INTERNATIONAL CIVIL AVIATION ORGANIZATION

**REPORT OF THE FIRST MEETING OF THE ASIA/PACIFIC REGIONAL
SEARCH AND RESCUE WORK GROUP (APSAR/WG/1) AND
SAR WORKSHOP/SEMINAR**

Bangkok, Thailand, 15-18 August 2016

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

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

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APPENDIXES

INTRODUCTION

Meeting

1.1   The First Meeting of the Asia/Pacific Regional Search and Rescue Work Group (APSAR/WG/1) and Seminar/Workshop was held from 15 to 18 August 2016 at Bangkok, Thailand.

Attendance

2.1   The meeting was attended by 46 participants from Australia, Bangladesh, Bhutan, Cambodia, China, Japan, Lao People's Democratic Republic (PDR), Malaysia, Nepal, New Caledonia, New Zealand, Philippines, Singapore, Sri Lanka, Thailand, U.S.A., Viet Nam, Cospas-Sarsat, IATA, and ICAO. A list of participants is appended at **Appendix A** to this report.

Officers & Secretariat

3.1   New Zealand nominated Mr. Phillip Jones-Hope Principal Advisor – SAR Aeronautical Policy Search and Rescue, Australian Maritime Safety Authority as Chair of the APSAR/WG. However Mr. Phillip Jones-Hope advised that due to administrative reasons, he was not in a position to accept the nomination. Mr. Tai Kit, Senior Air Traffic Control Manager (Search and Rescue/Business Continuity Planning), Civil Aviation Authority of Singapore was nominated by Cambodia as Chair of the APSAR/WG, which was seconded by Bangladesh, Bhutan and Lao PDR. As no other nominations were received, Mr. Tai Kit was duly elected as Chair.

3.2   Mr. Len Wicks, Regional Officer ATM, ICAO Asia and Pacific Office, was the Secretary for the meeting. Mr. Mike Barton, Aeronautical SAR Technical Expert, Airspace Management and Optimization Section (AMO) ICAO HQ assisted with Secretariat duties during the meeting.

Opening of the Meeting

4.1   On behalf of Mr. Arun Mishra, Regional Director of the ICAO Asia and Pacific Office, Mr. Len Wicks welcomed everyone to the APSAR/TF/4 meeting. The Chair, Mr. Tai Kit, opened the meeting.

Documentation and Working Language

5.1   The working language of the meeting and all documentation was in English. A total of 13 Working Papers (WP) and seven Information Papers (IP) were considered by the meeting. A list of papers is included at **Appendix B** to this report.

Draft Conclusions, Draft Decisions and Decisions – Definition

6.1   The APSAR/WG recorded its actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

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

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

c) **Decisions** of the APSAR/WG that relate solely to matters dealing with the internal working arrangements of APSAR/WG.

List of Decisions and Draft Conclusions/Decisions

7.1   <u>List of Draft Conclusions</u>

Draft Conclusion APSAR/WG/1 – 1: ELT Inadvertent Activation	
That, noting that: (1) Emergency Locator Transmitters (ELTs) remained a significantly disproportionate contributor to false alerts; and (2) the next generation ELTs would transmit within three seconds (reducing the time available to cancel an inadvertent activation); and (3) cockpit crews and maintenance personnel who activate beacons for testing are a high proportion of false alerts; and (4) all transmitted alert signals are received as an alert and treated as a real distress; States should investigate the reasons for false alerts in their area, and develop mitigation strategies, including education, to reduce the number of false activations.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Given the already high and disproportionate number of false alerts attributed to ELTs at present, States need to implement action to reduce the incidence of false alerts, which utilises valuable SAR resources, and to prepare for the effective implementation of next generation beacons, which will have an even shorter interval between activation and first transmission, and therefore may cause even more false alerts.	
When: 8-Sep-16	Status: Draft to be adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Draft Conclusion APSAR/WG/1 – 2: SAR Plan Capability Measurement	
That, the SAR Plan Capability Measurement System appended at **Appendix G to the Report** be adopted and States be urged to provide information on their capability with respect to this new performance system.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To provide a more accurate measurement of SAR capability than the 20 element Annex 12 based system and to provide APANPIRG with a more detailed measurement of Asia/Pacific SAR Plan implementation, and to provide an internal assessment tool to be used by States/Administrations.	
When: 8-Sep-16	Status: Draft to be adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Draft Conclusion APSAR/WG/1 – 3: Asia/Pacific Plan Update	
That, the Asia/Pacific SAR Plan V 2.0 as appended at **Appendix H to the Report** be adopted and updated on the ICAO Asia/Pacific website.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To make a minor amendment for additional operational requirements and to align the review cycle to match with the Seamless ATM Plan Review in 2019.	
When: 8-Sep-16	Status: Draft to be adopted by PIRG
Who: ☐Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Note: the ATM/SG Chair needs to approve these Draft Conclusions before submission to APANPIRG/27

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REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda

Adoption of Agenda (WP01)

1.1   The provisional agenda was adopted by the meeting and IP01 (List of Working Papers) was noted.

Agenda Item 2: Review Outcomes of Related Meetings

Related Meeting Outcomes (WP02)

2.1   ICAO presented information related to SAR from the following meetings and events:

a)   Twenty-Sixth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/26, Bangkok, Thailand, 07-10 September 2015);

b)   Fifty-Second Conference of Directors General of Civil Aviation, Asia and Pacific Regions (DGCA/52, Manila, the Philippines from 26 to 29 October 2015;

c)   Fourth Meeting of the APANPIRG Air Traffic Management Sub-Group (ATM/SG/4, Bangkok, Thailand, 04 to 08 July 2016); and

d)   ICAO AFI/APAC/MID Regional and Inter-regional Workshop on the Provision and Improvement of SAR Services in the AFI Region (Mahe, Seychelles, 19-22 July 2016).

2.2   The ATM/SG/4 was provided an update on the progress of Search and Rescue Region (SRR) description information and analysis, for eventual incorporation into the electronic Air Navigation Plan (eANP). The APSARWG/1 Chair urged the meeting to comply with the State Letter requests to check SRR coordinates and feedback information to the Regional Office. Due to the lack of maturity of SSR data, the meeting agreed with the stated intention to not incorporate SRR data into the eANP in 2016.

2.3   The ICAO AFI/APAC/MID Regional and Inter-regional Workshop on the Provision and Improvement of SAR Services in the AFI Region Africa and the Middle East noted that there were many of the same problems in Africa as Asia/Pacific nations, with under-developed SAR systems that were responsible for vast remote oceanic/arid/mountainous areas. In this regard, the African (AFI) and Middle East (MID) States specifically noted with appreciation the Asia/Pacific SAR Plan as a template for application in their regions as well.

2.4   At the Workshop, ICAO was urged to work with all stakeholders concerned with SAR to raise awareness on the importance of SAR at a high level and obtain the commitment of States in operationalizing SAR. In particular, ICAO HQ was asked to provide more support to SAR through the provision of adequate resources to ensure effective follow-up and assistance regarding global SAR issues.

Agenda Item 3: Global Update

<u>Global SAR Update (WP03)</u>

3.1   ICAO HQ presented information on matters related to the global progress of SAR improvement and SAR standards development. The paper discussed such matters as:

- concern regarding the effective implementation of Annex 12 provisions globally;

- non-responsive SAR Points of Contact (SPOCs);

- the Normal Aircraft Tracking Implementation Initiative group's (NATII2) development of guidance material and consequential provisions to Annex 6;

- Autonomous Distress Tracking (ADT);

- the Global Aeronautical Distress Safety System (GADSS);

- the ICAO/IMO Joint Working Group on SAR (JWG);

- Universal Safety Oversight Audit Programme Continuous Monitoring Approach (USOAP CMA Protocol Questions (PQs); and

- civil/military cooperation.

3.2   The United States emphasised the need for the update of ICAO civil/military cooperation documentation to include reference to aspects other than Flexible Use Airspace (FUA) and to fields such as SAR. ICAO recalled that the Asia/Pacific SAR and Seamless ATM Plans contained numerous references to civil/military cooperation, and that these were being incorporated where appropriate into the new ICAO civil/military document that was being developed.

3.3   The Chair noted the possibility of SAR not being supported by a subject matter expert in ICAO HQ from 2017, and asked if a SAR Panel was being considered. ICAO responded that there had been no consideration by the Air Navigation Commission of a formal SAR Panel.

<u>Annex 12 Considerations (WP04)</u>

3.4   The United States provided information on a possible future amendment of Annex 12 and other ICAO documents related to SAR such as Annex 6 *Operation of Aircraft*, Annex 11 *Air Traffic Services*, and Annex 13 *Aircraft Accident and Incident Investigation*. The ICAO Asia and Pacific Regional Office supplemented this paper with a review of possible Annex amendments that resulted from of lessons learnt following the MH370 and the QZ8501 tragedies in the areas of:

- timing of SAR Phases;

- division of responsibility between Annex 12 and Annex 13;

- provision of information to support SAR responses;

- multiple Flight Information Region (FIR) searches; and

- SRR designation.

3.5   The meeting agreed to present the information to the JWG In September 2016 through the Chair of the JWG, who was present at the APSAR/WG/1 meeting, for its consideration of specific Annex change proposals.

Status and Developments in Cospas-Sarsat (WP05)

3.6   Cospas-Sarsat presented a status report on the Cospas-Sarsat System, including System operations, System status (space and ground segments), and significant developments related to next-generation beacons and Medium Earth Orbit SAR (MEOSAR).

3.7   Commencement of the MEOSAR Early Operational Capability (EOC) phase was anticipated for later in 2016. During this phase, the MEOSAR system would not necessarily provide global coverage and may not fully meet expected performance requirements.

3.8   Related to next-generation beacon development, the Cospas-Sarsat Council had decided to approve Preliminary Issue B of document C/S T.018, *Specifications for Second-Generation Cospas-Sarsat 406-MHz Distress Beacons*, to progress the technical definition of this new technology.   The APSAR/WG meeting noted the importance of State frequency management authorities recognising the recent International Telecommunication Union's decision to protect the 406 MHz band from other applications such as mobile telephones.

3.9   In 2015 provisional statistics indicated that Cospas-Sarsat alert data had assisted in 718 distress incidents (703 in 2014) and 2,185 persons were rescued (2,104 in 2014). There were 121 aviation incidents, with 233 persons rescued. Since September 1982, the Cospas-Sarsat System had provided assistance in rescuing at least 41,750 persons in 11,788 SAR events, underlining the importance of this system.

3.10   The meeting noted that aviation Emergency Locator Transmitters (ELTs) remained a significantly disproportionate contributor to false alerts: six times greater than maritime Emergency Position-Indicating Radio Beacons (EPIRBs) and ten times greater than Personal Locator Beacons (PLBs). This appeared to be due, at least in significant part, to training and information issues for cockpit crews and maintenance personnel, who activate beacons for testing without understanding that all transmitted alert signals were treated as real.   The meeting agreed to the following Draft Conclusion, for consideration by APANPIRG/27:

Draft Conclusion APSAR/WG/1 – 1: ELT Inadvertent Activation

That, noting that:

(1) Emergency Locator Transmitters (ELTs) remained a significantly disproportionate contributor to false alerts; and

(2) the next generation ELTs would transmit within three seconds (reducing the time available to cancel an inadvertent activation); and

(3) cockpit crews and maintenance personnel who activate beacons for testing are a high proportion of false alerts; and

(4) all transmitted alert signals are received as an alert and treated as a real distress;

States should investigate the reasons for false alerts in their area, and develop mitigation strategies, including education, to reduce the number of false activations.

3.11   The average beacon registration rate for 2015 was 75.9%, a reduction over the period 2011-2014. The meeting concurred therefore to remind stakeholders that Cospas-Sarsat operated the International 406-MHz Beacon Registration Database (IBRD, www.406registration.com) which was freely available to users with no access to national registration facilities.

