

**57th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

Incheon, Republic of Korea

4 – 8 July 2022

AGENDA ITEM4: AIR NAVIGATION

**KEY APAC AIR TRAFFIC MANAGEMENT CHALLENGES 2020 – 2022
– FOCUS ON ATM CONTINGENCY PLANNING AND OPERATIONS**

Presented by the ICAO Secretariat

SUMMARY

This paper is a brief summary of selected Air Traffic Management (ATM) challenges facing the Asia/Pacific (APAC) Region during the period 2020 to 2022, particularly relating to ICAO regional activities in response to the COVID-19 pandemic, and also recent significant ATM contingency operations.

KEY APAC AIR TRAFFIC MANAGEMENT CHALLENGES 2020 – 2022 – FOCUS ON ATM CONTINGENCY PLANNING AND OPERATIONS

1. INTRODUCTION

1.1 Since the Conference was last updated on ICAO regional ATM matters at DGCA/56 in August 2019 the following meetings of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) and its ATM-related Sub-Groups have been held:

APANPIRG/30, Bangkok, Thailand, 04 to 06 November 2019;
 RASMAG/25, Video Teleconference, 27 to 30 October 2020;
 ATM/SG/8, Video Teleconference, 23 to 27 November 2020;
 APANPIRG/31, Video Teleconference, 14 to 16 December 2020;
 RASMAG/26, Video Teleconference, 20 to 24 September 2021;
 ATM/SG/9, Video Teleconference, 01 to 05 November 2021; and
 APANPIRG/32, 30 November to 02 December 2021.

1.2 Formal outcomes from the above meetings may be found in the meeting reports, available through the ICAO Asia/Pacific Regional Office Meetings web-page at:

<https://www.icao.int/APAC/Meetings/Pages/default.aspx>

1.3 In addition to these meetings, ATM-related matters were included in:

- COVID-19-related regional webinars, and meetings of the APAC Covid-19 Contingency and Recovery Planning Group (ACCRPG);

<https://www.icao.int/APAC/Pages/COVID-19.aspx>

Note: Outcomes from ACCRPG are separately reported under Agenda Item 9; DGCA-57/DP/9/3.

- APAC Webinars 2021 and 2022

<https://www.icao.int/APAC/Meetings/Pages/Webinars-.aspx>

1.4 APAC Administrations' reported implementation status of regional expectations in the following key ATM fields, being included among the commitments made in the Declaration of the First APAC Ministerial Conference on Civil Aviation (the Beijing Declaration) are separately discussed in **DGCA-57/DP/9/1 – Where does APAC Stand with the Beijing Declaration Commitments?**

- Aeronautical Information Services (AIS) – Aeronautical Information Management (AIM);
- Performance-Based Navigation (PBN);
- Civil-Military Cooperation;
- Air Traffic Flow Management (ATFM) and Airport Collaborative Decision-Making (A-CDM)

1.5 Information on the implementation status of the 41 elements of the Regional Search and Rescue (SAR) Plan is provided in **Attachment A**.

1.6 Section 2 of this paper focuses on matters relating to Air Traffic Management contingency planning and operations, including COVID-19-related contingency response.

2. DISCUSSION

Air Traffic Management-related ACCRPG Outcomes

2.1 The following ATM-related recommendations are included in the outcomes of the ACCRPG, as also reported to DGCA/57 under Agenda Item 9.

Recommendation 11:

Under a whole-of-government approach to the resumption of international air traffic, and considering that due to COVID-19 most Air Navigation Service Providers (ANSPs) are operating at lower than pre-COVID-19 Air Traffic Management (ATM) capacity, States should ensure that any decisions on the timing and scale of resumption of international travel are fully coordinated, taking into account:

- 1. the current ATM capacity of their ANSP;*
- 2. the ATM capacity necessary to accommodate the increased demand;*
- 3. the time needed to increase capacity;*
- 4. the need for coordinated planning among all affected States for resumption of international air traffic, whether between city pairs, within 'travel bubbles' or a more general reopening to all traffic; and*
- 5. the ICAO Asia/Pacific Regional Strategy for COVID-19-related ATM Contingency Recovery - ICAO State Letter AP147/20 (ATM)*

