

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF THE THIRD MEETING OF THE ASIA/PACIFIC REGIONAL
SEARCH AND RESCUE TASK FORCE (APSAR/TF/3)**

Maldives, 25-29 January 2015

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

APSAR/TF/3
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INTRODUCTION

Meeting

1.1 The Third Meeting of the Asia/Pacific Regional Search and Rescue Task Force (APSAR/TF/3) was graciously hosted by the Maldives from Sunday 25 to Thursday 29 January 2015 at Hulhulé Island (location of Malé International Airport).

1.2 The APSAR/TF/3 meeting included an International SAR Workshop (SAREX) focussed on the Indian Ocean, which was conducted on Sunday 25 January 2015 (Agenda Item 7 provides additional details). After the APSAR/TF/3 meeting, stakeholders involved in the Australian Indian Ocean Area SAR Capability Partnership Program (refer APSAR/TF/3/IP05) met on Thursday 29 January 2015 to discuss program arrangements (Agenda Item 7 provides additional details).

Attendance

2.1 The meeting was attended by 58 participants from Australia, Bangladesh, Brunei Darussalam, Cambodia, China, India, Indonesia, Japan, Maldives, Malaysia, Mauritius, Mongolia, Nepal, New Zealand, Pakistan, Philippines, Seychelles, Singapore, South Africa, Sri Lanka, Thailand, U.S.A., Cospas-Sarsat, IATA, the International Maritime Organization (IMO) and ICAO. A list of participants is at **Appendix A** to this report.

Officers & Secretariat

3.1 Mr. Scott Constable, Principal Advisor, Aeronautical SAR Policy, Joint Rescue Coordination Centre Australia (JRCC), Australian Maritime Safety Authority (AMSA) chaired the meeting.

3.2 Mr. Len Wicks, Regional Officer ATM, ICAO Asia and Pacific Office, was the Secretary for the meeting. Mr. David Labrosse, Regional Officer ATM, ICAO Eastern and Southern African Office, assisted with Secretariat duties for the meeting.

Opening of the Meeting

4.1 The meeting was opened by Chief of Defence Force, Major General Ahmed Shiyam, Mr. Ibrahim Faisal, Chairman of Maldives Civil Aviation Authority (MCAA), and the Chief Executive of the MCAA Mr. Hussain Jaleel, who welcomed everyone to the Maldives.

4.2 Mr. Scott Constable requested everyone to stand for a moment of silence in respect for the MH370 and QZ8501 victims and their families.

4.3 On behalf of Mr. Arun Mishra, Regional Director of the ICAO Asia and Pacific Office, Mr. Len Wicks thanked the Maldives for their hosting of the APSAR/TF/3 meeting.

Documentation and Working Language

5.1 The working language of the meeting and all documentation was English. A total of 16 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/TF 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/TF that relate solely to matters dealing with the internal working arrangements of APSAR/TF.

List of Decisions and Draft Conclusions/Decisions

7.1 List of Conclusions

Draft Conclusion APSAR/TF/3-1 SAR Air Navigation Report Form

That, the Search and Rescue (SAR) Air Navigation Report Form (ANRF) as appended in **Appendix D to the Report** be utilised by Asia/Pacific States as a means of regional strategic SAR planning and implementation in the Asia/Pacific Region.

Draft Conclusion APSAR/TF/3-2 SAR Lessons Learnt

That, considering the implications for Search and Rescue standards from the MH370 and other related events, ICAO, in coordination with the IMO through the ICAO/IMO Joint Working Group on Harmonisation of Aeronautical and Maritime SAR (JWG), should consider urgently updating global SAR documents from the lessons learnt.

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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) 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:

- a) Second Meeting of the APANPIRG Air Traffic Management Sub-Group (ATM/SG/2, Hong Kong, China, 04 to 08 August 2014);
- b) Twenty Fifth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/25, Kuala Lumpur, Malaysia, 08 to 12 September 2014);
- c) 21st meeting of the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue (JWG, 15 to 19 September, 2014);
- d) Aircraft Tracking Task Force (ATTF, report presented on 11 November, 2014); and
- e) Fifty First Conference of Directors General of Civil Aviation, Asia and Pacific Regions (DGCA/51, 24 to 26 November 2014).

2.2 The JWG Chair provided a brief verbal update on significant outcomes from the JWG meeting, particularly the International Aeronautical and Maritime SAR Manual (IAMSAR) update due in 2016.

2.3 The meeting was apprised of the work being conducted to develop the new Asia/Pacific Regional Air Navigation Plan (RANP) document. Participants were asked to analyse the draft data on Search and Rescue Regions (SRR), SAR Facilities, and Special SAR requirements, and report back to ICAO on any omissions, errors or improvements by **31 March 2015** (*note: a State Letter would also be circulated to ensure all administrations, including those that did not attend the APSAR/TF/3, would be aware of the draft data*).

2.4 The APSAR/TF/3 discussed the definition of what was meant by SAR Point of Contact (SPOC) in the new RANP SAR tables. It was agreed that this meant the entity responsible for 24 hour SAR response to Cospas-Sarsat alerts, and that onward communication could be noted in the 'remarks' column). Moreover, the Task Force agreed that information on both aeronautical and maritime RCCs could be entered under the 'RCC' column if it was not a joint arrangement.

2.5 The APSAR/TF/3 meeting reviewed the draft SAR Air Navigation Report Form (ANRF, **Appendix C**), which will be submitted to the ATM/SG for consideration. The APSAR/TF agreed to the following Draft Conclusion for consideration by the ATM/SG and APANPIRG:

Draft Conclusion APSAR/TF/3-1 SAR Air Navigation Report Form

That, the Search and Rescue (SAR) Air Navigation Report Form (ANRF) as appended in **Appendix D to the Report** be utilised by Asia/Pacific States as a means of regional strategic SAR planning and implementation in the Asia/Pacific Region.

