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UNITING AVIATION

# Asia/Pacific SAR Plan - Introduction

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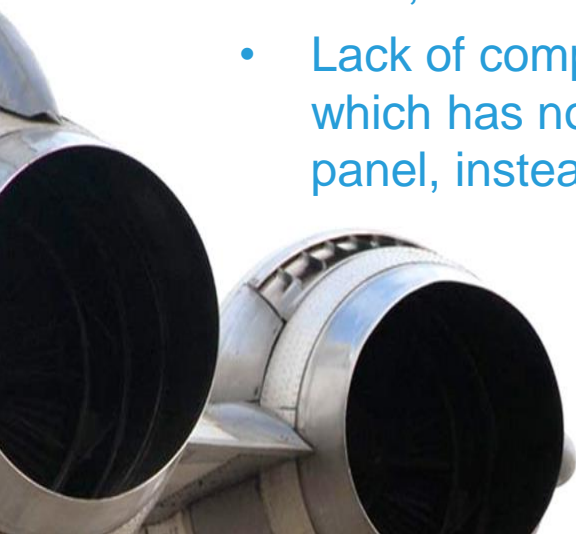




# Regional SAR Plan Requirement

## Why develop an Asia/Pacific SAR Plan?

- We have an inconsistent SAR capability in a region that has vast airspace (including two great oceans) to service.
- Lack of global recognition of SAR (drivers for improvement) within many global policy documents, including the Global Air Navigation Plan, so SAR is an 'orphan' in the ASBU planning system.
- Lack of comprehensive global SAR guidance from ICAO HQ, which has no permanent SAR technical officers and no SAR panel, instead relying on the ICAO/IMO JWG for technical advice.





# Regional SAR Plan Requirement

## Why develop an Asia/Pacific SAR Plan?

- With the need for a greater focus on SAR recognised by APANPIRG in 2012, the first of four Asia/Pacific SAR Task Force (APSAR/TF) meetings was conducted in 5-8 February 2013.
- The key deliverable for the APSAR/TF was the development of a comprehensive SAR Plan within two years.
- Unfortunately a year later MH370 disappeared on 08 March 2014, followed by the SAR response for QZ 8501 (Air Asia) from 28 December 2014; but these provided key lessons for the draft Plan.





# MH370

## DATA ISSUES

The recent MH370 event was a very challenging circumstance:

- lack of conventional data (such as MH370's last known position);
- Incorrect initial data from the airline from non-real time information;
- the absence of distress beacon detections;
- outdated SPOC directory delayed RCC-RCC information transfer;
- long delays for satellite imagery analysis before tasking SRUs; and
- lack of a detailed aircraft cargo description - information regarding parts likely to float (sea pollution meant difficulties distinguishing).





# MH370

## PERSONNEL ISSUES

The recent MH370 event was a very challenging circumstance:

- insufficient number of adequately dedicated SAR personnel

Note: all Malaysian SAR personnel were also air traffic controllers, and many SAR trained officers were assigned non-operational tasks, such as briefing the next of kin);

- lack of English language proficiency to describe unusual events; and
- intense media pressure and political involvement distracted personnel from core duties.





# MH370

## RCC ISSUES

The recent MH370 event was a very challenging circumstance:

- unavailability of updated regional maps;
- different methods of determining search areas (non-harmonised) hampered the multi-State response; and
- inadequate RCC facilities at Kuala Lumpur.





# MH370

## LOGISTICS ISSUES

The recent MH370 event was a very challenging circumstance:

- remote oceanic operations limited the choice of suitable search aircraft and maritime SRUs;
- lack of ship-based rotary wing SRUs; and
- sustainment of major logistical requirements such as air search observers.







# MH370

## MILITARY ISSUES

The recent MH370 event was a very challenging circumstance:

- there was poor or no civil/military cooperation at times;
- verification of the military radar data took longer than expected (however civilian primary radar data was available); and
- the participation of many military organizations required detailed briefings, which caused considerable workload.

Note: the eventual availability of Indonesia and Australia Liaison Officers at Kuala Lumpur ARCC greatly assisted.





# MH370

## ICAO ISSUES

The recent MH370 event was a very challenging circumstance:

- 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);
- lack of guidance for multi-FIR/SRR searches;
- lack of FIR/SRR and SRR/SRR correlation increased confusion;
- the poor reaction to a loss within radar surveillance airspace indicated that:
  - there was a lack of ATC supervisory standards; and
  - declaration of the uncertainty phase (30 minutes) proved to be an inappropriate standard for within such an environment.





