consecutive years (2020, 2021)~~	~~Brunei Darussalam~~	~~RASMAG/28~~	~~U~~
	State Responsibility to comply with the Annex 6 Height-Keeping Monitoring Requirement Annex 6 Part I Section 7.2.9 (10th Ed.) and Part II Section 2.5.2.10 (9th Ed.)					
Afghanistan	Non-compliance with LTHM requirement (remaining monitoring burden more than 30%)	RASMAG/ 23	Remaining monitoring burden of 85% (RASMAG/26) MAAR informed ICAO that all known airframes in Afghanistan have complied with the monitoring requirement (November 2022). Deficiency retained due to the unknown status of the Afghanistan aeronautical authority responsible for ensuring monitoring is conducted.	Afghanistan	RASMAG24	A
Mongolia	Non-compliance with LTHM requirement (remaining monitoring burden more than 30%)	RASMAG/ 28	Remaining monitoring burden of 43% (RASMAG/28)	Mongolia	TBD	A
Nepal	Non-compliance with LTHM requirement (remaining monitoring burden more than 30%)	RASMAG/ 28	Remaining monitoring burden of 45% (RASMAG/28)	Nepal	TBD	A
New Zealand	Non-compliance with LTHM requirement (remaining monitoring burden more than 30%)	RASMAG/ 28	Remaining monitoring burden of 36% (RASMAG/28)	New Zealand	TBD	A
Pakistan	Non-compliance with LTHM requirement (remaining monitoring burden more than 30%)	RASMAG/ 22	~~Remaining monitoring burden of 61% (RASMAG/26)~~ Remaining monitoring burden of 45% (RASMAG/28)	Pakistan	RASMAG24	A
Papua New Guinea	Non-compliance with LTHM requirement (remaining monitoring	RASMAG/ 28	Remaining monitoring burden of 69% (RASMAG/28)	Papua New Guinea	TBD	A

	Deficiencies			Corrective Action		
States/facilities	**Description**	**Date first reported**	**Remarks**	**Executing body**	**Target date**	**Priority ****
	burden more than 30%)					
Solomon Islands	Non-compliance with LTHM requirement (remaining monitoring burden more than 30%)	RASMAG/ 28	Remaining monitoring burden of 50% (RASMAG/28)	Solomon Islands	TBD	A
	Data Link Performance Monitoring and Analysis Requirements of Paragraph 2.28 and/or 3.3.5.2 of Annex 11 not met					
India	Post-implementation monitoring not implemented	13/07/2017	Performance monitoring and analysis was reported for the Chennai and Kolkata FIRs, but was not reported for the Mumbai FIR.	India	TBD	A
Maldives	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.	Maldives	TBD	A

** Note: In accordance with the *APANPIRG Handbook - Asia/Pacific Supplement to the Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies*, priority for Air Navigation Deficiencies is guided by the principle that a deficiency with respect to an ICAO Standard is accorded a "U" status, while a non-compliance with a Recommended Practice or a PANS is considered as "A" or "B" subject to additional expert evaluation. The final prioritization of deficiencies is the prerogative of APANPIRG.

FIR		[FIR Name}					
Criteria		RSP180					
Period		Jan-June YYYY			July-December YYYY		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria		**Message Counts**	**95%** **% < = 90sec**	**99.90%** **% <= 180sec**	**Message Counts**	**95%** **% < = 90sec**	**99.90%** **% <= 180sec**
By Media Type							
SATCOM							
VHF							
HF							
ALL							
By Remote Ground Station (RGS) Ground Earth Station (GES)							
Designator	**Type**	(only RGS/GES with message counts >100 recorded)					

FIR	{FIR Name}					
Criteria	RSP180					
Period	Jan-June YYYY			July-December YYYY		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	**Message Counts**	**95% % <= 90sec**	**99.90% % <= 180sec**	**Message Counts**	**95% % <= 90sec**	**99.90% % <= 180sec**
By Aircraft Operator / Type **(only message counts >100 recorded)**						