Agenda Item 3: Global Update

ICAO Multi-disciplinary Meeting regarding Global Tracking (WP13)

3.1 Australia provided a briefing on the Multi-disciplinary Meeting regarding Global Tracking, at ICAO Headquarters in Montreal, 12 and 13 May 2014. The APSAR/TF was informed that consensus was forged among States and the international air transport industry on the near-term priority to track airline flights, no matter what their global location or destination was. The meeting established a framework for future efforts in this regard for the medium and long term.

3.2 An IATA Aircraft Tracking Task Force and an ICAO Ad-Hoc Working Group on Flight Tracking were formed immediately following the meeting. Both groups completed work towards development of a Draft Concept of Operations on flight tracking with a final high level Concept of Operations planned for delivery to the ICAO High Level Safety Conference, in February 2015.

3.3 The APSAR/TF/3 was informed that there were potential inputs for the Asia/Pacific SAR Plan from the recently developed ICAO Concept of Operations for a Global Aeronautical Distress and Safety System (GADSS) proposal. The United States commented that there was a concern that the High Level Safety Conference in February 2015 would be dominated by aircraft tracking from the GADSS discussion, at the risk of overlooking or undervaluing the SAR system components that needed improvement. There was strong support for the need for ICAO to increase its resources allocated to assisting with improvements to the global SAR system.

Status and Developments in Cospas-Sarsat (WP03)

3.4 Cospas-Sarsat provided a status report on the Cospas-Sarsat (Cosmicheskaya Sistema Poiska Avaryinyh Sudov Search and Rescue Satellite-Aided Tracking) System, including system operations, significant developments, space and ground segments, beacons, false alerts and results of Mission Control Centre (MCC) - SAR Point of Contact (SPOC) communication tests.

3.5 In 2013, Cospas-Sarsat assisted in 153 aviation incidents, involving the rescue of 348 persons. Cospas-Sarsat provided the only alert in 23 aviation incidents, and the first alert in 65 incidents. The Cospas-Sarsat false alert rate was 95% (i.e. about one real alert in 20 alerts was received). Emergency Locator Transmitters (ELTs) continued to be a significantly disproportionate contributor to false alerts, many of which were caused by training and maintenance personnel.

3.6 Recognising that APANPIRG had already urged States to *provide post-alert advisories to Cospas-Sarsat on all alert outcomes as soon as practicable as a performance and system improvement measure* under *Conclusion APANPIRG/25-18: Cospas-Sarsat Alert Responses*, the Task Force agreed that poor reporting States would be identified in future so rectification action could be taken.

3.7 There were approximately 1,600,000 406-MHz beacons in use worldwide at the end of 2013, up 6.7% from 2012. On average 326 SAR users per month log into the International 406-MHz Beacon Registration Database (IBRD, www.406registration.com) to search for beacon registration information.

3.8 Regarding Cospas-Sarsat communication SPOC tests, no Asia/Pacific States were in the non-responsive or 'Low Success Ratio' (between 20 and 50% successful tests) categories. This was an improvement since the last report at APSAR/TF/2. However a large number of African and Central Asian States, some of which neighboured the Asia/Pacific, had poor communication test results. In addition, many Asia/Pacific Administrations viewed themselves as deficient with respect to their implementation of Cospas-Sarsat alert facilities in the SAR Capability Matrix.

3.9 The Medium Earth Orbit SAR (MEOSAR) satellite constellation currently included three operational L-band satellites (Glonass-K1, and Galileo IOV-3 and IOV-4 satellites) and 16 Global Positioning System (GPS) II satellites carrying experimental repeaters with an S-band downlink used by the Cospas-Sarsat Programme. It was reported that the Galileo IOV-4s had been taken out of service following a problem that rendered it unable to use two frequencies. The following Asia/Pacific States had announced the planned implementation of an operational MEOSAR ground segment: Australia, China, India, Japan, New Zealand and Pakistan.

ICAO HQ SAR Technical Officer Seconded (IP02)

3.10 In response to the recommendation from the APSAR/TF/2 (resulting in *Conclusion APANPIRG/25-20: Global SAR Coordination*) and the Multi-disciplinary Meeting regarding Global Tracking, Australia offered one of its Aeronautical Joint Rescue Coordinator Centre (JRCC Australia) Chiefs as a secondee at ICAO Headquarters, Montreal from the end of January 2015 for a 2 year period, fully funded by Australia. This expertise would allow ICAO to review options for a long term solution. ICAO thanked Australia for its initiative to assist the global SAR effort.

406-MHZ ELT Specification Development by Cospas-Sarsat (IP03)

3.11 Cospas-Sarsat provided a summary of developments from the Radio Technical Commission for Aeronautics (RTCA), the European Organisation for Civil Aviation Equipment (EUROCAE), and ICAO relevant to the Cospas-Sarsat 406-MHz ELT programme.

3.12 The RTCA SC 229/EUROCAE WG-98 Sub-group 1 (in-flight triggered ELTs) was focused on developing and expanding the questionnaire which would be used to develop triggering criteria for the in-flight activation, while the work on Sub-group 2 (crash safety) focused on the upcoming test campaign to be undertaken by NASA to verify the performance of various ELTs (and g-switch) in a test aimed at stimulating the crash of an aircraft.

3.13 The meeting noted that the ICAO Flight Recorder Panel (FLIRECP) was now proposing new amendments to Annex 6 of the Chicago Convention that would require that certain types of aeroplanes be equipped with a distress system which would reliably allow the location of an aeroplane accident site within a 6 Nautical Mile (NM) radius. However the best option to achieve this was still not clear. Such new requirements could significantly increase future deployment and usefulness of ELTs if it could be demonstrated that in-flight triggered, second-generation ELTs, operating in a MEOSAR environment, would be a suitable choice to address the new ICAO requirements.

