International Civil Aviation Organization

The Ninth Meeting of the APANPIRG ATM Sub-Group (ATM/SG/9)

Video Teleconference, 01 – 05 November 2021

Agenda Item 7: AOP, MET, AIM, SAR

ASIA/PACIFIC SEARCH AND RESCUE UPDATE

(Presented by the Secretariat)

SUMMARY

This paper discusses Search and Rescue (SAR) matters related to the Asia/Pacific.

1. INTRODUCTION

1.1 The Sixth Meeting of the Asia/Pacific Regional Search and Rescue Work Group (APSAR/WG/6) was held from 03 to 06 May 2021 by Video Teleconference (VTC) from the ICAO Asia and Pacific Regional Office, Bangkok, Thailand.

1.2 A total of 112 participants were registered for the meeting from 26 States and Administrations, and three International Organizations, including Australia, Bangladesh, Bhutan, Cambodia, China, Hong Kong China, Fiji, French Polynesia (France), India, Indonesia, Japan, Lao People's Democratic Republic (PDR), Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, United States of America, Viet Nam, Cospas-Sarsat, IATA, IFALPA and ICAO.

2. DISCUSSION

High Level Meeting Outcomes

2.1 APANPIRG/31, held in December 2020, had adopted ***Conclusion APANPIRG/31-10: Review of National Air Navigation Plans***, urging States to review their National Air Navigation Plans (NANPs) in accordance with a whole of government approach and the requirements of the Asia/Pacific Regional Air Navigation Plan (ANP). Volume II of the ANP included specific regional requirements relating to National Air Navigation planning and SAR implementation status reporting.

2.2 The APANPIRG/31 meeting was also reminded of element 7.42 of the Asia/Pacific Seamless ANS Plan, which expected States to establish an appropriate enhanced SAR system, and systems to support aircraft tracking capability, consistent with the provisions of Annex 12 and supporting the Global Air Navigation Plan (GANP) - Aviation System Block Upgrade (ASBU) elements ***GADS-B1/1-2***.

2.3 ***Conclusion APANPIRG/31-19*** had urged States to establish an action plan with defined target dates, update the status of corrective action taken and report progress dates for resolution of APANPIRG Air Navigation Deficiencies. Only Australia, Hong Kong China, India, Indonesia, Japan, Republic of Korea, New Zealand, Singapore, United States and Viet Nam had recorded *robust* implementation of SAR. All other APAC Administrations had APANPIRG Air Navigation Deficiencies recorded in the field of SAR. **Table 1** is provided for ease of reference of SAR- related Deficiencies recorded by APANPIRG/31.

SAR capability: 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/4 45%
Bangladesh	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/6 67%
Bhutan	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 34%
Brunei	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/4 63%
Cambodia	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 76%
China	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/4 82%
Cook Islands	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%
DPR Korea	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 66%
Fiji	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/6 89%
French Polynesia	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/4 84%
Kiribati	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 26%
Lao PDR	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 57%
Macau, China	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 85%
Malaysia	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/6 77%
Maldives	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/6 71%
Marshall Islands	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 17%
Micronesia	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 17%
Mongolia	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/6 73%
Myanmar	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 67%
Nauru	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%
Nepal	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 56%
New Caledonia	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/4 54%
Palau	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/5 17%
Pakistan	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/6 87%
Papua New Guinea	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%
Philippines	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/6 88%
Samoa	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%
Solomon Islands	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%
Sri Lanka	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/6 78%
Thailand	Asia/Pacific SAR Plan	17/05/2019	APSAR/WG/6 78%
Timor-Leste	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%
Tonga	Asia/Pacific SAR Plan	6/07/2015	APSAR/WG/4 0%

Table 1: APANPIRG/31 SAR Deficiencies

Global SAR Update

2.4 ICAO informed the meeting of State Letter AN 11/1.1.29-21/31 dated 26 April 2021, which canvassed States on the funding and hosting of the Location of Aircraft in Distress Repository (LADR). The LADR was intended to meet the requirements for information sharing as part of the Global Aviation Distress and Safety System (GADSS), supporting the relevant standards in Annex 6 – *Operation of Aircraft* Part I – *International Commercial Air Transport – Aeroplanes*.

2.5 ICAO was seeking contributions from Member States and international organizations that could be used to finalize the development of the LADR, and also sought one or more Member States and/or international organizations to host the system. An information session was held on 26 May 2021.

2.6 Intention to provide contributions for funding the finalized version of the LADR and expressions of interest to host the LADR were to be submitted to the ICAO Secretary General by 25 June 2021.

Autonomous Distress Tracking Implementation

2.7 The United States informed the meeting of guidance developed by an in-depth ICAO Headquarters review and update of the International Maritime Organization (IMO) circular for SAR services regarding implementation of Autonomous Distress Tracking (ADT). The guidance, provided in **APSAR/WG/6 WP/04 Attachment A** would become an appendix to the 2022 edition of the International Aeronautical and Maritime SAR (IAMSAR) Manual Volume II regarding the aircraft equipage requirement for an ADT device from January 2023.

2.8 The meeting was informed that the major civil airliner manufacturers (Airbus and Boeing) had indicated they would be likely to meet the ADT requirement by initially equipping aircraft with Emergency Locator Transmitter – Distress Tracking - ELT(DT) devices, which would generate alerts delivered by Cospas-Sarsat to RCCs, in addition to the data delivered to the LADR. ADT notifications in the LADR, including ELT(DT) transmissions, would be reviewed by the aircraft operator to validate the cause of the activation (whether it was genuine, unknown or false). If validated, the aircraft operator would then notify the appropriate Air Traffic Services Unit (ATSU) which would then alert the RCC in accordance with Annex 11 requirements.

2.9 It was noted that the ELT(DT) message transmitted as an alert would be likely to cause confusion in RCCs, as seen in recent simulation exercises. United States stressed that RCCs would need to recognize the ELT(DT) as an ADT device, and not an ELT. RCCs would need to be prepared for the receipt of ELT(DT) notifications (potentially multiple, and including the term ALERT in the message) generated by the Cospas-Sarsat system, and understand the difference between this Cospas-Sarsat alert message and a LADR notification (if any) subsequently received from the ATSU. There was a risk that the RCC may view it as an actual distress situation, in the absence of a notification.

2.10 There was considerable discussion of this matter, the outcomes summarized as follows:

- ADT devices were not limited to the Cospas-Sarsat ELT(DT). There were at least two others that had been trialled;
- ELT(DT) was an ADT notification device, not a distress alert;
- ELT(DT) notifications were also distributed using the existing Cospas-Sarsat alert system;
- ELT(DT) messages included the term ‘Alert’, like existing ELT messages, but would also include other information in the message that would indicate it was not an ELT;
- all ADT device notifications would be sent to the LADR;

- the LADR would receive the information, and automatically distribute it to all subscribers. Aircraft Operator subscription to LADR was mandatory;
- the ICAO Air Traffic Management Ops Panel was considering provisions for mandatory subscription to the LADR by RCCs and ATSUs;
- on receipt of an alert or a LADR notification, RCCs should still wait for the ATSU notification before commencing SAR actions;
- the ICAO position was that the ADT information distribution process would not change existing Annex 11 and Annex 12 provisions for coordination between ATSUs and RCCs;
- RCCs would need to subscribe to the LADR to receive notifications, but if not subscribed they would still receive the usual notification from ATSUs on emergency phase declaration;
- ADT devices were designed and engineered such that false activation/alert, rates should be very low, which could result in RCCs considering any received alert or notification to be authentic. RCCs would need to wait for validation of the alert or notification from the ATSU;
- the LADR prototype used email for notification to subscribers. Latency differences were noted during testing of the prototype. Additional communication methods are planned during further development of the LADR;
- on receipt of a LADR notification, the aircraft operator was to conduct a validation check and report the result to the ATSU, which would then notify the RCC of the result, whether an emergency phase or false activation.
- in the same way as for ELT alerts, ELT(DT) notifications were distributed to both the RCC associated with the airspace in which the aircraft was operating and the RCC associated with the State of Registry.

2.11 The following additional information on the LADR was provided by ICAO Headquarters post-meeting, in response to unanswered questions arising in plenary:

- LADR used a subscription model, in which users would select the notifications they wished to receive. Some options were ‘locked’, depending on the user type, e.g.:
  - aircraft operators could only receive notifications related to their own aircraft;
  - Air Navigation Service Providers (ANSPs) could only receive notifications related to aircraft within their FIR/s, or within an 80 nautical mile (NM) buffer to allow for flights about to enter the FIR, or flying parallel to the boundary but which may enter the FIR as the incident progresses. However, each ANSP receiving a notification would then be eligible to view the entire history of the event;
- users may choose to not subscribe to notifications, but it’s unlikely they would do so;
- RCC access to notifications was not restricted in the same way as aircraft operators or ANSPs:
  - Each RCC could configure its notification settings to receive a notification of data entering LADR from any aircraft in any FIR. While RCCs may initially choose to receive all LADR notifications (global), it was expected that after gaining system experience they would choose to only receive notifications for events in their own Search and Rescue Region (SRR), or for their own SRR and neighbouring SRRs, or for certain airlines, or other combinations matching their needs.

2.12 The meeting discussed the issue of lack of access by RCCs to the ICAO OPS Control Directory (https://www4.icao.int/opsctrl). It was noted that ICAO Headquarters was considering the inclusion of RCC details in the Directory. Currently, RCCs seeking access to the Directory may require authorization by the State aeronautical authority. It was further noted that aircraft operators had not yet fully populated the directory with their data, and that there was as yet no global database of aeronautical Search and Rescue Regions (SRRs), which could be useful in some circumstances. Further clarification provided offline by ICAO Headquarters was presented in **APSAR/WG/6 Flimsy 01.**

Status of the Cospas-Sarsat Programme

2.13 The meeting was provided with a status report on the Cospas-Sarsat system, presented by the meeting Chair on behalf of the Cospas-Sarsat Secretariat. The status report included system operations, significant developments, space and ground segments, beacons, false alerts, reporting by Rescue Coordination Centres (RCCs) on the use of distress alert data provided, and results of Mission Control Centre – Single Point of Contact (MCC-SPOC) communication tests.

2.14 In the latest year for which statistics had been compiled, 2019, Cospas-Sarsat alert data assisted in 1,032 distress incidents (904 in 2018) and 2,774 persons were rescued (2,185 in 2018). Since September 1982, the Cospas-Sarsat System had provided assistance in rescuing at least 51,512 persons in 15,563 SAR events.

2.15 The distribution of all SAR events was 20% for aviation, 26% for land and 54% for maritime.

2.16 19 of 31 operational MCCs reported results of their SPOC communication tests. Some MCCs did not support SPOCS outside their country, and therefore were not required to conduct tests. Of the 161 SPOCs tested in 2019, 24.22% were insufficiently responsive. While the 2020 data reporting had not yet been finalized, 34 of the 141 SPOCs tested and reported were insufficiently responsive (24.11%), which was consistent with prior years.

2.17 As an approach to prompt a better response, Cospas-Sarsat had made available a 'model' written agreement/arrangement, which could be accessed on the Cospas-Sarsat website at:

https://cospas-sarsat.int/en/documents-pro/document-templates

2.18 A new Mission Control Centre Handbook would include more technical information for MCC training programs, allowing MCC operators to better support RCCs. Video material was available on YouTube through the following link, and Cospas-Sarsat was investigating means to make videos accessible when information technology security policies did not allow access to YouTube:

http://cospas-sarsat.int/en/search-and-rescue/programme-videos-en

2.19 The meeting was informed that in 2019, the SAR false alert rate (SAR response perspective) was 96.65%, or about one real alert confirmed in 30 alerts received. The rate of false alerts had not changed substantially since 2015. While some States advised their false alert rates had been improved through local actions to engage relevant authorities, or were significantly lower than the global average, the numbers of false alerts remained unacceptably high. It was also important to educate SPOCs on the nature and incidence of false alerts, and to provide SPOCs with alert information that would better inform their actions to determine whether an alert may be false.

2.20 Cospas-Sarsat requested that participants provide feedback on notifications about system developments, provide feedback on the video library, participate in the development of modifications to distress alert message format, and provide details of any existing MCC-SPOC agreements and proposals for improving MCC-SPOC communications during tests and real alerts.

Review on Search and Rescue Services involving BeiDou Navigation Satellite System

2.21 China provided a summary of the development status of the BeiDou Navigation Satellite (BDS) system and the SAR services it provided.

2.22 The meeting noted that, unlike IMO, ICAO did not have a process to ratify satellite systems for Global Maritime Distress and Safety System (GMDSS) purposes. However, the meeting was informed that the IMO ratification of BDS was in process. The ICAO Standards and Recommended Practices (SARPS) supporting the use of BDS as a navigation system were under development by the Navigation Systems Panel, for consideration by the current session of the Air Navigation Commission.

Air Operators Workshops

2.23 Information was provided on a project undertaken between September 2020 and April 2021 by the Joint RCC of New Zealand (JRCCNZ), to visit and present a one-day workshop to all rescue helicopter crews operating in New Zealand. JRCCNZ regularly engaged with 14 helicopter operators that had been designated as SAR Units (SRUs) across 19 bases. SAR work was not the operators' main source of work, with percentages ranging between 1% and 20% of their annual operations.

2.24 Tangible results from the workshops included substantial improvement in post-tasking debriefing, better understanding of and noticeable improvement in the flying of search patterns, better understanding of the tasking/briefing information, now supported by a prescribed format for verbal briefings, and a process of improvement of briefing/debriefing forms based on feedback from the operators.

2.25 It was recommended that other RCCs engage with their national SRUs to understand their working environment, and to explain the operation of the RCC and SAR to enhance collaboration.

2.26 In response to a query, New Zealand informed the meeting that New Zealand was considering developing an online package for Pacific Island States located within the New Zealand SRR. Further workshops were also being considered for 'tier 2' helicopter operators that were occasionally contracted for SAR purposes.

SAR Operation – Sriwijaya Air SJ182

2.27 Indonesia briefed the meeting on the SAR operation responding to the crash of Sriwijaya Air flight SJ182 on northwest of Jakarta, Indonesia, on 09 January 2021. The briefing included the chronology of the crash, the trajectory of the flight, composition of the SAR team, SAR assets, tasking of aeronautical, maritime and underwater SAR assets, outcomes of the SAR mission and lessons learned.

2.28 The lessons learned included, in particular, the benefits of well-managed distress information that would determine a quick and accurate decision and response, the need for strong leadership to coordinate different assets in the SAR operation, and the coordination of shared responsibility being the key to success.

2.29 The presentation generated considerable discussion, summarized as follows:

- SAR datum buoys were not deployed as the crash site was very close to the coast of Java, and debris had been found early in the SAR operation;
- ATC tracking data provided by Indonesia's ANSP, AirNav Indonesia, had been utilized to develop the SAR operation plan;

- There was no direct contact between the SMC and the next of kin. Notification of next of kin was the responsibility of the aircraft operator. Human remains were forwarded to the police service for identification and onwards notification;
- The transporting of next of kin to the crash site for memorial purposes was arranged by the airline concerned, and was not part of the SAR operation;
- Indonesia's regulations stated that the duration of SAR operations was a maximum of seven days, except in the case of further finding of relevant items such as the location of wreckage/debris or human remains that required the SAR operation to be prolonged. The SJ182 operation had been conducted over 10 days;
- The cockpit voice recorder (CVR) was located several weeks after the end of the SAR operation.

Regional Air Navigation Plan Update

2.30 The following Administrations (21 of 42 in APAC) had submitted Proposals for Amendment (PfAs) to the Asia/Pacific Regional Air Navigation Plan (ANP) Volume I concerning SRRs, which were pending circulation to ICAO Headquarters Secretariat for approval before circulation to all States:

Afghanistan, Australia, China, Fiji, French Polynesia, India, Indonesia, Lao PDR, Malaysia, Maldives, Mongolia, Nauru, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka and USA.