3.12   Available results indicate that about 20% of all tested SPOCs remain insufficiently responsive or non-responsive; with the majority of less responsive SPOCs n the AFI region (Asia/Pacific had no non-responsive SPOCs).

3.13   To help to address the issue of poor SPOC communications, the Cospas-Sarsat and ICAO Secretariats jointly developed a draft model agreement for use by MCCs and their SPOCs, based on existing agreements provided by some Mission Control Centre (MCC) operators (available at https://www.cospas-sarsat.int/en/documents-pro/document-templates).

3.14   Cospas-Sarsat reiterated to APSAR/WG/1 participants the critical importance of maintaining up-to-date State contact information for search-and-rescue points of contact ("SPOCs"), 24/7 access (for SAR operators worldwide) to beacon registration information ("406-MHz Beacon Registers"), and public awareness of beacon regulations and registration procedures ("National Contacts for Beacon Matters"). Cospas-Sarsat reminded participants that their States' information can be reviewed and verified at http://www.cospas-sarsat.int/en/contacts-pro/contacts-details-all , and that the information can be updated by contacting the Cospas-Sarsat Secretariat.

Agenda Item 4: Asia/Pacific and inter-regional SAR planning, coordination and cooperation

Regional SAR Status (WP06)

4.1   ICAO provided information on the known status of Asia/Pacific SAR capability.   An analysis of the 31 Universal Safety Oversight Audit Programme (USOAP) SAR-related Protocol Questions (PQs) indicated that the overall Effective Implementation (EI) had risen from 50.7% in mid-2015 to **54.8%** in August 2016 for the Asia/Pacific Region. However, the 12 PQs below 50% EI had not improved, and in three cases were worse than the results from 2015.

4.2   **Figure 1** provided an overview of the Asia/Pacific's USOAP CMA SAR PQ compliance.

Figure 1: APAC USOAP CMA SAR PQ Compliance (average: 54.8%)

4.3   From this analysis, it appeared that major areas of weakness remained in the areas of coordination with adjacent States, effective SAR oversight, and training of both SAR inspectors and staff that provide the SAR services.

4.4   Therefore, the APSAR/WG noted the vital need for improved coordination with other States, a focus on the minimisation of barriers associated with the efficient cross-border coordination of SAR Units (SRU, such as pre-arranged approval) and other RCC coordination mechanisms.

4.5   In addition, the meeting recognised the need for improved systemic approaches (possibly on a sub-regional or regional basis) regarding training for both SAR inspectors and personnel responsible for the provision of SAR services, including the regular organisation of effective SAREX that actually tested systems and personnel.

4.6   Many States appeared to have unclear regulatory oversight of SAR services, due in part to a lack of certification and independent SAR regulation. It was recognised that many States had SAR services provided by a non-aeronautical entity (such as a maritime safety authority), so there may be legal difficulties in developing a SAR inspectorate oversight system within the aeronautical system (i.e.: the Civil Aviation Authority of the State concerned). In this case, the State needed to demonstrate an independent safety oversight and compliance mechanism of the SAR services.

4.7   APSAR/TF/4 had recognised that the task of regulatory inspection for any ANS field (e.g.: ATC, AIS, MET, etc.) did not require the inspector to be an expert in the field itself but rather, it was necessary for inspectors to be experts in regulatory inspection skills, which were generic. Thus it was expected that a State would comply by establishing a generic ANS inspectorate so multi-disciplined inspectors could be utilised in an efficient manner across many ANS fields, and were not expected draw resources away from the primary service functions such as SAR.

4.8   The current List of SAR Agreements is presented in **Appendix C**. A SAR Agreement Matrix is provided in **Appendix D**. The SAR Capability Matrix Table is appended as **Appendix E**. **Figure 2** provides the updated SAR compliance overview for APSAR/WG/1.
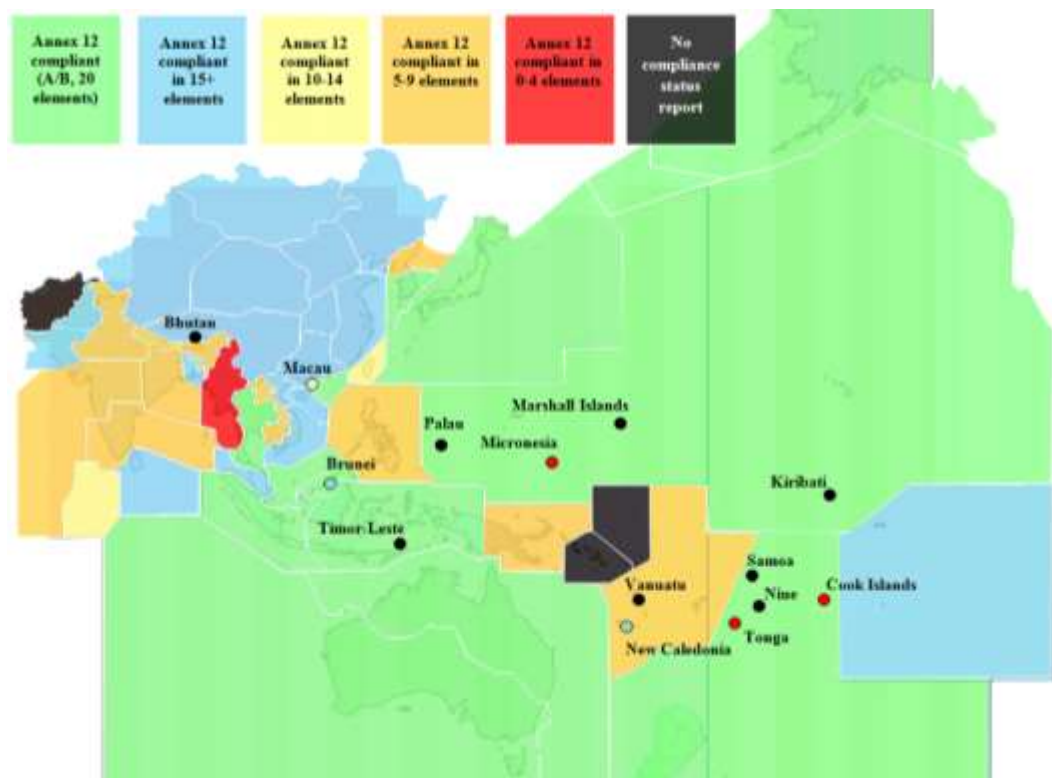

Figure 2: APSAR/WG/1 Asia/Pacific Regional SAR Overview

4.9   **Figure 2** indicated that significant Annex 12 compliance weaknesses remained in the Southwest Pacific and improvement was necessary in several Asian States: Afghanistan; Democratic People's Republic of Korea (DPRK); Maldives; Myanmar; Nepal; and the Philippines (note: the APANPIRG ANS Deficiencies List is at **Appendix F**).

4.10   The overall SAR capability ranking of Asia/Pacific States (using a metric of 5% for an A and 4% for a B as assessed in the SAR Capability Matrix) is indicated in **Figure 3**:
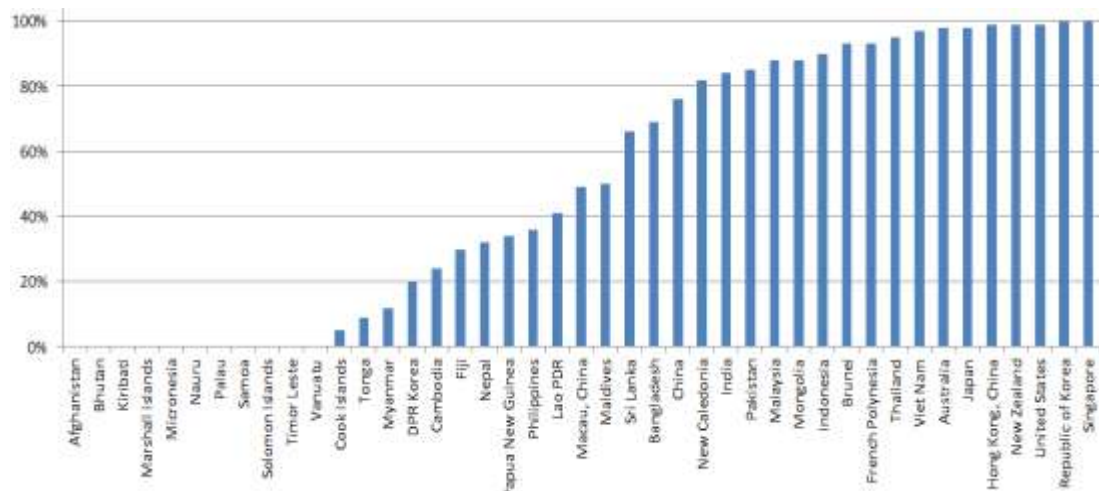

Figure 3: Asia/Pacific SAR Capability Ranking

4.11   The meeting discussed whether the 20 Annex 12 SAR compliance elements could be superseded over a transition period of some years by a more accurate self-assessment of capability aligned with the SAR Plan, as presented by the ICAO Regional Office. The following Draft Conclusion was agreed by the APSAR/WG/1 for consideration by APANPIRG/27:

Draft Conclusion APSAR/WG/1 – 2: SAR Plan Capability Measurement

That, the SAR Plan Capability Measurement System appended at **Appendix G to the Report** be adopted and States be urged to provide information on their capability with respect to this new performance system.

Letters of Agreement (WP07)

4.12   Noting that the Asia/Pacific SAR Plan provided background information on SAR Letters of Agreement (LOA) and that this was a specific topic at the ICAO Regional and Inter-regional Seminar and Workshop on SAR held in the Seychelles, the United States urged States to pay greater attention to this vital area. The United States recalled that the IAMSAR Manual, Volume I, Appendix J *SAR Agreements* provided a page of notes explaining aspects about agreements and a four page sample agreement. Presentation PR05 provided more detail of possible solutions to implement LOA.

Proposal for Revising Current SAR LOAs (WP13)

4.13   Viet Nam provided a brief update on SAR LOAs between the Civil Aviation Authority of Viet Nam (CAAV) and neighbouring States. Viet Nam proposed that States concerned should consider revising existing SAR LOAs in order to update changes in practical SAR operations such name of relevant organization, postal address, telephone and fax numbers. Singapore requested that Viet Nam put in a formal request for the review of the SAR LOA between CAAV and CAAS and state the specific areas in the LOA to be reviewed. A new LOA had been signed with the Philippines in 2015. The Chair urged participants to take the opportunity of being at the meeting to update any technical details of applicable LOAs.

Sharing SAR Experience – Recent SAR Incident Lessons (WP08)

4.14   New Zealand presented lessons learnt from a SAR incident involving communications loss with an aircraft flying from New Zealand to Argentina, which had resulted in an ALERFA phase being declared. WP08 provided a detailed analysis and expose of the problems that had occurred, including communication and coordination failures, so that other States could learn from the event and important associated recommendations.

4.15   The meeting thanked New Zealand for its honest assessment of the problem areas revealed by the incident. ICAO suggested that New Zealand provide the lessons learnt to the ATC provider as it was clear the ANSP had made errors in addition to the RCC. The Chair suggested that each State take WP08 and the associated presentation (PR08) as a refresher training lesson.

Progress in SAR Capability of Sri Lanka under the SCPP Program (IP02)

4.16   Sri Lanka presented an update on the progress in SAR Capability of Sri Lanka under the Search & Rescue Capability Partnership Program (SCPP) implemented by the Australian Maritime Safety Authority (AMSA) with funding from the Australian Department of Foreign Affairs and Trade to improve and enhance SAR capability in the Indian Ocean.

4.17   The meeting recognised Australia's important contribution to SAR in the Asia/Pacific region with assistance to establish improved SAR systems and procedures.

Tahiti JRCC (IP03)

4.18   France described the decision of the French Civil Aviation Authority (DGAC) to launch a project for the creation of a Joint Rescue Coordination Centre (JRCC) within the Tahiti FIR. The WP recalled that in July 2015, APSAR/TF/4 reminded Asia/Pacific States of the advantages of JRCCs. The Tahiti Aeronautical RCC (ARCC) was now closed and JRCC activities were being performed in the Maritime RCC (MRCC).