# Lessons Learnt

A number of vital SAR lessons were learnt from the MH370 event:

- extend the transmission life of Underwater Locator Beacons (ULBs);
- closer civil/military airspace coordination and communication;
- clearly defined division of responsibilities between the SAR functions (Annex 12) and the air accident investigation search and recovery functions (Annex 13); and
- 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;





# Lessons Learnt

A number of vital SAR lessons were learnt from the MH370 event:

- adequate testing of systems (regular testing, or during SAR Exercise - SAREX) are needed to ensure an efficient Annex 11/12 response;
- improvements in the cooperation between international bodies such as Iridium, Cospas-Sarsat and Inmarsat are needed to enhance technical data availability and analysis;
- the establishment of a legal framework to support the roles and responsibilities of SAR experts to handle various SAR missions;





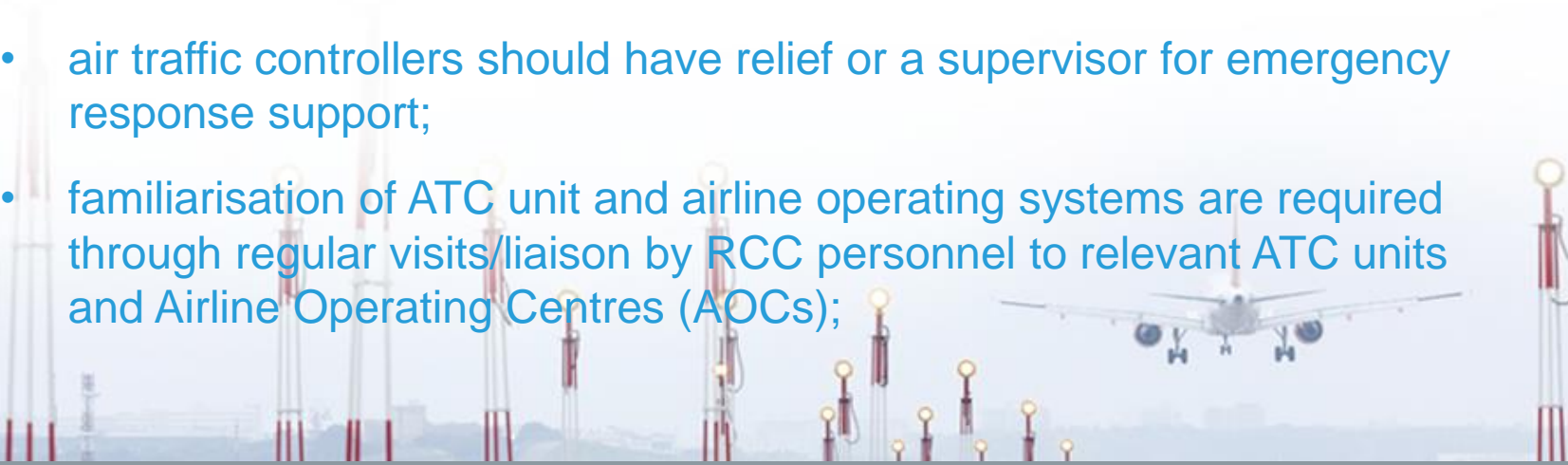
# Lessons Learnt

A number of vital SAR lessons were learnt from the MH370 event:

- improvements in cooperation between States and State entities are required 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,*

- air traffic controllers should have relief or a supervisor for emergency response support;
- familiarisation of ATC unit and airline operating systems are required through regular visits/liaison by RCC personnel to relevant ATC units and Airline Operating Centres (AOCs);