3.14 Cospas-Sarsat noted that the possibility of Automatic Deployable Flight Recorders (ADFR) integrated with ELTs was being discussed by ICAO in relation to the GADSS.

New Zealand SAR Assistance in the Pacific (IP04)

3.15 New Zealand informed the APSAR/TF of assistance provided by the New Zealand government to the Pacific Island nations of Kiribati and the Kingdom of Tonga, to improve SAR in their areas of responsibility. This assistance included the provision of search plans and aerial searching by Royal New Zealand Air Force P-3K2 aircraft at the request of MRCC Fiji, a new rescue vessel, communications equipment, and SAR training and SAR awareness education to Kiribati and National SAR Plan development and conduct of a SAR workshop for Tonga.

3.16 The APSAR/TF/3 meeting thanked New Zealand for its efforts to assist less developed States, noting that the assistance was of financial mutual benefit by reducing costs to the donor. New Zealand agreed to provide a draft Appendix for the Asia/Pacific SAR Plan that elucidated the benefits of such cooperation for ‘champion States’ that donated resources.

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

ICAO Brief on the SAR Response to MH370 (WP05)

4.1 ICAO provided a brief on the SAR response to the disappearance of Malaysia Airlines Flight 370 (MH370) on 08 March 2014, while flying from Kuala Lumpur, Malaysia to Beijing, China with 239 people on board. After ten months the whereabouts of the B777-200ER aircraft remained a mystery, with current underwater search efforts focused on the Southern Indian Ocean. The purpose of the brief was to provide feedback from the ICAO Regional Office on aspects of events, coordination, advice, challenges noted and possible improvement suggestions as a result of the MH370 tragedy.

4.2 The meeting noted the following issues as being possible lessons learnt that could be incorporated into the Asia/Pacific Plan:

- a) The time lapses of more than 16 minutes between the transfer of control point at IGARI and the advisory to Kuala Lumpur ACC that MH370 had disappeared, 38 minutes for the declaration of an INCERFA SAR phase and 7 hours and 21 minutes for the declaration of an ALERFA/DETRESFA SAR phase by Viet Nam indicates that there was a need to divert more resources and/or urgency in the ATC response;
- b) It is apparent that a higher degree of civil/military coordination may have revealed the MH370 course reversal much earlier, and as the track also crossed Thailand’s PSR coverage, advice to Thailand may have also proved beneficial. Considerable time had been lost in the initial search, partly due to poor civil/military cooperation;
- c) Annex 11 and Annex 12 SAR phases and actions needed to be revised (Annex 11, Section 5.2, and Annex 12, Section 5.2 refer) to take into account the expectations and capabilities of an ATS surveillance environment, the need for civil/military coordination where appropriate, and advisories to all neighbouring ACCs in the case of uncertainty of the aircraft’s track; and
- d) Poor SAR preparedness and ad hoc SAR coordination between States, including the intervention by political decision-makers needs to be addressed if an optimal operational response was that it was difficult to reconcile the primary radar trace with an airliner’s capability, adding further doubt at the time.

MH370 Search and Rescue Operations and Lessons Learnt (WP06)

4.3 Malaysia commented that the delay in the activation of the Kuala Lumpur Aeronautical Rescue Coordination Centre (ARCC) was partially due to conflicting reports received from Malaysian Airlines (MAS) that the aircraft was still flying, based on their flight tracking system and reports on the media indicating that MH370 had landed safely in Nanning airport in Southern China. Upon further investigation, this information was found to be baseless and inaccurate, so time was wasted pursuing these unfounded reports.

4.4 Due to the uncertainties surrounding the information received from the Royal Malaysian Air Force, it was decided that both areas to the west and east of Peninsular Malaysia would be searched, and a large number of assets, aircraft and vessels were deployed to search these areas. Major challenges faced by the Kuala Lumpur ARCC during the MH370 SAR operation were as follows:

- a) complexity of the MH370 event, compounded with the lack of conventional data (such as aircraft last known position, altitude, speed, actual flight route to determine the correct datum) hindered the effectiveness of the SAR operations;
- b) absence of distress beacon detections;
- c) unavailability of updated regional maps and inadequate facilities hampered the SAR operation (Kuala Lumpur ARCC had to resort to Google Earth as a mapping solution) – the unavailability of search planning software and specific equipment restricted the RCC in providing a complete and comprehensive tasking order;
- d) insufficient number of adequately dedicated SAR personnel at the Kuala Lumpur ARCC over a prolonged period of time (all SAR personnel were also operational air traffic controllers at Kuala Lumpur ACC, and many SAR trained officers were also assigned non-operational tasks in city hotels, such as briefing the next of kin);
- e) verification of the military radar data took longer than expected, resulting in Kuala Lumpur ARCC initially conducting the search in two different areas;
- f) outdated directory of SPOCs within the Asia Pacific region delayed the transfer of information between the respective RCCs;
- g) incomplete detailed information made available to the Kuala Lumpur ARCC on how certain search areas were derived hampered fast responses by other States; and
- h) participation of numerous military organizations during the search within the Kuala Lumpur SRR and neighbouring SRRs requiring continuous detailed briefings, which caused considerable workload (the availability of Liaison Officers from Indonesia and Australia at the Kuala Lumpur ARCC ensured smoother coordination).

4.5 The following recommendations were made by Malaysia for consideration by the APSAR/TF in terms of SAR system improvements:

- a) extend the transmission life of Underwater Locator Beacons (ULBs) installed in flight recorders on all commercial aircraft;
- b) closer civil/military airspace coordination and communication;
- c) clearly defined division of responsibilities between the SAR functions (Annex 12) and the air accident investigation search and recovery functions (Annex 13); and
- d) establishment of a legal framework to support the roles and responsibilities in handling various SAR missions.