Cambodia SAR Legislation and Regulations (IP04)

4.19   Cambodia provided a brief overview of its SAR legislation and regulations in as well as progress in development of SAR agreements.

4.20   Cambodia observed that they had some potential issues such as a lack of sufficient resources for a 24 hour RCC facility and staff (the latter involving a suitable number of trained and skilled staff, supplemented by a pool of trained RCC support staff where appropriate). The meeting was requested to consider providing technical and resource assistance to solve this problem.

Designation of Focal Points and SAR Authorities in Cambodia (IP05)

4.21   Cambodia made a short presentation on their national focal points and competent authorities for SAR in Cambodia.

Brief on Aviation SAR System in Viet Nam (IP06)

4.22   Viet Nam provided a brief update presentation on aviation SAR system capability in Viet Nam within the Ha Noi and Ho Chi Minh FIRs/SRRs. In addition, Viet Nam mentioned that they also provided services within a small southern portion of the Phnom Penh FIR as delegated by Cambodia.

4.23   A SAREX had been conducted near Pleiku aerodrome in June 2016 and in the future:

- An airport emergency exercise would be held at Buon Ma Thuot aerodrome in November 2016; and

- SAREX 2017 was planned for the Southern Region of Viet Nam.

ASEAN SAREX (IP07)

4.24   Singapore presented IP07, regarding the ASEAN Transport SAR Forum agreement to conduct SAREX under the ASEAN Joint SAREX Work Plan. Indonesia conducted the first ASEAN SAREX in Jakarta in August 2014 and Singapore conducted the second exercise in October 2015.

4.25   The Third ASEAN SAREX Table Top Exercise (TTX) would be held in Singapore during October 2016. This exercise would focus on a maritime scenario with the aim of further refining the standardized operating and communication procedures in the ASEAN SAR Standard Operating Procedures.

Agenda Item 5: Asia/Pacific Regional SAR Plan

SAR Library (WP09)

5.1   The United States provided some practical advice regarding the establishment of a SAR library for RCCs. In addition, PR07 presented more detail on a proposal to amend part of the text in the Asia/Pacific SAR Plan Version 1.0 regarding SAR library resources (paragraph 7.11 a)).

Asia/Pacific SAR Plan Update (WP10)

5.2   ICAO presented information on the implementation of the Asia/Pacific SAR Plan, and updates considered necessary. A minor update is recommended to the Asia/Pacific SAR Plan, to include reference to strengthened operational requirements (**Attachment H**). In addition, as the amendment cycle for the Asia/Pacific Seamless ATM Plan is proposed to be amended to 2019 (thence every three years), a minor amendment in 2016 would re-align the SAR Plan with the parent document's amendment cycle.

5.3   An excerpt of the main proposed update regarding operational SAR procedures was agreed by the meeting for incorporation into the Asia/Pacific SAR Plan. The following Draft Conclusion was agreed by the APSAR/WG/1 for consideration by APANPIRG/27:

Draft Conclusion APSAR/WG/1 – 2: Asia/Pacific Plan Update

That, the Asia/Pacific SAR Plan V 2.0 as appended at **Appendix H to the Report** be adopted and updated on the ICAO Asia/Pacific website.

Agenda Item 6: APSAR/WG Task List

Task List (WP11)

6.1   The meeting developed the task list, which is included as **Appendix I** to this report.

Agenda Item 7: Any Other Business

SAR Implementation Seminar/Workshop

7.1 A seminar/workshop on SAR implementation was held prior to the APSAR/WG/1. Presentations were made on the following subjects:

- PR01 Global Update – GADSS (ICAO);

- PR02 Cospas-Sarsat System Overview - GADSS-AG (Cospas-Sarsat);

- PR03 SAR Sharing and Lessons Learnt (ICAO);

- PR04 Asia/Pacific SAR Problem Areas (ICAO);

- PR05 Bilateral SAR Agreements (Australia);

- PR06 Letters of Agreement (United States).

7.2 The seminar/workshop discussed a range of subjects related to the effective implementation of the Asia/Pacific SAR Plan. Some examples of key points expressed during the seminar/workshop were:

- recognizing the link between the MCC and RCC was crucial, with the advent of distress tracking States needed to review their MCC agreements;

- RCC operational personnel need English language proficiency, and RCCs need to have ready access to interpreter services to effectively manage international responses and to provide assistance to persons who may come from foreign backgrounds;

- RCCs need to engage military liaison officers and liaison officers between States when this is appropriate;

- RCC personnel who may be exposed to media scrutiny need media training, and RCCs need to consider how they utilize modern media to convey the right information, including via social media;

- SAR agreements do not create a legal obligation (where there are repercussions if an agreement commitment is not met), but establishes a framework of expectations for planning – therefore they are not a rigid, unyielding mechanism so there is no consequence on sovereignty (thus we need a form of promotional material that elucidates this to high level decision-makers);

- SAR agreements may be called by many names (arrangements, Memorandum of Understanding, etc.) as suits the political narrative, and should ideally be established as a two level hierarchy as follows.

  o These agreements provide aspirational statements between two states on their best endeavour intentions for collaboration and coordination of a SAR response. The primary requisite outcome of these agreements is on reducing response time by facilitating agreement and enhancing knowledge on operational matters such as resource capacity identification, systems, procedures, and information that might describe efficient and effective working arrangements during a SAR response.

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      o   As a secondary purpose, States may wish also to include additional high level policy agreement between their political decision-makers to confirm the aeronautical (and if possible, maritime) commitment and policies of the involved States/Administrations. While this is welcomed, it was noted that the provision of certain information raised concerns for many states and this aspect of a SAR agreement was identified as a significant challenge by a number of states preventing them from entering into such agreements. The states were again reminded the primary purpose of a SAR agreement was to provide an operational level document. Attention was drawn to the fact that the IAMSAR Vol 1 - SAR Agreement Template should be considered as a starting point tool which may be modified to address such concerns of states which were party to a proposed agreement.

      o   **Appendix J** provided a list of issues considered during the Workshop regarding SAR Agreements and any identified enablers for improvement.

- the use of Personal Electronic Devices (PED) within operational environments should be managed with the utmost caution due to the potential for interference and distraction.

      <u>SAR Contact List (WP12)</u>

7.3   ICAO requested States and Organizations to update the SAR Contact List provided in WP12. The SAR Contact List is provided at **Appendix K**.

Agenda Item 8: Date and Venue of the Next Meeting

8.1   The next meeting of the APSAR/WG is tentatively scheduled for June 2017.

Closing of the Meeting

9.1   In closing the meeting, the Chairman summarised the positive progress that had been achieved by the meeting and thanked the meeting participants for their contributions.

List of Participants

		Name	Title/Organization	TEL/FAX/E-MAIL
1.		**AUSTRALIA (1)**		
	1.	Mr. Phillip Jones-Hope	Principal Advisor – SAR Aeronautical Policy Search and Rescue Australian Maritime Safety Authority GPO Box 2181, Canberra ACT 2601 Australia	Tel: +61 0409 223 554 Fax: +61 2 6279 5828 Email: Philip.jones-hope@amsa.gov.au
2.		**BANGLADESH (4)**		
	2.	Mr. Mohammmad Nurul Islam	Deputy Director Flight Safety Regulation Division Civil Aviation Authority of Bangladesh CAAB Headquarter Kurmitola Dhaka – 1229 Bangladesh	Tel: Fax: Email: ddadmin@caab.gov.bd
	3.	Mr. Mohammad Khorshed Ali	Assistant Director Civil Aviation Authority of Bangladesh CAAB Headquarter Kurmitola Dhaka – 1229 Bangladesh	Tel: +880 2890 1014 Fax: Email: khorshed.caab@yahoo.com
	4.	Mr. Md Wahiduzzaman	Senior Aerodrome Officer Civil Aviation Authority of Bangladesh CAAB Headquarter Kurmitola Dhaka – 1229 Bangladesh	Tel: +880 1711 446 441 Fax: +880 2890 1411 Email: wahidcaab@yahoo.com

	Name	Title/Organization	TEL/FAX/E-MAIL
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3.	**BHUTAN (1)**		
6.	Mr. Karma Yonten	ATCO, AIS Officer Department of Air Transport, Bhutan Paro International Airport Paro, Bhutan	Tel: +9758272760 Fax: +975272307 Email: kyonten@doat.gov.bt
4.	**CAMBODIA (2)**		
7.	Mr. Sieng Seloske	Chief of Rescue Coordination Center (RCC) State Secretariat of Civil Aviation #62 Norodom Blvd. Phnom Pehn Cambodia	Tel: +855 12 994 878 Fax: +855 23 224 259 Email: sieng.sar@gmail.com
8.	Mr. Em Yuthea	Deputy of Rescue Coordination Center (RCC) State Secretariat of Civil Aviation #62 Norodom Blvd. Phnom Pehn Cambodia	Tel: +855 12 421 777 Fax: +855 23 224 259 Email: emyuthea@gmail.com
5.	**CHINA (2)**		
9.	Mr. Zhang Wei	Engineering of Air Traffic Management Civil Aviation Authority of China No. 155, Dongsi West St., Dong Cheng District Beijing, China	Tel: +86 10 6409 2111 Fax: +86 10 6513 5983 Email: zongdiao1@163.com

	Name	Title/Organization	TEL/FAX/E-MAIL
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	18.	Mr. Robert Teh Geok Chuan	Director of SAR Malaysian Maritime Enforcement Agency Prime Ministry Department 8th Floor One IOI Squre IOI Resort 62502 Putrajaya Malaysia	Tel: +603 8995 7870 Fax: +603 8941 3129 E-mail: robert@mmea.gov.my
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		Name	Title/Organization	TEL/FAX/E-MAIL
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International Civil Aviation Organization

First Meeting of the Asia/Pacific Regional Search and Rescue Working Group (APSAR/WG/1)

Bangkok, Thailand, 15 – 19 August 2016

LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs)

(Presented by the Secretariat)

WORKING PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
WP01	1	Provisional Agenda	Secretariat
WP02	2	Related Meeting Outcomes	Secretariat
WP03	3	Global SAR Update	Secretariat
WP04	3	Annex 12 Considerations	United States
WP05	3	Status and Developments in Cospas-Sarsat	Cospas-Sarsat
WP06	4	Regional SAR Status	Secretariat
WP07	4	Letters of Agreement (refer also PR05)	United States
WP08	4	Sharing SAR Experience – Recent SAR Incident Lessons	New Zealand
WP09	5	SAR Library (refer also PR06)	United States
WP10	5	Asia/Pacific SAR Plan Update	Secretariat
WP11	6	APSAR/TF Task List	Secretariat
WP12	7	SAR Contact List	Secretariat
WP13	4	Proposal For Revising Current SAR LOAs	Viet Nam

INFORMATION PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
IP01	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP02	4	Progress in SAR Capability of Sri Lanka under the SCPP Program	Sri Lanka
IP03	4	Tahiti JRCC	France/DGAC
IP04	4	Cambodia SAR Legislation and Regulations	Cambodia
IP05	4	Designation Of Focal Points and SAR Authorities in Cambodia	Cambodia
IP06	4	Brief on Aviation SAR System In Viet Nam	Viet Nam
IP07	4	ASEAN SAREX	Singapore

PRESENTATIONS

NUMBER	AGENDA	TITLE	PRESENTED BY
PR01	Seminar	IAMSAR Vol I Appendix I SAR Agreements	United States
PR02	Seminar	IAMSAR Vol I Appendix J SAR Committee	United States
PR03	Seminar	SAR Sharing and Lessons Learnt	ICAO
PR04	Seminar	Asia Pacific SAR Problem Areas	ICAO
PR05	Seminar	Bilateral SAR Agreements	Australia
PR06	4	Letters of Agreement	United States
PR07	5	SAR Library for RCCs	United States