FIR	{FIR Name}									
Criteria	RCP240									
Period	Jan - Jun YYYY					Jul - Dec YYYY				
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark	
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec		ACP % < =180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec
By Media Type										
SATCOM										
VHF										
HF										
ALL										
By Remote Ground Station (RGS) Ground Earth Station (GES)										
Designator	**Type**	(RGS/GES with message counts >100)								

FIR	[FIR Name}											
Criteria	RCP240											
Period	Jan - Jun YYYY						Jul - Dec YYYY					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT %<60secs		ACP % < =180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT %<60secs
By Aircraft Operator / Type (only message counts >100 recorded)												

FIR	NZZO					
Criteria	RSP180					
Period	Jan-June 2023			July-December 2023		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% % < = 90sec	99.90% % <= 180sec	Message Counts	95% % < = 90sec	99.90% % <= 180sec
By Media Type						
SATCOM	337695	98.81	99.66	382399	98.61	99.59
VHF	76376	99.75	99.92	89058	99.7	99.87
HF	259	74.13	84.16	230	69.56	85.65
ALL	414330	98.97	99.7	471687	98.81	99.64
By Remote Ground Station (RGS) Ground Earth Station (GES)						
Designator	**Type**	(only RGS/GES with message counts >100 recorded)				
AKL	VDL	6434	99.75	99.9	7720	99.79	99.88
AKL1	VDL	856	100	100	878	99.88	99.88
AKL2	VDL	6425	99.09	99.89	7099	98.81	99.5
AKL7	VDL	4168	99.97	99.97	5652	99.96	99.98
AKL8	VDL	21360	99.92	99.96	20269	99.96	99.99
AKLV	VDL	1419	99.71	99.85	1441	100	100
AME1	SAT	13297	99.7	99.92	16016	99.25	99.68
AME2	SAT	2659	99.81	99.92	4050	99.5	99.75
AME7	SAT				470	99.57	99.78
AME8	SAT				288	100	100
APK1	SAT	151812	99.19	99.82	175089	98.92	99.74
APK2	SAT	8732	99.54	99.89	7052	99.37	99.87
APK7	SAT				1600	98.5	98.81
APK8	SAT				889	98.98	99.43
APW1	VDL	4432	99.66	99.72	5198	99.9	99.98
CHC	VDL	356	100	100	436	100	100
CHC1	VDL	252	97.22	99.2	259	96.91	99.61
CHC2	VDL	282	97.51	100	243	95.47	98.76
CHC7	VDL	1913	99.94	100	1777	99.88	100
CHC8	VDL	1535	99.93	100	1419	99.92	100
CHCV	VDL	383	100	100	619	99.83	99.83
H05	HF	208	77.4	86.05	186	74.19	89.78
HLZ	VDL	1097	99.72	99.9	728	100	100
HLZ1	VDL	269	99.62	100	299	98.99	99.33
IG1	SAT	2287	96.76	98.51	1687	97.09	98.93
IGW1	SAT	77675	97.38	99.23	83026	96.95	99.12
IOR5	SAT				197	97.46	100
IVC1	VDL	754	97.21	99.6	956	98.22	100