4.6 Malaysia commented that the Rescue Coordination Centre (RCC) did not have dedicated SAR officers, but utilised SAR-trained air traffic controllers. APSAR/TF/3 agreed that this may not be optimal, as SAR was an increasingly specialised task that required expert knowledge. In addition, Malaysia stated that lack of English proficiency between RCCs played a part in the difficulty of understanding information that was being conveyed, especially with the Ho Chi Minh RCC.

4.7 Malaysia expressed gratitude and thanks to all the States that had provided assistance and cooperation during the search for MH370. Malaysia also expressed its thanks to Viet Nam for ‘releasing’ a significant amount of airspace to Malaysia in a cooperative manner for the initial search in the South China Sea. Singapore commented on the rapidity of Cambodia and Thailand’s response to requests for data.

MH370 JRCC Australia SAR Response (WP14)

4.8 Australia provided an overview in WP14 of the Australian SAR response to Malaysia Airlines Flight MH370, with a view towards prompting APSAR/TF/3 discussion on any issues which may improve the development of the draft Asia/Pacific Regional SAR Plan. The paper also provided a SAR comparison between the MH370 incident and the Air France Flight AF447 incident of 2009.

4.9 After contact was lost with aircraft MH370 (Boeing 777-200ER, registered 9M-MRO), an analysis of radar data, JRCC Australia and the Australian Transport Safety Bureau (ATSB) had jointly determined a search area strategy correlating information from a Joint Investigation Team (JIT) located in Malaysia. The JIT was comprised of specialists from Malaysia, China, USA, UK and France, and other government and academic sources.

4.10 Innovative analysis by the JIT of satellite communication (SATCOM) system messages recorded by a satellite ground station in Perth, Western Australia placed the aircraft in the Australian SAR Region (SRR) along an arc in the southern part of the Indian Ocean. This arc was considered to be the location where the aircraft’s fuel was exhausted. The analysis process included an independent validation of results.

4.11 A surface search of probable impact areas along this arc was coordinated by the Australian Maritime Safety Authority’s (AMSA’s) JRCC Australia in Canberra from 18 March 2014 to 28 April 2014. The search effort involved a multi-national, civil/military SAR response involving aircraft and ships from several countries including Australia, China, Japan, Malaysia, New Zealand, Republic of Korea, United Kingdom and the United States of America, plus Australian and international technical experts and liaison officers.

4.12 This analysis was supplemented by other information provided to the ATSB during this period including possible ULB and hydrophone acoustic detections. Information regarding the performance and operation of the aircraft was also considered. Over the duration of the search, search areas were relocated following further refinement and analysis by the JIT of the available data. AMSA stated that they were very grateful to all the States and their many personnel involved for their assistance and expertise.

4.13 Sri Lanka commented that poor civil/military cooperation may have had a very adverse effect on the SAR response, and asked ICAO to do what it could to improve this aspect. ICAO noted that they can deliver the right messages through fora such as seminars, but ultimately, civil/military cooperation was a matter for the State to manage, preferably through a National SAR Committee. Australia stated that the civilian SAR system can often assist and respond quicker to a military SAR incident, especially if civil SAR Units (SRUs) were closer or better equipped than military SRUs which may take longer to respond due to distance and deployment times – so civil/military cooperation was mutually beneficial for both parties.

4.14 The Seychelles commented on their Joint RCC (JRCC), which was created to ensure harmonisation between aeronautical and maritime SAR efforts. They noted that training was essential for military personnel to familiarise themselves with the civil SAR operation, but now that all resources were combined there was a high degree of cooperation. The APSAR/TF recognised the effort by the Seychelles to develop the JRCC as a model for other States.

4.15 Singapore supported the continued enhancement of aircraft equipage in terms of technology that could assist a SAR response.

4.16 Australia noted that numerous challenges affected the MH370 search operation, including:

- a) lack of available and accurate position data about MH370's actual flight path;
- b) no distress beacon detections from ELT;
- c) remote oceanic operations, limiting the choice of suitable search aircraft assets to those which could operate with sufficient endurance and range;
- d) a period of 10 days before the search commenced within the Australian SRR, and the resultant oceanic drift that led to large search areas and wide debris dispersal;
- e) two tropical cyclones that influenced oceanic drift modelling;
- f) poor weather and search conditions on a number of days;
- g) long transit times for ships to reach aircraft sightings;
- h) availability of ship-borne helicopters to investigate sightings (the Ocean Shield helicopter became unserviceable in transit);
- i) time required for satellite imagery analysis before tasking SRUs;
- j) multinational civil/military cooperation, coordination and communications;
- k) media pressure, requiring a JRCC Australia Media Team and social media updates;
- l) volume of information submitted online and via email which required processing (including Internet submission of crowd-sourced satellite imagery);
- m) volume of sea pollution making it difficult to distinguish possible MH370 debris;
- n) lack of a detailed description of cargo carried (colour, type, etc.) to enable correlation against any floating objects sighted;
- o) lack of information regarding aircraft components which were likely to float (this information was eventually provided by the aircraft manufacturer – composite material components were indicated as the most likely to float);
- p) sustainment of large logistical requirements such as air search observers, fuel, search unit maintenance and resupply requirements, accommodation, etc.; and
- q) lack of a clearly defined division of responsibilities between the search and rescue function (Annex 12) and the air accident investigation search and recovery function (Annex 13).

4.17 On 30 March 2014, the Prime Minister of Australia established the Joint Agency Coordination Centre (JACC) to coordinate the Australian Government's support for the search for MH370. The purpose of the JACC was to ensure the public and other stakeholders, particularly families, are well informed about the progress of the search. The JACC worked closely with the Government of Malaysia, Malaysia Airlines and other international stakeholders, but did not perform any search, recovery or investigation activities.