Recommendation 12:

Air Navigation Services Planning to Support Post-COVID-19 Aviation Recovery:

Considering the dramatically different operating environment, States urgently review and update their National Air Navigation Plans (NANPs) in close coordination with Air Navigation Service Providers (ANSPs) and airspace users, to ensure that:

- a) any new ANSP projects that entail cost to airspace users in terms of equipage, efficiency, mandates, etc. still have a positive cost-benefit to the air navigation system; and*
- b) current ANSP systems and procedures are reviewed to explore measures that can be taken to increase airspace user operating efficiencies (such as using 5NM horizontal surveillance-based separations within the applicable airspace; and*
- c) ANSPs are prepared in terms of capacity to manage increases in traffic from recovery policies or a change in the pandemic's status.*

2.2 The conference is invited to note that Recommendation 12 will remain particularly important for the foreseeable future, as ANSPs and airspace users may require several years to recover from significant revenue losses caused by the COVID-19 pandemic and exacerbated by current global geopolitical and economic events.

APAC Regional Strategy for COVID-19-Related ATM Contingency Recovery

2.3 The Regional strategy for COVID-19-related ATM contingency recovery is available on the ICAO Asia/Pacific Regional Office website (ICAO APAC COVID-19 BCP web-page) at:

<https://www.icao.int/APAC/Pages/COVID-19-BCP.aspx>

- 2.4 The strategy listed Air Navigation Service Provider (ANSP) actions including:
1. Response to an ICAO survey on COVID-19-related ATM capacity;
 2. Regular review of the ICAO APAC-Office-developed checklist Asia/Pacific COVID-19 Contingency Operations and Recovery;
 3. Establishing regular liaison between ANSPs and government decision-makers;
 4. Ensuring government COVID-19 decision-makers were kept fully informed of ATM readiness;
 5. Ensuring there was an effective agreement between government COVID-19 decision-makers and the ANSP for minimum advance notification of decisions to relax entry requirements;
 6. Conducting air traffic demand prediction analyses;
 7. Establishing regular liaison between ANSPs and airport authorities;
 8. Keeping ANSPs of neighbouring States informed of current and planned ATM contingency and recovery operations through Collaborative Decision-Making (CDM) conferencing; and
 9. Notifying ICAO Asia/Pacific Regional Office of changes to ATM contingency status and arrangements, or any planned relaxation of entry restrictions resulting in a full or partial recovery of traffic.

2.5 Under the Strategy, ICAO actions on receipt of notification under point 9. above were to assess and coordinate where necessary:

1. The convening of *Contingency Coordination Teams – Recovery* (CCTs-Recovery);
2. Readiness of all affected FIRs;
3. NOTAMs;
4. traffic demand predictions;
5. Air Traffic Flow Management availability;
6. coordinated traffic resumption times;
7. situation monitoring and reporting; and
8. follow-up conferencing;

2.6 The Strategy was circulated by ICAO State Letter AP147/20 (ATM) dated 15 July 2020, and publicized through ACCRPG and other video-teleconferences, including those related specifically to COVID-19 and the regular meetings of relevant technical groups established under APANPIRG.

2.7 No notifications have been received from any APAC Administration. This would appear to indicate that all APAC Administrations have either maintained their pre-COVID-19 ATM capacity or increased it as necessary to keep pace with the progressive increase in international traffic from its 2020 lows, and that ICAO assistance has not been necessary. However, the Conference is reminded of the availability of the Strategy and other COVID-19 traffic recovery information, and is encouraged to inform the ICAO Regional Office in the event that assistance in coordinating bi-lateral or multi-lateral engagement supporting post-pandemic recovery may be necessary.

Regional ATM Contingency Planning and Response

2.8 The Asia/Pacific Region experienced three major ATM contingency events in the last four years. Some lessons learned from the major disruption caused by the 2019 Pakistan/India FIR boundary closure were included in a 2019 update of the *Regional ATM Contingency Plan*. Two further major ATM contingency operations occurred in 2021; the withdrawal of Air Traffic Services in the Yangon (Myanmar) FIR in February 2021, and the initial total withdrawal and subsequent, ongoing severely reduced availability of Air Traffic Services (ATS) in the Kabul (Afghanistan) FIR, since August 2021.