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SAR AGREEMENTS

Updated: 18 August 2016

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	
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	
6 March 2012	Cook Islands / New Zealand	Notified 2012
notified July 2007	French Polynesia (Tahiti) / New Zealand	Final draft agreement being considered by FP authorities
notified January 2013	French Polynesia (Tahiti) / United States	Draft agreement being considered by FP authorities
June 1982	Indonesia / Singapore	
1990	Indonesia / Papua New Guinea	JBC MOU signed
25 August 1986	Indonesia / Philippines	
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	LOA for provision of assistance
05 March 2013	Lao PDR/Myanmar	
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	
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

DATE	STATES	REMARKS
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	
March 2009	Viet Nam / Lao PDR	
March 2009	Viet Nam / Cambodia	

SAR LOA Matrix
Date Last Amended: 18 August 2016 (√ = 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	Vanuatu	Viet Nam	USA
1. Afghanistan	■																																											
2. Australia		■										√			√					√								√				√					√	√						
3. Bangladesh			■																																									
4. Bhutan				■										√																														
5. Brunei					■														√																									
6. Cambodia						■																																					√	
7. China							■																											√										√
8. Hong Kong, China								■																																				
9. Macao, China									■																																			
10. Cook Islands										■																		√																
11. DPR Korea											■																																	
12. Fiji		√										■																																
13. French Polynesia													■															√																
14. India			√											■																														
15. Indonesia		√													■				√													√	√			√			√				√	√
16. Japan																■																	√	√										√
17. Kiribati																	■																											
18. Lao PDR																		■						√																			√	
19. Malaysia					√										√				■														√			√			√				-	
20. Maldives		√																		■																		√						
21. Marshall Islands																					■																							√
22. Micronesia																						■																						√
23. Mongolia																							■							Note: has LOA with Russian Federation														
24. Myanmar																		√						■																				
25. Nauru																									■																			
26. Nepal																										■																		
27. New Caledonia																											■	√																
28. New Zealand[1]		√								√			√														√	■	√						√						√			√
29. Niue (NZ)																												√	■															
30. Pakistan																														■														
31. Palau																															■													√
32. Papua New Guinea		√													√																	■												
33. Philippines															√	√			√														■			√			√				√	
34. Republic of Korea							√									√																		■										
35. Samoa																												√							■									
36. Singapore															√				√														√			■			√				√	
37. Solomon Islands		√																																			■							
38. Sri Lanka		√																		√																		■						
39. Thailand															√				√														√			√			■				√	
40. Timor Leste																																								■				
41. Tonga																												√													■			
42. Vanuatu																																										■		
43. Viet Nam					√										√			√	-														√			√			√				■	
44. USA[2]							√								√	√												√			√		√											■

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

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

SAR Capability Matrix (Last Update: 18 August 2016)

	Training	Alerting	Legislative	SAR Committee	SAR Agreements	Relationships	Communications	Quality Control	Civil Military	Resources	SAREX	Library	Computerisation	SAR Programme	Supply Dropping	Special Equipment	SAR aircraft	Navigation	ELTs	COSPAS-SARSAT Alerts	Capability (A=5, B=4) %
Afghanistan																					0
Australia	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	B	A	98
Bangladesh	D	B	B	E	C	B	B	A	A	B	B	B	C	B	B	B	A	B	A	A	69
Bhutan																					0
Brunei	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	E	93
Cambodia	B	B	C	B	C	B	C	E	B	C	C	C	D	C	E	E	D	D	E	B	24
China	A	A	A	A	A	A	B	B	A	B	B	C	D	E	A	A	A	A	A	E	76
Cook Islands	E	D	D	E	E	C	C	C	D	E	D	E	E	E	E	D	D	E	A	E	5
DPR Korea	D	B	D	B	E	D	B	B	B	C	D	E	E	E	D	E	C	C	E	E	20
Fiji	D	A	C	C	C	C	B	C	B	C	B	C	C	B	D	C	C	C	B	A	30
French Polynesia	A	A	A	B	C	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	93
Hong Kong, China	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	99
India	B	A	A	B	C	B	A	D	A	A	A	A	B	B	A	B	A	A	A	A	84
Indonesia	A	A	A	A	A	A	B	B	A	A	A	B	B	B	A	B	B	B	B	B	90
Japan	A	A	A	A	B	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	98
Kiribati																					0
Lao PDR	C	B	C	B	B	B	B	D	B	B	C	C	C	C	B	D	D	B	D	A	41
Macau, China	A	A	A	B	A	-	A	-	-	-	A	-	-	-	-	-	A	-	A	A	49
Malaysia	A	A	C	A	B	A	A	A	A	A	A	B	A	A	A	A	A	A	A	D	88
Maldives	C	A	C	E	B	A	B	C	A	C	B	B	B	A	C	C	C	A	C	A	50
Marshall Islands																					0
Micronesia	C	D		E	E	D	C					E		D	D						0

	Training	Alerting	Legislative	SAR Committee	SAR Agreements	Relationships	Communications	Quality Control	Civil Military	Resources	SAREX	Library	Computerisation	SAR Programme	Supply Dropping	Special Equipment	SAR aircraft	Navigation	ELTs	COSPAS-SARSAT Alerts	
Mongolia	A	A	B	A	B	B	A	A	A	B	A	A	A	B	D	B	A	B	A	A	88
Myanmar	D	E	D	C	E	B	C	C	B	E	E	E	E	E	C	E	B	C	E	E	12
Nauru																					0
Nepal	B	B	C	D	E	C	C	D	B	D	E	D	E	B	B	C	B	B	B	D	32
New Caledonia	A	B	B	B	C	B	A	B	A	B	A	A	B	E	A	B	A	A	A	A	82
New Zealand	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	99
Pakistan	A	B	B	A	C	A	B	A	A	A	A	A	D	B	B	A	A	A	A	A	85
Palau																					0
Papua New Guinea	B	A	B	C	B	B	C	C	B	C	C	B	C	C	C	E	E	E	A	E	34
Philippines	C	B	A	C	B	C	B	C	C	C	C	D	C	C	D	C	B	A	A	A	36
Republic of Korea	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	100
Samoa																					0
Solomon Islands																					0
Singapore	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	100
Sri Lanka	C	B	B	C	B	B	A	B	A	B	B	A	D	D	B	B	C	A	A	A	66
Thailand	B	A	A	A	B	A	A	A	A	A	A	B	B	B	A	A	A	A	A	A	95
Timor Leste																					0
Tonga	C	D	E	E	D	C	C	E	B	E	E	E	E	E	E	C	E	A	E	E	9
United States	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	99
Vanuatu																					0
Viet Nam	A	A	A	A	B	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	97

A = Fully meets Annex 12 requirements, B = Meets Annex 12 requirements in most areas,

C = Meets Annex 12 requirements in some areas, D = Initial implementation, E = Not implemented, Blank = No response

SAR Matrix Element Descriptions

Training: The appropriate level and type of training for SAR coordinator, SAR mission coordinator, on-scene coordinator, and operational facilities. (IAMSAR Manual Vol. 1, Chapter 3)

Alerting: Fast and reliable means for the rescue coordination center to receive distress alerts. (IAMSAR Manual Vol. 1, Chapter 2)

Legislative: Statutes and related provisions that establish a legal foundation for establishing a SAR organization and its resources, policies, and procedures. (IAMSAR Manual Vol. I, Chapter 1)

SAR committee: Typically established under a national SAR plan, the SAR coordinating committee is comprised of SAR system stakeholders. (IAMSAR Manual Vol. 1, Chapter 6 and Appendix J)

Agreements : States should enter into agreements with neighboring States to strengthen SAR cooperation and coordination. (Chapter 3 – *Cooperation*, in both Annex 12 – Search and Rescue, and the International Convention on Maritime SAR)

Relationships: Close cooperation between services and organizations which may contribute to improving SAR service in areas such as operations, planning, training, exercises and research and development.

Communications: Communication capability for receipt of distress alerts and operational coordination among the SAR mission coordinator, the on-scene coordinator and SAR facilities. (IAMSAR Manual Vol. 1, Chapter 3)

Quality Control: Procedures to focus on improving the quality of SAR services so as to improve results and reduce costs. (IAMSAR Manual Vol. 1, Chapter 6)

Civil/Military: Close cooperation between the various civilian and military organizations.

Resources: The primary operational facilities made available to the national SAR system by various authorities and arrangements with others. (IAMSAR Manual Vol. 1, Chapter 5 and Appendix C)

SAR Exercise: Exercise to test and improve operational plans, provide learning experience and improve liaison and coordination skills. (IAMSAR Manual Vol. 1, Chapter 3; Annex 12, and Annex 14 regarding Airport Emergency Plan)

Library: Quick access to the applicable international, national, and agency SAR publications that provide standards, policy, procedures and guidance.

Computerization: Use of or access to output of various computer resources including databases, computer aids for SAR system management, search planning software, etc. (IAMSAR Manual Vol. 1, Chapter 2)

SAR programme: National structure to establish, manage and support the provision and coordination of SAR services. (IAMSAR Manual Vol. 1, Chapter 1)

Supply dropping: Supplies and survival equipment carried by air and maritime SAR facilities to aid survivors and facilitate their rescue, as appropriate. (IAMSAR Manual Vol. 1, Chapter 2 and Appendix B)

Special equipment: Equipment created for specific rescue scenarios (such as mountain or desert rescue) and equipment typically carried on designated SAR units to support coordination and locating functions as well as special supplies and survival equipment to aid survivors and facilitate their rescue. (IAMSAR Manual Vol. 1, Chapter 2 and 4)

SAR aircraft: An aircraft provided with specialized equipment suitable for the efficient conduct of SAR missions (Annex 12, Chapter 2 - *Organization*)

Navigation: Suitable means provided within the SAR region to determine position, and the responding SAR facilities have the appropriate equipment on board to determine their position in the SAR region they are likely to operate. (IAMSAR Manual Vol. 1, Chapter 2)

ELT: National regulations for carriage of ELTs, and arrangements for registration of the 406 MHz beacon and rapid access to the beacon registration database. (Annex 6 – Operation of Aircraft and Annex 10 - Aeronautical Telecommunications; and IAMSAR Manual Vol. 1, Chapter 4)

Cospas-Sarsat Distress Alerts: A SAR Point of Contact (SPOC) designated for receipt of Cospas-Sarsat distress data, and arrangements for efficient routing of the distress data to the appropriate SAR authority (the aeronautical emergency locator transmitter ELT), maritime emergency position-indicating beacon (EPIRB), and personal locator beacon (PLB)). (Annex 12, paragraph 3.2.5 and Section 2.4; and, IAMSAR Manual Vol. 1, Chapter 4)

ATM/AIM/SAR Deficiencies List (Updated 16 June 2016)