4.18 The MH370 Operational Search Update of 14 January 2015 reported that more than 14,000 square kilometres of the seafloor had been search so far, and assuming no significant delays with search vessels, equipment or from the weather, the current underwater search area may be largely completed about May 2015.

4.19 The APSAR/TF had an extensive discussion about the lessons that might be learnt from the MH370 event. Considering APANPIRG *Conclusion APANPIRG/25-22: Provision of MH370 Feedback*, the Task Force expressed its disappointment at the unfortunate lack of participation by Viet Nam at APSAR/TF/3. In addition to those already provided in WP05, the lessons included the following points regarding the need for:

- a) adequate testing of systems (regular testing, or during SAR Exercise - SAREX) to ensure an efficient Annex 11/12 response;
- b) States (or sub-regional/regional bodies) to minimise the 'grey areas' over unclear aeronautical-aeronautical and aeronautical - maritime SRR boundary responsibilities, especially in the latter case regarding an aircraft ditching into the sea;
- c) improvements in the cooperation between international bodies such as Iridium, Cospas-Sarsat and Inmarsat to enhance technical data availability and analysis;
- d) improvements in cooperation between States and State entities through ICAO Standards and State legislation (*note: Annex 12 paragraph 5.1.1. merely refers to 'SAR organisations' being compelled to provide information to RCCs, whereas the scope of cooperation should be much wider*);
- e) air traffic controllers to have relief or a supervisor for emergency response support;
- f) familiarisation of ATC unit and airline operating systems through regular visits/liaison by RCC personnel to relevant ATC units and Airline Operating Centres (AOCs);
- g) RCC staff to be full-time specialised officers expert in the field of SAR;
- h) appropriate training of military responders regarding civilian SAR systems and standards and recommended practices.
- i) English language proficiency in all RCCs to ensure correct understanding of communications;
- j) regular reports and access to information for key stakeholders (SITREPS and media such as the Internet);
- k) providing authority and empowerment to SAR agencies and therefore SAR Mission Coordinators to effectively coordinate SAR responses through State legislative Acts;
- l) management of undue external influences (such as political entities) on efficient RCC responses; and
- m) a means of handling media/next-of-kin enquiries.

4.20 Considering the lessons learnt from the MH370 tragedy (paragraphs 4.2 and 4.19), and other relevant information on recent SAR events, APSAR/TF/3 agreed to the following Draft Conclusion for consideration by the ATM/SG and APANPIRG:

Draft Conclusion APSAR/TF/3-2 SAR Lessons Learnt

That, considering the implications for Search and Rescue standards from the MH370 and other related events, ICAO, in coordination with the IMO through the ICAO/IMO Joint Working Group on Harmonisation of Aeronautical and Maritime SAR (JWG), should consider urgently updating global SAR documents from the lessons learnt.

ATM and SAR Operation – QZ8501 (WP16)

4.21 Indonesia provided initial information regarding the Air Traffic Control (ATC) and SAR operation for Air Asia QZ 8501, which lost contact with ATC on 28 December 2014. The last known position of the aircraft was over the Karimata Strait, Java Sea. BASARNAS, as Indonesia's SAR organisation, had been conducting a SAR operation since the declaration of emergency phase until the wreckage was recently found.

4.22 Air Asia QZ8501 (an Airbus A320-200) took off from Surabaya at 22:36 UTC, and climbed to FL320 on ATS route M635. While en-route, the QZ8501 pilot requested a deviation left of track to avoid weather, which was approved by ATC. The pilot then requested a higher level (FL380). When, Jakarta ATC tried to contact QZ8501 to approve clearance initially to FL340, there was no response. ATC called QZ 8501 several times but there was no reply.

4.23 The main SAR operation problems were associated with the adverse weather during part of the search, poor underwater visibility, strong tides and currents that affected the ability of SRUs to operate. Indonesia thanked Australia, China, Japan, Malaysia, Republic of Korea, Singapore, Russia and the USA for their assistance to the SAR effort. The preliminary accident investigation report would be announced by the Indonesian National Transport Safety Committee (NTSC) at the end of January 2015.

4.24 Indonesia made a presentation to the Task Force showing the daily results of the SAR response. On Day 16 and Day 17, the flight data recorder and Cockpit Voice Recorder (CVR) were found approximately 15NM southeast of QZ8501's Last Known Position (LKP). On Day 18 the aircraft's fuselage was found. Two passenger bodies were also found about 370NM east of the LKP.

4.25 The APSAR/TF commended Indonesia on the conduct of the SAR operation, noting that the post-incident analysis and reporting was on-going. The Task Force discussed whether military SRUs were adequately trained in specific SAR procedures (such as the need to operate at optimal search altitudes). Indonesia stated that regular SAREX and liaison with the military had developed an adequate knowledge among SAR responders, and this was noted as a key lesson for other States.

4.26 Indonesia commented that the enhanced cooperation they had received by civil and military agencies was greatly assisted by their legislation (Act 29/2014) and also the presence of high ranking political officers, who reiterated the need to support BASARNAS.

Asia/Pacific SAR Status (WP04)

4.27 ICAO presented the status of SAR information in the Asia/Pacific Region known to the ICAO Regional Office, and requested States to update the information, including the:

- a) List of SAR Agreements (**Appendix D**);
- b) SAR Agreement Matrix (**Appendix E**); and
- c) SAR Capability Matrix Table (**Appendix F**).

4.28 This data indicated that only seven Asia/Pacific administrations had a high level of Annex 12 compliance in all twenty assessed elements (Australia, Hong Kong China, Japan, New Zealand, Republic of Korea, Singapore and the United States of America).