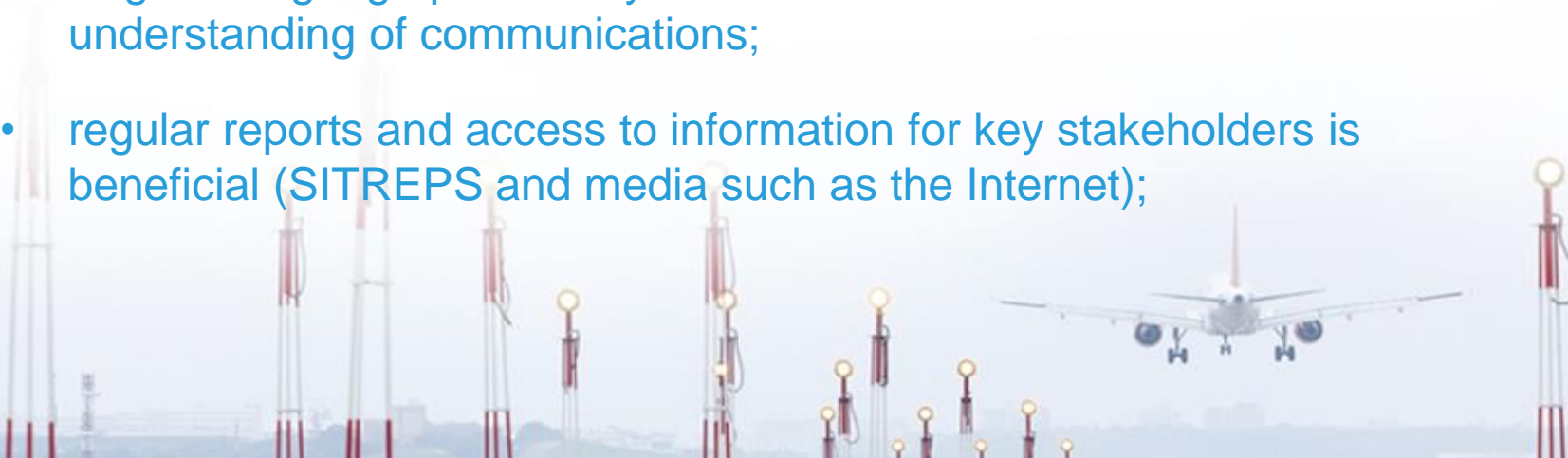




# Lessons Learnt

A number of vital SAR lessons were learnt from the MH370 event:

- RCC staff are ideally full-time specialised officers, expert in the field of SAR;
- appropriate training of military responders regarding civilian SAR systems and standards and recommended practices is beneficial;
- English language proficiency for RCC staff is needed to ensure better understanding of communications;
- regular reports and access to information for key stakeholders is beneficial (SITREPS and media such as the Internet);





# Lessons Learnt

A number of vital SAR lessons were learnt from the MH370 event:

- providing authority and empowerment to SAR agencies and therefore SAR Mission Coordinators is necessary to effectively coordinate SAR responses through State legislative Acts;
- management of undue external influences (such as political entities) on efficient RCC responses is critical; and
- All RCCs must have a means of handling media/next-of-kin enquiries and train staff in managing such pressures.

The QZ8501 (Air Asia) SAR response was much more efficiently handled, in part due to lessons learnt from the MH370 tragedy.





# APANPIRG

APANPIRG/25 noted that several lessons learnt from the MH370 tragedy, which would be incorporated into regional and/or global SAR material – but for the Asia/Pacific, mainly into the regional SAR Plan.

- *The recent tragedy of MH370 highlighted the need to strengthen a significant aspect of civil/military cooperation in the area of Search and Rescue (SAR).*