Yangon FIR ATM Contingency Operations – February 2021.

2.9 The Yangon FIR contingency operation may be summarized as follows, from the ICAO perspective. The purpose of this summary is to identify significant matters of experience that should be taken into account in considering any amendment to the Regional ATM Contingency Plan:

- ICAO did not receive any direct notification from Myanmar of the contingency situation. Notification was received from IATA, relaying information received from their office in India;
- Coordination of the contingency situation with neighbouring Administrations appeared to consist of mainly email notification, but this is not certain;
- After multiple unsuccessful attempts to contact Myanmar's nominated ATC and CCT points of contact, ICAO circulated by email the Yangon FIR CCT Bulletin 2021/001, notifying ATC and CCT points of contact of neighbouring States Bangladesh (Dhaka FIR), China (Kunming FIR), India (Chennai and Kolkata FIRs), Lao PDR (Vientiane FIR) and Thailand (Bangkok FIR) of the formation of the CCT, and details known at the time;
- The CCT Bulletin 2021/001 included a copy of the *Level 2 Myanmar ATS Contingency Plan Yangon FIR* version 1.1 AMDT-1, indicating that this was the most recent known version of the plan, but which was subsequently found to be out-of-date;
- The CCT Bulletin 2021/001 included a request for information from all neighbouring States. Only Bangladesh, India and Thailand responded to this request for information.
- The limited responses indicated that voice coordination of the contingency situation was made to only one neighbouring Administration (India), and that formal arrangements were in place with only some Administrations;
- Some ATC coordination between Yangon ACC and neighbouring ACCs occurred during the contingency operation, but only for a small proportion of affected flights;
- After contact was established with Myanmar, and the updated Level 2 Contingency Plan (AMDT-2) was provided, ICAO issued CCT Bulletin 2021/002, updating the known information and notifying the CCT of a teleconference to be hosted by Thailand;
- On request by ICAO, Myanmar uploaded the Level 2 Contingency Plan to the DCA Myanmar website;
- The CCT teleconference outcomes were:
 - Air Traffic Control (ATC), Aeronautical Information Service (AIS) and Communications, Navigation and Surveillance (CNS) staff were not available. Only senior management were available. NOTAM could be issued, but the AFTN was not regularly monitored. Critical navigation aids were monitored, and were ok;
 - There was no SAR alerting service, but the RCC was staffed by the military;
 - Emergency diversion aerodromes were available;
 - The contingency plan had been operating “reasonably well”;

- While improvements were suggested, it was agreed that stability was important in the first few days;
- There was a need to review NOTAMS (subsequently amended accordingly) to refer directly to the contingency plan and relevant sections of AIP Myanmar;
- Clarification of the Traffic Information Broadcast by Aircraft (TIBA) frequency and other communications expectations;
- Contact details of ACCs and key persons, including those managing overflight approvals; and
- Myanmar provided assurance that non-scheduled COVID-related flights (repatriation, vaccine distribution) would be accommodated;
- There was a need for additional flight levels and at least one additional contingency route;
- Some flights departing Bangkok needed to plan via a more distant contingency route to improve the likelihood of achieving more efficient (if not optimal) flight levels;
- ICAO developed specific contingency recovery guidance for Myanmar, based on the regional guidance provided in the Regional ATM Contingency Plan. This guidance was not subsequently used;
- There was no clarity around the resumption of normal operations, such as what limited services may be initially available when full, normal capability would resume;
- Communication between ICAO and Myanmar in the lead-up and transition to normal operations was unreliable;
- The management of NOTAMs related to the contingency, particularly during preparation for resumption of normal operations, resulted in incomplete, inconsistent and/or incorrect information promulgated;
- After reasonably reliable communication was established between ICAO and Myanmar, and after protracted coordination, Myanmar elected to resume normal operations by unilateral decision, without a CCT-agreed resumption time as described in the Regional ATM Contingency Plan.