4.29 **Figure 1** provides a regional SAR overview at APSAR/TF/2. **Figure 2** provides the APSAR/TF/3 compliance, indicating that significant Annex 12 weaknesses remained in the South Asia area and the Southwest Pacific (improvements were noted in Bangladesh, Indonesia, Fiji and Pakistan). There were also parts of Southeast and East Asia that indicated a need for compliance improvement.

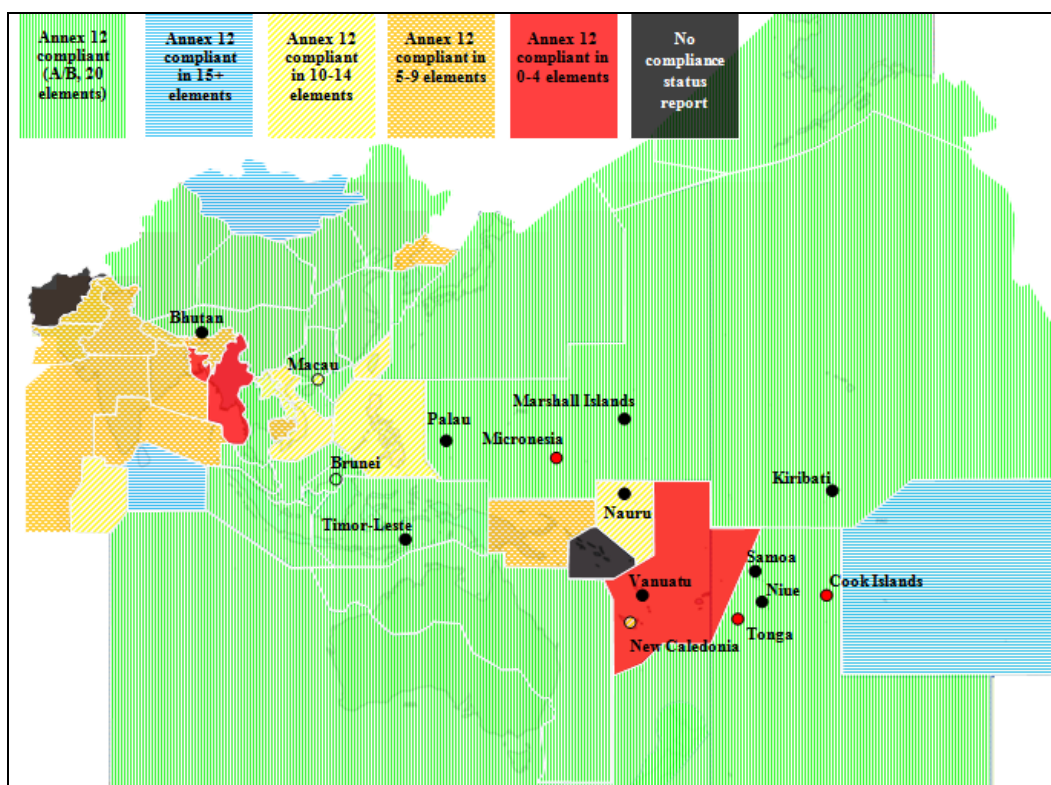


Figure 1: APSAR/TF/2 Asia/Pacific Regional SAR Overview

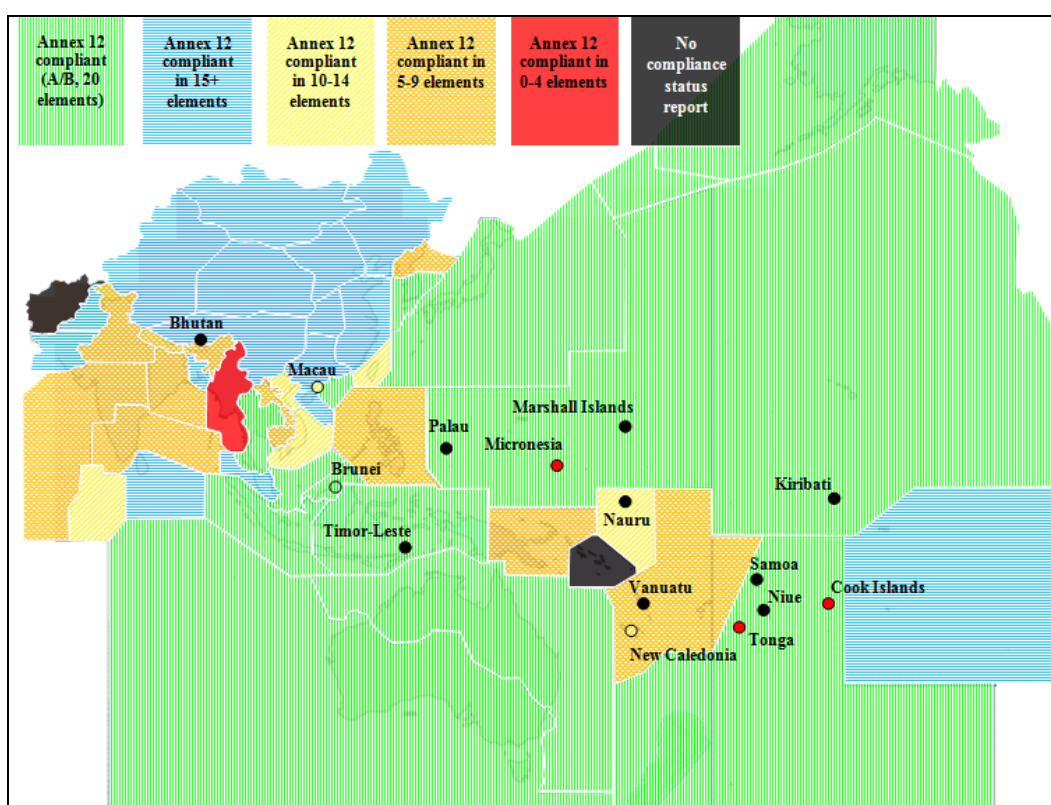


Figure 2: APSAR/TF/3 Asia/Pacific Regional SAR Overview

4.30 **Figure 3** provides a graph of SAR capability from **Appendix F** based on category A (fully meets Annex 12) and B (meets Annex 12 in most areas) classifications only.