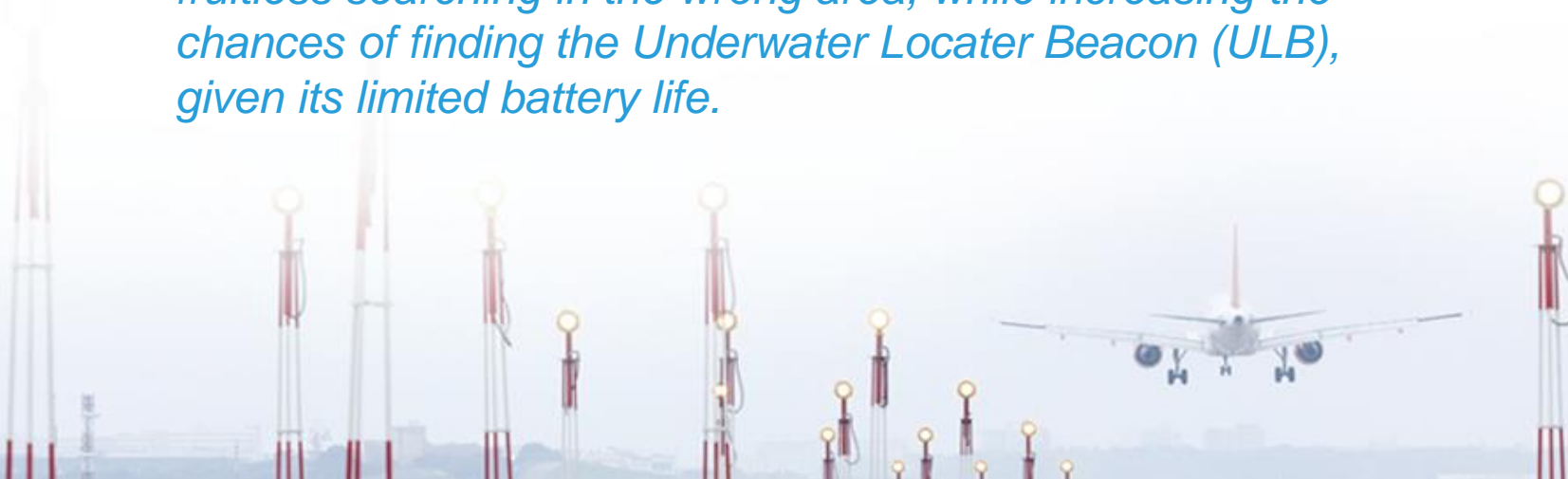






# APANPIRG

- APANPIRG/26 also noted that:
  - *It was apparent that a higher degree of civil/military coordination may have revealed the possibility of the MH370 course reversal much earlier after the initial alert advice from Viet Nam ATC, and may have saved as much as a week of fruitless searching in the wrong area, while increasing the chances of finding the Underwater Locator Beacon (ULB), given its limited battery life.*





# APANPIRG

## APANPIRG Conclusion on the SAR Plan

### *Conclusion APANPIRG/26/22 – Asia/Pacific SAR Plan*

*That, regarding the Asia/Pacific Search and Rescue (SAR) Plan Version 1.0 attached as APANPIRG/26/WP07/Appendix R, ICAO be requested to:*

- a) make the SAR Plan available on the ICAO Asia/Pacific Regional Office web site;*
- b) reference the SAR Plan within the Asia/Pacific Seamless ATM Plan;*
- c) add the following elements to the Asia/Pacific Seamless ATM monitoring and reporting scheme:*
  - SAR Regulatory and Coordination Mechanisms;*
  - SAR Facilities and Assets;*
  - SAR Information;*
  - SAR Improvement; and*
- d) conduct Asia/Pacific SAR Planning and Implementation Seminars/ Workshops for Asia/Pacific States.*



# APANPIRG

## APANPIRG Conclusion on SAR Planning

### *Conclusion APANPIRG/26/23 – State SAR Planning*

*That, States should be urged to:*

- a) review Version 1.0 of the Asia/Pacific SAR Plan and utilise the SAR Plan to develop planning for State implementation of applicable SAR elements;*
- b) ensure relevant decision-makers are briefed on the SAR Plan;*
- c) submit the first SAR Plan Seamless ATM monitoring information to the ICAO Regional Office by 01 March 2016; and*
- d) where possible, participate and contribute to SAR Plan system collaborative training and research initiatives.*

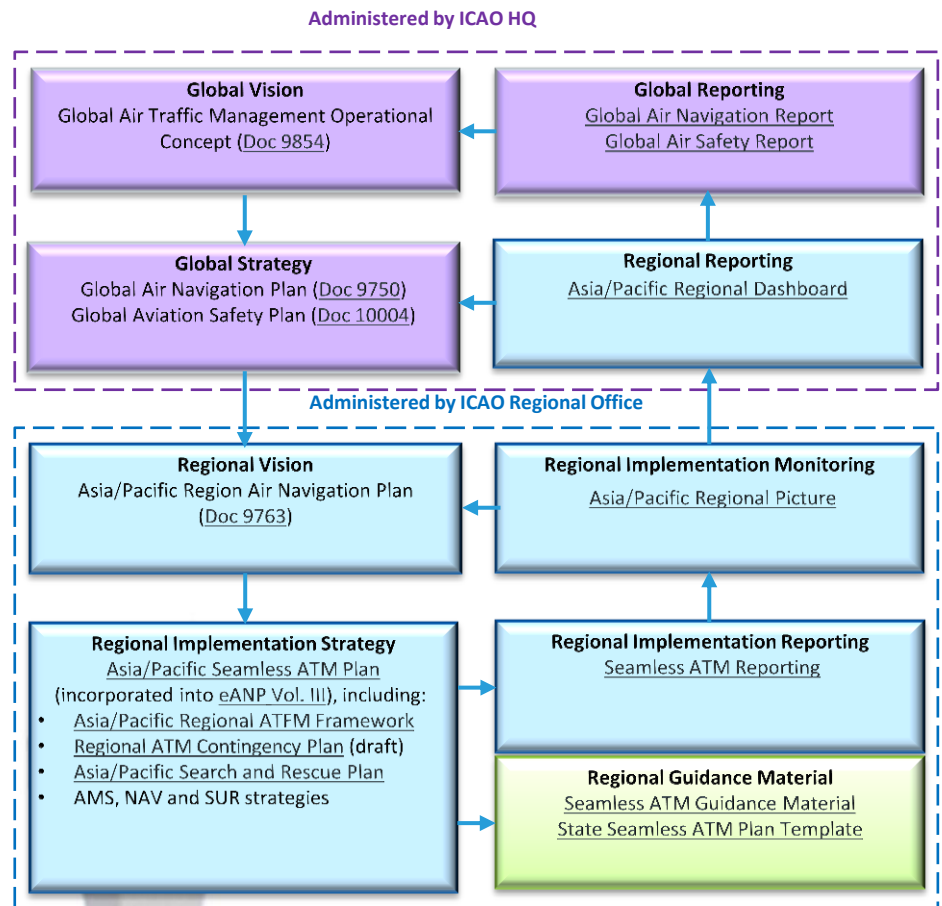
### *Decision APANPIRG/26/24 – Asia/Pacific SAR Workgroup*