2.10 Following 24 hours of continuous normal operations, the CCT was stood down on 16 February 2021.

Key Issues for Lessons Learned

2.11 The following should be considered the key issues arising from the Yangon FIR contingency operation, for consideration in a review of the Regional ATM Contingency Plan:

- sporadic contact or, in some cases, no contact at all between CCT POCs in affected FIRs and ICAO;
- uncertainty about what VHF frequency was intended to be used for TIBA;
- the need for the Level 2 contingency plan to be publicly available to all stakeholders;
- the need for formalization of Level 2 contingency arrangements in formal agreements between neighbouring Administrations;
- the need identified by neighbouring Administrations and airspace users for additional contingency flight levels, and at least one additional contingency ATS route;
- en-route holding to achieve 15 minutes' longitudinal separation before entering the Yangon FIR;
- problematic NOTAM information and handling; and

- resumption of normal operations not in accordance with the guidance provided in the Asia/Pacific Regional ATM Contingency Plan.

Kabul FIR ATM Contingency Operations – August 2021 until Present

2.12 In June 2021 the ICAO Asia/Pacific Regional Director wrote to Afghanistan to seek clarification of matters related to contingency planning, recognizing that the planned withdrawal of foreign military forces from Afghanistan by the end of August may lead to potential disruption of civil aviation. No reply was received from Afghanistan.

2.13 Afghanistan had published the Kabul FIR ATM Contingency Plan, which included incorrect assumptions on the availability of Air Traffic Flow Management services provided by AEROTHAI and EUROCONTROL, and other significant inconsistencies. The Inter-Regional Afghanistan Contingency Arrangements, also known as the Kabul FIR bypass plan, was available but had not yet been formally agreed by all affected States.

2.14 On 16 August 2021 ICAO Regional Office was informed of major political/government instability in Afghanistan and the potential for significant security challenges that could disrupt ATS and AIS in the Kabul FIR. ICAO attempts to contact the Afghanistan CAA were unsuccessful.

2.15 ICAO consequently issued the Kabul FIR Contingency Coordination Team Bulletin 2021/001, notifying Afghanistan, States administering FIRs adjacent to the Kabul FIR, States administering other FIRs that may be affected by traffic avoiding the Kabul FIR, and relevant International Organizations, of the formation of the CCT. The bulletin was issued at 0230 UTC on 16 August.

2.16 The situation in Afghanistan deteriorated rapidly, and CCT Bulletin 2021/002 was issued at 0500, notifying the CCT of information received by ICAO (from a third party) that the Kabul ACC had released the airspace to the military, and that transit aircraft should be advised to reroute. CCT and ATC Points of Contact in Afghanistan continued to disregard all ICAO attempts to contact them.

2.17 All ATS and the AIS in Afghanistan were entirely unavailable until 30 August 2021, when ICAO was informed of the appointment of a number of officials to a new aviation administration in Afghanistan. Some very limited ATS and AIS capability has been implemented since that time, and Afghanistan is now engaged in weekly conferences with ICAO, and in the (currently) fortnightly conferences of the Kabul FIR CCT.

Key Issues for Lessons Learned

2.18 In addition to the lessons already learned from the Pakistan and Myanmar contingency situations, and noting that many of the issues encountered were common to both the Myanmar and Afghanistan situations, the following is a non-exhaustive list of considerations/lessons from the Kabul FIR contingency:

- regular full review of contingency plans, and additional reviews when known risks or threats to normal ATS provision may be reasonably foreseen;
- contingency plan exercises to test all elements, particularly when the reasonably foreseeable risks or threats are arising;
- formal agreement of all neighbouring States, and of all agencies that are ‘expected’ to provide services supporting contingency operations;
- inclusion in contingency plans of formally agreed arrangements for a neighbouring State to originate and distribute NOTAMs on behalf of the State subject to the contingency situation;

- stakeholder understanding that a contingency plan provides a valuable means of ensuring all stakeholders have input to and prior knowledge of how contingency operations may be conducted;
- stakeholder understanding that the operational elements of a contingency plan are not formally in effect unless published in AIP, AIP Supplement or NOTAM; and
- engagement in the CCT by all neighbouring States;
- early and frequent communication with ICAO, all neighbouring States, and the CCT.