2.31 **Figure 1** indicates the status of SRR verification as at 04 May 2021:

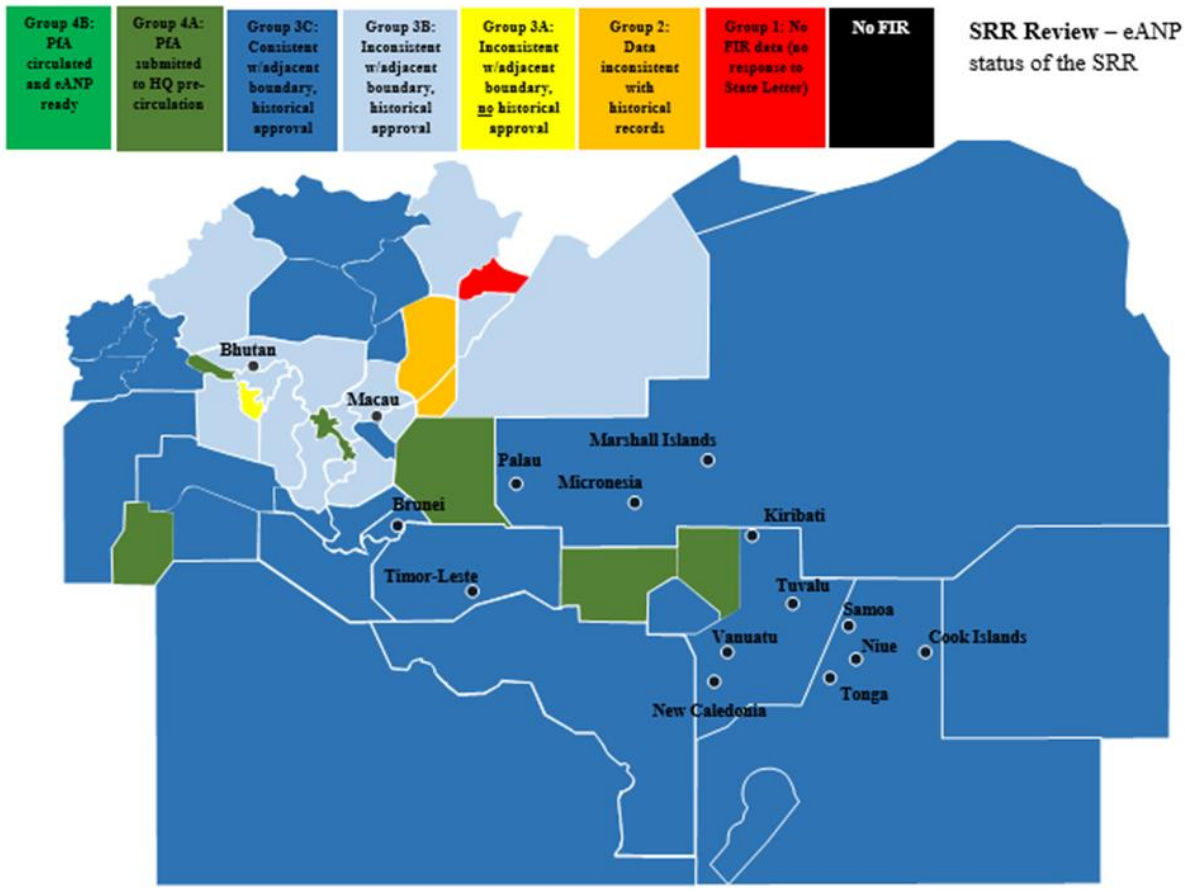

Figure 1: SRR Verification Status as at 04 May 2021

2.32 A PfA template was provided on the IAO APAC Regional Office website at:

https://www.icao.int/APAC/Pages/APAC-eANP.aspx

2.33 **APSAR/WG/6 WP07 Attachment B** provided SRR data to be included in the draft Table SAR I-1 in APAC ANP Volume I. All administrations were requested to review the data and provide feedback to ICAO on its accuracy.

2.34 Republic of Korea informed the meeting that there was no current arrangement between China and Republic of Korea on Maritime SRR boundaries, resulting in a misalignment between the Incheon FIR boundary and the SRR declared by Republic of Korea, which was larger than the FIR. As there was no current coordinated action to resolve this matter, Republic of Korea would be unable to meet the timeframe of October 2021 for completion of the SRR boundary definition for the ANP. Republic of Korea further informed the meeting that the inconsistent definition of the FIR and SRR boundaries caused difficulty in both aeronautical and maritime SAR operations.

2.35 The meeting noted that, while the harmonization of aeronautical and maritime SAR regions was an appropriate goal, it was recognized that many States had not yet achieved it. As the matter of MSRR definition was one for the IMO, it was suggested that the States concerned could raise it with the SAR Working Group of the IMO Subcommittee on Navigation, Communications and SAR (NCSR). However, resolution of the issue would require direct coordination between the States concerned.

Regional SAR Status

2.36 The meeting was provided with an update of SAR implementation status in the APAC Region. The ICAO APAC Regional Office maintained records of the information provided from its accredited Administrations regarding SAR status, in order to report to APANPIRG.

2.37 An analysis of the 26 Universal Safety Oversight Audit Programme (USOAP) SAR-related Protocol Questions (PQs, not including 7.483) on 06 April 2021 indicated that the overall Effective Implementation (EI) for SAR had risen since the advent of the APSAR/WG and its predecessor APSAR/TF, from 50.7% in July 2015 to 59.23% in April 2021. 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.

2.38 There had been little improvement in the major areas of weakness in SAR indicated by USOAP, including:

- **CE-3**: 7.517 (28%) – [SAR service provider] SAR coordination agreements;
- **CE-4**: 7.497 and 7.499 (42% and 37%) – [SAR regulatory oversight] SAR inspector's training plan and training programme effectively implemented for SAR inspectors;
- **CE-7**: 7.505 and 7.545 (31% and 53%) – [SAR regulatory oversight] effective regulatory surveillance oversight of SAR, and checks that SAR operational personnel have regular training, including the conduct of SAREX; and
- **CE-8**: 7.507 (43%) – [SAR regulatory oversight and service provider] mechanism to eliminate SAR regulatory deficiencies.

2.39 **Figure 2** illustrated the implementation status of the 41 elements of the Asia/Pacific Regional SAR Plan as at April 2021-based 41-element assessment provided a metric of implementation of the performance expectations of the SAR Plan as at 04 May 2021.

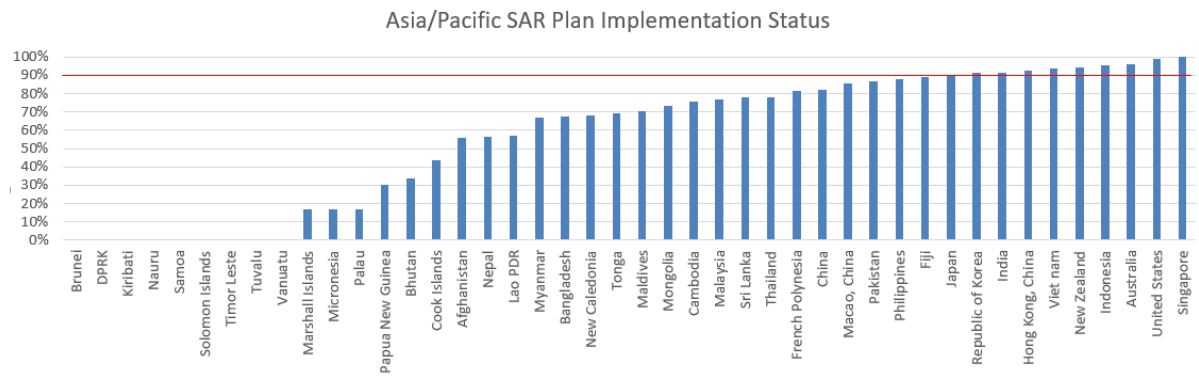

Figure 2: Asia/Pacific SAR Plan Implementation Status as at 04 May 2021

2.40 Regional policy (ANP Vol II Part I Section 3 – Specific Regional Requirements) established that States below 90% implementation would be considered to have an APANPIRG ANS Deficiency recorded for SAR implementation. Only ten APAC Administrations had reported implementation of 90%:

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

2.41 **Figure 3** provided an overview of reported Asia/Pacific SAR Plan compliance as at 04 May 2021.

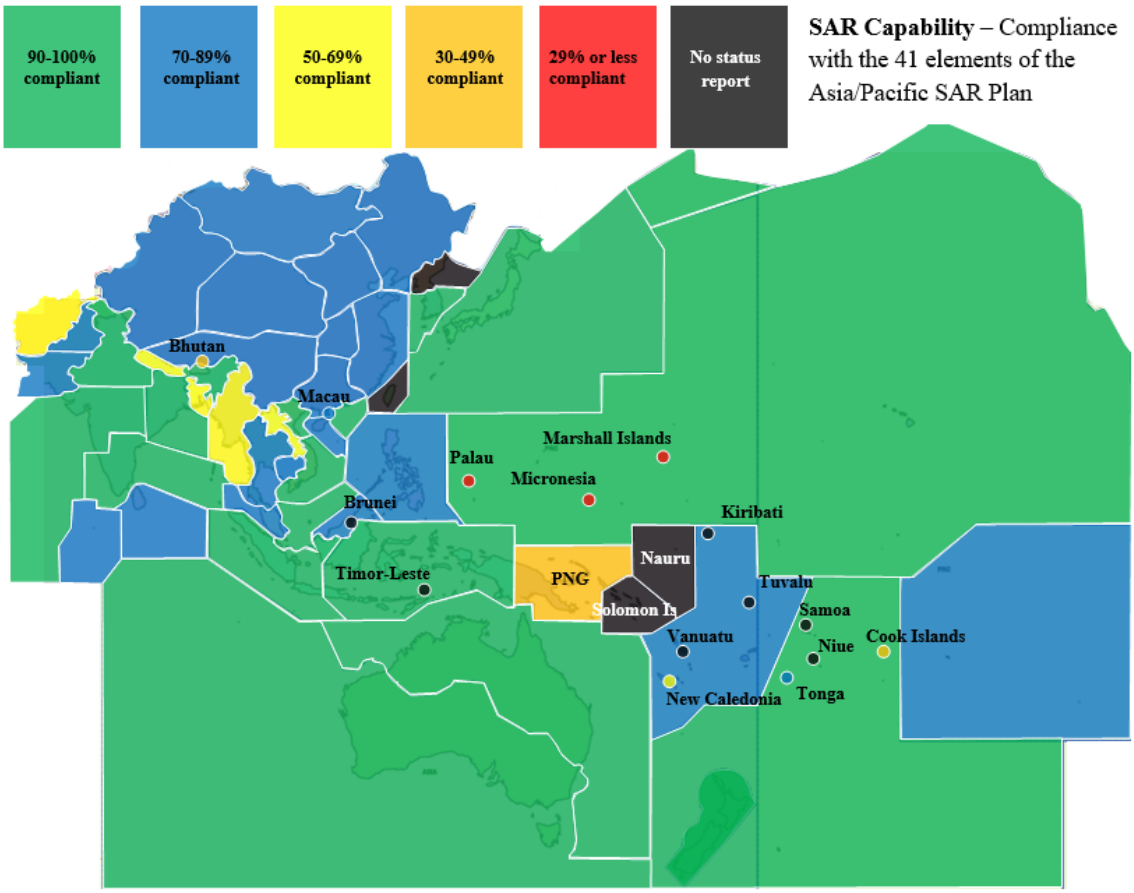

Figure 3: Reported Compliance with the Asia/Pacific SAR Plan, 04 May 2021.

2.42 **Attachment A** provides an overview of the SAR implementation status of each APAC Administration, including updates provided immediately prior to or during the APSAR/WG/6 meeting.

2.43 The SAR Agreements List (**Attachment B**) and SAR Agreement Matrix (**Attachment C**) provide information on SAR agreements established between APAC Administrations.

2.44 New Zealand informed the meeting that their SAR agreements with Fiji and France (French Polynesia) were under consideration by those States, but had not been finalized. The States concerned were requested to finalize the SAR agreements as soon as possible.

2.45 The meeting was also informed that New Zealand had been working on SAR capability with Cook Islands, Samoa and Tonga, and also offered to assist Kiribati, which had a quite mature SAR capability, to report its SAR implementation status.

Example MOU between the SAR Service and the Accident Investigation Authority

2.46 The United States informed the meeting that cooperation between national SAR services and national accident investigation authorities had been of concern to the Asia/Pacific region for several years. **APSAR/WG/6 WP/09 Attachment A** was the Memorandum of Understanding (MOU) between the United States national SAR service (U.S. Coast Guard) and its national accident investigation authority (National Transportation Safety Board) regarding cooperation for civil aviation accidents in the maritime environment.

2.47 The meeting was informed that the last meeting of the ICAO/IMO JWG had canvassed the availability of examples that could be used as a template in the next iteration of the IAMSAR Manual, and found that there were none. There would therefore be value in APSAR/WG taking a lead role in the development of a template for inclusion initially in the regional SAR plan, with a view to its later inclusion in the IAMSAR Manual, after which it could be withdrawn from the regional SAR plan. The next revision of the IAMSAR Manual was scheduled for 2025. The meeting agreed to the proposal that a generic version of the MOU should be developed for inclusion in the updated Asia/Pacific SAR Plan as a template. Australia, Singapore and USA volunteered to work on this task.

2.48 The meeting was informed that the GADSS Concept of Operations Chapter 2 included discussion of high-level objectives of the GADSS relating to improvement in the transition of an event from ICAO Annex 12 (SAR) to Annex 13 (Accident Investigation) responsibility. The GADSS Concept of Operations was available on the ICAO GADSS website at:

https://www.icao.int/safety/globaltracking/Pages/Homepage.aspx.

Asia/Pacific SAR Plan Update

2.49 ICAO informed the meeting of amendments currently proposed for inclusion in the next iteration of the Asia/Pacific SAR Plan, and proposed the commencement of APSAR/WG activity to prepare a final draft of the updated plan for consideration at APSAR/WG/7 in 2022. The SAR Plan stated inter alia that it was intended that a complete review be conducted every three years from 2019. The proposed 2022 review was considered to be mainly editorial, updating information where necessary but not requiring a major re-write apart from the items identified by APSAW/WG/6 for inclusion in the Plan.

2.50 The Draft Asia/Pacific SAR Plan Version 3.2 provided in **Attachment D** includeds comments from ICAO Headquarters, and 'tracked changes' resulting from those comments and other feedback received.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) urge States to provide *Asia/Pacific SAR Plan* status reports on their compliance with the *Asia/Pacific SAR Plan* reporting elements;

c) provide submissions on the draft *Asia/Pacific SAR Plan* update; and

d) discuss any relevant matters as appropriate.

……

REGIONAL SAR PLAN MONITORING AND REPORTING FORM
SAR PERFORMANCE INDICATORS

Following is a bank of indicators based on the Asia/Pacific Plan's performance improvement section (which should be read in conjunction with these questions), that can be used to assess whether an administration is either compliant or not and to internally evaluate their implementation status of the Asia/Pacific SAR Plan. Using the drop down menu for each of the 41 elements, please indicate implementation status with either 0 (not implemented), or 0.5 (50% implemented - note - other partial implementation may be indicated such as 0.1 = 10%) or 1 (fully implemented).