*That, the Asia/Pacific Search and Rescue (SAR) Task Force be disestablished and an Asia/Pacific SAR Workgroup (APSAR/WG) be established in accordance with the Terms of Reference at APANPIRG/26/WP07/Appendix S.*



# Asia/Pacific Seamless ATM Plan

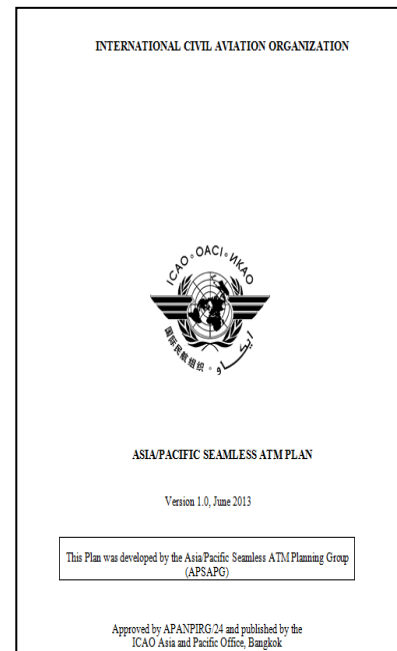
- Hierarchy of global and regional planning
- APAC Seamless ATM planning is at the level of strategy for regional implementation





# Asia/Pacific Seamless ATM Plan

- The Asia/Pacific Seamless ATM Plan incorporated Global Air Navigation Plan Aviation System Block Upgrades, but also added regional human performance and **civil/military cooperation** elements.
- The Seamless ATM Plan is available at: <http://www.icao.int/APAC/Pages/edocs.aspx>





# Asia/Pacific SAR Plan

- SAR Plan key points, *Legal Framework and Structure (7.1)*:
  - *c) National SAR Committee;*
  - *d) empower SAR Mission Coordinators;*
  - *f) integration of aviation and maritime SAR, and as far as practicable, civil and military activities,*
  - *g) align, as far as practicable, aeronautical and maritime SRRs; and SRRs and FIRs;*
  - *h) establish a single State SAR Plan.*