FIR	NZZO					
Criteria	RSP180					
Period	Jan-June 2023			July-December 2023		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% % <= 90sec	99.90% % <= 180sec	Message Counts	95% % <= 90sec	99.90% % <= 180sec
By Aircraft Operator / Type (only message counts >100 recorded)						
AAL/B77W	4234	98.91%	99.34%	9511	98.92%	99.32%
AAL/B788				108	100.00%	100.00%
AAL/B789	8290	99.92%	100.00%	4762	99.87%	99.98%
ACA/B77L	273	98.53%	100.00%	468	97.86%	98.50%
ACA/B789	3732	99.01%	99.65%	2015	98.91%	99.80%
ACI/A20N	2173	98.44%	99.54%	2312	98.36%	99.35%
ACI/A339	1467	99.25%	99.93%	1563	100.00%	100.00%
ANZ/A20N	36588	97.70%	99.62%	36744	97.52%	99.73%
ANZ/A21N	40944	98.22%	99.44%	46025	97.44%	99.14%
ANZ/B77W	35456	99.28%	99.71%	52449	98.88%	99.59%
ANZ/B789	73626	99.34%	99.94%	70165	99.12%	99.94%
ASY/A332	163	100.00%	100.00%	228	99.56%	100.00%
ASY/C17	109	100.00%	100.00%	237	96.20%	97.89%
ASY/C30J	101	100.00%	100.00%	147	98.64%	100.00%
ASY/FA7X	242	97.93%	98.35%	174	98.85%	100.00%
AWC/A21N				140	97.86%	100.00%
CAL/A359	2668	99.06%	99.85%	2951	99.36%	100.00%
CAL/B77L	155	98.71%	100.00%			
CCA/A332				171	100.00%	100.00%
CCA/B789	678	98.53%	99.26%	2891	98.93%	99.34%
CES/A332	1996	100.00%	100.00%	1222	99.92%	100.00%
CES/B77W	928	99.25%	99.46%	3560	98.96%	99.47%
CES/B789	101	100.00%	100.00%	1967	99.90%	99.90%
CHH/A333	238	100.00%	100.00%			
CKS/B744	346	98.55%	100.00%			
CKS/B77L	5143	98.41%	99.38%	1240	98.23%	99.03%
CPA/A359				202	100.00%	100.00%
CPA/A35K	1780	99.89%	100.00%	2062	99.37%	99.95%
CSN/A359	405	100.00%	100.00%	331	100.00%	100.00%
CSN/B789	3266	99.91%	99.97%	5617	99.54%	99.93%
DAL/A359	8060	99.50%	99.94%	12381	99.56%	99.92%
DOD/K35R	131	86.26%	90.84%			
FDX/B77L	1134	98.85%	99.74%	1123	97.77%	99.02%
FJI/A332	5705	98.02%	99.67%	4167	96.33%	98.78%