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
<u>WGS-84</u>								
Requirements of Paragraph 3.7.1 of Annex 15	Afghanistan	WGS-84 - Not implemented	24/6/2014			Afghanistan	TBD	A
	Bangladesh	WGS-84 - Not implemented	24/6/2014			Bangladesh	TBD	A
	Bhutan	WGS-84 - Not implemented	2/7/1999	Data conversion completed, but not published		Bhutan	TBD	A
	Brunei Darussalam	WGS-84 - Not implemented	24/6/2014			Brunei Darussalam	TBD	A
	Cook Islands	WGS-84 - Not implemented	24/6/2014			Cook Islands	TBD	A
	Kiribati	WGS-84 - Not implemented				Kiribati	TBD	A
	Marshall Islands	WGS-84 - Not implemented	24/6/2014			Marshall Islands	TBD	A
	Micronesia	WGS-84 - Not implemented	24/6/2014			Micronesia	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Nauru	WGS-84 - Not implemented		Conferring with consultant		Nauru	TBD	A
	Pakistan	WGS-84 - Not implemented	24/6/2014			Pakistan	TBD	A
	Palau	WGS-84 - Not implemented	24/6/2014			Palau	TBD	A
	Philippines	WGS-84 - Not implemented	24/6/2014			Philippines	TBD	A
	Samoa	WGS-84 - Not implemented	24/6/2014			Samoa	TBD	A
	Thailand	WGS-84 - Not implemented	24/6/2014			Thailand	TBD	A
	Vanuatu	WGS-84 - Implemented at main airports	2/7/1999			Vanuatu	1999	A
<u>Airspace Classification</u>								
Requirements of Paragraph 2.6 of Annex 11	China	Airspace Classification - Not implemented	7/7/99		Difference to Annex 11 is published in AIP, China.	China	APANPIRG/19 updated, implementation planned by end 2010.	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Kiribati	Airspace Classification - Not implemented	7/7/99			Kiribati	TBD	A
	Nauru	Airspace Classification - Not implemented	7/7/99			Nauru	TBD	A
	Papua New Guinea	Airspace Classification - Not implemented	7/7/99			Papua New Guinea	Project in place	A
	Solomon Islands	Airspace Classification - Not implemented	7/7/99			Solomon Islands	TBD	A
AIP Format								
Requirements of Chapter 4 of Annex 15	Cook Islands	AIP Format - Not implemented	7/7/99			Cook Islands	ATM/AIS/SAR/G/16 (June 2006) updated - AIP COOK ISLANDS in new format in progress with assistance of New Zealand	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Kiribati	AIP Format - Not implemented	7/7/99			Kiribati	ATM/AIS/SAR/SG/ 18 (June 2009) was advised AIP in draft stage	A
	Nauru	AIP Format - Not implemented	7/7/99			Nauru	ATM/AIS/SAR/SG/ 18 (June 2008) was advised work soon to start	A
	Papua New Guinea	AIP Format - Not implemented	7/7/99			Papua New Guinea	TBA	A
AIS Quality Management System								
Requirements of Paragraph 3.2.1 of Annex 15 Quality Management System - Not implemented	Afghanistan	AIS Quality Management System - Not implemented	24/6/2014			Afghanistan	TBD	A
	Bangladesh	AIS Quality Management System - Not implemented	24/6/2014			Bangladesh	TBD	A
	Bhutan	AIS Quality Management System - Not implemented	24/6/2014			Bhutan	TBD	A
	Brunei	AIS Quality Management	24/6/2014			Brunei	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Darussalam	System - Not implemented				Darussalam		
	Cambodia	AIS Quality Management System - Not implemented	24/6/2014			Cambodia	TBD	A
	Cook Islands	AIS Quality Management System - Not implemented	24/6/2014			Cook Islands	TBD	A
	DPR Korea	AIS Quality Management System - Not implemented	24/6/2014			DPR Korea	TBD	A
	Indonesia	AIS Quality Management System - Not implemented	24/6/2014			Indonesia	TBD	A
	Kiribati	AIS Quality Management System - Not implemented	24/6/2014			Kiribati	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	States/ facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
	Lao PDR	AIS Quality Management System - Not implemented	24/6/2014			Lao PDR	TBD	A
	Maldives	AIS Quality Management System - Not implemented	24/6/2014			Maldives	TBD	A
	Marshall Islands	AIS Quality Management System - Not implemented	24/6/2014			Marshall Islands	TBD	A
	Micronesia	AIS Quality Management System - Not implemented	24/6/2014			Micronesia	TBD	A
	Nauru	AIS Quality Management System - Not implemented	24/6/2014			Nauru	TBD	A
	Nepal	AIS Quality Management System - Not	24/6/2014			Nepal	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
		implemented						
	Pakistan	AIS Quality Management System - Not implemented	24/6/2014			Pakistan	TBD	A
	Palau	AIS Quality Management System - Not implemented	24/6/2014			Palau	TBD	A
	Papua New Guinea	AIS Quality Management System - Not implemented	24/6/2014			Papua New Guinea	TBD	A
	Philippines	AIS Quality Management System - Not implemented	24/6/2014			Philippines	TBD	A
	Samoa	AIS Quality Management System - Not implemented	24/6/2014			Samoa	TBD	A
	Solomon Islands	AIS Quality Management System - Not	24/6/2014			Solomon Islands	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
		implemented						
	Thailand	AIS Quality Management System - Not implemented	24/6/2014			Thailand	TBD	A
	Timor Leste	AIS Quality Management System - Not implemented	24/6/2014			Timor Leste	TBD	A
	Vanuatu	AIS Quality Management System - Not implemented	24/6/2014			Vanuatu	TBD	A
	Viet Nam	AIS Quality Management System - Not implemented	24/6/2014			Viet Nam	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	States/ facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
SAR capability								
Requirements of Annex 12	Afghanistan	SAR Capability Matrix	6/07/2015	SAR Capability (no data)		Afghanistan	2016	U
	Bhutan	SAR Capability Matrix	6/07/2015	SAR Capability (no data)		Bhutan	2016	U
	Cambodia	SAR Capability Matrix	6/07/2015	SAR Capability (14 of 20)		Cambodia	2016	U
	Cook Islands	SAR Capability Matrix	6/07/2015	SAR Capability (19 of 20)		Cook Islands	2016	U
	Cook Islands	Annex 12 requirements not implemented. No agreements with adjacent States.	31/1/95		Cook Islands - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Cook Islands	2009. SAR agreement with New Zealand completed 2007.	U
	DPR Korea	SAR Capability Matrix	6/07/2015		SAR Capability (15 of 20 elements non-compliant)	DPR Korea	2016	U

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Fiji	SAR Capability Matrix	6/07/2015		SAR Capability (13 of 20 elements non-compliant)	Fiji	2016	U
	Kiribati	SAR Capability Matrix	6/07/2015		SAR Capability (no data)	Kiribati	2016	U
	Lao PDR	SAR Capability Matrix	6/07/2015		SAR Capability (10 of 20 elements non-compliant)	Lao PDR	2016	U
	Macau, China	SAR Capability Matrix	6/07/2015		SAR Capability (10 of 20 elements non-compliant)	Macau, China	2016	U
	Maldives	SAR Capability Matrix	6/07/2015		SAR Capability (9 of 20 elements non-compliant)	Maldives	2016	U

Identification		Deficiencies			Corrective Action			
Requirements	States/ facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
	Maldives	Annex 12 requirements not implemented. No agreements with adjacent States.	24/4/97	SAR services and facilities provided (details to be confirmed). SAR agreements with neighbouring States under development	Maldives - implement Annex 12 requirements and co-ordinate LOA with adjacent States ICAO - assist to develop SAR capability and to co-ordinate with adjacent States	Maldives	2009	U
	Marshall Islands	SAR Capability Matrix	6/07/2015		SAR Capability (no data elements non-compliant)	Marshall Islands	2016	U
	Micronesia	SAR Capability Matrix	6/07/2015		SAR Capability (20 of 20 elements non-compliant)	Micronesia	2016	U
	Myanmar	SAR Capability Matrix	6/07/2015		SAR Capability (17 of 20 elements non-compliant)	Myanmar	2016	U
	Nauru	SAR Capability Matrix	6/07/2015		SAR Capability (no data elements non-compliant)	Nauru	2016	U
	Nepal	SAR Capability Matrix	6/07/2015		SAR Capability (12 of 20 elements non-compliant)	Nepal	2016	U
	New Caledonia	SAR Capability Matrix	6/07/2015		SAR Capability (8 of 20 elements non-compliant)	New Caledonia	2016	U

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Palau	SAR Capability Matrix	6/07/2015		SAR Capability (no data)	Palau	2016	U
	Papua New Guinea	SAR Capability Matrix	6/07/2015		SAR Capability (11 of 20 elements non-compliant)	Papua New Guinea	2016	U
	Philippines	SAR Capability Matrix	6/07/2015		SAR Capability (12 of 20 elements non-compliant)	Philippines	2016	U
	Samoa	SAR Capability Matrix	6/07/2015		SAR Capability (no data elements non-compliant)	Samoa	2016	U
	Solomon Islands	SAR Capability Matrix	6/07/2015		SAR Capability (no data)	Solomon Islands	2016	U
	Timor Leste	SAR Capability Matrix	6/07/2015		SAR Capability (no data)	Timor Leste	2016	U
	Tonga	SAR Capability Matrix	6/07/2015		SAR Capability (18 of 20 elements non-compliant)	Tonga	2016	U
	Vanuatu	SAR Capability Matrix	6/07/2015		SAR Capability (no data)	Vanuatu	2016	U

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
<u>Non Provision of Safety-related Data</u>								
Requirement of Paragraph 3.3.5.1 of Annex 11 (provision of data for monitoring the height-keeping performance of aircraft)	India	Annex 11 requirement not implemented.		Established by RASMAG/20- failure to provide RVSM approvals summary data	Lack of	India		U
Requirement of Paragraph 3.3.5.1 of Annex 11 (provision of data for monitoring the height-keeping performance of aircraft)	Philippines	Annex 11 requirement not implemented.		Established by RASMAG/20- failure to provide RVSM approvals summary data		Philippines		U
Failure to provide RVSM Approval Data to the RMA	India	Annex 6 paragraph 7.2.6	RASMAG/ 20 and 21	Established by RASMAG/21 - Relevant APANPIRG Conclusions: *19/15 (Enhanced communications between States and RVSM RMAs)*; *23/15 (Long-Term Non-RVSM Approved Aircraft)*; and *23/16 (Safety Monitoring Data Provision)*.		India		U

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
<u>Data Link Performance Monitoring and Analysis</u>								
Requirements of Paragraph 2.27.5 of Annex 11 not met.	China	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA		China	TBD	A
	Indonesia	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.		Indonesia	TBD	A
	Malaysia	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.		Malaysia	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	**States/ facilities**	**Description**	**Date first reported**	**Remarks**	**Description**	**Executing body**	**Target date for completion**	**Priority for action****
	Myanmar	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.		Myanmar	TBD	A
	Maldives	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.		Maldives	TBD	A
	Sri Lanka	Post-implementation monitoring not implemented	29/5/2015	~~Not registered with competent CRA.~~ Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.	Agreed by FIT-Asia/5, endorsed by RASMAG/21	Sri Lanka	TBD	A

Identification		Deficiencies			Corrective Action			
Requirements	States/ facilities	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action**
	Viet Nam	Post-implementation monitoring not implemented	29/5/2015	Problem Reports not provided to CRA. Performance monitoring and analysis not reported to FIT.	Agreed by FIT-Asia/5, endorsed by RASMAG/21	Viet Nam	TBD	A

SAR Plan Capability Measurement System

Following is a bank of indicators based on the Asia/Pacific Plan's performance improvement section (which should be read in conjunction) than 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.