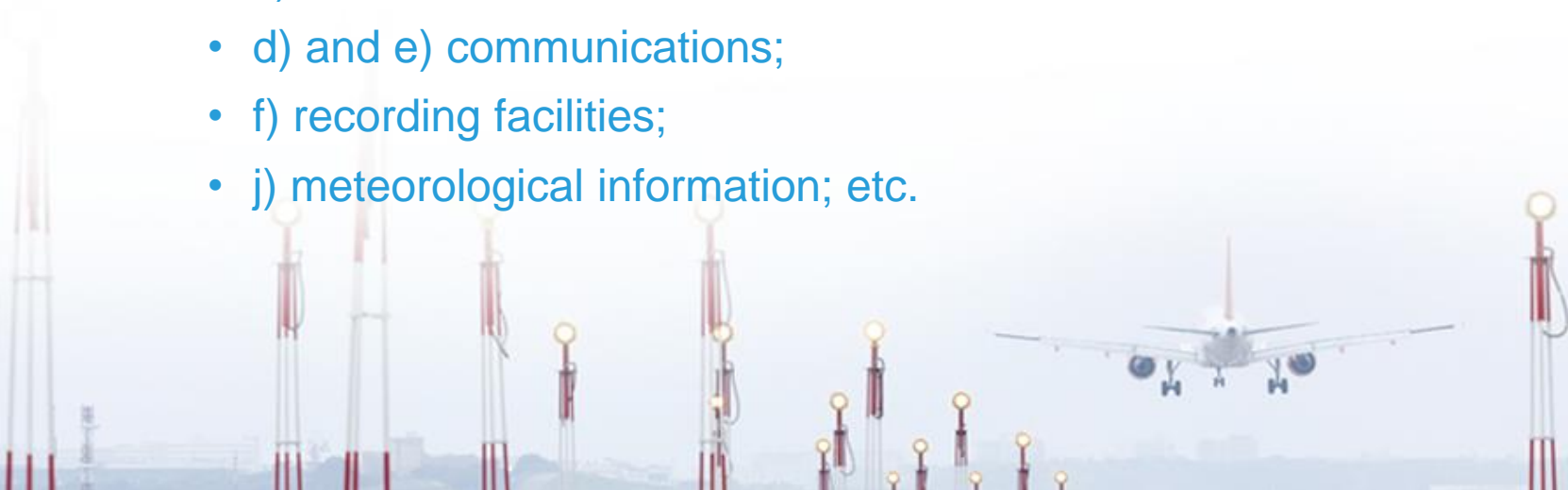
# Asia/Pacific SAR Plan

- SAR Plan key points, *SAR Standards and Procedures, (7.2)*:
  - *a) aerodrome emergency plan – co-ordination with RCCs;*
  - *b) SAR agreements with neighbouring States;*
  - *c) up-to-date cross-border information on SAR capability;*
  - *d) pre-arrange procedures for cross-border SAR responses;*
  - *e) contingency procedures for delegation of SAR responsibility;*
  - *f) establish a program for regular SAREX; and*
  - *g) Mass Rescue Operation plans integrated with national disaster plans; and*
  - *h) SAR Alerting procedures, for civil and military support and sharing of information.*



# Asia/Pacific SAR Plan

- SAR Plan key points, *RCC Facilities (7.3)*:
  - a) sufficient size (operational positions designed in accordance with human factors principles for a major search)
  - b) computers and software to support planning and response;
  - c) charts;
  - d) and e) communications;
  - f) recording facilities;
  - j) meteorological information; etc.







# Asia/Pacific SAR Plan

- SAR Plan key points, *Personnel and Training* (7.4):
  - a) ATC supervisory resources for timely SAR responses;
  - b) sufficient RCC staffing;
  - c) specialist RCC officers including SAR Mission Coordinators (SMCs) and Assistant SMCs;
  - f) competency-based training for SAR coordinators and military personnel supporting SAR;
  - g) RCC staff English language proficiency; and
  - h) regular liaison visits between ATC, SAR and AOC units.





# Asia/Pacific SAR Plan

- SAR Plan key points, *Oceanic Capability (7.5)*:

*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.*





# Asia/Pacific SAR Plan

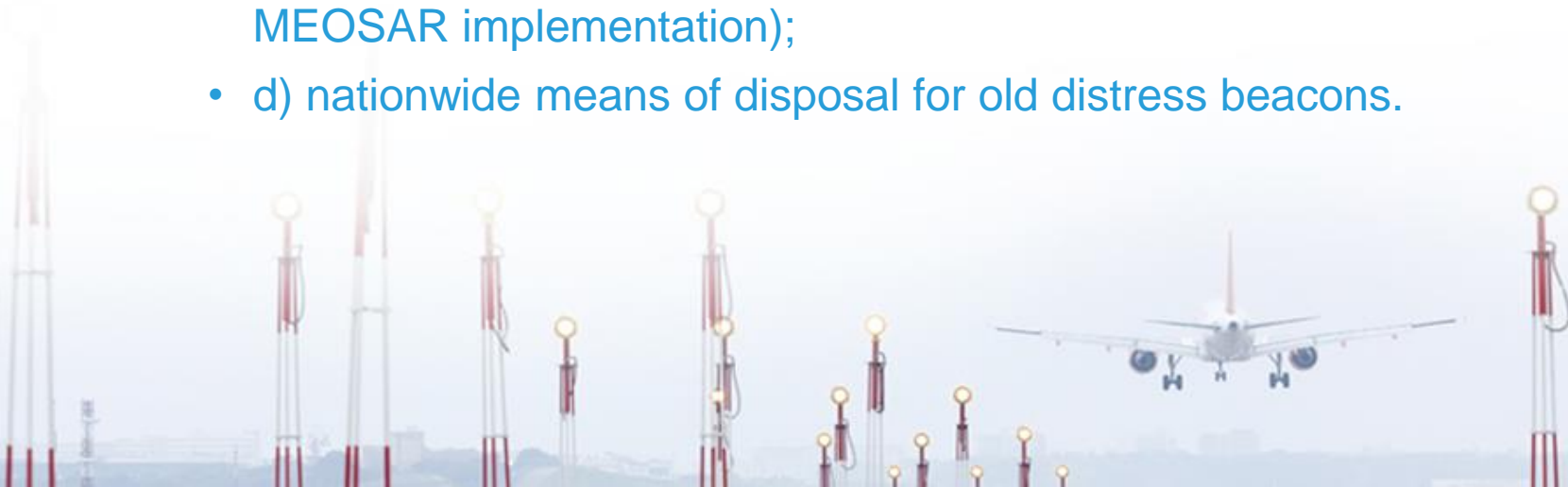
- SAR Plan key points, *SRUs* (7.6):
  - a) pool of suitably crewed, trained and equipped SRUs (civil and military);
  - c) protocols to request assistance of military assets;
  - d) communication between aeronautical and maritime SAR;
  - e) cooperative use and/or sharing of SAR assets;
  - f) pre-arranged government authority for funding of costs;
  - g) aircraft with regulatory approval to conduct SAR missions.