	Indicate whether your Admininistration has:	Afghanistan	Australia	Bangladesh	Bhutan	Cambodia	China	Hong Kong, China	Macao, China	Cook Islands	Fiji	India	Indonesia	Japan	Lao PDR	Malaysia	Maldives
1	Enacted legislation that incorporates or is aligned to applicable international Conventions	1	1.0	1.0	0.5	1.0	1.0	1.0	0.5		0.5	1.0	1.0	1.0	1.0	1	1
2	Unless delegated, established an entity that provides H24, SAR services within its area of responsibility/SRR	1	1.0	1.0	0.5	0.5	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1	1
3	Established a national SAR committee	1	1.0	0.0	0.0	1.0	1.0	1.0	1.0		1	1.0	1.0	1.0	1.0	1	1
4	Empowered SAR Mission Coordinators with the authority to adequately carry out their responsibilities	1	1.0	1.0	0.0	0.5	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1	0.5
5	Established an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent, administrative matters	1	1.0	1.0	1.0	1.0	1.0	1.0	0.5		1	1.0	1.0	1.0	1.0	1	0
6	Conducted studies to integrate aviation and maritime SAR, and as far as practicable, civil and military activities	1	1.0	1.0	1.0	1.0	0.8	1.0	0.5	1.0	1	1.0	1.0	1.0	0.5	1	1
7	Conducted studies to align, as far as practicable, aeronautical and maritime SRRs, and SRRs and FIRs	1	1.0	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1	1.0	1.0	1.0	0.5	0	0.5
8	Established a single State SAR Plan	1	1.0	1.0	0.5	1.0	1.0	1.0	1.0		1	1.0	1.0	0.5	1.0	1	1
9	Established aerodrome emergency plans that provide for co-operation and co-ordination with RCCs	0.5	1.0	1.0	0.0	1.0	1.0	1.0	1.0		1	1.0	1.0	1.0	0.5	1	0
10	Established SAR agreements with States having adjoining SRRS or FIRs	0.5	1.0	0.0	0.5	1.0	0.5	0.5	1.0	0.9	**0.1**	0.5	0.9	0.5	0.5	0.5	0.5
11	Provided up to date cross-border information on SAR capability to adjoining States	0	0.7	1.0	0.0	1.0	0.5	1.0	1.0		**0.1**	0.5	1.0	0.5	0.5	0.5	0.5
12	Pre-arranged procedures for cross-border SAR responses	1	1.0	0.0	0.0	1.0	0.6	0.0	1.0	1.0	**0.1**	0.5	1.0	0.5	0.5	0.5	0.5
13	Established RCC plans for response to Mass Rescue Operations (MROs) integrated with national disaster plans	0.5	0.7	0.5	0.0	1.0	1.0	1.0	1.0	1.0	1	0.5	1.0	1.0	0.0	1	1
14	Established operational plans and procedures for SRUs, provision of support, communication and reporting	0.5	1.0	1.0	0.5	1.0	1.0	1.0	1.0		1	1.0	1.0	1.0	1.0	1	1
15	Established SAR Alerting procedures which are tested, integrated and include civil/military protocols	0.5	1.0	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	0.5	1	1
16	Provided a fully equipped RCC of sufficient size with adequate provision for operational positions and human factors	0.5	1.0	1.0	0.5	0.5	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1	1
17	Provided adequate supervisory ATC resources to allow timely SAR alerts and information to RCCs	0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1	1.0	1.0	1.0	1.0	1	1
18	Provided sufficient RCC staffing	0	1.0	1.0	0.5	0.5	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1	1
19	Provided a sufficient number of trained specialist RCC officers including SMCs and A/SMCs	0	1.0	0.1	0.0	0.5	0.8	1.0	1.0	1.0	1	1.0	1.0	1.0	0.5	1	1
20	Availability of a pool of RCC support staff who are familiar with RCC operations, but not trained as coordinators	0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	0.5	1	1
21	Developed SAR personnel position descriptions detailing responsibilities and eligibility criteria	1	1.0	1.0	0.5	0.5	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	0.5	1	1
22	Developed a comprehensive training programme that includes SAR training for SAR Coordinators and SRU staff	0.5	1.0	1.0	0.0	0.5	0.8	1.0	1.0		1	1.0	1.0	0.5	0.5	1	0.5
23	Facilitated RCC staff to be proficient in the English language	1	1.0	1.0	1.0	0.5	0.8	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1	1
24	Facilitated a programme of regular liaison visits between relevant RCCs, ATC units and airline operating centres	0	0.9	0.5	0.5	0.5	0.5	1.0	1.0		**1**	1.0	1.0	1.0	0.5	0.5	0
25	Established additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response	1	1.0	1.0	1.0	0.5	0.6	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	0.5	1
26	Established sufficient SRU capabilities (crews, availability, military assets, communications, authority, etc.)	0.5	1.0	1.0	0.0	1.0	0.8	1.0	1.0		1	1.0	1.0	1.0	0.5	1	1
27	Established procedures and necessary infrastructure to coordinate distress beacon alert responses	0	1.0	0.5	0.0	1.0	1.0	1.0	1.0	1.0	1	1.0	1.0	1.0	1.0	1	1
28	Established a reliable distress beacon registration system	0	1.0	1.0	0.0	0.5	0.6	1.0	1.0		1	1.0	1.0	1.0	1.0	1	0.5
29	Planned and prepared for the implemention of next generation beacons	0	1.0	1.0	0.0	0.5	1.0	0.5	0.5	1.0	0	0.5	1.0	1.0	0.5	0	0
30	Established an appropriate nationwide means of disposal for old distress beacons	0	0.8	1.0	0.0	1.0	0.5	1.0	0.0		0	1.0	0.2	1.0	1.0	0	0
31	Established contingency facilities, or procedures for the temporary delegation of SAR to another body or State	1	1.0	0.0	0.0	1.0	1.0	1.0	1.0		**1**	0.0	1.0	1.0	0.0	1	1
32	Established a centralised information source publishing all AIP information required on SAR	1	0.9	1.0	1.0	0.5	1.0	1.0	0.5		1	1.0	1.0	1.0	1.0	1	1
33	Established an Internet-based SAR information sharing system	1	1.0	0.0	0.0	1.0	0.2	1.0	0.5		**1**	0.5	1.0	0.5	0.0	0	0
34	Established systems for the maximum practicable cooperation between State entities for information when required	1	1.0	0.0	0.0	1.0	1.0	1.0	1.0		1	1.0	1.0	1.0	0.0	0.5	0.5
35	Developed and maintained a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SRUs	0.5	1.0	0.0	0.0	0.5	0.6	0.0	1.0		1	1.0	1.0	1.0	0.0	0.5	1
36	Established an Internet-based SAR Library, or cooperate by contributing to an Internet-based Asia/Pacific resource	0.5	1.0	0.0	0.0	0.5	0.6	1.0	0.0	1.0	0.1	1.0	0.5	0.5	0.0	0	0
37	Provided each RCC and SAR Authority with ready access to a current copy of SAR reference documents	1	1.0	1.0	0.3	0.5	0.6	1.0	1.0		1	1.0	1.0	1.0	0.5	1	1
38	Conducted regular SAREX to test and evaluate coordination procedures, data and information sharing and SAR responses	0.5	1.0	0.5	0.0	0.5	0.6	1.0	1.0		1	1.0	1.0	0.5	0.0	1	1
39	Implemented SAR System Improvement and Assessment measures, including Safety Management and QA systems	0	0.9	0.0	0.0	1.0	0.6	1.0	1.0		1	1.0	0.5	1.0	0.0	1	0
40	Conducted an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability	0.5	1.0	0.5	0.5	0.5	0.8	1.0	1.0		1	1.0	1.0	1.0	0.0	0.5	1
41	Conducted SAR promotional programs	0	1.0	0.0	0.0	0.5	0.8	1.0	0.5		1	1.0	1.0	1.0	0.0	1	1
		23.0	**39.9**	**26.6**	**13.8**	**31.0**	**33.6**	**38.0**	**35.0**	**17.9**	**34.9**	**37.0**	**39.1**	**37.0**	**23.5**	**32.0**	**29**
		56%	**97%**	**65%**	**34%**	**76%**	**82%**	**93%**	**85%**	**44%**	**85%**	**90%**	**95%**	**90%**	**57%**	**78%**	**71%**

*2021 Update - Higher than previous year
*2021 Update - Less than previous year
*2021 Update - No Change

REGIONAL SAR PLAN MONITORING AND REPORTING FORM
SAR PERFORMANCE INDICATORS

Following is a bank of indicators based on the Asia/Pacific Plan's performance improvement section (which should be read in conjunction with these questions), that can be used to assess whether an administration is either compliant or not and to internally evaluate their implementation status of the Asia/Pacific SAR Plan. Using the drop down menu for each of the 41 elements, please indicate implementation status with either 0 (not implemented), or 0.5 (50% implemented - note - other partial implementation may be indicated such as 0.1 = 10%) or 1 (fully implemented).

	Indicate whether your Admininistration has:	Marshall Islands	Micronesia	Mongolia	Myanmar	Nepal	New Caledonia	New Zealand	Pakistan	Palau	Papua New Guinea	Philippines	Republic of Korea	Singapore	Sri Lanka	Tonga	Thailand
1	Enacted legislation that incorporates or is aligned to applicable international Conventions	0	0	1	1.0	0.7	1.0	1.0	1.0	0	0.0	1.0	1	1.0	1.0	1.0	1.0
2	Unless delegated, established an entity that provides H24, SAR services within its area of responsibility/SRR	1	1	1	1.0	0.5	1.0	1.0	1.0	1	1.0	1.0	1	1.0	1.0	1.0	1.0
3	Established a national SAR committee	0	0	1	1.0	1.0	1.0	1.0	1.0	0	0.0	0.8	1	1.0	1.0	1.0	1.0
4	Empowered SAR Mission Coordinators with the authority to adequately carry out their responsibilities	0	0	1	1.0	0.5	1.0	1.0	1.0	0	1.0	0.5	1	1.0	1.0	1.0	0.5
5	Established an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent, administrative matters	0	0	1	1.0	1.0	1.0	1.0	1.0	0	1.0	1.0	1	1.0	1.0	1.0	1.0
6	Conducted studies to integrate aviation and maritime SAR, and as far as practicable, civil and military activities	0	0	1	1.0	1.0	1.0	1.0	1.0	0	0.0	0.8	1	1.0	1.0	0.5	1.0
7	Conducted studies to align, as far as practicable, aeronautical and maritime SRRs, and SRRs and FIRs	0	0	0	1.0	0.5	1.0	1.0	1.0	0	0.0	0.0	0.5	1.0	0.8	0.5	1.0
8	Established a single State SAR Plan	0	0	1	0.5	0.2	1.0	1.0	1.0	0	0.0	1.0	0.8	1.0	0.5	1.0	1.0
9	Established aerodrome emergency plans that provide for co-operation and co-ordination with RCCs	0	0	1	0.5	0.5	1.0	1.0	1.0	0	0.5	0.0	1	1.0	0.8	0.5	1.0
10	Established SAR agreements with States having adjoining SRRS or FIRs	1	1	1	0.5	0.0	0.5	0.8	0.0	1	0.0	0.8	0.7	1.0	0.8	1.0	0.5
11	Provided up to date cross-border information on SAR capability to adjoining States	1	1	0.5	0.0	0.5	0.0	1.0	0.0	1	0.0	1.0	1	1.0	1.0	1.0	1.0
12	Pre-arranged procedures for cross-border SAR responses	1	1	1	1.0	0.0	0.0	1.0	0.5	1	0.0	0.8	1	1.0	0.8	0.5	0.5
13	Established RCC plans for response to Mass Rescue Operations (MROs) integrated with national disaster plans	0	0	0.5	0.5	0.5	0.0	1.0	0.5	0	0.5	1.0	1	1.0	0.5	0.5	0.5
14	Established operational plans and procedures for SRUs, provision of support, communication and reporting	0	0	1	1.0	0.5	0.0	0.8	1.0	0	0.0	1.0	0.8	1.0	0.5	0.5	0.5
15	Established SAR Alerting procedures which are tested, integrated and include civil/military protocols	0	0	1	0.5	0.8	1.0	1.0	1.0	0	0.5	0.5	1	1.0	0.5	1.0	0.5
16	Provided a fully equipped RCC of sufficient size with adequate provision for operational positions and human factors	0	0	1	1.0	0.7	1.0	1.0	1.0	0	1.0	0.7	1	1.0	0.7	0.5	0.5
17	Provided adequate supervisory ATC resources to allow timely SAR alerts and information to RCCs	0	0	1	1.0	1.0	1.0	1.0	1.0	0	1.0	0.7	1	1.0	1.0	0.5	1.0
18	Provided sufficient RCC staffing	0	0	1	1.0	0.5	1.0	1.0	1.0	0	1.0	0.7	1	1.0	0.9	0.5	0.5
19	Provided a sufficient number of trained specialist RCC officers including SMCs and A/SMCs	0	0	1	1.0	0.3	0.5	1.0	1.0	0	1.0	1.0	1	1.0	0.9	0.5	0.5
20	Availability of a pool of RCC support staff who are familiar with RCC operations, but not trained as coordinators	0	0	0.5	1.0	0.5	0.5	1.0	1.0	0	0.5	1.0	1	1.0	1.0	1.0	1.0
21	Developed SAR personnel position descriptions detailing responsibilities and eligibility criteria	0	0	1	0.5	0.4	0.5	1.0	1.0	0	0.5	1.0	1	1.0	1.0	0.5	1.0
22	Developed a comprehensive training programme that includes SAR training for SAR Coordinators and SRU staff	0	0	1	1.0	0.7	0.5	1.0	1.0	0	0.0	0.5	1	1.0	0.9	1.0	1.0
23	Facilitated RCC staff to be proficient in the English language	1	1	0.5	1.0	0.0	1.0	1.0	1.0	1	0.5	1.0	1	1.0	1.0	0.5	1.0
24	Facilitated a programme of regular liaison visits between relevant RCCs, ATC units and airline operating centres	0	0	0.5	1.0	0.5	0.0	0.8	1.0	0	0.0	0.5	1	1.0	0.7	1.0	1.0
25	Established additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response	1	1	0	1.0	1.0	0.0	1.0	1.0	1	0.0	0.3	1	1.0	0.6	1.0	0.5
26	Established sufficient SRU capabilities (crews, availability, military assets, communications, authority, etc.)	0	0	1	1.0	0.5	1.0	1.0	1.0	0	0.0	1.0	1	1.0	0.6	1.0	1.0
27	Established procedures and necessary infrastructure to coordinate distress beacon alert responses	1	1	1	1.0	0.7	1.0	1.0	1.0	1	0.5	1.0	1	1.0	1.0	0.5	1.0
28	Established a reliable distress beacon registration system	0	0	1	0.5	1.0	1.0	1.0	1.0	0	1.0	1.0	1	1.0	1.0	0.5	1.0
29	Planned and prepared for the implemention of next generation beacons	0	0	0.5	0.0	0.4	0.0	1.0	0.5	0	0.0	0.3	1	1.0	0.5	0.5	1.0
30	Established an appropriate nationwide means of disposal for old distress beacons	0	0	0	0.0	1.0	0.0	1.0	0.5	0	0.0	0.3	0	1.0	0.5	0.0	0.5
31	Established contingency facilities, or procedures for the temporary delegation of SAR to another body or State	0	0	0	0.0	0.0	0.0	0.50	1.0	0	0.0	0.3	0.8	1.0	0.0	0.5	0.5
32	Established a centralised information source publishing all AIP information required on SAR	0	0	1	1.0	1.0	0.0	1.0	1.0	0	0.0	1.0	1	1.0	0.8	0.5	0.5
33	Established an Internet-based SAR information sharing system	0	0	1	0.0	0.6	0.0	0.9	1.0	0	0.0	1.0	0.8	1.0	0.0	0.5	0.5
34	Established systems for the maximum practicable cooperation between State entities for information when required	0	0	1	0.5	0.5	0.0	1.0	1.0	0	0.0	1.0	1	1.0	0.5	1.0	0.5
35	Developed and maintained a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SRUs	0	0	0	0.5	0.8	0.0	0.9	0.5	0	0.0	1.0	1	1.0	1.0	0.5	0.5
36	Established an Internet-based SAR Library, or cooperate by contributing to an Internet-based Asia/Pacific resource	0	0	0	0.0	0.3	0.0	1.0	1.0	0	0.0	0.5	1	1.0	0.8	0.0	0.5
37	Provided each RCC and SAR Authority with ready access to a current copy of SAR reference documents	0	0	0.5	0.0	0.5	0.0	1.0	1.0	0	1.0	1.0	1	1.0	1.0	1.0	1.0
38	Conducted regular SAREX to test and evaluate coordination procedures, data and information sharing and SAR responses	0	0	1	1.0	0.7	0.5	0.6	0.5	0	0.0	0.3	1	1.0	0.8	1.0	1.0
39	Implemented SAR System Improvement and Assessment measures, including Safety Management and QA systems	0	0	0.5	0.0	0.5	1.0	0.75	0.5	0	0.0	0.5	0.5	1.0	0.4	0.5	0.5
40	Conducted an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability	0	0	1	0.5	0.3	1.0	1.0	0.5	0	0.0	0.0	0.5	1.0	0.5	0.5	1.0
41	Conducted SAR promotional programs	0	0	0	0.5	0.5	0.0	0.75	1.0	0	0.0	1.0	1	1.0	0.5	1.0	1.0
		7.0	**7.0**	**26.0**	**27.5**	**23.1**	**22.0**	**38.8**	**35.0**	**7.0**	**12.5**	**29.8**	**37.4**	**41.0**	**30.8**	**28.5**	**32.0**
		17%	**17%**	**63%**	**67%**	**56%**	**54%**	**95%**	**85%**	**17%**	**30%**	**73%**	**91%**	**100%**	**75%**	**70%**	**78%**

*2021 Update - Higher than previous year
*2021 Update - Less than previous year
*2021 Update - No Change

REGIONAL SAR PLAN MONITORING AND REPORTING FORM
SAR PERFORMANCE INDICATORS

Following is a bank of indicators based on the Asia/Pacific Plan's performance improvement section (which should be read in conjunction with these questions), that can be used to assess whether an administration is either compliant or not and to internally evaluate their implementation status of the Asia/Pacific SAR Plan. Using the drop down menu for each of the 41 elements, please indicate implementation status with either 0 (not implemented), or 0.5 (50% implemented - note - other partial implementation may be indicated such as 0.1 = 10%) or 1 (fully implemented).