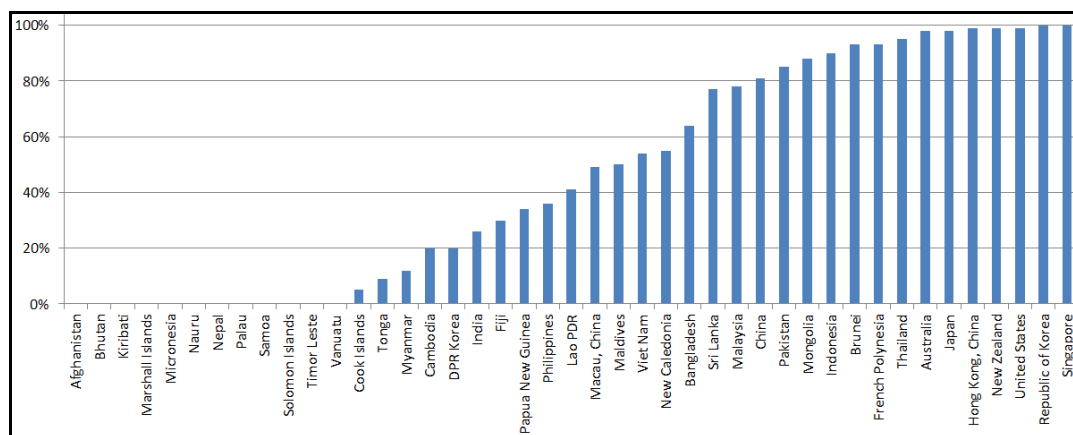


Figure 3: SAR Capability

4.31 Many States had not provided any information on their SAR compliance status, and therefore they are assumed to be deficient until such time as clarification is provided. There had also been no update from the Taipei Flight Information Region (FIR).

4.32 In summary, the Asia/Pacific appears to have made only marginal SAR capability progress in the past two years since the APSAR/TF/1 was held. There remained significant risk of poor SAR responses unless major changes, including increased resources and effort, were applied to this important area of safety.

4.33 The Task Force reviewed and discussed the list of new States and Administrations with SAR compliance deficiencies proposed for APANPIRG/26's attention (to add to existing SAR deficiencies registered for the Cook Islands and the Maldives after APSAR/TF/4) as follows:

- South Asia: Afghanistan; Bhutan; India; Myanmar; Nepal;
- Southeast Asia: Cambodia; Lao PDR;
- East Asia: DPR Korea; Macau, China, Philippines; and
- Pacific: Fiji; Kiribati; Marshall Islands; Micronesia; Nauru; New Caledonia; Palau, Papua New Guinea, Samoa, Solomon Islands, Timor Leste and Vanuatu.

SAR Agreements with Neighbouring States (WP07)

4.34 In WP07, India discussed the imperative for establishment of SAR agreements with the neighbouring States. They noted that SAR agreements had always been necessary for seamless cross-border transit of search assets engaged in SAR activity, but there had not been much progress in establishing such agreements. India also noted that at the APSAR/TF/1 meeting in 2013, it had been categorically emphasized that SAR Agreements should be facilitated as early as possible. India noted that the findings regarding the missing MH370/QZ-8501 may further reiterate the importance and essential aspects of agreements between States.

4.35 India stated that initiatives had been taken by presenting a draft Letter of Agreement (LOA) for discussion so as to derive an agreeable template/format for submission to respective Governments for consideration. Unfortunately there had been insignificant progress thereafter, so India urged neighbouring States to take actions to formalise the LOAs.

SAR Activity Sharing of Information using the Internet (WP15)

4.36 Japan discussed the SAR coordination system of Japan, which was developed to share information between Japanese organizations. The new Internet function seems to be an effective means to share information, not only domestically but also among States participating in an international SAR activity, such as that required by the SAR response to MH 370. However the system was not intended to be public as it required a secure sign-on so information was protected from alteration.

Third Joint Mongolia-Russia Aviation SAR Exercises (IP05)

4.37 Mongolia presented an IP on the Third Joint Mongolia-Russia SAREX. The Task Force noted the continuing exercises were an excellent example of cross-border cooperation that involved a realistic search which truly tested the system, allowing lessons to be learnt and systems to be refined.

Indian Ocean Area SAR Capability Program (IP06)

4.38 Australia advised the Task Force about a new initiative between Australia, the Maldives, Mauritius and Sri Lanka with the objective of improving regional SAR service capability in the Central Indian Ocean region. Mauritius, Sri Lanka and the Maldives thanked Australia for its assistance.

4.39 Like the effort being conducted by New Zealand in the South Pacific (IP04), the APSAR/TF/3 noted that there were substantial mutual benefits to Australia, including enhanced SAR response assurance to citizens of the donor nation that travelled through the airspace or across the ocean of the State receiving assistance. In addition, there was an advantage when a recipient State was able to respond to SAR alerts that might take the donor State SRUs much longer time to reach in the more remote areas of its own SRR.

Maldives National Search and Rescue System (IP07)

4.40 The Maldives provided an outline on their SRR with its 1,192 widespread islands, cooperation between maritime and aeronautical SAR organizations, scope of the Coast Guard/Maldives National Defence Force MNDF, the existing Search and Rescue facilities including challenges, and ongoing works to improve the present Search and Rescue system. The Maldives Coast Guard attended over 300 emergency requests and assisted more than 1,000 persons at sea annually.