FIR	NZZO									
Criteria	RCP240									
Period	Jan - Jun 2023					Jul - Dec 2023				
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark	
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec		ACP % < =180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec
By Media Type										
SATCOM	68738	99.03%	99.53%	99.35%	99.70%	74291	99.08%	99.48%	99.36%	99.63%
VHF	9827	99.64%	99.83%	99.71%	99.91%	10372	99.69%	99.73%	99.82%	99.91%
HF	112	75.00%	76.78%	77.67%	82.14%	110	83.63%	87.27%	90.00%	91.81%
ALL	78677	99.07%	99.53%	99.36%	99.71%	84773	99.13%	99.49%	99.40%	99.65%
By Remote Ground Station (RGS) Ground Earth Station (GES)										
Designator	**Type**	(RGS/GES with message counts >100)								
AKL	VDL	973	99.28%	99.58%	99.28%	99.58%	1109	99.63%	99.90%	99.81%	100.00%
AKL2	VDL	1285	99.84%	99.84%	99.84%	99.92%	1049	100.00%	100.00%	100.00%	100.00%
AKL7	VDL	316	100.00%	99.36%	100.00%	100.00%	394	99.23%	99.23%	99.49%	99.49%
AKL8	VDL	2105	99.61%	99.71%	99.80%	99.95%	1812	99.61%	99.11%	99.83%	99.77%
AKLV	VDL	168	100.00%	100.00%	100.00%	100.00%	161	99.37%	100.00%	100.00%	100.00%
AME1	SAT	1813	99.39%	99.72%	99.39%	99.88%	2071	99.61%	99.71%	99.71%	99.85%
AME2	SAT	372	98.65%	99.73%	98.92%	99.73%	494	98.98%	98.98%	99.39%	99.39%
APK1	SAT	30442	99.37%	99.63%	99.62%	99.78%	32789	99.33%	99.55%	99.60%	99.70%
APK2	SAT	1853	99.62%	99.89%	99.78%	99.89%	1344	99.25%	99.55%	99.47%	99.77%
APK7	SAT						260	99.23%	100.00%	99.61%	100.00%
APK8	SAT						134	99.25%	100.00%	99.25%	100.00%
APW1	VDL	831	100.00%	100.00%	100.00%	100.00%	950	100.00%	100.00%	100.00%	100.00%
CHC7	VDL	150	100.00%	100.00%	100.00%	100.00%	140	100.00%	98.57%	100.00%	100.00%
CHC8	VDL	102	100.00%	100.00%	100.00%	100.00%					
HLZ	VDL	123	100.00%	100.00%	100.00%	100.00%	100	100.00%	100.00%	100.00%	100.00%
IG1	SAT	426	92.25%	95.53%	94.36%	98.12%	298	96.64%	97.65%	97.31%	98.99%
IGW1	SAT	18403	98.20%	99.26%	98.75%	99.54%	19242	98.29%	99.12%	98.71%	99.33%
IVC1	VDL	126	100.00%	100.00%	100.00%	100.00%	198	100.00%	100.00%	100.00%	100.00%
RAR1	VDL	378	99.20%	99.73%	99.20%	99.73%	707	99.85%	100.00%	99.85%	100.00%
SUV1	VDL	146	97.94%	100.00%	98.63%	100.00%					
TBU1	VDL	2627	99.58%	99.96%	99.61%	99.96%	2149	99.67%	99.95%	99.76%	100.00%
XSN7	VDL						428	99.53%	99.06%	100.00%	99.53%
XXA	SAT	11664	99.47%	99.70%	99.66%	99.76%	13424	99.36%	99.70%	99.57%	99.77%
XXH	SAT	697	98.42%	99.13%	98.99%	99.28%	1239	99.59%	99.83%	99.75%	99.83%
XXP	SAT	2614	99.46%	99.77%	99.65%	99.77%	2809	99.67%	99.85%	99.71%	99.85%
XXU	SAT						204	99.50%	100.00%	99.50%	100.00%
XXW	SAT	407	99.26%	99.75%	99.26%	99.75%	375	99.73%	100.00%	99.73%	100.00%