	Indicate whether your Admininistration has:	United States	Viet nam
1	Enacted legislation that incorporates or is aligned to applicable international Conventions	1.0	1
2	Unless delegated, established an entity that provides H24, SAR services within its area of responsibility/SRR	1.0	1
3	Established a national SAR committee	1.0	1
4	Empowered SAR Mission Coordinators with the authority to adequately carry out their responsibilities	1.0	1
5	Established an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent, administrative matters	1.0	1
6	Conducted studies to integrate aviation and maritime SAR, and as far as practicable, civil and military activities	1.0	1
7	Conducted studies to align, as far as practicable, aeronautical and maritime SRRs, and SRRs and FIRs	1.0	1
8	Established a single State SAR Plan	1.0	1
9	Established aerodrome emergency plans that provide for co-operation and co-ordination with RCCs	1.0	1
10	Established SAR agreements with States having adjoining SRRS or FIRs	0.7	0.5
11	Provided up to date cross-border information on SAR capability to adjoining States	1.0	1
12	Pre-arranged procedures for cross-border SAR responses	1.0	1
13	Established RCC plans for response to Mass Rescue Operations (MROs) integrated with national disaster plans	1.0	0.5
14	Established operational plans and procedures for SRUs, provision of support, communication and reporting	1.0	1
15	Established SAR Alerting procedures which are tested, integrated and include civil/military protocols	1.0	1
16	Provided a fully equipped RCC of sufficient size with adequate provision for operational positions and human factors	1.0	1
17	Provided adequate supervisory ATC resources to allow timely SAR alerts and information to RCCs	1.0	1
18	Provided sufficient RCC staffing	1.0	1
19	Provided a sufficient number of trained specialist RCC officers including SMCs and A/SMCs	1.0	0.5
20	Availability of a pool of RCC support staff who are familiar with RCC operations, but not trained as coordinators	1.0	1
21	Developed SAR personnel position descriptions detailing responsibilities and eligibility criteria	1.0	1
22	Developed a comprehensive training programme that includes SAR training for SAR Coordinators and SRU staff	1.0	1
23	Facilitated RCC staff to be proficient in the English language	1.0	0.5
24	Facilitated a programme of regular liaison visits between relevant RCCs, ATC units and airline operating centres	1.0	1
25	Established additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response	1.0	1
26	Established sufficient SRU capabilities (crews, availability, military assets, communications, authority, etc.)	1.0	1
27	Established procedures and necessary infrastructure to coordinate distress beacon alert responses	1.0	1
28	Established a reliable distress beacon registration system	1.0	1
29	Planned and prepared for the implemention of next generation beacons	1.0	1
30	Established an appropriate nationwide means of disposal for old distress beacons	1.0	1
31	Established contingency facilities, or procedures for the temporary delegation of SAR to another body or State	1.0	1
32	Established a centralised information source publishing all AIP information required on SAR	1.0	1
33	Established an Internet-based SAR information sharing system	1.0	1
34	Established systems for the maximum practicable cooperation between State entities for information when required	1.0	1
35	Developed and maintained a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SRUs	1.0	1
36	Established an Internet-based SAR Library, or cooperate by contributing to an Internet-based Asia/Pacific resource	1.0	0.5
37	Provided each RCC and SAR Authority with ready access to a current copy of SAR reference documents	1.0	1
38	Conducted regular SAREX to test and evaluate coordination procedures, data and information sharing and SAR responses	1.0	1
39	Implemented SAR System Improvement and Assessment measures, including Safety Management and QA systems	1.0	1
40	Conducted an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability	1.0	1
41	Conducted SAR promotional programs	1.0	1
		40.7	**38.5**
		99%	**94%**

*2021 Update - Higher than previous year
*2021 Update - Less than previous year
*2021 Update - No Change

SAR AGREEMENTS LIST

Updated: 21 June 2020

DATE	STATES	REMARKS
14 April 1972	ASEAN States – Indonesia, Malaysia, Philippines, Singapore and Thailand	Multilateral agreement
March 1997	ASEAN – Viet Nam	Viet Nam accession to 1972 ASEAN Agreement (as above)
August/Sept. 2004	Australia/Fiji	
November 1990	Australia / Indonesia	Updated 5 April 2004
April 2006	Australia / Maldives	Letter of Arrangement
2 April 2009	Australia / New Zealand	Notified 2013
February 2001	Australia / Papua New Guinea	
29 July 1999	Australia / New Caledonia	Maritime Arrangement for SAR Cooperation
8 October 1998	Australia / Solomon Islands	SAR Arrangement
29 April 2014	Australia/Sri Lanka	SAR Arrangement
16 December 1998	Brunei Darussalam / Malaysia	
22 December 2009	Bhutan / India	SAR Arrangement
February 1999	Cambodia / Viet Nam	Updated in 2009
04 May 2016	China/Hong Kong (Macao) China	SAR and Salvage Agreement
11 September 2019	China/Kazakhstan	
1 June 2009	Chile / New Zealand	SAR services coordination
16 May 2007	China / Republic of Korea	
notified 2003	China / United States	
Signed 25 Oct 2013	China/Mongolia	
20 July 2017	Cook Islands / New Zealand	Notified 3 August 2017
~~notified July 2007~~	~~French Polynesia (Tahiti) / New Zealand~~	
~~notified January 2013~~	~~French Polynesia (Tahiti) / United States~~	~~Draft agreement being considered by FP authorities~~
~~Notified September 2016~~	~~French Polynesia (Tahiti)/Cook Islands~~	~~Cook Islands covered by agreement with New Zealand.~~
June 1982	Indonesia / Singapore	
1990	Indonesia / Papua New Guinea	JBC MOU signed
25 August 1986	Indonesia / Philippines	
24 January 2018	Indonesia/Sri Lanka	MOU
1988, July 2006	Indonesia / United States	SAR Services Agreement
17 March 2010	Japan/Philippines	SAR Agreement
30 April 2008	Japan / Republic of Korea	
1986	Japan / United States	
1998	Lao PDR / Vietnam	Updated in 2009
05 March 2013	Lao PDR/Myanmar	
13 July 2019	Lao PDR/Thailand	
29 August 1985	Malaysia / Indonesia	
9 December 1985	Malaysia / Philippines	
11 August 1984	Malaysia / Singapore	
9 September 1985	Malaysia / Thailand	
25 June 2014	Maldives/Sri Lanka	

DATE	STATES	REMARKS
notified 2003	Marshall Islands / United States	
notified 2003	Micronesia / United States	
11 April 2008	Mongolia/Russian Federation	
22 May 2002	New Caledonia / New Zealand	
notified July 2007	New Zealand/Niue	Government aid agreement
20 August 2003	New Zealand / Samoa	Notified 2005
Notified July 2007	New Zealand/Tokelau	Government aid agreement
17 June 2005	New Zealand / Tonga	
16 April 2003	New Zealand / United States	
26 November 2002	Palau / United States	
July 1996	Philippines / Singapore	
20 September 1996	Philippines / Viet Nam	Updated 2015
September 1985	Singapore / Thailand	Updated July 1996
July 1996	Singapore / Viet Nam	

SAR LOA Matrix Date Last Amended: 11 June 2020 (√ = SAR Agreement notified, blank cell = SAR Agreement not notified)

Administration	Afghanistan	Australia	Bangladesh	Bhutan	Brunei	Cambodia	China	Hong Kong	Macao	Cook Islands	DPR Korea	Fiji	French Polynesia	India	Indonesia	Japan	Kiribati	Lao PDR	Malaysia	Maldives	Marshall Is	Micronesia	Mongolia	Myanmar	Nauru	Nepal	New Caledonia	New Zealand	Niue (NZ)	Pakistan	Palau	PNG	Philippines	ROK	Samoa	Singapore	Solomon Is	Sri Lanka	Thailand	Timor Leste	Tonga	Tuvalu	Vanuatu	Viet Nam	USA
Afghanistan 0%															√					√																									
Australia 88%												√			√					√								√			√						√	√							
Bangladesh 0%																																													
Bhutan 50%														√																																
Brunei 100%																			√																										
Cambodia 33%																																												√	
China[1] 38%								√	√														√											√										√
Hong Kong, Ch 50%							√																																						
Macao, China 100%							√																																						
Cook Islands 25%																												√																	
DPR Korea 0%																																													
Fiji 10%		√																																										
Fr. Polynesia 0%																																													
India 11%				√																																									
Indonesia 91%		√																	√													√	√			√		√	√	√				√	√
Japan 60%																																	√	√											√
Kiribati 0%																																													
Lao PDR 60%																								√															√					√	
Malaysia 63%					√										√																	√			√			√				-	
Maldives 67%		√																																				√						
Marshall Is. 100%																																													√
Micronesia 100%																																													√
Mongolia 100%							√																																						
Myanmar 17%																		√																											
Nauru 0%																																													
Myanmar 17%																		√																											
Nauru 0%																																													
Nepal 0%																																													
New Caledonia 33%																												√																	
New Zealand[2] 89%		√								√																		√		√					√				√				√
Niue 25%																												√							√				√					
Pakistan 0%																																													
Palau 100%																																													√
PNG 50%		√													√																														
Philippines 67%															√	√			√																	√			√			√			√	
ROK 67%							√									√																												
Samoa 17%																												√																	
Singapore 100%															√				√															√						√				√	
Solomon Is. 33%		√																																											
Sri Lanka 75%		√													√					√																									
Thailand 75%															√			√	√															√			√							√	
Timor-Leste 50%															√																														
Tonga 25%																												√																	
Tuvalu 0%																																													
Vanuatu 0%																																													
USA[3] 50%							√								√	√					√	√						√			√													
Viet Nam 75%						√									√			√	-													√				√			√					

[1] Also has an agreement with Kazakhstan

[2] Also has an agreement with the Tokelau Islands and a SAR agreement with SAM State Chile

[3] Includes American Samoa, Guam, Johnston, Kingman, Midway, Mariana, Palmyra, Wake

INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA/PACIFIC SEARCH AND RESCUE (SAR) PLAN

Version 3.~~0~~ 12 ~~August 2019~~~~May 2020~~ April 2021 MARKUP VERSION

This Plan was developed by the Asia/Pacific Search and Rescue Task Force (APSAR/TF) and the Asia/Pacific Search and Rescue Work Group (APSAR/WG)

Approved by the ATM/SG/7 and published by the
ICAO Asia and Pacific Office, Bangkok

CONTENTS

SCOPE OF THE PLAN

Plan Structure

1.1 The Asia/Pacific Search and Rescue (SAR) Plan (hereinafter referred to as the 'Plan') references different levels. At the higher level are global requirements established by the ICAO Annex 12 to the ICAO Convention on International Civil Aviation (ICAO Doc 7300). Global guidance material is provided by the International Maritime Organization (IMO) and ICAO's joint publication, the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual. Beneath this is regional planning guidance primarily provided by this Plan and other regional guidance material, in order to enable States to define the goals and means of meeting objectives for State planning towards improving State SAR System capability, such as Regional Air Navigation Plan (RANP, ICAO Doc 9673) objectives.

1.2 The global air navigation perspective is guided mainly by the *Global Air Navigation Plan* (GANP, Doc 9750), the *Global ATM Operational Concept* (Doc 9854) and the *Global Aviation Safety Plan* (GASP).

1.3 The scope of the Plan is the identification of:

- the current status of SAR preparedness of Asia/Pacific Region States and State SAR arrangements; and
- recommendations for SAR planning and preparedness enhancements, in terms of compliance with Annex 12 of the ICAO Convention, IAMSAR Manual guidance, and accepted best international practice.

1.4 References in the Plan to 'States' are intended to include Special Administrative Regions and territories.

Plan Review

1.5 As an iterative process, the Plan requires regular updating to keep current with changes in ICAO Annexes and guidance material, outcomes from the ICAO-IMO JWG-SAR, the IAMSAR manual, regional aviation activity, developments in the Air Traffic Management (ATM) system, new technology, political considerations, human performance and lessons learned from actual SAR responses. Plan updates should also focus on the SAR system being an important component of an integrated regional and global air navigation system. It is intended that APANPIRG and its contributory bodies conduct a complete review every three years from 2019 (or a shorter period determined by Asia/Pacific Air Navigation Planning and Implementation Regional Group - APANPIRG) of the Plan to align with the review cycle of the GANP and the IAMSAR Manual. The review should be guided by a consultative process involving States and relevant International Organisations and technical bodies.

OBJECTIVES

Introduction

2.1 Asia/Pacific States who are signatories to the Chicago Convention accept the responsibility for the provision of SAR services per the requirements of Annex 12 – *Search and Rescue*. Increases in both aviation and maritime traffic throughout the Asia/Pacific region places additional importance on the ability for States to be adequately prepared for potentially increased demand for aeronautical and maritime SAR services.

2.2 The world's citizens, who frequently fly over or sail through the Asia/Pacific, expect a timely and adequate SAR response to be provided should it be required. States in the region need to be adequately prepared for the provision of efficient and effective SAR services. To assist in achieving this, it is essential for States to cooperate, collaborate and in some cases assist with resources to neighbouring and sub-regional RCCs.

2.3 ICAO Regional Office maintains a record, as reported to ICAO by the States themselves, of the status of individual State SAR compliance against Annex 12 requirements. There are significant variations in the level of State SAR capability across the region with significant gaps requiring urgent action, especially in oceanic areas. A number of States have not reported their status at all to ICAO. The ICAO Universal Safety Oversight Audit Programme – Continuous Monitoring Approach (USOAP-CMA) also provides a useful tool to States to self-assess their individual SAR system status. Since the establishment of this Plan, there had already been commendable improvements to the SAR systems of some States which have contributed to building better regional SAR capability. However, there was still considerable work required to address capability gaps.

2.4 There is a high risk of negative consequences to a State which does not provide an adequate SAR response to an aircraft or vessel in distress. The primary concern is the higher probability for loss of lives which may have been saved. The ability for news to spread rapidly in today's technologically connected world also provides the opportunity for a poor or ineffective SAR response to quickly reach a global audience resulting in damage to that State's reputation internationally and potential economic loss to sensitive State industries such as tourism and transport. However, the benefits of an effective and reliable SAR service to States offers many advantages. Besides reduction of loss of life and human suffering, other advantages include the following aspects.

a) Safer and more secure environment for aviation and maritime related industries, commerce, recreation and travel. Increased safety may promote use and enjoyment of aviation and maritime environments, tourism and economic development. This is especially true when the SAR system utilised programmes aimed at preventing or reducing the effects of mishaps, sometimes referred to as 'Preventative SAR'.

b) Availability of SAR resources often provides the initial response and relief capabilities critical to saving lives in the early stages of natural and man-made disasters. SAR services offer an integral part of local, national and regional emergency management systems.

c) Well performed SAR operations can provide positive publicity about situations which may otherwise be viewed negatively. This can lead to improved public confidence in that State's reputation and commitment to providing a safe environment, leading to increased confidence to conduct activities beneficial to that State's economy.

d) As SAR is a relatively non-controversial and humanitarian mission, it provides an excellent opportunity to enhance cooperation and communication in general between States and organisations, not only for SAR. It can also foster better working relationships between States and organisations at the local, national and international levels, including civil/military cooperation.

2.5 In 2014 Malaysia Airlines flight MH370, a Boeing 777 with 239 persons on board, disappeared when flying from Kuala Lumpur, Malaysia to Beijing, China, and Air Asia QZ8501 was lost on a flight from Surabaya to Singapore. The MH370 event resulted in probably the largest and most expensive search response for a missing aircraft in human history. Together with Air France flight AF447, which crashed into the Atlantic Ocean in 2009, these tragedies have highlighted vulnerabilities in the current air navigation system, including the SAR system, which have hampered timely identification and localisation of aircraft in distress, hindering effective response efforts. ICAO is addressing these vulnerabilities through implementation of functions of the Global Aeronautical Distress and Safety System (GADSS) concept of operations; however, this new system is also dependent on improvements in global SAR capability, especially for remote and oceanic SAR response.