2.19 Approximately 40 to 50 flights per day are currently operating to/from four aerodromes in the Kabul FIR, which under normal circumstances is crossed by major traffic flows from South and Southeast Asia to/from Europe. With very few exceptions the airline flights that would normally cross the Kabul FIR to/from the southeast/northwest are now avoiding it. About 50 to 55 flights per day continue to operate on the north/south ATS route P500 through airspace served by a pre-existing ATC service delegation in the far northeast of the FIR. **Figure 1** refers. Many flights avoiding the FIR incur very large increases in flight time due to extensive deviations required to avoid it, and to also avoid other FIRs where there are pre-existing limitations in place.

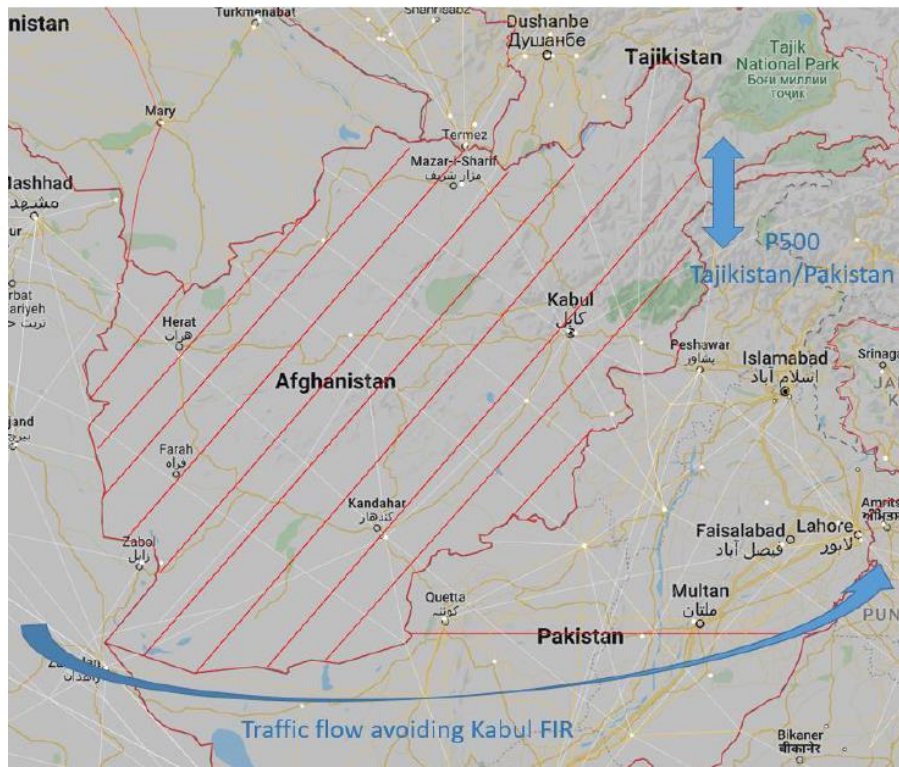


Figure 1: Main Traffic Flows – Kabul FIR transit and/or avoidance

2.20 **Table 1** summarizes additional costs to airlines avoiding the Kabul FIR.

Costs*	Time (mins)	Fuel (ton)	Distance (NM)	CO2 (ton)	Fuel (USD)
Max	120	13.7	825	206.1	10378
Min	5	0.5	26.8	51	2168
Ave	55	4	245	111	5574
Mean	39	3	109	96	4958
Median	47.5	3.8	71.5	92.6	5116.5
* columns are not always directly related to each other - they represent a range of individual figures provided for each category.					

Table 1: Summary of Additional Flight Costs – Avoidance of Kabul FIR (Source: IATA)

2.21 12 Kabul FIR CCT bulletins have been issued, and 22 CCT video teleconferences conducted. Details are available on the dedicated Afghanistan ATM Contingency page on the ICAO APAC Regional Office website at <https://www.icao.int/apac/Pages/default.aspx>.

2.22 Lessons learned from the Yangon and Kabul FIRs' contingency operations will be included in an upcoming review of the Regional contingency plan, which will also include editorial corrections and amendments where necessary to ensure full alignment with Annex 11 provisions.