1. Enacted legislation that incorporates or is aligned to applicable international Conventions	0
2. Unless delegated, established an entity that provides H24, SAR services within its area of responsibility/SRR	0
3. Established a national SAR committee	0
4. Empowered SAR Mission Coordinators with the authority to adequately carry out their responsibilities	0
5. Established an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent, administrative matters	0
6. Conducted studies to integrate aviation and maritime SAR, and as far as practicable, civil and military activities	0
7. Conducted studies to align, as far as practicable, aeronautical and maritime SRRs, and SRRs and FIRs	0
8. Established a single State SAR Plan	0
9. Established aerodrome emergency plans that provide for co-operation and co-ordination with RCCs	0
10. Established SAR agreements with States having adjoining SRRS or FIRs	0
11. Provided up to date cross-border information on SAR capability to adjoining States	0
12. Pre-arranged procedures for cross-border SAR responses	0
13. Established RCC plans for response to Mass Rescue Operations (MROs) integrated with national disaster plans	0
14. Established operational plans and procedures for SRUs, provision of support, communication and reporting	0
15. Established SAR Alerting procedures which are tested, integrated and include civil/military protocols	0
16. Provided a fully equipped RCC of sufficient size with adequate provision for operational positions and human factors	0
17. Provided adequate supervisory ATC resources to allow timely SAR alerts and information to RCCs	0
18. Provided sufficient RCC staffing	0
19. Provided a sufficient number of trained specialist RCC officers including SMCs and A/SMCs	0
20. Availability of a pool of RCC support staff who are familiar with RCC operations, but not trained as coordinators	0
21. Developed SAR personnel position descriptions detailing responsibilities and eligibility criteria	0
22. Developed a comprehensive training programme that includes SAR training for SAR Coordinators and SRU staff	0
23. Facilitated RCC staff to be proficient in the English language	0
24. Facilitated a programme of regular liaison visits between relevant RCCs, ATC units and airline operating centres	0
25. Established additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response	0
26. Established sufficient SRU capabilities (crews, availability, military assets, communications, authority, etc.)	0
27. Established procedures and necessary infrastructure to coordinate distress beacon alert responses	0

28. Established a reliable distress beacon registration system	0
29. Planned and prepared for the implementation of next generation beacons	0
30. Established an appropriate nationwide means of disposal for old distress beacons	0
31. Established contingency facilities, or procedures for the temporary delegation of SAR to another body or State	0
32. Established a centralised information source publishing all AIP information required on SAR	0
33. Established an Internet-based SAR information sharing system	0
34. Established systems for the maximum practicable cooperation between State entities for information when required	0
35. Developed and maintained a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SRUs	0
36. Established an Internet-based SAR Library, or cooperate by contributing to an Internet-based Asia/Pacific resource	0
37. Provided each RCC and SAR Authority with ready access to a current copy of SAR reference documents	0
38. Conducted regular SAREX to test and evaluate coordination procedures, data and information sharing and SAR responses	0
39. Implemented SAR System Improvement and Assessment measures, including Safety Management and QA systems	0
40. Conducted an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability	0
41. Conducted SAR promotional programs	0
Total (of 41)	0

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

ASIA/PACIFIC SEARCH AND RESCUE (SAR) PLAN

Version 1.02.0, September 20152016

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 APANPIRG/26 27 and published by the
ICAO Asia and Pacific Office, Bangkok

CONTENTS

1

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, 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 such as the IMO and other 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 its 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.

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 is associated with 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 taking measures to assist with addressing these vulnerabilities through the Global Aeronautical Distress and Safety System (GADSS) concept; however this also requires improvements in global SAR capability.

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 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   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.

2.8   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).

Plan Objective

2.9   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.

2.10   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.

2.11   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.

2.12   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.

2.13   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.

2.14   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

2.15   The Plan was developed as part of a suite of Asia/Pacific air navigation plans, including the Seamless ATM Plan, the Air Traffic Flow Management (ATFM) Framework, and the Regional ATM Contingency Plan, so the Plan should not be considered in isolation.

2.16   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 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;

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.

2.17 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 SAR plans.

EXECUTIVE SUMMARY

3.1   ICAO reported the following statistics regarding global civil aviation in 2014:

- 3.3 billion passengers;

- 50 million tonnes of freight;

- over 1 000 scheduled airlines; and

- 26,700 aircraft in service.

3.2   The Asia/Pacific region was the world's largest air transport market in 2014, with a 32 per cent share in terms of world Revenue Passenger Kilometres (RPKs).

3.3   Maritime traffic in the Asia/Pacific region is also increasing and 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.

3.4   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.

3.5   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.

3.6   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

3.7   The level of funding provided for effective SAR systems is a matter of concern for all senior decision-makers. 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.

3.8   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).

Joint Rescue Coordination Centres (JRCCs)

3.9   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: Where JRCCs are not practicable, development of facilities and procedures 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.*

3.10   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.*

ABBREVIATIONS AND ACRONYMS

ADS-B	Automatic Dependent Surveillance-Broadcast
ADS-C	Automatic Dependent Surveillance-Contract
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	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 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) 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.

Recent ICAO SAR Initiatives

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

5.6   As part of the response to the Conclusions and Recommendations from the ICAO Multi-disciplinary Meeting on Global Tracking, ICAO developed a Concept of Operations (CONOPS) for a GADSS. The implementation of this target concept will have implications for 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 noted that the effectiveness of the current alerting and SAR services should be increased by addressing a number of key improvement areas. The ICAO GADSS 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.

Cospas-Sarsat System

5.8   Cospas-Sarsat had been developing two major enhancements to its distress-alerting System of value to all System users, including the aviation industry. One is the introduction over the period of approximately 2016 to 2018, and beyond, of 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.

5.9   This architecture would permit determination of a distress incident location (independent of any location data transmitted in the beacon message) beginning with the first burst from the distress beacon. This could mean near real-time and very frequent delivery of distress alerts.

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

5.11   The other major development was the completion in the next couple of years of specifications for the next generation of 406 MHz distress beacons, 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. The RLS was also being considered as part of the GADSS Concept, being a means of remotely activating an ELT in the case of an unresponsive or uncooperative cockpit.

5.12   States needed to continue to ensure that aviators were aware that 121.5 MHz beacons cannot be detected by the global Cospas-Sarsat System and were only intended as a final homing signal for 406 MHz beacons.

5.13   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).*

5.14   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). 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;* and

Annex 14 – *Aerodromes*.

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:

- 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 on 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 35 USOAP Protocol Questions (PQs) in June August 20162015 that involved SAR (7.182, 7.184, 7.481, 7.483, 7.485, 7.487, 7.489, 7.491, 7.493, 7.494, 7.495, 7.497, 7.499, 7.501, 7.503, 7.505, 7.507, 7.511, 7.513, 7.515, 7.517, 7.519, 7.521, 7.523, 7.525, 7.527, 7.529, 7.531, 7.533, 7.535, 7.537, 7.539, 7.541, 7.543, 7.545) resulted in an overall Effective Implementation (EI) of 50.6854.8% for the Asia/Pacific Region. When analysed for 35 Asia/Pacific States and administrations, 1412 SAR-related questions indicated EIs of below 50% (**Figure 1** refers):

- 23% - PQ 7.517 (SAR coordination with neighbouring States);

- 29% - PQ 7.505 (effective SAR safety oversight);

- 31% - PQ 7.495 (SAR inspectorate training programme);

- 34% - PQs 7.497, 7.501 (SAR inspectorate periodic training plan and OJT);

- 4037% - PQs 7.499, 7.545 (SAR inspectorate training implemented; and SAR personnel regular training and appropriate SAR exercises arranged);

- 4340% - PQ 7.507 (elimination of deficiencies identified by SAR inspectors); and

- 46% - PQs 7.493, 7.533 (SAR inspector minimum qualifications and experience and RCC and RSC training programme); and

- 49% - PQs 7.487, 7.489, 7.491, 7.503 (sufficient SAR safety oversight staff, functions and responsibilities of the SAR inspectorate, SAR inspector job descriptions and SAR inspectorate training records system).
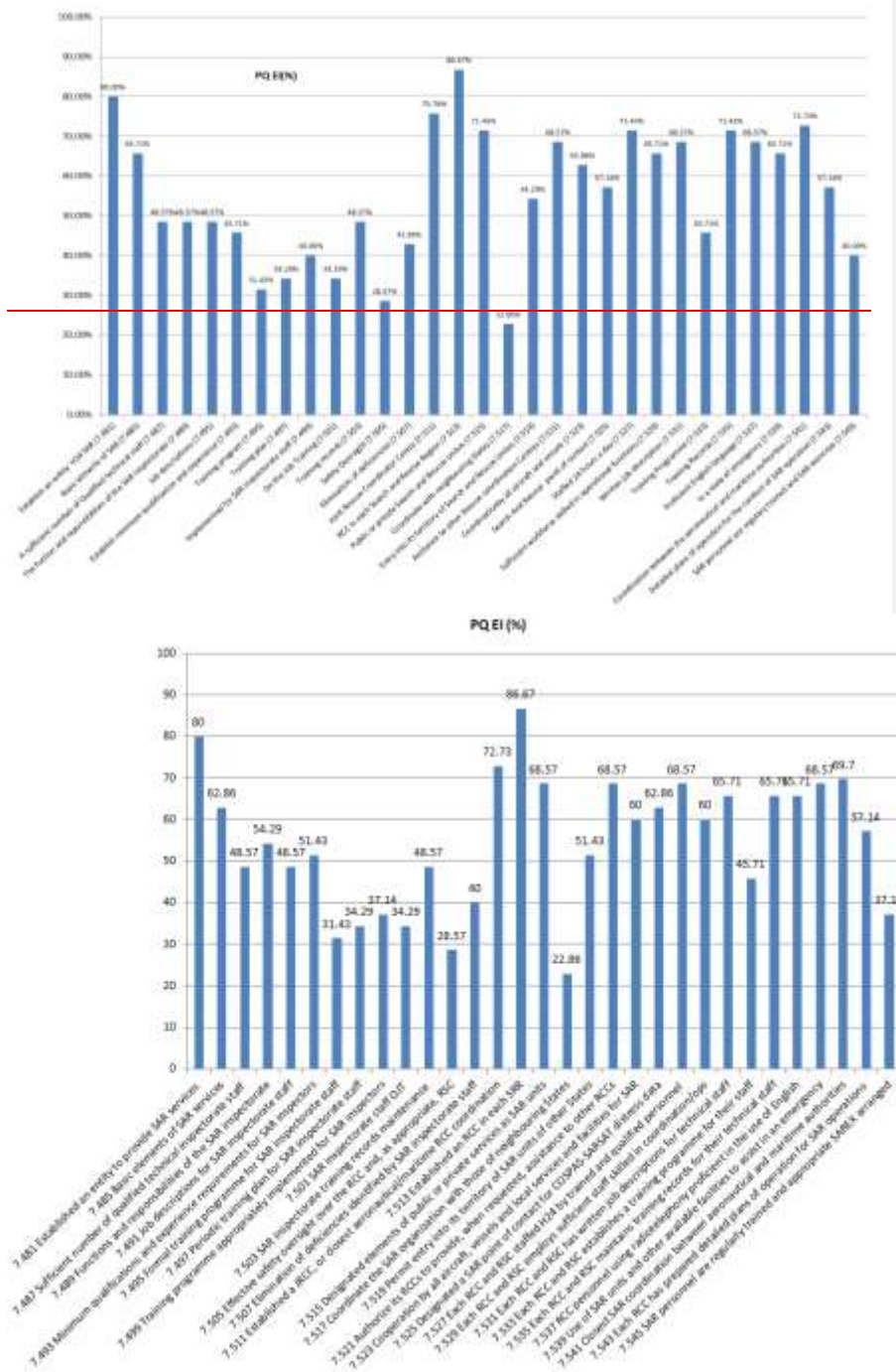
Figure 1: USOAP CMA SAR PQ Compliance (average: 54.8%, as at August 2016)~~SAR related questions indicated EIs of below 50% (as at June 2015~~)