2.6 The Plan is designed to address both civil and military SAR authorities and has been developed in consultation with Asia/Pacific States, SAR administrations and relevant International Organisations. States should consult with stakeholders nationally, regionally and internationally as appropriate and determine actions in order to commit to achieving the objectives of this Plan in order to meet at least the minimum SAR service requirements in accordance with ICAO Annex 12. It is noted that where a State is unable to meet minimum SAR Standards and Recommended Practices (SARPs) of ICAO Annex 12, Article 38 to the ICAO Convention requires notification to ICAO of the differences between its own practice and that established by the international standards.

2.7 It is a common practice for the military to conduct or have a major role in SAR operations to fulfil or assist in fulfilling the State's obligation to provide SAR services. From the perspective of providing SAR services, civil-military coordination takes on many forms. This includes coordination during an actual SAR response, national coordination with other agencies to determine the military role, part of an international agreement or set of procedures with a neighbouring State to assist in SAR response, or other types of coordination. ICAO Document 10088 – Civil/Military Cooperation is focused on airspace management and includes SAR matters relevant to civil-military coordination in airspace management.

2.8 The 2019 edition of the IAMSAR Manual, Volume II, Chapter 7 Multiple Aircraft Operations has guidance on establishing areas of SAR action to assist with the safe coordination and management of aircraft operations during SAR operations. SAR authorities should have procedures in place to rapidly notify airspace users of SAR operations and the establishment of any temporary airspace operation such as danger areas or restricted areas through appropriate State authorities. The combination of guidance in the IAMSAR Manual and ICAO Document 10088 should enable a State to have an appropriate plan in place for civil-military coordination and cooperation in readiness for efficient and effective SAR response.

2.9 States should aim to meet their obligations progressively in a strategically structured and planned manner with improvement goals set for short term, medium term and long term implementation. It may be more productive to make gains in small steps commencing with measures that are more easily achievable in the short term and have a minimal cost, progressing to measures which will take longer to implement over the medium to long term. Short term measures that may be implemented relatively easily include the establishment of a national SAR Committee and ensuring SAR Agreements are in place with neighbouring States allowing for seamless cross-border transit of search assets engaged in SAR activity. A SAR agreement can be in the form of 'Letter of Agreement' (LOA) or a Memorandum of Understanding or other acceptable term indicating a lower form of arrangement for operational matters between SAR service providers (such as RCCs and/or RSCs) or a more formal agreement for arrangements between governments concerned.

2.10 All States are encouraged to use the guidance provided within this Plan as a way forward, thus ensuring a timely, well-coordinated response to any SAR incident within their area of responsibility, or during cooperative responses involving more than one Search and Rescue Region (SRR) including overlapping aeronautical and maritime SRRs which may be the responsibility of different RCCs.

Plan Objective

2.11 The objective of this SAR Plan is to provide a framework to assist Asia/Pacific States to meet their SAR needs and obligations accepted under the Convention on International Civil Aviation and for the harmonised and interoperable delivery of both aeronautical and maritime SAR services within the region, and across other ICAO regional boundaries, where practicable.

2.12 The Plan is to be consistent with the SARPs of ICAO Annex 12 - *Search and Rescue*, and aligned where appropriate with the SAR technical and operational standards and guidance of the IMO.

2.13 The Plan recognizes that ICAO serves as the forum for the implementation of practical and achievable measures to improve SAR services for international civil aviation. The Plan also recognizes that the IMO provides a similar forum for SAR services to maritime shipping.

2.14 Both ICAO and IMO share the same goal of ensuring that SAR services are available globally wherever people sail or fly. The SAR services that ICAO and IMO promote are complementary and offer tangible opportunities to derive mutually beneficial efficiencies for both the aviation and maritime transportation SAR systems globally, regionally and nationally. The objective of this Plan includes encouraging States to take advantage of such efficiencies. States should, where practicable, align their SAR systems with the guidance provided by the IAMSAR Manual, which also provides the benefit for standardised SAR coordination between RCCs and across SRR lines of delineation.

2.15 State SAR plans describe how SAR services will be provided, organized and supported in order for States to meet their obligations under the relevant Conventions. Search and Rescue Coordinators (SC) and SAR managers oversee and implement these plans. National SAR plans should be signed by all Government agencies which can provide or support SAR services. These agencies should all be represented on the State's Search and Rescue Coordinating Committee (SCC), which oversees these plans.

Note: The SC should not be confused with the operational nature of the SAR Mission Coordinator (SMC). The primary purpose of the national SC is to enable a whole-of-government approach to make efficient and effective use of a State's capabilities for SAR.

Plan Development

2.16 The Plan was developed as part of a suite of Asia/Pacific air navigation plans, including the *Asia~~2~~/Pacific Seamless ATM Plan*, the *Asia/Pacific Plan for Collaborative Aeronautical Information Management* (AIM), the *Asia/Pacific Framework for Collaborative Air Traffic Flow Management* (ATFM), and the *Regional ATM Contingency Plan*, so the Plan should not be considered in isolation.

2.17 The Plan is expected to provide guidelines and recommendations for Asia/Pacific States to consider for the enhancement and improvement of national, sub-regional and regional SAR capability including:

a) compliance with Annex 12 SARPs;

b) identification and addressing of deficiencies in SAR capability;

c) continuous and coherent development of SAR capability;

d) harmonisation of aeronautical and maritime SAR services;

e) civil/military cooperation and coordination (including SAR response, information sharing and use of airspace);

f) remote oceanic SAR response capability (including provision for Mass Rescue Operations (MRO);

g) establishment and review of arrangements between neighbouring States to expeditiously facilitate SAR coordination, operations and cooperation across regional boundaries including sharing SAR resources and contingency procedures;

h) facilitation of the implementation of SAR systems and services including the establishment of JRCCs where suitable and practicable;

i) supporting the sharing of SAR information, data and expertise;

j) integration with ATM systems and future ATS developments, where appropriate;

k) monitoring of outcomes from APANPIRG Sub-Groups, other ICAO Region SAR groups, ICAO/IMO Joint Working Group on Harmonisation of Aeronautical and Maritime SAR (JWG) and related forums for issues that may affect the Plan;

l) facilitation of a continuous reporting mechanism of State SAR capability, Annex 12 compliance and SAR performance data to the APAC Regional Office through the APANPIRG Air Traffic Management Sub-Group (ATM/SG);

m) implementation of a SAR System Improvement and Assessment measures, including Safety Management System, Quality Assurance programme and risk assessment, and programs to reduce the number of SAR incidents;

n) coordinating the introduction of new technology affecting the regional SAR system;

o) sharing future research and development concepts;

p) seeking efficiencies, through the coordination and facilitation of concurrent regional SAR meetings, seminars, workshops and exercises, including joint ICAO and IMO, and sub-regional forums where practicable; and

q) conducting efficient SAR Exercises (SAREXs) that identify improvements and latent problems.

2.18 The Plan elements should be periodically reviewed by APANPIRG to ensure that they remain relevant to the SAR system, particularly for new technology developments and alignment with other relevant global and regional SAR plans and the Global Air Navigation Plan.

EXECUTIVE SUMMARY

3.1 The Asia/Pacific Region had the largest share of Passenger Kilometres Performed (PKP), accounting for more than one third of the global total at 34.5% (Europe and North America were the two other key regions, with shares of 26.7% and 22.4% respectively). As the world's major manufacturing and distribution hub, the Asia/Pacific Region also accounted for the largest share of global air freight traffic in 2018, at 35.5%.

3.2 For the maritime industry, the United Nations Conference on Trade and Development (UNCTAD) Review of Maritime Transport 2017 reported that Asia remained the main global cargo loading and unloading area in 2016 with the largest world shipping tonnage share of 40% Loaded and 61% Unloaded. Growth in the cruise ship industry together with the many other forms of maritime transport such as fishing vessels and passengers ferries creates added potential demand for regional SAR services. Whilst IMO assists the Parties to the Maritime SAR Convention, particularly their implementation related to the provision of maritime SAR services, the demand for aeronautical SAR services which frequently support responses to maritime SAR incidents is also likely to rise.

3.3 Asia/Pacific States who are signatories to the Chicago Convention accept the responsibility for the provision of SAR services per the requirements of Annex 12 - *Search and Rescue*. Increases in both aviation and maritime traffic throughout the Asia/Pacific region places additional importance on the ability for States to be adequately prepared for potentially increased demand for aeronautical and maritime SAR services.

3.4 Considering that many of the Asia/Pacific States have the challenging responsibility for providing a SAR service over vast and remote areas, including three of the world's five oceans, the importance for States with oceanic SAR responsibility to cooperate, collaborate and share resources with their neighbouring and regional/sub-regional RCCs is essential.

3.5 High-level support might be necessary from regional bodies that can effectively support the Plan's implementation, such as the:

- Association of Southeast Asian Nations (ASEAN) and ASEAN Regional Forum (ARF);
- Asia Pacific Economic Cooperation (APEC);
- South Asian Association for Regional Cooperation (SAARC);
- Secretariat of the Pacific Community (SPC); and
- Indian Ocean Rim Association (IORA).

SAR System Funding

3.6 The level of funding provided for effective SAR systems is a matter of concern for all senior decision-makers. An effective SAR system helps prevent lives being lost that may have been saved which provides a persuasive argument for proper funding. The resources should be sufficient to develop and/or maintain the required SAR service per their obligations as signatories to the relevant aeronautical and maritime SAR conventions. This may require the development of business cases to governments outlining where additional funding is required.

3.7 Such business cases should include consideration of amendments to existing State SAR arrangements which may provide more efficient delivery of the SAR service by better utilisation of existing resources (for example by establishing Joint RCCs (JRCCs), or additional funding sources where required (for example charging a levy to aircraft operators for providing the SAR service or seeking company sponsorship for SRUs). The economic value of a life saved when compared against the economic value of a life lost can also be a significant persuasive factor in any business case.

Joint Rescue Coordination Centres (JRCCs)

3.8 Where practicable, States are encouraged to examine the potential benefits that may be derived by the establishment of JRCCs to incorporate the aeronautical and maritime SAR activities and/or facilities of ARCCs/ARSCs and MRCC/MRSCs. JRCCs have the potential to not only provide a more effective SAR service to both the aeronautical and maritime industries, but also offer potential financial efficiencies by releasing funds for improvements in other SAR areas.

Note 1: Where JRCCs are not practicable, facilities and procedures should be developed which provide and/or enhance effective SAR coordination and collaboration between the ARCCs and MRCCs in support of each other, to provide an efficient and integrated State SAR system for both aeronautical and maritime SAR incident response.

Note 2: A JRCC may be established either physically or by virtual means using the integration of communications, information and computer technology between an ARCC and an MRCC to achieve full search and rescue coordination functionality.

3.9 Where practicable, the JRCC evaluation may consider consolidation of two or more different State RCCs into single sub-regional JRCCs.

Note: a single sub-regional JRCC may be established in partnership with a group of States and serve as a 24 hour nodal JRCC supported by Joint Rescue Sub-Centres (JRSCs) of the other partner States which may not necessarily need to be manned 24 hours but could be activated when required.

Commented [SS1]: ICAO HQ Comment:

FYI, JWG26 included moves to amend IAMSAR manual to promote the use of a 'virtual' JRCC, whereby the systems etc are joined-up/shared, even though for whatever reason the physical RCCs are not co-located. Should be added to the 2022 Manual. Will appear as: "**Note:** A JRCC may be established either by physical co-location or by the integration of communications, information and computer technology between an ARCC and an MRCC to achieve full search and rescue coordination functionality." in section 2.3

ABBREVIATIONS AND ACRONYMS

ADS-B	Automatic Dependent Surveillance-Broadcast
ADS-C	Automatic Dependent Surveillance-Contract
ADT	Autonomous Distress Tracking
ANRF	Air Navigation Reporting Form
ANSP	Air Navigation Service Provider
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
APEC	Asia Pacific Economic Cooperation
APSAR/TF	Asia/Pacific SAR Task Force
ARCC	Aeronautical Rescue Coordination Centre
ARF	ASEAN Regional Forum
ARSC	Aeronautical Rescue Sub-Centre
A/SMC	Assistant SMC
ASEAN	Association of Southeast Asian Nations
ASPOCS	Administrative Single Point of Contact for SAR
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
CONOPS	Concept of Operations
COSPAS-SARSAT	**Co**smicheskaya **S**istema **P**oiska **A**variynyh **S**udov-Search and Rescue Satellite-Aided Tracking
EI	Effective Implementation
ELT	Emergency Locator Transmitters
GADSS	Global Aeronautical Distress and Safety System
GANP	Global Air Navigation Plan
GASP	Global Aviation Safety Plan
GLONASS	Global Navigation Satellite System
GPS	Global Positioning System
IAMSAR	International Aeronautical and Maritime SAR (Manual)
IMO	International Maritime Organization
IORA	Indian Ocean Rim Association
iSTARS	Integrated Safety Trend Analysis and Reporting System
JRCC	Joint (aeronautical and maritime) Rescue Coordination Centre
JRSC	Joint Rescue Sub-Centre
JWG-SAR	ICAO/IMO Joint Working Group on the Harmonisation of Aeronautical and Maritime Search and Rescue
LOA	Letter of Agreement
MCC	Mission Control Centres
MEOSAR	Medium-altitude Earth Orbit Search and Rescue
MRCC	Maritime Rescue Coordination Centre
MRO	Mass Rescue Operations
MRSC	Maritime Rescue Sub-Centre
OJT	On-the-Job Training
PQs	Protocol Questions
PSCS	Preferred SAR Capability Specifications
RANP	Regional Air Navigation Plan
RCC	Rescue Coordination Centre
RPK	Revenue Passenger Kilometres
RPAS	Remotely Piloted Aircraft Systems
SAR	Search and Rescue
SARPs	Standards and Recommended Practices
SAARC	South Asian Association for Regional Cooperation
SAREX	SAR Exercises

SC	Search and Rescue Coordinator
SCC	Search and Rescue Coordinating Committee
SMC	Search and Rescue Mission Coordinator
SMS	Safety Management System
SOLAS	International Convention for the Safety of Life at Sea
SPC	Secretariat of the Pacific Community
SPOC	SAR Point of Contact
SRR	Search and Rescue Region
SRU	Search and Rescue Unit
SWIM	System Wide Information Management
UNCLOS	United Nations Convention on the Law of the Sea
USOAP-CMA	Universal Safety Oversight Audit Programme – Continuous Monitoring Approach
VSP	Variable Set Parameter

BACKGROUND INFORMATION

Improvement Drivers

5.1 The ICAO USOAP-CMA focuses on a State's capability in providing safety oversight by assessing whether the State has effectively and consistently implemented the critical elements of a safety oversight system and determining the State's level of implementation of ICAO's safety–related SARPs, including ~~Annex~~ Annex 12 — *Search and* Rescue~~12 Search and Rescue~~, and associated procedures and guidance material.

5.2 ICAO APAC Regional Office maintains an Air Navigation Deficiencies List. This list is based on the uniform methodology for identification, assessment and reporting of such deficiencies as described in Part V of the APANPIRG Procedural Handbook. ~~-~~By identifying and addressing specific deficiencies, APANPIRG and its Sub-groups facilitate the development and implementation of action plans by States to resolve identified deficiencies, where necessary.

5.3 The ANS Deficiency information had been populated into the ICAO iSTARS (Integrated Safety Trend Analysis and Reporting System) CHECK database and was accessible through the ICAO Secure Portal. The intention is to merge this data with the CMA Data, and manage the deficiencies using a single web-based process.

Asia/Pacific SAR System Monitoring

5.4 Significant Annex 12 compliance weaknesses had been identified within the Asia/Pacific region based upon information provided (and in many cases not provided) by States to the ICAO Regional Office. This regional information status of the SAR capability and SAR agreements was recorded in tables made available to APANPIRG, which was expected to be enhanced with the integration of SAR elements into the Seamless ATM on-line monitoring system.