4.41 The Task Force noted an extensive SAR infrastructure supporting SAR alerts in the Maldives was in place, as the nation had recognised the importance of such services for two main local industries – tourism and fishing. However the Maldives stated that there was a need for improvement, such as the implementation of new infrastructure, a National SAR Plan, and agreements with neighbours that were not yet in place. APSAR/TF/3 noted that the Maldives used civil resources like the large seaplane fleet to very good effect to ensure the best possible SAR response, and the engagement of the domestic airline fleet also ensured a closer working relationship with mutual benefits.

Agenda Item 5: Asia/Pacific Regional SAR Plan

Job Description Template (WP08)

5.1 Sri Lanka submitted a Job Description Template which could be applicable to a SAR Manager or Coordinator, or an ARCC Chief for consideration by the APSAR/TF for incorporation into the Asia/Pacific Regional SAR Plan and/or the IAMSAR manual Volume 1 as an Appendix. This would be further refined by a small working group led by Sri Lanka prior to APSAR/TF/4, then submitted to the JWG for consideration in the IAMSAR Manual.

Guidance on Organisation of SAREX between States (WP09)

5.2 Singapore provided a guide intended to assist States in organizing a Joint Search and Rescue Exercise (SAREX) with their neighbouring State or States. The IAMSAR Manual Volume 1 Chapter 3 – *Training, qualification, certification and exercises* gave a brief outline on the planning stage of an SAREX to the evaluation stage of the exercise; however the WP09 Work Plan provided a more detailed list and further guidance that the APSAR/TF/3 agreed would be useful for inclusion in the Asia/Pacific SAR Plan as an appendix. The meeting agreed that this template should also be submitted to the JWG for consideration of inclusion in the IAMSAR Manual.

Asia Pacific Regional SAR Plan (WP10)

5.3 ICAO presented information on the development of the Asia/Pacific SAR Plan Version 0.7 (**Appendix G**), including the latest draft for consideration by the APSAR/TF. The draft SAR Plan was extensively reviewed by the meeting over the course of an entire day, and was expected to be finalised by APSAR/TF/4.

Agenda Item 6: APSAR/TF Task List

Task List (WP11)

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

Agenda Item 7: Any Other Business

SAR Workshop

7.1 A SAR Workshop Exercise was held on Monday 25 January 2015 during the AP SAR/TF/3 meeting that involved all delegates which explored regional SAR issues according to a set hypothetical scenario involving an Airbus A380 which failed to report en-route. The scenario was moved geographically to 6 different locations throughout the Asia/Pacific region (**Figure 4**) where the States of those different locations were asked to tell the group about how they would respond according to existing arrangements. The objective of the exercise was to:

- prompt group discussion and awareness of regional SAR issues;
- capture any issues and lessons learnt generated for consideration as input to the draft Asia/Pacific Regional SAR Plan; and
- learn about regional SAR neighbours.

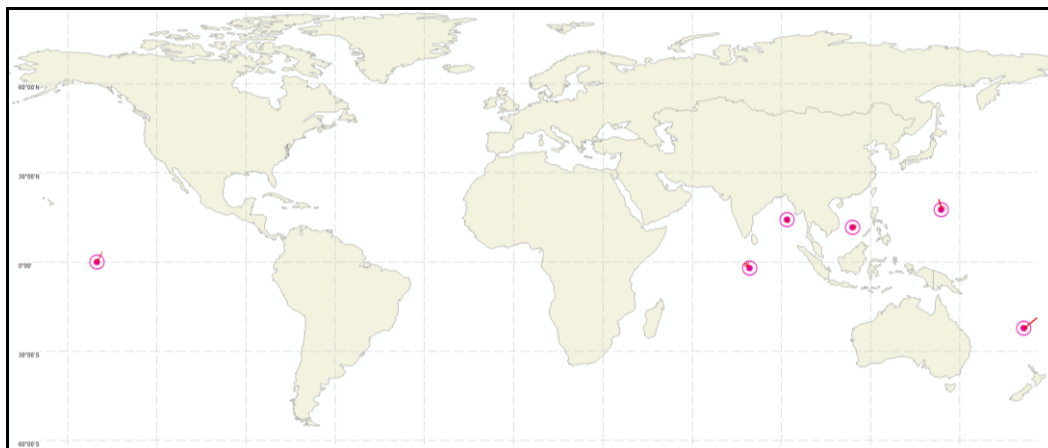


Figure 4: Exercise locations

7.2 The exercise highlighted several issues in the areas of:

- differences in understanding of ATS SAR Alerting responsibilities and timings for declaration of SAR emergency phases;
- potential coordination confusion resulting from differences in delineation of aeronautical and maritime Search and Rescue Region, compounded by overlapping responsibilities of different States;
- notification processes by initiating ATS units/RCCs to other ATS units/RCCs;
- lack of SAR Agreements between neighbouring States;
- differences in understanding of whether it is an ARCC or MRCC who is responsible for an aircraft ditching into the ocean;
- consideration for use of aircraft and vessels of opportunity in a distress area that may be able to divert to assist an aircraft in distress; and
- potential over-reliance on military response assets when civil assets are also available.

SAR Contact List (WP12)

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

Agenda Item 8: Date and Venue of the Next Meeting

8.1 It was proposed that the next meeting would be held from 6-10 July 2015, at a venue to be advised.

Closing of the Meeting

9.1 In closing the meeting, the Chairman summarised the positive progress that had been achieved by the meeting, thanked the meeting participants for their contributions and expressed sincere appreciation to the Maldives for hosting the meeting.