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 2015 SAR/TF/4 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   The overall SAR capability ranking of Asia/Pacific States (using a metric of 5% for an A = full Annex 12 compliance as advised by the State and 4% for a B = meets Annex 12 requirements in most areas) is indicated in **Figure 2**:
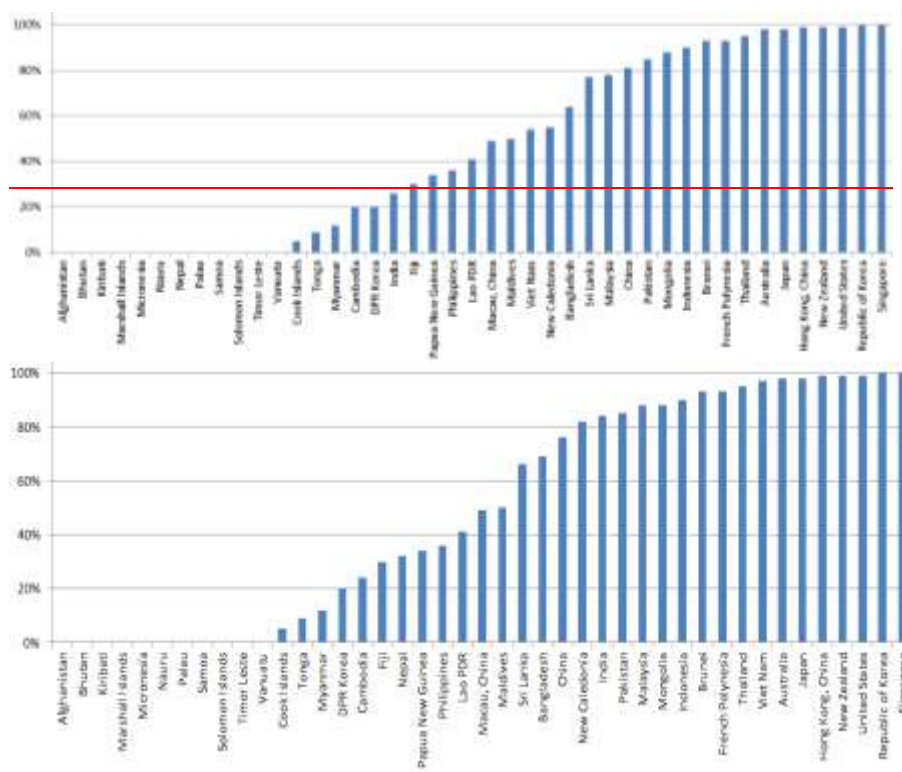
Figure 2: Asia/Pacific SAR Capability Ranking (as at June 2015)

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/TF. After the APSAR/TF completes its tasks, 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, such as:

a) Pacific Ocean SAR Forum – including Pacific States of the Asia/Pacific, North American and South American regions;

b) Indian Ocean SAR Forum – including Indian Ocean States of the Asia/Pacific, South and East African and Middle East regions; and

c) Secretariat of the Pacific Community (SPC) – an existing forum which could include these matters on its work programme.

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. For example Australia was sponsoring programmes in partnership with Indonesia through the Indonesian Transport Safety Advancement Program (ITSAP) and with the Maldives, Mauritius and Sri Lanka through a SAR Capability Partnership Program (SCPP).

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.

<u>Barriers</u>

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;

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

g) inadequate civil/military cooperation; and

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

<u>Global and Regional SAR Issues</u>

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 was 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.);

- identify and task available SRUs;

- Aircraft and vessel tracking information including ADS-B, Automatic Identification System, etc.;

- reliable and rapid H24 communications, and a suitable means to-

  o receive and communicate distress alerts

  o communicate with ATS units, other RCCs/RSCs, Coast Radio Stations, COSPAS-SARSAT Mission Control Centres (MCCs), military units, medical services, meteorological offices, etc.;

- information technology-

  o RCC workstation computers;

  o 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.;

e) Search and Rescue Units (SRUs)-

- available and suitable SAR aircraft and crews;

- 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) Training support-

- RCC staff – basic and ongoing;

- SRU crews – pilots, air crew and air observers; and

- RCC support staff – basic and refresher.

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. PSCS were not expected to contravene existing Annex 12 standards.

PSCS (expected implementation by 08 November 2018)

Note: Guidance Material for the implementation and monitoring of PSCS is expected to be developed by APANPIRG to align with the established Asia/Pacific Seamless ATM Implementation Guidance Material.

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 to, where appropriate to:

<ol type="a">
ensure that it is party to, and/or aligned with the following Conventions, as applicable –
<ol type="i" start="4">
Convention on International Civil Aviation 1944;
International Convention on Maritime Search and Rescue, 1979;
International Convention for the Safety of Life at Sea (SOLAS), 1974;
Convention on the High Seas, 1958; and
United Nations Convention on the Law of the Sea (UNCLOS), 1982;

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;
establish a national SAR committee consisting of civil and where appropriate, military members to enable a whole-of-government approach;
empower SAR Mission Coordinators with the authority to adequately carry out their responsibilities;
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;
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;
conduct studies to align, as far as practicable, aeronautical and maritime Search and Rescue Regions (SRRs); and SRRs and Flight Information Regions (FIRs); and
establish a single State SAR Plan that –
<ol type="i">
designates the responsible RCC(s), RSC(s) and 24-hour SPOC/ASPOC;
describes the relevant SRRs, including the coordinates and geographical chart depiction of the SRR and neighbouring SRRs;

iii.   details the National SAR Committee;

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:

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

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

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

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

m)   establish contingency procedures for delegation of SAR responsibility where such service is not able to be provided, or in contingency (temporary) circumstances;

n)   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

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

p)   establish SAR Operations ~~p~~Plans to include:

        i.   procedures for cooperation and deployment of foreign SRUs;

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

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

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

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

        ~~o)~~v.

~~p)~~q) 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.

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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 Coast 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. ADS-B, 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; and

o) Cospas-Sarsat equipment and reference material.

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

a) provide adequate ATC resources (either an ATS supervisor or other staff) that can provide relief within Area Control Centres (ACCs) to allow timely 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, ATC 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)   aircraft with the ability and regulatory approval to safely conduct SAR missions.

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

7.7   <u>*Distress Beacons*</u>: 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 next generation beacons (e.g.: update beacon registration systems to be compatible with new beacon hexadecimal identifications) and 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); and

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

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.

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 as required by ICAO Annex 15 Appendix 1, page APP 1-8 including:

   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 *www.uscg.mil/nsarc)*; and

   a)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)SOLAS; and

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

   iv.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 coordination (SAREX should routinely involve SAR authorities of adjacent SRRs, especially if the SAREX area concerned is within 50NM of the adjoining SRR); and

   c) 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 at **Appendix 1**.*

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.   time from first alert to tasking the SRU;

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

    v.   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 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.

RESEARCH AND FUTURE DEVELOPMENT

<u>Research and Development</u>

8.1   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   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 Remotely Piloted Aircraft Systems (RPAS) SAR capability;

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; and

f)   enhanced technology oriented systems to improve SAR system effectiveness.

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 08 November 2018 .

9.2   States should commence planning for the various PSCS elements from the approval of this Plan, to ensure a smooth transition by 08 November 2018, 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 2018 until 2028.

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 ATM Reporting and Monitoring system, using the following categories in accordance with the SAR Air Navigation Reporting Form (ANRF) B0-SAR:

- SAR Regulatory and Coordination Mechanisms ;
- SAR Facilities and Assets;
- SAR Information; and
- SAR Improvement.

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 was 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: WORK PLAN FOR THE [[JOINT]] SAREX COORDINATION MEETING

_____

1.   **OBJECTIVES**

State the objectives of the [joint] SAREX and what are to be achieved out of the SAREX by all participants.

1.1   The objectives of the [joint] SAREX are:

   a)   To provide continuation of SAR exercise and improve cooperation between …………… (participating agencies or State RCC) and ……………….. (participating agencies or State RCC).

   b)   To provide continuation training for personnel of SAR organisations from both …………… (participating agencies or State RCC) and ………………. (participating agencies or State RCC)

   c)   To test the communication facilities and procedures between ………. (participating agencies or State RCC) and ………………… (participating agencies or State RCC); and

   d)   To test and determine the effectiveness of the Search and Rescue Units of ………………… (participating agencies or State RCC) and …………………… (participating agencies or State RCC).

2   **DATE AND TIMING OF SAREX**

State the agreed date, time and year for the [joint] SAREX. Have alternate or contingency plan in the event that the full scale SAREX cannot be conducted due to weather or any unforeseen circumstances. It is recommended that a pre-SAREX brief be conducted to ensure all participants understand their roles and the required actions to be taken. State the agreed time for a pre-SAREX brief to be carried out for all participants and States may conduct simultaneous pre-SAREX brief at their own location for their local participants. For standardization and to avoid confusion, it is recommended that all timing and dates used should be in UTC as there may be difference in time and day for different States. After the SAREX, it is also recommended to conduct a de-brief for all participants.

For example:

2.1   Table Top SAREX or A Full Scale Exercise will be held between ………….. (participating agencies or States) and …………… (participating agencies or State) on ………….(date/month/year according to UTC) ………..(day of the week according to UTC) from ……… (time in UTC) to ………. (time in UTC).

2.2   In the event of bad weather, the Full Scale SAREX will be converted into a Table Top SAREX. The cut off time will be at ……….. (time in UTC).

2.3   A Pre-SAREX brief will be held on …………… (day/month/year according to UTC) …………. (day of the week according to UTC) in …………. (location of the pre-SAREX brief) at …….. (time in UTC).

2.4   De-Brief will be held on ………… (day/month/year according to UTC) ……….. (day of the week according to UTC) in …………. (location of the de-brief) at ………….. (time in UTC).

3   SCENARIO

Discussion and development of exercise scenario with participating State or States and agencies involved. Scenario created should be as realistic as possible to simulate close to a real incident. A fictitious flight plan can be included to provide additional information pertaining to the distressed aircraft as required by the RCCs. Using fictitious call signs or airlines for distressed aircraft will avoid complication or confusion especially if it involves the social media.

For example:

3.1   At ………… (time in UTC), a chartered ………….(type of aircraft) …………… (callsign of distressed aircraft) departed from …………. (point of departure) to ……………. (destination) with …………. (POB). At ……… (time in UTC), aircraft declared **"MAY DAY"** due to ………… (nature of emergency) at ………….. (location in Lat and Long or with reference to a prominent location known to all). …………………………………..

3.2   Other information like Pilot-in-command ….......... equipment carried on board …………, colour of aircraft fuselage or tail.

4   PARTICIPATING ORGANISATIONS OR UNITS

Identify and list all participating agencies or agencies from both States. Agencies should include both government and private. ANSP, Aircraft Investigation Bureau, Airlines etc should be involved in a SAREX as they are directly involved in any real air incident

For example:

4.1   From ………….. (participating local agencies or States)

1)   Civil Aviation Authority of ……………

2)   Local Air Force

3)   Local Navy

4)   …………………….

5)   …………………….

From …………….. (the other participating local or States):

1)   Civil Aviation Authority of ……………..

2)   Local Air Force

3)   Local Navy

5)   ……………………………

6)   …………………………….

5   DEPLOYMENT OF EXERCISE SAR UNITS (SRUs) AND CALLSIGNS

State all the SAR assets that will take part in the SAREX. It is recommended that the callsigns of the SRUs should be pre-fixed with the word "SAREX" to indicate that it is an exercise aircraft or surface vessel. This will not create any confusion between a SAREX and a real incident. Callsign assigned to a particular SAR asset should not be changed and to be used throughout the exercise. Different SAR asset should be assigned with an individual flight number.

5.1 SRUs from ………… (participating State) and their callsigns are as follows:

Type of SRUs	Callsign	Remarks
Fokker 50	SAREX 01	Search
C130	SAREX 02	Search
Dolphin Helicopter	SAREX 03	Search and Rescue
…………………………	SAREX……..	………………………..
…………………………	SAREX……..	………………………..
…………………………	SAREX……..	………………………..

5.2 SRUs from ………… (the other participating State) and their callsigns are as follows:

Type of SRUs	Callsign	Remarks
Helicopter	SAREX 04	Search and Rescue
Ship	SAREX 05	Search and rescue
……………….	SAREX….	…………………..

6   COMMUNICATIONS

State the agreed radio frequencies to be used in the SAREX.   Make communication arrangements between the two RCCs as well as between the RCCs and the SRUs. It is recommended that a communication check be conducted between all parties before the SAREX to ensure serviceability of communication equipment. A standby day may be necessary if the communication check is found not satisfactory or unsuccessful.