FIR	NZZO											
Criteria	RCP240											
Period	Jan - Jun 2023						Jul - Dec 2023					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%	Message Counts	95% benchmark		99.9% Benchmark		95%
		ACP % <= 180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec	PORT %<60secs		ACP % <= 180sec	ACTP % <= 120sec	ACP % <= 210sec	ACTP % <= 150sec	PORT %<60secs
By Aircraft Operator / Type (only message counts >100 recorded)												
AAL/B77W	816	99.26%	99.87%	99.26%	99.87%	98.28%	1588	99.31	99.49%	99.62	99.62%	98.55%
AAL/B789	1430	99.93%	100.00%	100.00%	100.00%	99.44%	703	99.86	100.00%	99.86	100.00%	99.00%
ACA/B789	577	99.48%	99.13%	99.83%	99.13%	99.30%	319	99.69%	98.43%	100.00%	99.05%	98.43%
ACI/A20N	360	99.72%	100.00%	99.72%	100.00%	98.61%	362	100.00%	99.72%	100.00%	100.00%	99.17%
ACI/A339	185	100.00%	100.00%	100.00%	100.00%	98.91%	189	100.00%	100.00%	100.00%	100.00%	98.41%
ANZ/A20N	8016	98.75%	99.65%	99.13%	99.83%	96.83%	8081	98.87%	99.50%	99.26%	99.82%	97.06%
ANZ/A21N	8844	98.64%	99.43%	99.04%	99.77%	96.85%	9538	98.67%	99.30%	98.99%	99.41%	97.27%
ANZ/B77W	6677	99.36%	99.65%	99.52%	99.79%	97.94%	8635	99.07%	99.50%	99.43%	99.55%	97.85%
ANZ/B789	13329	99.55%	99.55%	99.81%	99.80%	98.87%	12180	99.55%	99.37%	99.81%	99.77%	99.12%
CAL/A359	559	99.28%	99.28%	99.28%	99.28%	97.49%	586	99.32%	99.31%	99.32%	99.48%	99.14%
CCA/B789	150	98.67%	100.00%	99.33%	100.00%	96.00%	612	99.84%	100.00%	99.84%	100.00%	99.83%
CES/A332	426	99.30%	99.53%	99.53%	99.76%	97.18%	244	99.18%	99.59%	99.59%	100.00%	97.95%
CES/B77W	209	99.04%	99.04%	99.04%	99.04%	99.04%	782	99.62%	99.74%	99.74%	99.74%	99.61%
CHH/A333	-	-	-	-	-	-	353	100.00%	100.00%	100.00%	100.00%	97.00%
CKS/B77L	826	99.15%	99.03%	99.64%	99.27%	98.18%	200	100.00%	100.00%	100.00%	100.00%	99.15%
CPA/A35K	404	100.00%	100.00%	100.00%	100.00%	98.01%	458	99.56%	99.34%	100.00%	99.78%	98.25%
CSN/B789	721	98.75%	99.16%	98.75%	99.30%	98.75%	1204	99.58%	99.83%	99.75%	99.83%	99.08%
DAL/A359	1475	99.25%	99.59%	99.66%	99.66%	97.08%	2065	99.27%	99.80%	99.47%	99.80%	96.99%
FDX/B77L	180	98.89%	100.00%	99.44%	100.00%	97.77%	165	97.58%	98.78%	98.18%	99.39%	96.36%
FJI/A332	1134	98.85%	99.20%	99.29%	99.47%	97.88%	739	97.56%	98.10%	98.24%	99.05%	94.04%
FJI/A333	297	99.66%	100.00%	100.00%	100.00%	96.96%	334	99.10%	98.80%	99.70%	99.40%	96.70%
FJI/A359	760	99.74%	99.86%	99.87%	99.86%	98.68%	1241	99.76%	100.00%	99.76%	100.00%	98.63%
FJI/B38M	3176	97.13%	98.58%	98.08%	98.77%	95.27%	3043	96.68%	98.12%	97.31%	98.22%	95.72%
GTI/B744	131	100.00%	100.00%	100.00%	100.00%	98.47%	166	98.80%	99.39%	99.40%	100.00%	98.79%
HAL/A21N	-	-	-	-	-	-	208	99.52%	100.00%	99.52%	100.00%	97.59%
HAL/A332	1320	99.62%	99.92%	99.70%	99.92%	97.50%	1340	99.78%	100.00%	99.93%	100.00%	98.05%
JST/A21N	-	-	-	-	-	-	622	99.20%	100.00%	99.52%	100.00%	96.46%
JST/A332	234	98.72%	100.00%	98.72%	100.00%	96.17%	180	100.00%	100.00%	100.00%	100.00%	98.33%
KAL/A332	110	100.00%	100.00%	100.00%	100.00%	97.27%	428	99.53%	100.00%	99.53%	100.00%	93.22%
KAL/B772	271	99.26%	100.00%	99.26%	100.00%	96.67%	-	-	-	-	-	-
KAL/B77W	263	99.24%	99.23%	99.62%	99.23%	96.95%	306	100.00%	100.00%	100.00%	100.00%	98.69%
KIW/B752	113	100.00%	100.00%	100.00%	100.00%	98.23%	174	98.28%	99.42%	99.42%	100.00%	97.70%
KIW/C130	116	99.14%	100.00%	99.14%	100.00%	95.68%	204	98.53%	99.50%	99.01%	99.50%	97.54%