Asia/Pacific Regional ATM Contingency Plan – Implementation Status

2.23 The *Asia/Pacific Regional ATM Contingency Plan* includes guidance supporting implementation of ATM contingency plans, and a performance improvement plan comprised of 22 performance expectations. APAC Administrations are expected to report the implementation status of the performance expectations annually, to the ICAO Regional Office.

2.24 As described in the APAC Regional Air Navigation Plan Volume II, implementation status was assessed as *robust* (90 – 100% of expectations implemented), *marginal* (70 – 89%) or *incomplete* (0 – 69%).

2.25 Only Indonesia, Singapore and United States reported implementation sufficient to be assessed as robust.

2.26 As at APANPIRG/32 (December 2021) there were 22 Administrations that had never provided an implementation status report.

Afghanistan, Bhutan, Brunei Darussalam, China, Cook Islands, Fiji, France (French Polynesia), DPR Korea, India, Kiribati, Lao PDR, Marshall Islands, Micronesia, Nauru, New Zealand, Palau, Samoa, Solomon Islands, Timor Leste, Tonga, Tuvalu, Vanuatu.

2.27 **Figure 2** illustrated the overall regional implementation status:

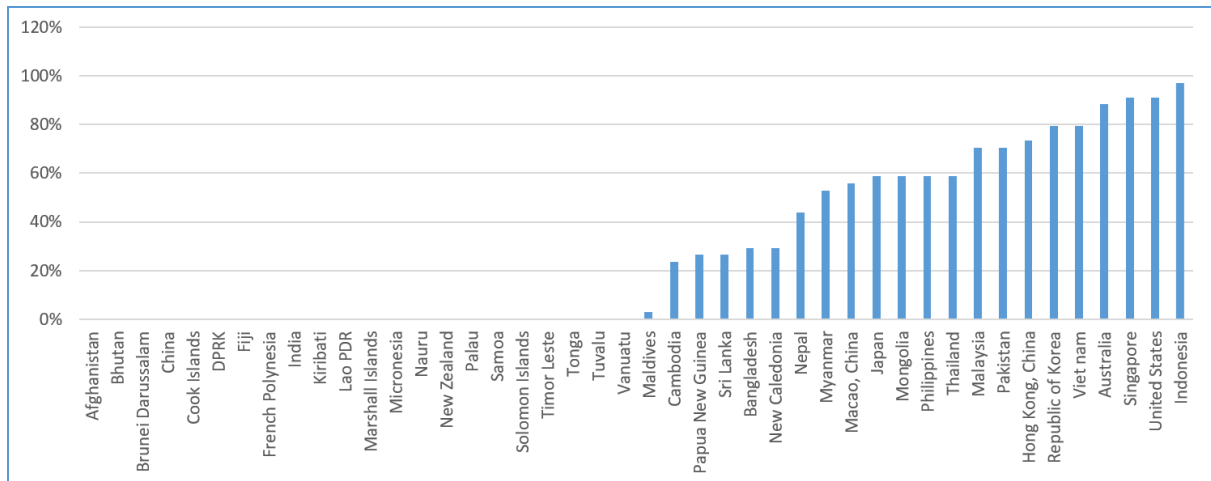


Figure 2: Regional ATM Contingency Plan – Overall Implementation Status

2.28 The Conference is reminded of the following standard in Annex 11 Air Traffic Services requiring the development and promulgation of contingency plans:

2.32 Contingency Arrangements

Air traffic services authorities shall develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services in the airspace for which they are responsible for the provision of such services. Such contingency plans shall be developed with the assistance of ICAO as necessary, in close coordination with the air traffic services authorities responsible for the provision of services in adjacent portions of airspace and with airspace users concerned.

Note 1.— Guidance material relating to the development, promulgation and implementation of contingency plans is contained in Attachment C.

Note 2.— Contingency plans may constitute a temporary deviation from the approved regional air navigation plans; such deviations are approved, as necessary, by the President of the ICAO Council on behalf of the Council.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) Note the APAC Regional Strategy for COVID-Related ATM Contingency Recovery;
- b) Note the lessons learned from the Yangon FIR and Kabul FIR ATM contingency operations
- c) Note the poor overall regional implementation ATM contingency plans, and the poor rate of implementation status reporting;
- d) Note the Annex 11 Standard requiring that States establish and promulgate contingency plans;
- e) Establish, and update where necessary, regulations requiring the development, promulgation, exercising and update of ATM contingency plans, including formal contingency arrangements with all neighbouring States, and that the regulations are in safety oversight activities; and
- f) Ensure the status of implementation of the performance expectations of the Asia/Pacific Regional ATM Contingency Plan is reported annually to the ICAO Asia/Pacific Regional Office, as specified in the Plan.