6.1 The communications arrangement will be as follows:

   a)   Between …………. (participating agency or State RCC) and …………. (the other agencies or participating State RCC)

Primary communication	-	…….KHz or …..Mhz or landlines
Secondary communication	-	…….KHz or …..Mhz or landlines
Standby communication	-	…….KHz or …..Mhz or landlines

   b)   Between …………….(participating agencies or State RCC) and SRUs)

Primary communication	-	……. KHz or …….MHz
Secondary communication	-	……. KHz or …….MHz
Standby communication	-	…….KHz or ….....MHz

6.2 A communication test between …………… (participating agency or State RCC) and …………… (the other participating agencies or State RCC) will be conducted prior to the SAREX. The date for the test is on ………………. (date/month/year according to UTC) between ……… (time in UTC) to ……..….. (time in UTC).

6.3 In the case of unsatisfactory communication test, another test will be conducted on ………………. (date/month/year according to UTC) between ……… (time in UTC) to ……..….. (time in UTC). .

6.4 All messages pertaining to the exercise shall be prefixed with the words "SAREX SAREX SAREX"

7   SEARCH OBJECT

In a Full Scale SAREX, States can consider the deployment of a search object to add realism to the exercise. This will enable participating SRUs to practice visual search from air as well as on from the surface of the sea. If the homing capability of the SRUs is desired, a beacon can be placed on the search object for electronic search. Arrangement can be made for the search object to be deployed at the proposed distress location at the activation time of the SAREX. A search object with some significant marking or markings on it will enable easier visual sighting of search target on land or on water.

7.1   The search object will be provided by …………… (one of the participating agency or State RCC) and will be deployed at ………. (time in UTC) on …………..(date of the SAREX according to UTC) at the position in which the distressed aircraft is assumed to have crashed.

7.2   Search target is marked with…………… (bright colour or with the words "SAREX" or some significant marking).

8   ALERTING AND ACTIVATION

State clearly on the alert and activation processes for the SAREX. Decide on which agency or State would initiate the distress phase and notify the other participating agencies or State or States so that [joint] SAR effort can be carried out. In a joint SAREX, if the distressed location is within the area of responsibility of a particular State, the State concern should carry out the alerting and activation phase. The other participating State or States should be notified and [joint] SAR operations can be carried out.

8.1   Since the crash will occur in ………… (location or name the State FIR) or area of responsibility, ………… (State concern) RCC will notify ………….. (participating State) . Both RCCs will coordinate the SAR Operations.

9   SEARCH AREA

Discuss on how to determine the search area or which State should determine the search area. In a joint SAR effort, the two RCCs can determine their own search areas and agree on a common search area.

9.1   The respective Search Mission Coordinators (SMCs) will work out a search area upon receipt of the distress location or crash report.

9.2   The two SMCs shall discuss with each other and agree on a common search area.

9.3   If there is a great difference between the two search areas, the controlling RCC shall decide on the most probable area and take the necessary action to promulgate the area as a restricted area for SAR operations accordingly.

10   DIPLOMATIC CLEARANCE

In a joint SAREX, make necessary arrangement for the application of Diplomatic Clearance required if State assets may or are required to enter into another State's territorial airspace or waters. The process for application should be made known or if there is an agreement in place between the two States, then the agreed procedure should be followed. Provide information regarding the SRUs and particulars of the personnel on board.   It is recommended that particulars of the SRUs be provided to the State concern prior to the SAREX. This will assist in the Diplomatic Clearance process.

10.1 …………… (State) SMC will request to ………… (State) for diplomatic clearance to allow …………… (State's) SRUs to enter …………. (State's) territorial airspace and waters.

10.2 To obtain diplomatic clearance for ……….. (State's) SRU, ……….. (State) SMC shall provide the following particulars:

a) Registration of SRU

b) Type of aircraft or vessel

c) Name of Captain/Pilot in Command

d) Names of crew on board (not required for sea asset)

e) Area of operation

f) Date and time of operation

10.3 The details of the …………. (State's) SRU shall be provided to ……….. (State) one or two weeks before the exercise. Application for diplomatic clearances through the normal channel via the …………… (agency for the process of the Diplomatic Clearance) is advised in order to accelerate the diplomatic clearance process.

11 SEARCH OPERATIONS

Note: Ensure the safe conduct of the SAREX especially with the air assets. It is recommended that there should be one controlling RCC providing instructions to search aircraft prior to entering the search area. It is also recommended that an Air Coordinator be deployed to provide instructions to search aircraft during transit to and fro from the search area as well as within the search area if the RCC personnel have no knowledge of Air Traffic Control.

11.1 All SRUs shall report to the controlling RCC or On Scene Coordinator (OSC) prior to entering the Search Area and while conducting search in the Search Area to ensure safety and efficiency in the [joint] SAR effort. All air search assets must observe and adhered to ATC instructions.

11.2 Non exercise aircraft shall keep clear of the search area unless clearance has been obtained for these aircraft to transit through.

12 RESCUE OPERATIONS

Note: Discuss on how the rescue operation is to be executed. Agency or States can decide on a simulated rescue operation by taking photographs of the search object once sighted or if actual personnel are deployed at the distressed location as survivors, actual rescue operations can be conducted. Actual rescue operation will provide training for the rescue of survivors from sea or land to hospitals or landing sites. If possible, recover the search object from the land or sea after the exercise, this will help to avoid the search object becoming an obstacle to others on land or sea. If recovering is not possible, make a general broadcast to warn others of the objects.

12.1 When the search object is sighted, the SRU shall inform the ……… (State) RCC. The ……… (State) RCC will disseminate the information to all other SRUs.

12.2 The SRUs to take photographs of the search object to simulate the rescue of the survivors.

12.3 Recovery of the search object will be by …………………….. (agency that is recovering the search object).

12.4   If the search object is unable to be recovered due to sea state or weather, an Urgent Marine Information Broadcast is provided by ……….. (maritime agency responsible for the area).

13   EMERGENCY LANDING OF SEARCH AIRCRAFT

Note: In a joint SAREX, make arrangement for search aircraft to land in airport or airfield of another State in the event of an emergency encountered by the search aircraft where immediate landing is required.

13.1   ………… (State's) search aircraft will be given permission to land in …………….. (name of airport or airfield) if an emergency landing is required.

14   TERMINATION OF SAREX

Note: State the requirements or under what circumstances that will terminate the SAREX. Make arrangement in the event of a real incident that might occur during the SAREX. Consideration can be given to have a code word or words which are understood by all participating agencies and SRUs in the event of a real incident. Once the code word is broadcast to all concern, it will be understood by all participants and the SAREX will be converted into real SAR operations.

14.1   The SAREX will be terminated under any one of the following circumstances:

a)   When the all the SRUs have returned to base.

b)   When the time for the SAREX has expired and no search object is sighted.

c)   When there is an actual emergency.

14.2   In the case of a real emergency, the exercise will be converted into a real SAR Operations. The code word **"NO DUFF NO DUFF"** will be broadcast and all agencies to terminate the exercise immediately and prepare and convert it into a real SAR Operations.

15   SAREX De-brief

Note: Conduct of a SAREX de-brief is important as this is where the evaluation process of the exercise is presented by evaluation experts who observed the exercise and observations by people who actually participated in the exercise scenarios. This is the final step to identify weaknesses and development of recommendations for improvement. Agree on a date and venue to conduct a SAREX de-brief to all participants from both States.

15.1   SAREX Debrief will be held in on ………….. (date/month/year according to UTC) at …………. (time in UTC).

15.2   The venue for the SAREX De-brief will be at ……………. (name the venue).

16   SAREX CONTROLLERS/EVALUTORS/OBSERVERS

Note: Name the personnel who will be involved in the SAREX as observers, evaluators and controllers. As for evaluators and controllers, they must have expertise in the areas of SAR as they will understand what is to be evaluated and how to control the exercise to maximize the training value.

16.1   Personnel involved in the SAREX will be as follows:

From   SAREX Controllers/Evaluators/Observers

……………. (Agency or State) ……………….. (name of personnel and their role)

17   INVITATION TO FOREIGN OBSERVERS

Note: Agency or States may consider inviting observers from other agencies or foreign countries or international organizations to attend and observe the SAREX. These personnel can provide valuable feedbacks for improvement to the system. Arrangement to be made as to which State will do the invitation and who should be invited to attend.

17.1   Invitation to foreign observers to observe the SAREX at ………… (state the venue for the observation of the SAREX) will be provided ……… (State that is providing the invitation) on behalf of …………. (the other State).

17.2   The following countries and organizations will be invited to attend:

a)   ……………… (name of country or organization)

b)   ……………… (name of country or organization)

c)   ……………… (name of country or organization)

d)   ……………… (name of country or organization)

18   PRESS COVERAGE

Note: If there provision for any press coverage for the SAREX, made the arrangement for drafting of press release.

18.1   If there is a requirement for a [joint] press release on the SAREX to be issued, ………...(Agency or State that will produce the draft) will draft the press release and forward to ……… (the other participating agencies or State) for concurrence.

19   SAREX REPORT

Note: SAREX Report is important as it serve as a permanent record of the exercise. Each element of the exercise is recorded and lesson learnt during the exercise is captured. Make arrangement on who should produce the SAREX Report for dissemination to all participating agencies as well as others who may be interested.

19.1   ……….. (Agency or State) will produce the SAREX Report with assistance from ………. (the other participating agencies or State). Photographs will be made available for the SAREX Report.

19.2   A copy of the report will be sent to each of the following countries and International Organizations.

a)   ………………….….. (agency or country or International Organization)

b)   ………………….….. (agency or country or International Organization)

20   VENUE FOR THE NEXT SAREX

Note: It will be good to plan for an annual [joint] SAREX with relevant agencies or neighbouring State or States. State the tentative date and venue if possible for the next SAREX coordination meeting and SAREX.

20.1   The next SAREX Coordination Meeting will be held at ……………. (venue) on ……….. (date/month/year).

20.2   The next Full Scale SAREX will be held on ………… (date/month/year).

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

<u>APAC States Face Demanding SAR Responsibilities with Few Resources</u>

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.

<u>Taking A Regional Approach Improves Effectiveness and Efficiency</u>

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.

<u>When Developed SAR States Support Less Developed Neighbours, Everyone Wins</u>

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 SARP's 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/ICAO) or multi-lateral initiatives include:

a) conduct 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) the provision of operational search plan data;

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

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

APSAR/TF - TASK LIST

(Last amended APSAR/TWG/1, August 2016)

ID	Task Description	Start Date	Expected Finish Date	Resource Names/Remarks
1/1	Present the information on Annex 12 considerations to the JWG next month through the Chair of the JWG	SEP 2016	SEP 2016	USA, ICAO
1/2	States to remind their frequency management authorities regarding the ITU's decision to protect the 406 MHz band from other applications such as mobile telephones	SEP 2016	DEC 2016	States
1/3	States to take APSAR/WG/1/WP08 and associated presentation (PR08) as a refresher training lesson	SEP 2016	JUL 2017	States

Bilateral Arrangements between States

Capturing Issues and Enablers for Improvement

Blockers	Enablers
1.Political Issues	1. Explain consequences of not having an arrangement – EDUCATION. Internal and External or International: Depends on National decisions. International much more complex – ensure arrangements are not complex. Address what we can deal with, leave out the more complex or contentious issues.
1.Ministry support	
1.Cabinet approvals	
1.Ministry needs to understand importance or arrangements and consequences of no arrangements	
1.Political trust	
2.Small Country - assistance	Collaboration across States. Project sponsorship – where does it come from. Continued assistance in Regions by more developed States.
2.Long process – limited resources	
2.NCLB – HR development & training	
2.ICAO assist in development	
3.Complex documents	Try to avoid.
3.& 1.Legal process	Operational document. Provide tools and resources to give Lawyers instructions for the outcomes desired.
3.&1.Will try, not we must	Desired input
Both sides aware, see need	Meetings to disseminate the idea of the needs at Regional or sub-Regional levels.
State commitment – assets	Facilitation of assets. State to pay for civil assets.
Operational level – Policy level	
Different – policies	
1984 – different era or less stressful	
Aeronautical & maritime (or both)	Make sure any anomalies are covered in the arrangements.
No response to drafts	Follow up. Try to understand if there are problems and what may be done to help.
Military issues	Education. Access.

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