REQUIRED SURVEILLANCE PERFORMANCE						
Region	{FIT Name}					
Performance Criteria	RSP180					
Time Period	YYYY January-June			YYYY July-December		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	No. Messages	Criteria		No. Messages	Criteria	
		95% % < = 90sec	99.90% % <= 180sec		95% % < = 90sec	99.90% % <= 180sec
Aggregate All RGS						
{FIR name}						

REQUIRED COMMUNICATIONS PERFORMANCE										
Region	ISPACG									
Performance Criteria	RCP240									
Time Period	YYYY January-June					YYYY July - December				
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	No. Messages	ACP Criteria		ACTP Criteria		No. Messages	ACP Criteria		ACTP Criteria	
		95%	99.90%	95%	99.90%		95%	99.90%	95%	99.90%
Aggregate All RGS		% <= 180sec	% <= 210sec	% <= 120sec	% <= 150sec		% <= 180sec	% <= 210sec	% < = 120sec	% <=150sec
{FIR name}										

Criteria			RSP180					
Period			Jan-June YYYY			July-December YYYY		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria			Message Counts	95% % < = 90sec	99.90% % <= 180sec	Message Counts	95% % < = 90sec	99.90% % <= 180sec
FIR	By Media Type							
By Remote Ground Station (RGS) Ground Earth Station (GES)								
FIR	Designator	Type	(only RGS/GES with message counts >100 recorded)					

Criteria		RSP180					
Period		Jan-June YYYY			July-December YYYY		
Colour Key Meets Criteria 99.0%-99.89% Under Criteria		Message Counts	95% % <= 90sec	99.90% % <= 180sec	Message Counts	95% % <= 90sec	99.90% % <= 180sec
FIR	By Aircraft Operator / Type (only message counts >100 recorded)						

Criteria			RCP240										
Period			Jan - Jun YYYY					Jul - Dec YYYY					
Colour Key Meets Criteria 99.0%-99.89% Under Criteria			Message Counts	95% benchmark		99.9% Benchmark		Message Counts	95% benchmark		99.9% Benchmark		
				ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec		ACP % < =180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	
FIR	By Media Type												
By Remote Ground Station (RGS) Ground Earth Station (GES)													
FIR	Designator	Type	(RGS/GES with message counts >100)										

Criteria	RCP240													
Period	Jan - Jun YYYY							Jul - Dec YYY						
Colour Key Meets Criteria 99.0%-99.89% Under Criteria	Message Counts	95% benchmark		99.9% Benchmark		95%		Message Counts	95% benchmark		99.9% Benchmark		95%	
		ACP % < = 180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT %<60secs			ACP % < =180sec	ACTP % <= 120sec	ACP % < = 210sec	ACTP % <= 150sec	PORT %<60secs	
FIR	By Aircraft Operator / Type (only message counts >100 recorded)													

FIT-ASIA — TASK LIST

(Last updated 19 July 2024)

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
7/1	All APAC FIT and CRA to provide a list of States having submitted problem report and performance analysis reports to CRA (including number of reports) and FIT	Ongoing	FIT-Asia CRA Japan IPACG/FIT ISPACG/FIT SEASMA	Open	FIT-Asia/7 IP/3 To be provided one month prior to each annual FIT-Asia meeting Updated FIT-Asia/10
7/2	Direct correspondence to survey non-respondent States with FIRs listed in Doc 7030 with performance-based separations	Ongoing ~~FIT-Asia/12~~ ~~FIT-Asia/13~~ ~~FIT-Asia/14~~ FIT-Asia/15	Secretariat	Open	FIT-Asia/7 WP/4 and IP/13 Include availability of guidance for operations authorizations Updated ~~FIT-Asia/11~~ FIT-Asia/12
8/1	States to complete annual data link performance analysis in new template format	Ongoing ~~By 31 March each year~~ 28 February each year	States	Open	1. Forward to Secretariat for forwarding to State responsible for aggregated Regional data. 2. Prepare report of State performance for FIT-Asia FIT-Asia/12 WP/8 and Flimsy 2 (Subject RASMAG agreement to Draft Conclusion)