ICAO Global Aeronautical Distress and Safety System (GADSS)

5.5 The tragedies of Malaysia Airlines flight MH370 in 2014 and Air France flight AF447 in 2009 highlighted vulnerabilities in the air navigation system which hampered timely identification and location of aircraft in distress, particularly in remote oceanic areas. This significantly hindered effective SAR efforts and recovery operations.

5.6 As part of the response to the Conclusions and Recommendations from the 2014 ICAO Multi-disciplinary Meeting on Global Tracking, ICAO developed a Concept of Operations (CONOPS) for a GADSS. The implementation of this target concept affects the provision of services such as air traffic control, SAR and accident investigation. It contained a large number of measures targeting improvements in SAR system response integrated within the wider ATM and aircraft/airline operations systems.

5.7 The CONOPs notes that the effectiveness of the current alerting systems and SAR services should be addressed by a number of key improvement areas. The CONOPS also included aspects which potentially involve use of different distress systems, including for example 406 MHz Emergency Locator Transmitters (ELTs) and the Cospas-Sarsat system as part of the proposed GADSS solution.

5.8 Guidance on the aircraft tracking function is provided in ICAO Circular 347, *Aircraft Tracking Implementation guidelines*. Chapter 8 outlines procedures to be followed when an operator notifies an ATSU of a missed aircraft 15 minute tracking report. This circular is for aircraft operators and civil aviation authorities, and applies to the aircraft tracking function that commenced 8 November 2018. Of particular relevance is Section 8.2 and Appendix C *Missed 4D/15 Position*

Report Form for Operator. The operator is required to notify the air traffic services unit (ATSU) of a missed aircraft 4D/15 tracking report (four-dimensional position of individual aircraft in flight at 15-minute intervals). The information that the operator has to provide the ATSU closely aligns with what the ATSU has to provide the RCC. However, the ATSU-to-RCC requirement does not have a standard form and it is not automated (machine-to-machine).

5.9 The ADT device notifies the aircraft operator (the airline) of the last known position of an aircraft that may be in a distress condition in flight. ADT activation is a notification, not a distress alert. This would be at one-minute intervals while the aircraft is in flight. The operator is responsible to make the position information available to the ATSUs and RCCs. ICAO is leading the effort to create an ADT ~~distress tracking repository (DTR)~~ Location of Aircraft in Distress Repository (LADR) as a database for storing the ADT information. The ~~DTR~~ LADR would then notify the aircraft operator, and if subscribed, the ATSU and RCC that ADT information relevant to them is in the ~~DTR~~LADR for those stakeholders to pull the data.

5.10 The ATS unit may already be informed by other means of an emergency situation, such as ~~-~~from the aircrew. The aeronautical alerting process is based on the ATS unit making the decision about whether or not the aircraft is in distress and, if determined to be a distress situation, must notify the RCC immediately before contacting the operator per Annex 11. ICAO has not prescribed a specific technology for the ADT device but one of the technologies will be a new version of the aeronautical 406 MHz emergency locator transmitter – the ELT Distress Tracking ELT(DT)

5.11 ADT notifications from the ELT(DT) will be delivered directly to SAR services using the existing Cospas-Sarsat ground segment infrastructure. ~~Having the~~

5.12 Having the ADT notifications from the ELT(DT) going directly to an RCC was not the original intent of ICAO and is a major change in the aeronautical alerting process envisaged under the GADSS. RCCs need to prepare for the ADT capability and that the aircraft could remain in flight across multiple SAR regions. Appendix 1 contains specific guidance on RCC procedures for ADT signals.~~-~~

5.13 ADT notifications from the ELT(DT). RCCs may need to update SAR practices and procedures ~~before 1 January 2021~~ for concerns such as:

- accurate delimitation of SAR regions to ensure proper transfer of the SAR operation to the next responsible RCC;
- effective and efficient coordination between the ATS unit (or aeronautical RCC) and the maritime RCC;
- harmonized operations between aeronautical and maritime SAR services; and
- initial response to an ADT notifications from the ELT(DT) includes rapid contact with the ATS unit to notify and confirm if the aircraft is in distress.

Cospas-Sarsat System

5.14 Cospas-Sarsat has been developing two major enhancements to its distress-alerting System of value to all System users, including the aviation industry. One is the introduction of 2020, a new space-segment architecture based primarily on Medium-altitude Earth Orbit Search and Rescue (MEOSAR) payloads aboard the European Commission's Galileo system, the Russian Federation's Global Navigation Satellite System (GLONASS) and the United States' Global Positioning System (GPS) satellites.~~–~~ Another potential satellite system from China, the Beidou Navigation Satellite System, could be part of the Cospas-Sarsat Space Segment.~~–~~

5.15 This architecture would permit determination of an end-of-flight distress incident location (independent of any location data transmitted in the beacon message) beginning with the first

Commented [SS2]: ICAO HQ Comment:

There is work ongoing to put an updated version of this form (mostly editorial changes for clarity) into PANS-OPS, with a proposed applicability date of 5 Nov 2020. The work should go before the ANC in the next session I believe.

Commented [SS3]: ICAO HQ Comment:

It should be. They should be using the ALR message on the AFTN. PANS-ATM Appendix 3 refers.

Commented [SS4]: ICAO HQ Comment:

Renamed following comments that the name was confusing (made it seem like an alert!) at a workshop in April this year.

Commented [JW5]: My view is that lots of RCCs and ATSU will not subscribe to these notifications, as they're going to get lots that will be unnecessary, since the operator will verify them as non-events. Also, the ATSU/RCC can do nothing with the information until the operator calls, so it's just a distraction. However, I may be wrong!

Commented [SS6]: ICAO HQ Comment:

My view is that lots of RCCs and ATSU will not subscribe to these notifications, as they're going to get lots that will be unnecessary, since the operator will verify them as non-events. Also, the ATSU/RCC can do nothing with the information until the operator calls, so it's just a distraction. However, I may be wrong!

Commented [SS7]: ICAO HQ Comment:

Be careful! We don't want the RCC pestering the ATSU. The question is, how much time is appropriate for RCC to wait (assuming RCC receives notification of ADT… they will from ELT(DT) but perhaps not from other ADT sources?)

burst from the distress beacon. This could mean near real-time and very frequent delivery of distress alerts.

5.16 The SAR/Galileo space segment would also provide a Return Link Service (RLS) that, among other possible future uses, would provide an acknowledgment from the MCC back to the beacon to confirm that the distress message has been received.

5.17 The technical specifications for the second generation 406 MHz distress beacon has been approved, including ELTs. This new generation of beacons should further improve speed and accuracy in locating an activated distress beacon. The period from beacon activation to first transmission was expected to be reduced from 50 seconds to three seconds. The specification would consider in-flight activation of ELTs when certain flight parameters were exceeded. Consequently, false alerts would affect real SAR events significantly.

5.18 States needed to continue to ensure that aviators were aware that 121.5 MHz and 243 MHz beacons cannot be detected by the global Cospas-Sarsat System and the low-power 121.5 MHz signal on the 406 MHz distress beacon was only intended as a final homing signal.

5.19 States also need to ensure the critical requirement to provide for a suitable, clear and simple means for aircraft owners to register and keep updated their 406 MHz distress beacon details.

Note: information on beacon registration is at: http://www.cospas-sarsat.int/en/beacons-pro/beacon-regulations-pro/ibrd-user-information-for-professionals).

5.20 Entries in the beacon register should be available to both aeronautical and maritime RCCs on a 24 hour basis (Annex 12 – *Search and Rescue* refers, although Annex 10 establishes the registration requirement).

ICAO Annexes

5.21 States should note that Annex 12 should be read in conjunction with elements of the following ICAO Annexes:

Annex 6 – *Operation of Aircraft*;

Annex 10 – *Aeronautical Telecommunications*;

Annex 11 – *Air Traffic Services* (particularly Chapter 5 Alerting Service)*;*

Annex 14 – *Aerodromes* (particularly aerodrome emergency planning with the RCC); and

Annex 19 – *Safety Management* (particularly SAR services under the authority of an ATS provider).

CURRENT SITUATION

Global Situation

6.1 The ICAO USOAP Report of audit results, 3rd Edition, April 2005 to August 2010 revealed a number of SAR deficiencies during the audits of 165 Member States: ~~REVIEW AND UPDATE~~

- 38% of States had not laid down provisions for entry into their territory of SAR units (SRU) of other States for the purpose of search for the site of aircraft accidents and rescuing survivors;
- 44% of States had not developed a detailed plan o~~n~~f operation for the conduct of SAR operations within their respective Search and Rescue Regions (SRRs);~~ and~~
- 67% of States had not established the necessary coordination of their SAR organisations with those of neighbouring States, including the conclusion of bi-lateral SAR agreements in order to coordinate SAR operations; and
- regarding RCCs –
  i. about 40% of States had not developed job descriptions for their technical staff;
  ii. 45% did not ensure that RCC personnel using radiotelephony communications were proficient in the use of the English language; and
  iii. about 56% of States do not regularly train their SAR personnel, and nor did they conduct SAREXs.

Asia/Pacific SAR Analysis

6.2 The last decade has seen a steady increase in air traffic in the Asia/Pacific Region. Maritime traffic is also increasing, adding further urgency to ensure that States with oceanic SAR responsibilities in the region meet the requirements of both ICAO and IMO for the provision of aviation and maritime SAR services.

6.3 An analysis of the 26 Universal Safety Oversight Audit Programme (USOAP) SAR-related Protocol Questions (PQs) indicated that the overall Effective Implementation (EI) in the Asia/Pacific Region for SAR had risen from 50.7% in July 2015 to 58.99% in March 2019. **Figure 1** provides the EI of individual SAR-related PQs in March 2019.

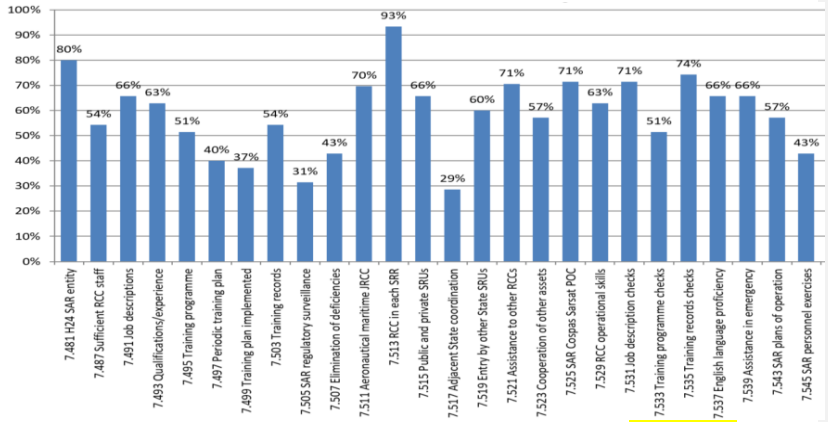

Figure 1: APAC USOAP CMA SAR PQ Compliance (average: 59%, March 2019)

6.4 From this analysis, it appeared that the major areas of weakness is in coordination with adjacent States, effective SAR oversight, and training of SAR staff that provide the SAR services. Therefore, a focus on the minimisation of barriers associated with the efficient cross-border coordination of SRU (such as pre-arranged approval) and other coordination mechanisms, including updates of SAR agreements (whatever their form) was vital. Finally, there was a need for improved systemic approaches to training for both SAR inspectors and personnel responsible for the provision of SAR services, including the regular organisation of effective SAR exercises that test systems and personnel. It should be noted that the training of SAR inspectors did not require SAR-specific technical training, but was more focused on effective audit and inspection techniques, etc.

6.5 The current analysis indicated significant Annex 12 compliance weaknesses remained in the South Asia area and the Southwest Pacific. In addition, there were parts of Southeast Asia and East Asia that indicated a need for compliance improvement.

6.6 With the advent of the Asia/Pacific SAR Plan and its more comprehensive expectations, an accurate assessment of capability aligned with the SAR Plan (was developed. This assessment could be used by States as a means of internal gap analysis, in addition to providing a more accurate metric of the Asia/Pacific SAR Plan implementation, noting that implementation was scheduled for 2019.

Asia/Pacific SAR Coordination Forums

6.7 The Asia/Pacific Region will benefit from the cooperation and coordination of States and International Organizations involved in the APSAR ~~SAR~~ Working Group. The establishment of permanent joint ICAO/IMO Regional SAR Forums to enable collaboration and cooperation on oceanic SAR matters across the specific oceanic regions and including adjacent ICAO regions should be considered.

6.8 There were several regional initiatives for cooperative support and development already being undertaken in the Asia/Pacific Region to assist with SAR capability enhancement.

6.9 Such improvement programmes could result from a request by a State needing assistance, ICAO/IMO oversight, the users of the SAR system itself, an audit or following a SAR 'Go-Team' visit that identifies weaknesses in the State's SAR capability (a 'Go Team' normally consists of external SAR experts from ICAO/IMO, more advanced 'champion' States or external agencies such as Cospas-Sarsat). The programs can be conducted by experts from a 'champion' State, or through a cooperative effort by several States or a regional body.

Note: Appendix ~~xxx~~ 2 provides a summary of benefits to the SAR System of States assisting other States.

Barriers

6.10 The following potential issues should be considered to ensure they do not become barriers to the achievement of the expected SAR capability:

a) absence of established appropriate legal framework designating, recognizing, supporting and giving authority to national SAR authorities, RCCs and SMCs;

b) inadequate funding and equipping of SAR authorities and in particular, resourcing of RCCs;

c) absence of an appropriate SAR organizational framework;

d) absence of a national SAR committee;

e) lack of clarity of responsibilities for each component of the SAR system;

Commented [SS8]: ICAO HQ Comment:

Is one of these set up already? [ICAO HQ] has given this idea some initial consideration. Coordination may be needed to avoid duplication of effort.

f) inadequate collaboration and cooperation between aeronautical and maritime SAR agencies;

g) absence of bilateral/multi-lateral/international SAR Agreements;

h) inadequate civil/military cooperation; and

i) complacency about, or lack of recognition of, the importance or priority given to SAR.

Global and Regional SAR Issues

6.11 States should monitor outcomes from global and regional ICAO and IMO SAR forums to ensure their State SAR authorities are updated on relevant SAR developments, otherwise State planning may not be synchronized with external international expectations, including users. Such forums may include APANPIRG and its Sub-Groups, other ICAO Region SAR groups, the JWG, ICAO High Level Safety Conferences, etc.

6.12 The provision of sufficient resources is critical in a number of areas, including:

a) Financial-

- funding for 24 hour RCC facility and staff;
- funding for use/hire of search and rescue units; and
- provision of a suitable administrative process enabling financial support including the ability for SAR authorities to quickly authorise payments required for emergency response aircraft, vessels and supporting logistics such as fuel.

b) RCC personnel- a suitable number of trained and skilled staff, supplemented by a pool of trained RCC support staff where appropriate;

c) RCC facilities-

- appropriate RCC facility space;
- minimum RCC tools (such as current charts, plotting equipment, documentation, etc.);
- ability to identify and task available SRUs;
- aircraft and vessel tracking information including ATS surveillance, Automatic Identification System, etc.;
- reliable and rapid H24 communications, and a suitable means to-
  - receive, communicate and acknowledge distress alerts
  - communicate with ATS units, other RCCs/RSCs, Coastal Radio Stations, COSPAS-SARSAT Mission Control Centres (MCCs), military units, medical services, meteorological offices, etc.;
- information technology-
  - RCC workstation computers;
  - Software including basic databases, drift modelling, incident management, etc.;
- ~~d)~~ Contingency- back-up RCC facility, or arrangement with another RCC as a contingency against inability to operate from the primary RCC due to the need to evacuate or loss of systems, etc.;

~~c)~~d) Search and Rescue Units (SRUs)-

- available and suitable SAR aircraft and crews;

Commented [SS9]: This item was previously listed as paragraph 6.12 sub-paragraph d). ICAO HQ suggested it should instead be a bullet point under 6.12 c) for consistency. Change made accordingly.

Formatted: Sub-bullet, Indent: Left: 1.08", Hanging: 0.3", No bullets or numbering

- funding arrangements/agreements for hiring/payment/sharing of SRUs to permit rapid deployment; and
- Available and suitable SAR survival equipment for delivery by aircraft to survivors and to assist SAR coordination efforts (e.g.: SAR Datum Buoys, droppable life rafts and survival supplies, etc.);

~~f)~~e) Training support-

- RCC staff – basic and ongoing;
- SRU crews – pilots, air crew and air observers;~~ and~~
- RCC support staff – basic and refresher;~~.~~
- SAR inspectorate staff- basic and on-going; and
- Other SAR Units-
  - aeronautical units
  - maritime units
  - land units
  - specialised units (paramedical, divers, etc.)