— END —

ATTACHMENT A Asia/Pacific Regional SAR Plan – Implementation Status

Extracted from the Report of the Seventh Meeting of the Asia/Pacific Search and Rescue Working Group (APSAR/WG/7)

The 2020 revision of the USOAP CMA Protocol Questions (PQs) had resulted in the total number relating to SAR being reduced from 26 to 16.

An analysis of the 16 revised SAR-related PQs indicated that the overall Effective Implementation (EI) for SAR had decreased when compared to the previous assessment. ICAO was still in the process of transitioning the revised USOAP Protocol questions on the USOAP website to reflect the changes, and the States would have been made aware of any corresponding changes to the PQ results. Regional average EI scores for the last three years (2020 and 2021 – 26 PQs, 2022 – 16 merged PQs):

- May 2020 – 60%
- April 2021 – 59%
- May 2022 – 55%

The same analysis undertaken in July 2015 yielded an average EI score of 51%. While the general trend of improvement was welcomed, it was recognized that all Administrations needed to continue their efforts to address weak areas and to assist other States where possible.

From the PQ analysis there was still weakness in the major areas of SAR indicated by USOAP:

- **CE-3:** 7.517 (26%) – [SAR service provider] SAR coordination agreements;
- **CE-4:** 7.499 (29%) – [SAR regulatory oversight] Implementation of training plan;
- **CE-7:** 7.505, 7.543 and 7.545 (35%, 47% and 49%) – [SAR regulatory oversight] effective regulatory surveillance oversight of SAR, Detailed Plans of SAR operations and checks that SAR operational personnel have regular training, including the conduct of SAREX; and
- **CE-8:** 7.507 (38%) – [SAR regulatory oversight and service provider] mechanism to eliminate SAR regulatory deficiencies.

APSAR/WG/7 WP/8 Attachment B provided more detailed information on PQ status for each audited State.

Figure A1 illustrated the implementation status of the 41 elements of the Asia/Pacific Regional SAR Plan as at April 2021 that provided a metric of implementation of the performance expectations of the SAR Plan as at 27 May 2022.