# Asia/Pacific SAR Plan

- SAR Plan key points, *Distress Beacons (7.7)*:
  - a) coordinated aeronautical and maritime distress beacon alert procedures;
  - b) distress beacon registration system;
  - c) preparation for next generation beacons (such as MEOSAR implementation);
  - d) nationwide means of disposal for old distress beacons.





# Asia/Pacific SAR Plan

- SAR Plan key points, *Contingency Facilities (7.8)*:

*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.*





# Asia/Pacific SAR Plan

- SAR Plan key points, *Provision of [SAR] Information (7.9)*:
  - a) centralised information source publishing State SAR resources;
  - b) Internet-based SAR information sharing system in accordance with the emerging System Wide Information Management – SWIM concept;
  - 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.*





# Asia/Pacific SAR Plan

- SAR Plan key points, *SAR Facilities and Equipment Lists* (7.10):

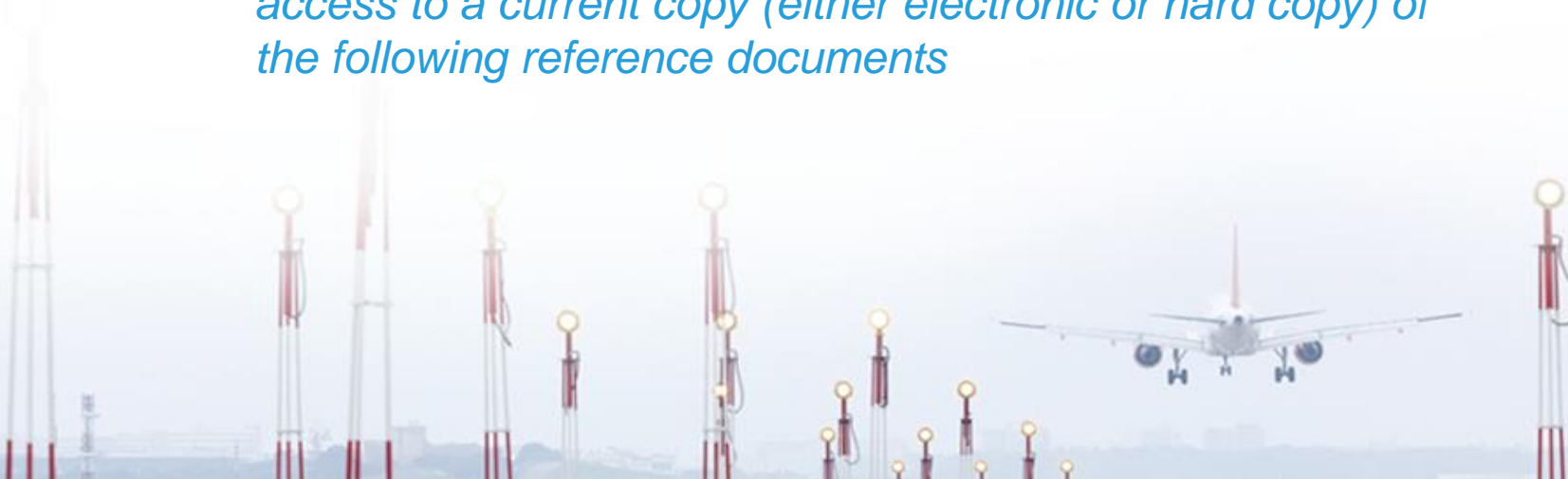
*All States should develop and maintain a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SAR Units (SRUs), including joint or shared facilities and equipment, and provide the Internet link to that list to the ICAO Asia/Pacific Regional Office.*