Formatted: Indent: Left: 1.38", Bulleted + Level: 4 + Aligned at: 1.75" + Indent at: 2", Tab stops: 1.63", Left + Not at 1.38"

PERFORMANCE IMPROVEMENT PLAN

Preferred SAR Capability Specifications (PSCS)

Note: PSCS are the non-mandatory expectations on all Asia/Pacific Region States to enhance SAR systems in order to meet a minimum level of SAR capability, with a high degree of interoperability and harmonisation, and interoperability with other ATM components such as Air Navigation Service Providers (ANSPs) and aerodrome operators, and between aeronautical and maritime SAR services. PSCS were not expected to contravene existing Annex 12 standards.

PSCS (expected implementation by 07 November 2019)

7.1 *Legal Framework and Structure Planning*: All States should develop statutes and related provisions that establish or enhance the legal foundation for a State SAR organization and its framework, resources, policies and procedures, where appropriate, to:

a) ensure that it is party to, and/or aligned with the following Conventions, as applicable –

i. Convention on International Civil Aviation 1944;

ii. International Convention on Maritime Search and Rescue, 1979;

iii. International Convention for the Safety of Life at Sea (SOLAS), 1974;

iv. Convention on the High Seas, 1958; and

v. United Nations Convention on the Law of the Sea (UNCLOS), 1982;

b) unless delegated by written agreement, establish an entity that provides, on a 24-hour basis, SAR services within its territories and designated area of responsibility/SRR;

c) establish a national SAR committee consisting of civil and, where appropriate, military members to enable a whole-of-government approach;

d) empower SAR Mission Coordinators with the authority to adequately carry out their responsibilities;

e) establish an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent, administrative matters, such details to be submitted to the ICAO Regional Office;

f) conduct studies to check the feasibility for, and develop an implementation plan if practicable, the integration of aviation and maritime SAR activities, and as far as practicable, civil and military activities, including joint training and familiarisation of staff and review of documentation to ensure harmonisation of procedures, and joint exercises;

g) conduct studies to align, as far as practicable, aeronautical and maritime Search and Rescue Regions (SRRs); and SRRs and Flight Information Regions (FIRs); and

h) establish a single State SAR Plan that –

i. designates the responsible RCC(s), RSC(s) and ASPOC/24-hour SPOC~~/ASPOC~~;

ii. describes the relevant SRRs, including the coordinates and geographical chart depiction of the SRR and neighbouring SRRs;

iii. details the National SAR Committee;

Commented [JW10]: I'd change the order here to emphasise the difference between SPOC and ASPOC

Commented [SS11]: Change proposed by ICAO HQ to emphasize the difference between ASPOC and 24-hour SPOC.

iv. details the governmental and non-governmental agencies with authority and responsibility for SAR coordination within its territories and designated area of responsibility;

v. details required and available SAR facilities, personnel, and equipment;

vi. details the SAR manuals, plans and procedures for national and regional cooperative SAR response arrangements;

vii. details the SAR personnel training and competency programme, qualification standards, SAR certification if applicable and SAR cooperation training;

viii. details the SAR agreements required;

ix. is electronic and accessible on the Internet, such details to be submitted to the ICAO Asia/Pacific Regional Office; and

x. is monitored by quality assurance processes.

7.2 *SAR Standards and Procedures*: All States should:

a) establish aerodrome emergency plans that provide for co-operation and co-ordination with RCCs;

b) establish SAR agreements with States having adjoining SRR~~S~~s or FIRs, including trans-regional neighbours (the agreements should include clear responsibilities for overlapping or non-adjoining aeronautical and maritime SRRs);

c) provide up to date cross-border information on SAR capability (this should be included in bilateral SAR agreements);

d) pre-arrange procedures for cross-border SAR responses (this should be included in bilateral SAR agreements);

e) establish a program for regular SAREX, which may be a desktop communications exercise, with each alternate SAREX being ~~-~~a full exercise (this expectation may be fulfilled by participating in a sub-regional SAREX that tests the State's SAR system); ~~and~~

f) establish RCC plans for response to Mass Rescue Operations (MROs) integrated with national disaster plans;

g) establish SAR Operations Plans between the State's SAR Authorities and Government, Military and Commercial operators, including those with an~~-~~ over-water rotary wing or sea plane capability, to include:

i. procedures for cooperation and deployment of foreign SRUs;

ii. provision for translators/liaison Officers/Embassy Officers for the daily tasking of the SRUs at the RCC;

iii. provision of information for logistic and administrative support (hotels, fuel, security passes, food, medicine, etc.);

iv. instructions on communication (ops normal reports, sightings, etc.) for search planning, command and control to foreign SRUs;

v. planning and arrangements that ensure the availability of State and other SRU assets, especially over-water rotary wing capability where applicable, to support a timely and effective SAR response; and

vi. daily end of day report by SRUs to the RCC (via mobile, email, fax, etc.); and

h) establish SAR Alerting procedures which:

i. are tested and fully integrated with RCC procedures so that RCCs are rapidly notified of any SAR event 24 hours a day;

ii. include procedures for joint aeronautical and maritime distress alert notification, including reliable delivery and acknowledgement of Cospas-Sarsat distress alerts, support and response to both aviation and maritime SAR incidents; and

iii. where applicable, include protocols for civil and military support and sharing of information.

SAR Facilities and Resources

7.3 *RCC Facility*: All States should ensure that RCCs are of sufficient size with adequate provision for operational positions designed in accordance with human factors principles (such as human machine interface) for a major search involving civil and military assets where applicable, and facilities such as:

a) workstations, telephones (with international access), plotting tables, wall notice/status boards, computer, and communications equipment and systems, briefing/debriefing areas, room for storage including incident records and recorders, RCC staff break and rest facilities;

b) computer resources which may provide support to RCCs with incident management, plotting, search planning, mapping, contact databases, web-based information, etc.;

c) charts, electronic or paper, which:

i. apply to SAR (aeronautical, nautical, topographic and hydrographic);

ii. depict SRR, neighbouring SRRs, FIR(s), SAR resources and made available for all relevant aeronautical and maritime RCCs, ATS units, aircraft operators; and

iii. provide a means of plotting;

d) ability to reliably receive and acknowledge distress alerts 24 hours a day;

e) maritime broadcast facilities;

f) a means of recording, playback and archiving of communications;

g) shipping/vessel communications and maritime broadcast facilities such as Coastal Radio Stations, RCC radio and satellite communications, marine radio networks;

h) aircraft communications – via ATS units, aircraft operators, satellite communications or direct between RCC and aircraft;

i) access to aircraft and ship tracking data, e.g. ATS surveillance data, Automatic Identification System and Long Range Identification and Tracking of Ships (LRIT) allowing rapid identification of potential aircraft and vessels that may divert to assist;

j) a means of obtaining meteorological information – forecast, present and historical data;

k) if applicable, drift modelling software;

l) if applicable, ocean data including sea temperature, currents, winds, tides, etc.;

m) if applicable, SAR Datum Buoys, preferably with satellite tracking capability; and

n) RCC documentation and reference material such as plans of operation, procedures manuals, guidance material, ICAO and IMO references, SAR agreements;

o) Cospas-Sarsat equipment and reference material; and

p) SWIM-enabled systems that can evolve the sharing of Flight Data, Aeronautical Information and MET data in alignment with contemporary practices being implemented under global and regional planning.

7.4 *Personnel and Training* All States should, where applicable to maintain a 24 hour service:

a) provide adequate ATCS resources (either an ATS supervisor or other staff) that can provide relief within Area Control Centres (ACCs) to allow timely response to SAR alerts and information to RCCs;

b) provide sufficient RCC staffing;

c) provide a sufficient number of trained specialist RCC officers including SMCs and Assistant SMCs (A/SMCs);

d) provide availability of a pool of RCC support staff who are familiar with RCC operations, but not trained as coordinators, that can assist with the functioning of the RCC during SAR incident response;

e) develop SAR personnel position descriptions that detail responsibilities and eligibility criteria for recruitment of operational staff;

f) develop a comprehensive training programme that includes SAR training for:

i. RCC SAR Coordinators (SCs) based on a competency-based assessment approach to ensure technical and English language proficiency, cyclical (periodic) instruction that provides continuous training to ensure competency is maintained, and a system for maintaining training records; and

ii. SRU staff, including military personnel.

g) facilitate RCC staff to be proficient in the English language; and

h) facilitate a programme of regular liaison visits between relevant RCCs, ATSC units and airline operating centres in order to understand those organizations, facilities and capabilities (reference Annex 12, paragraph 3.1.9).

7.5 *Oceanic Capability*: Where applicable, States should establish additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response is available to all oceanic areas of their SRRs. This may be met through cooperative arrangements with neighbouring States or other RCCs.

7.6 *Search and Rescue Units*: All States should establish capabilities enabling:

a) availability and deployment of suitably crewed, trained and equipped SRUs (including a pool of air search observers trained in visual search techniques), public and/or private, civil and military, for rapid SAR response;

b) availability and deployment of SRU craft that may be in use for another primary purpose but made available to RCCs for SAR purposes on an as needed emergency basis (vessels, aircraft and land units);

c) protocols for civil SAR authorities to request the assistance of military assets, and similarly military SAR authorities to request civil assets;

d) a communication means and information protocols between the State's Aeronautical and Maritime SAR Authorities;

e) cooperative use and/or sharing of SAR assets with protocols incorporated within National SAR Plans and bilateral SAR Agreements;

f) pre-arranged government authority for funding of costs associated with hiring of SRUs, and payment for critical supporting logistics such as fuel, to avoid any delays in response availability;

g) pre-approval of specified SRU assets that may be utilised cross-border (requiring diplomatic pre-approval) or cross-SRR boundary (which may not require diplomatic approval if operating within international airspace); and

h) aircraft with the ability and regulatory approval to safely conduct SAR missions.

Note: guidance material on SAR aircraft capability is found in the IAMSAR manual.

7.7 *Distress Beacons*: All States should:

a) where separate ARCCs and MRCCs exist with responsibility for coincident aviation and maritime SRRs, coordinate distress beacon alert procedures to ensure both RCCs are aware of any distress beacon activations within their areas to avoid duplication of response. For example, MRCCs should ensure their procedures alert ARCCs and ATS units to any EPIRB activations;

b) have a reliable distress beacon registration system that:

i) provides a readily-accessible mechanism (preferably one that is available by Internet as well as other conventional means) to enable distress beacon owners to fulfil their obligation to register ELTs, EPIRBs and PLBs, and update the registration data as information changes (e.g., change in ownership);

ii) is available to RCCs 24 hours a day and includes up-to-date registration details for all national civil and military ELTs, EPIRBs and PLBs;

c) take steps (including education) required to prepare for, and to implement changes related to, the introduction of second generation beacons, the transition to the MEOSAR satellite architecture, and the pending Return Link Service provided by the Galileo constellation;

d) establish an appropriate nationwide means of disposal for old distress beacons; and

e) conduct promotional programmes, including, where appropriate, with airworthiness agencies and civil aviation authorities, related to the minimization of false alerts.

Note 1: Information on beacon registration is at: http://www.cospas-sarsat.int/en/beacons-pro/beacon-regulations-pro/ibrd-user-information-for-professionals.)

Note 2: Incorrect disposal of distress beacons often causes the deployment of scarce and often expensive SAR resources only to have the beacon located as a non-distress event in a rubbish dump or similar location. This also creates the risk of SAR resources being diverted away from a real emergency should it arise at the time. Beacon batteries are hazardous items which should be disposed of in an environmentally friendly manner.

Note 3: Education should include matters such as an update on beacon registration systems to be compatible with new beacon hexadecimal identifications, the transition to the MEOSAR satellite architecture (e.g.: update local user terminals and mission control centres to properly receive and manage MEOSAR data), in accordance with Cospas-Sarsat specification documents (http://www.cospas-sarsat.int/en/documents-pro/system-documents).

7.8 *Contingency Facilities*: All States should ensure there are established contingency facilities, or when a SAR service is not able to be provided, procedures in place for the temporary delegation of the SAR responsibility to another appropriate national body or State. All States should test their contingency arrangements periodically, but not less than once every six months.

SAR Information

7.9 *Provision of Information*: All States should ensure the:

a) establishment of a centralised information source publishing all Asia/Pacific State Aeronautical Information Publication (AIP) information:

i. The agency responsible for providing SAR services;

ii. The area of SAR responsibility where SAR services are provided;

iii. The type of SAR services and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft;

iv. SAR agreements;

v. The conditions of SAR facility and service availability; and

vi. SAR procedures and signals used;

b) establishment of an Internet-based SAR information sharing system (with security protocols as required and in accordance with the emerging System Wide Information Management – SWIM - concept as applicable) to share SAR activity with States and key stakeholders participating in a SAR activity (the information sharing system should include a means of handling media and next of kin enquiries, and recognise the need to avoid premature media statements); and

c) maximum practicable cooperation between State entities in the provision of accurate and timely information when required, including from military sources, except where national security could be adversely affected.

7.10 *SAR Facilities and Equipment Lists*: All States should develop and maintain a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SAR Units (SRUs), including joint or shared facilities and equipment, and provide the Internet link to that list to the ICAO Asia/Pacific Regional Office.

7.11 *SAR Library*: All States should:

a) establish a web-based SAR Library, or cooperate by contributing to an Internet-based Asia/Pacific resource (such as https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Response-Policy-CG-5R/Office-of-Incident-Management-Preparedness-CG-5RI/US-Coast-Guard-Office-of-Search-and-Rescue-CG-SAR/SAR-Publications/); and

b) ensure that each RCC and SAR Authority has ready access to a current copy (either electronic or hard copy) of the following reference documents at a minimum:

i. ICAO Annex 12;

ii. IAMSAR Manual Volumes I, II and III;

iii. International Convention on Maritime SAR (SAR Convention);

iv. Asia/Pacific SAR Plan/electronic Air Navigation Plan; and

v. relevant regional, national and agency SAR documents.

Note: The Asia/Pacific SAR Library hosted by the US Coast Guard contains a list of documents that may be held by RCCs and JRCCs as appropriate. In addition, a list of documents (SAR.7/Circ.12) would be available on the IMO web site at: (http://www.imo.org/en/OurWork/Safety/RadioCommunicationsAndSearchAndRescue/SearchAndRescue/Pages/Default.aspx).

SAR Improvement

7.12 *Search and Rescue Exercises (SAREX)*: All States should conduct regular SAREX (at least once every two years) to test and evaluate existing coordination procedures, data and information sharing and SAR response arrangements involving:

a) both aeronautical and maritime SAR authorities including both civil and military agencies as applicable, and related bodies such as Air Navigation Service Providers (ANSPs) and Airline Operations Centres (AOCs);

b) where appropriate, cross-aeronautical SRR boundary coordination (SAREX should routinely involve SAR authorities of adjacent SRRs); and

c) improvement of SAREX effectiveness through a post-SAREX review and written report, completed to ensure that deficient areas or latent problems are identified and remedied.

Note 1: a SAREX template is provided ***in the 2019 edition of the IAMSAR Manual, Volume I, Appendix O, Sample template for a joint SAREX****.*

Note 2: SAREX should test the SAR system, including unannounced alerts that allow an actual search (whether it is a desktop or a physical operation), to be conducted which will indicate weaknesses in the system. SAREX should not be confused with, or take the form of, simulated crash fire exercises such as for Aerodrome Emergency Procedures that do not have a search component.

Note 3: Real SAR incident responses which include an adequate post-response review and evaluation with lessons learned may replace the need for a SAREX.

7.13 *SAR Quality Assurance*: All States should implement SAR System Improvement and Assessment measures, including Safety Management and Quality Assurance systems, that:

a) provide performance and safety indicators, including post-incident/accident lessons learned and management reviews (RCC and SAR System Continuous Improvement process), and feedback from RCC staff, SAR system users or SAR stakeholders;

b) identifies risk and corrective and preventive actions that prevent or minimise risk and the possibility of substandard SAR performance;

c) establishes an internal quality assurance programme, which includes regular internal audits of the RCC, SAR operations, SAR facilities and procedures that are conducted by trained auditors;

d) ensures the person responsible for internal quality assurance within the entity responsible for SAR services has direct access to report to the Head of the entity responsible for SAR services on matters of quality assurance; and

e) where appropriate, provides submissions to the JWG to share lessons learned and experiences with other global States for the continuous improvement of the worldwide SAR system.