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
8/2	Prepare aggregated Regional data link performance data for submission to FIT-Asia and RASMAG	Ongoing By 31 May each year	~~USA China (2021-2022)~~ ~~Japan (2023-2024)~~ Indonesia and Malaysia (2025-2026)	Open	Rotational responsibility ~~The US will work with Europe to assure poor performing global fleets are reported to the states of registry outside of their region of operation.~~ ~~Following FIT-Asia/10 China contacted the Secretariat and volunteered to take on this responsibility. China subsequently provided the report to FIT-Asia/11~~ ~~Updated FIT-Asia/11 FIT-Asia/12~~ FIT-Asia/14 Report paragraph 4.45
9/1	Aircraft Operators to ensure contact details on the FANS CRA website are up to date, and include, the correct contact for approving release of data link logs	Ongoing	IATA States (non IATA members) Boeing CRA	Open	FIT-Asia/9 Report paragraph 2.5 Updated FIT-Asia/10
10/3	Confirm need for Doc 7030 procedure for Hong Kong FIR ~~and Sanya FIR~~ (50 NM longitudinal)	~~10 September 2021~~ ~~FIT-Asia/13~~ ~~RASMAG/28~~ FIT-Asia/15	Hong Kong, China ~~China~~ Secretariat	Open	FIT-Asia/10 Report paragraph 3.17 FIT-Asia/11 Report paragraph 3.21 and Table 3. Updated FIT-Asia/12

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
11/2	Contact relevant authority to determine whether data link ground station NTX (Natunas) can be reactivated or relocated.	~~FIT-Asia/12~~ ~~FIT-Asia/13~~ ~~FIT-Asia/14~~ FIT-Asia/15	Indonesia/~~SITA/Boeing CRA/~~	Open	FIT-Asia/11 Report paragraph 2.13 Updated FIT-Asia/12 FIT-Asia/13 FIT-Asia/14 Report paragraph 2.10
13/1	Provide a report on the current CRA service agreement with States/Administrations in the APAC	30 June 2023	APANPIRG recognized CRAs	~~Open~~ Completed	FIT-Asia/13 Report paragraph 3.8
13/2	Establish the service agreement with an APANPIRG recognized CRA	Ongoing	All States/Administrations providing ADS-C and/or CPDLC	Open	FIT-Asia/13 Report paragraph 3.8 FIT-Asia/14 Report paragraph 3.9
13/3	Consider signing up for the PBCS Global Charter	Ongoing	All States/Administrations and all aircraft operators	Open	FIT-Asia/13 Report paragraph 3.14
13/4	Review and develop Draft of new version of *Guidance Material for End-to-End Safety and Performance Monitoring of ATS Data Link Systems in the APAC Region* in cooperation with CNS subject matter experts.	FIT-Asia/14		~~Open~~ Completed	Action item 9/5 Possible transfer to RASMAG
14/1	Refer to the comments on PBCS-related PRs by FIT-Asia CRA when providing a PR and also additional guidance from NAT Doc 011	Ongoing	All States/Administrations	Open	FIT-Asia/14 Report paragraph 2.5 FIT-Asia/14 Report paragraph x.x
14/2	Double-check the PBCS data before submission each year to avoid format errors and consistency issues	Ongoing	All States/Administrations	Open	FIT-Asia/14 Report paragraph 4.41
14/3	Coordinate with Maldives if the APANPIRG deficiency on data link would be appropriate	RASMAG/29	ICAO	Open	FIT-Asia/14 Report paragraph 6.6

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
14/4	Conduct a one-day seminar in conjunction with FIT-Asia/15	FIT-Asia/15	China, Japan, New Zealand, Singapore, USA, Boeing, Inmarsat, ICAO	Open	FIT-Asia/14 Report paragraph 7.5 States to provide relevant topics by Dec 2024