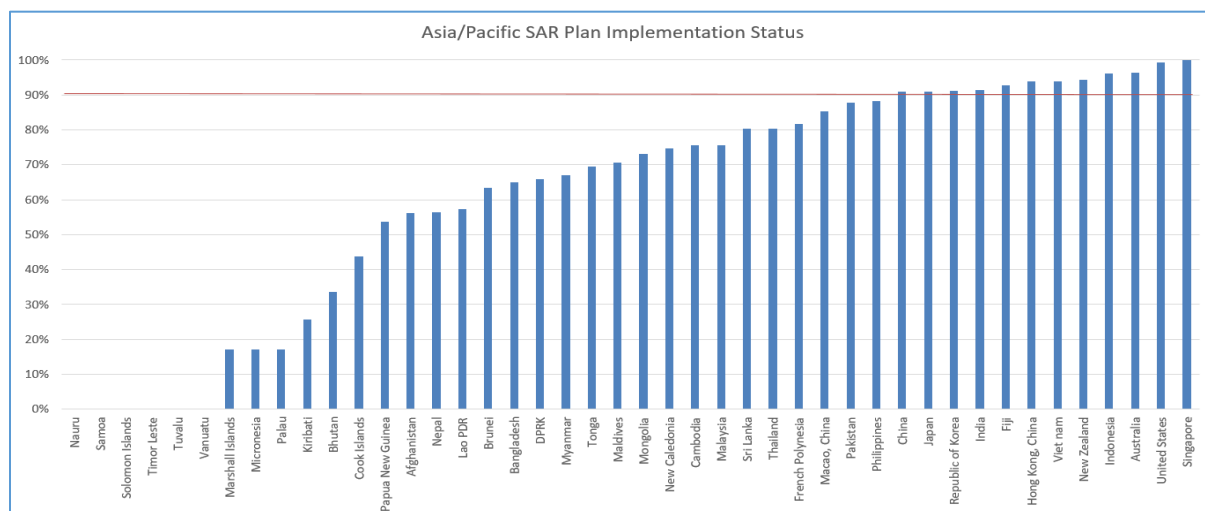


Figure A1: Asia/Pacific SAR Plan Implementation Status as at 27 May 2022

Regional policy established that States below 90% implementation would be considered to have an APANPIRG ANS Deficiency recorded for SAR implementation. There was an increase from 10 to 12 States/Administrations that had reported implementation of 90% as compared to APSARWG/6:

Australia, China, Fiji, Hong Kong China, India, Indonesia, Japan, New Zealand, Republic of Korea, Singapore, USA and Viet Nam

Figure A2 provided an overview of reported Asia/Pacific SAR Plan compliance as at 04 May 2021.

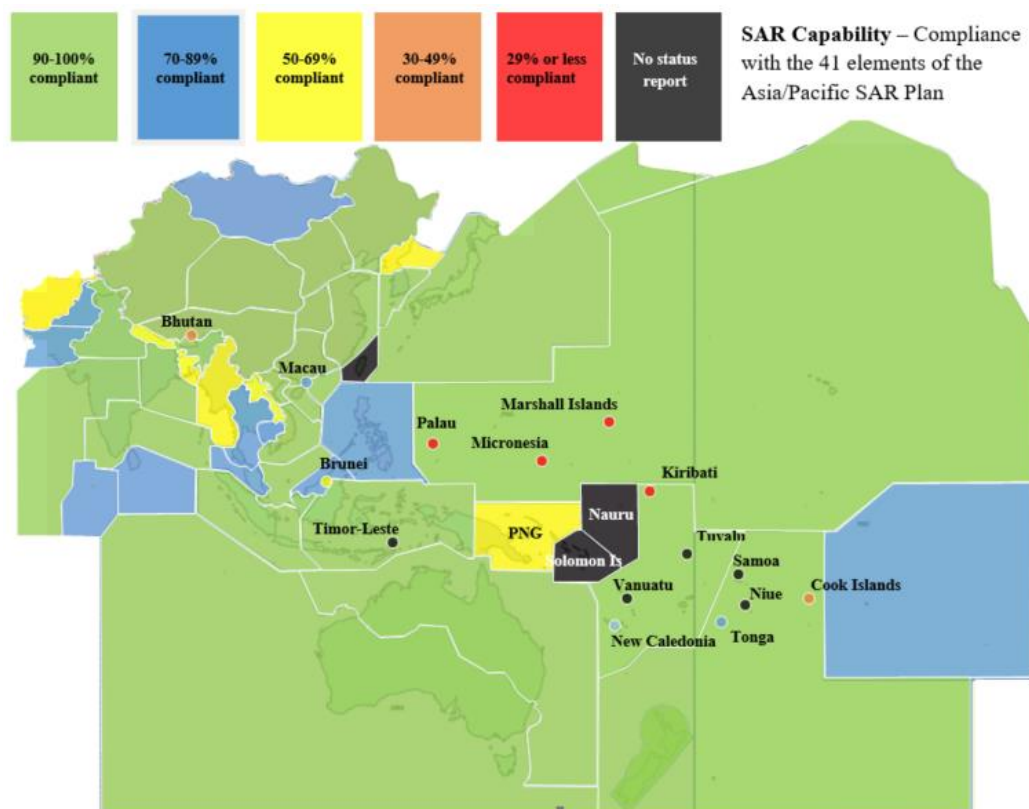


Figure A2: Reported Compliance with the Asia/Pacific SAR Plan, 27 May 2022.

Appendix C to the APSAR/WG/7 Report provides an overview of the SAR implementation status of each APAC Administration, including updates provided immediately prior to or during the APSAR/WG/7 meeting.

The meeting was informed that Philippines and USA had formalized a SAR agreement on 30 July 2021. Fiji and New Zealand formalized their SAR agreement on 19 November 2021.

— END —