Note 1: Resourcing of SAR system audit arrangements could be mitigated by States entering cooperative arrangements, including sub-regional regulation, between States for auditing of each other's SAR systems to share expertise and costs.

Note 2: Provisions of Annex 19 for a Safety Management System (SMS) may apply where a SAR service is provided under the authority of an ATS provider (Annex 19, Chapter 3, 3.1.3 e refers).

Note 3: Peer review, either external or internal, may provide a useful internal quality assurance tool.

7.14 *SAR Management Review*: All States should conduct an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability against the minimum requirements of Annex 12 and the guidelines of the IAMSAR Manual to:

a) enable the ICAO Asia/Pacific SAR data to be updated to accurately reflect the State's capability;

b) be informed regarding the availability and capability of SAR services in neighbouring States;

c) identify SAR research and development programmes, especially those which could be conducted if possible in cooperation with other States;

d) establish a common set of basic SAR system statistics, which include-

i. number of SAR incidents per year;

ii. number of lives at risk versus number of lives saved;

iii. records of time from first alert to tasking the SRU;

iv. records of time from first alert to arrival on scene of first SRU; and

v. records of time from first alert to rescue.

e) plan for any necessary improvements to gradually build and improve capability over time, which would be detailed in the State SAR Plan; and

f) regularly review and update SAR agreements as appropriate.

Note 1: The National self-assessment on SAR found in IAMSAR Manual Vol I Appendix H and the ICAO USOAP-CMA Protocol Questions for SAR may assist States with their reviews.

Note 2: The number of incidents should identify the type (e.g.: Cospas-Sarsat alert, ATS alerts, etc.) and outcome of SAR incidents.

7.15 *SAR Promotion*: All States should conduct SAR promotional programs (e.g. Seminars, Workshops and public safety campaigns) to:

a) encourage higher SAR preparedness by persons that may require SAR services through public safety campaigns aimed at preventing persons getting into distress situations (i.e.: 'preventative SAR');

b) ensure the support of government decision-makers for SAR facilities and improvements, in particular adequate funding availability;

c) assist media to understand SAR operations in order to minimise the need for explanations during SAR responses;

d) recognise improvement in State SAR systems;

e) enhance cooperation between SAR services and –

i. civil, military and police agencies;

ii. ANSPs;

iii. aerodrome and port operators;

iv. aircraft and shipping operators;

v. meteorological agencies;

vi. accident investigation agencies;

vii. government and non-government agencies affected by SAR operations, in particular large scale national and international responses involving whole of government agencies; and

viii. other States.

Note: social media may be an effective means of SAR promotion that reduces the workload of SAR staff during major SAR responses.

EMERGING ISSUES AND FUTURE DEVELOPMENTS

Planning for the Future

8.1 ~~(New numbering required)~~ States should monitor developments such as improvements to existing and new technologies and other emerging matters which may impact on the SAR system of the future as part of State, regional and global aviation strategic direction and planning. This may include matters such as:

Formatted: Style 8, Justified, Indent: First line: 0"

- the need to cater for increased growth or changes in air and maritime traffic through SAR regions which may increase the demand, or present changed capability requirements, for SAR services. This may include, for example, new air routes using longer range aircraft into more remote areas or increased numbers of, and/or larger, cruise ships; and
- new technology such as UAS, autonomous vessels, new distress alerting devices and systems.

Research and Development

~~8.1~~8.2 To develop the tools and systems required to meet foreseeable long-term requirements, there is a need for States to undertake planning and co-operation on SAR matters. This includes major efforts to define concepts, to extend knowledge and invent new solutions to future SAR challenges so these new concepts are selected and applied in an appropriate timely manner. Such efforts could be forged through collaborative partnerships between, States, ANSPs, International Organizations, institutes of higher learning and specialised technical agencies. This concept is consistent with Seamless ATM Principle 36 (*Inter-regional cooperation ('clustering') for the research, development and implementation of ATM projects*), and may manifest itself in joint projects such as:

- ICAO and/or IMO regional SAR training opportunities, where provided, to assist States that are unable to provide their own SAR training;
- Joint Sub-regional RCCs (ASEAN States in particular may be candidates for a single centre of excellence that brings together civil and military SAR experts from all ASEAN States and provides a single SAR facility that is cost-effective and has a level of resources and facilities that would be difficult for all States to maintain by themselves); and
- Regional online eLearning packages.

Note: Appendix 2 provides a summary of benefits to the SAR System of States assisting other States.

~~8.2~~8.3 With the end goal of a globally interoperable SAR system in mind, the region will have to consider planning for a long term supporting concept and infrastructure. The following are possible areas that should be considered for future SAR research and development, in order to promote the maximum possible harmonisation and interoperability of SAR systems:

a) data sharing such as aircraft and ship tracking information;

b) automated data link communication to RCCs when an aircraft or ship exceeds a Variable Set Parameter (VSP) in terms of its operating envelope, or activation of an emergency status (could be displayed as a symbol, and the data could include certain operating parameters such as acceleration and altitude for an aircraft) – note the ICAO GADSS includes this concept;

c) regional UAS and autonomous vessels for use in SAR;

d) inclusion of the SAR system and RCC access as a component of the ~~new~~ ICAO SWIM concept of operation and implementation;

e) on-going development of standardised SAR training objectives and advanced training systems, including the use of high fidelity simulators;

f) enhanced technology oriented systems to improve SAR system effectiveness; and

g) transition to MEOSAR System and second generation beacons.

MILESTONES, TIMELINES, PRIORITIES AND ACTIONS

Milestones

9.1 Section 7 (*Performance Improvement Plan*) provides a scheme for the implementation of a collective set of enhancements for a number of elements in the PSCS, effective 07 November 2019.

9.2 States should commence planning for the various PSCS elements from the approval of this Plan, to ensure a smooth transition by 07 November 2019, and should include consideration of issues such as:

- safety/operational analysis and assessment;
- cost-effectiveness;
- budgetary issues;
- development of operational procedures; and
- training.

9.3 Section 8 (*Research and Future Development*) provides, subject to future agreement by concerned parties, possible SAR improvements beyond 2020 until 2030.

Priorities

9.4 It is a matter for each State to determine priorities in accordance with its own economic, environmental, safety and administrative drivers.

Actions

9.5 This Plan necessitates a number of implementation actions. It is expected that each Asia/Pacific State report progress on each applicable element to APANPIRG. All States should note the importance of SAR status monitoring, which is expected to be conducted as part of the Seamless ATM on-line monitoring. Reporting of implementation progress of SAR elements from this Plan is expected to be conducted by the on-line Seamless ANS Reporting and Monitoring system, once this system is enabled to include the subsidiary plan such as the Asia/Pacific SAR Plan.

9.6 Section 6 (*Current Situation*) provides analysis and major concerns in the region, which should be considered in the formulation of specific State plans.

9.7 SAR Coordination Forums, which are likely to be based on sub-regional development (such as a Pacific Ocean SAR Forum and Indian Ocean SAR Forum) need to be promoted, established and supported to ensure the on-going implementation work and future review of SAR expectations linked to this Plan are conducted.

SAREX

9.8 A program is expected to be established for an annual SAREX in each sub-region (South Asia, Southeast Asia, East Asia and the Pacific), with every second year being a desktop communications exercise, and alternate years being a full exercise. The SAREX outcomes and lessons learned should be reported to APANPIRG through the ATM Sub-Group.

9.9 The ICAO Asia and Pacific Regional Office is responsible for taking actions that assist the implementation of SAR within its accredited States, in cooperation with the IMO. In addition, the Asia and Pacific Regional Office was responsible for coordinating with adjacent ICAO regional offices on an ad hoc basis or at relevant trans-regional meetings.

APPENDIX 1: RCC PROCEDURES FOR AUTONOMOUS DISTRESS TRACKING (ADT) SIGNALS

Asia/Pacific States and territories need to prepare for the implementation of functions of the Global Aeronautical Distress and Safety System (GADSS). GADSS applies to certain passenger and cargo aircraft. ~~-~~The first phase commenced 8 November 2018 for the aircraft tracking function of automated reporting of position at least every 15 minutes. The next phase commences 1 January 2021 for the autonomous distress tracking (ADT) function of reporting at least once every minute. It is possible for the ADT to transmit as the aircraft flies across multiple SAR regions and flight information regions. ~~WP13 US comments change ADT to …~~

The sharing of GADSS alerting information requires global coverage and a global interoperable systems approach. Aircraft tracking and ADT ~~alert~~ notification information for aircraft emergency conditions need rapid distribution to the aircraft operator, and possibly the responsible ATSU and the responsible RCC. Effective sharing of this information to the responsible stakeholders requires well defined, accurate and readily accessible global flight information region and SAR region data, plus reliable 24-hour contact details for the aircraft operators, ATSUs and RCCs. For many States, these are key areas needing improvement to enable effective SAR response. ~~And, t~~Territories which may not have an RCC but have an international airport, need to be prepared to correctly react when an RCC or ATSU informs it of such a possible inflight emergency.

RCC Procedures for no later than 1 January 2021

The RCC will greatly benefit from autonomous distress tracking (ADT), which provides timely detection of an aeroplane in distress and the last known location of the aeroplane. Current RCC processes are established under the provisions of ICAO Annex 11 and ICAO Annex 12 – *Search and Rescue*, and apply to the aeronautical RCC (ARCC). However, the International Convention on Maritime SAR also established a global maritime search and rescue system but uses maritime RCCs (MRCCs). To ensure close coordination between the aeronautical and maritime SAR services, States are expected to either establish a joint RCC (JRCC) or to ensure the closest practicable coordination between the ARCC and MRCC.

Note: In this plan, the term RCC will be used to apply to an ARCC, MRCC or JRCC.

While the ADT process is new, it is anticipated that the alerting process for the RCC will not ~~fundamentally~~ change.

The distress ~~alert~~ notification processes associated with ADT, based on ICAO Annex 11, Chapter 5 can be summarized as follows:

- if an ATSU detects an aeroplane in distress it will notify the RCC and the operator;
- if the operator detects an aeroplane in distress, it will notify the ATSU who will in turn notify the RCC;
- if an ELT is activated, the RCC will be notified via the Cospas-Sarsat system and the RCC will subsequently notify the ATSU and the aircraft operator;
- ADT notifications, including ~~-~~ from the ELT(DT), provide the last known position of an aircraft that may be in a distress condition in flight; and, the aircraft operator, ATSU and RCC will be notified when the information is available from the ADT distress tracking repository; and

- The RCC should confer with the ATSU to decide if the ADT notification is a distress alert. It may be appropriate to consider this as in at least the uncertainty phase until further information is provided by the ATSU or aircraft operator.

As specified in Annex 11, Chapter 5, not only is the ATSU expected to notify the RCC immediately when an aeroplane is considered to be in a state of emergency, the notification is expected to contain as much as is available of information listed in that chapter. This list of information closely aligns with content of the "Missed 4D/15 Position Report Form for Operator" that the operator should provide in notifying an ATSU, as identified in ICAO Circular 347, *Aircraft Tracking Implementation Guidelines*, Chapter 8 – *Operator Missed Reports Notifications to ATS Unit*. ~~CHECK WITH HQ~~

Once notified of a distress, the RCC will initiate action based on preparatory measures and operating procedures set forth in Annex 12. Under preparatory measures, the RCC is required to have readily available at all times up-to-date information concerning its search and rescue region, including ATSUs addresses and telephone numbers of all operators, or their designated representatives, engaged in operations in the region, and MRCCs which are not part of a JRCC.

If the ATSU was not the notification source, the RCC should contact the ATSU to confirm the possible distress and have the ATSU gather further information, which would be the list of information in Annex 11 and the most recent 4D aeroplane position data leading up to the ADT activation. These actions are taken concurrently as the RCC immediately initiates search and rescue actions. When the information concerning the emergency is received from another source, such as the ELT alert going directly to the RCC via the Cospas-Sarsat system, the RCC will notify the associated ATSU and also notify the operator, where possible, and keep the operator informed of all developments. (The MRCC does not have a requirement to notify the operator but should try to have arrangements in place to notify or seek the support of the ARCC or ATSU to notify the operator.)

The responsible RCC and the associated ATSU serving the flight information region (FIR) in which the aeroplane is operating coordinate their activities and work closely together. The RCC is expected to provide that ATSU with planned SAR action initiated by the RCC so that such information can be passed to the aeroplane.

If the aeroplane in distress continues in flight and crosses into other SAR region(s), the first RCC originally notified will contact and coordinate with the other RCC(s) to decide which RCC will have responsibility to coordinate the SAR operation. If coordination is handed off to another RCC then its associated ATSU would be expected to support that RCC.

The RCC and ATSU will keep each other informed as to changes in the emergency phase after the initial declaration as well as if the aeroplane has resumed normal operations or safely landed, and, as soon as practicable, notify the operator concerned.

Commented [JW12]: Correct. Provisions are with Commission at the moment that will update this form (better name for it, and a couple of editorial revisions, but content largely the same) and put it into PANS-OPS

Commented [SS13]: ICAO HQ Comment:

Provisions are with the Commission (as at 18 October 2019) that will update this form and insert it into PANS-OPS.

(To be checked)

Commented [SS14]: ICAO HQ Comment:

As a theoretical subscriber to the LADR, the RCC should be able to get this position data itself, not need to ask the ASTU for it.

APPENDIX 2: BENEFITS TO THE SAR SYSTEM OF STATES ASSISTING OTHER STATES

APAC States Face Demanding SAR Responsibilities with Few Resources

2.1 Many APAC States have the challenging responsibility of providing SAR services over vast and remote land and oceanic areas and several have few resources available to meet Annex 12 requirements.

Taking A Regional Approach Improves Effectiveness and Efficiency

2.2 To provide an effective and efficient SAR service in the region it is important that States focus not only on meeting their own national obligations, but also take the broader view that their State SAR system is only one part of the wider regional SAR system. States therefore need to cooperate, collaborate and share resources and technical expertise with their neighbouring and regional RCCs, with the more developed SAR States in particular looking for opportunities to assist their lesser developed State neighbours.

When Developed SAR States Support Less Developed Neighbours, Everyone Wins

2.3 Sometimes simple measures can reduce the incidence of SAR operations in a State's Area of Responsibility.

2.4 An example of this is where New Zealand has been regularly requested to send resources to Kiribati, which is not in New Zealand's SRR, to conduct aerial searches for people missing in small vessels at sea. New Zealand recognised that with the provision of basic aids, the number of people going missing at sea could be reduced. The work was completed through an aid program and the benefit was immediate and twofold. There has been a large reduction in the number of people going missing at sea and New Zealand has reduced costs through less aerial searches being required.

2.5 Another example is where Australia has recognised that increasing aircraft and vessel traffic in the north and western areas of its SRR in the Indian Ocean region comes with increased likelihood of more frequent SAR responses in that region. As a result, Australia has commenced a new project in partnership with the Maldives, Mauritius and Sri Lanka to fund and provide technical assistance to improve the SAR capabilities of those countries that will also assist Australia's SAR response obligations in that area of its SRR. Similarly, since 2008 Australia has been providing funding and development assistance to Indonesia to improve SAR capability and cooperation.

2.6 States who aren't compliant with Annex 12 SARPs and who are unable to meet the minimum SAR service requirements could consult and seek assistance from 'champion' States who are compliant and have well developed SAR systems in place.

2.7 Examples of assistance that could be provided by States, International Organisations (such as IMO and ICAO) or multi-lateral initiatives include:

a) conducting of a SAR Gap Analysis;

b) advice on the establishment of a SAR organisational framework;

c) advice for the establishment of a National SAR Committee;

d) technical assistance in the development of a National SAR Plan;

e) providing copies of relevant SAR documents to be used as templates;

f) technical assistance on the establishment of SAR agreements;

g) technical assistance in the development of RCC position descriptions;

h) training of SAR personnel;

i) provision of SRU where appropriate and training of SRU crews;

j) provision/sharing of computerised SAR tools including incident management systems, databases, maritime drift modelling software, etc.;

k) establishing data and information sharing agreements between RCCs;

l) provision of operational search plan data;

m) providing advice on how to conduct a SAREX and post-SAREX analysis; and

n) set up of SAR system publicity and safety awareness campaigns.-

……