# Asia/Pacific SAR Plan

- SAR Plan key points, *SAR Library* (7.11):
  - *a) establish a web-based SAR Library, or cooperate by contributing to an Internet-based Asia/Pacific resource (such as [www.uscg.mil/nsarc](http://www.uscg.mil/nsarc));*
  - *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*







# Asia/Pacific SAR Plan

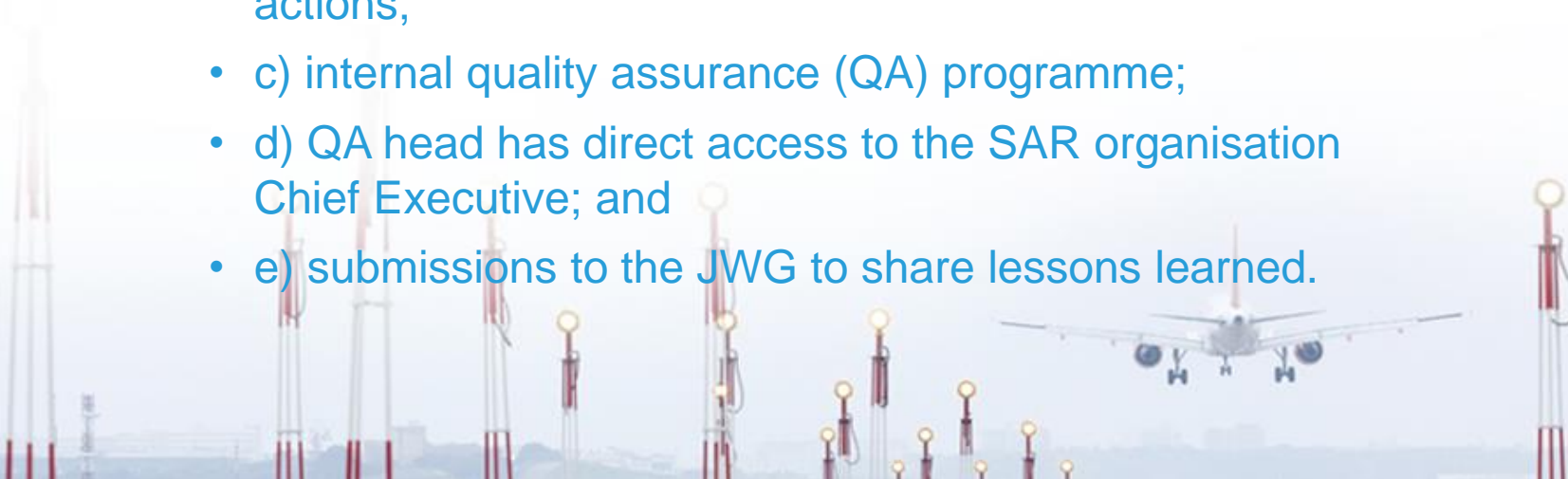
- SAR Plan key points, *SAR Improvement (7.12)*:
  - SAREX involving –
    - aeronautical and maritime SAR authorities;
    - civil and military agencies as applicable;
    - Air Navigation Service Providers (ANSPs); and
    - Airline Operations Centres (AOCs);
  - *b) where appropriate, cross-aeronautical SRR coordination;*
  - *c) post-SAREX review and written report, to ensure that deficient areas or latent problems are identified and remedied.*

*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.*



# Asia/Pacific SAR Plan

- SAR Plan key points, *SAR Quality Insurance* (7.13):
  - a) performance and safety indicators, including post-incident/accident lessons learned and management reviews;
  - b) identification of risk and corrective and preventive actions;
  - c) internal quality assurance (QA) programme;
  - d) QA head has direct access to the SAR organisation Chief Executive; and
  - e) submissions to the JWG to share lessons learned.





# Asia/Pacific SAR Plan

- SAR Plan key points, *SAR Management Review (7.14)*:  
*Annual or more frequent analysis of their current State SAR system to identify specific gaps in capability regarding –*
  - update of Asia/Pacific SAR data;
  - availability and capability of neighbouring State services;
  - SAR research and development programmes;
  - establish a common set of basic SAR system statistics;
  - plan for any necessary improvements; and
  - regularly review and update SAR agreements.





# Asia/Pacific SAR Plan

- SAR Plan key points, *SAR Promotion* (7.15):
  - a) public safety campaigns;
  - b) campaigns to ensure the support of government decision-makers;
  - c) media assistance to minimise the need for explanations during SAR responses;
  - d) promotion to recognise improvement in State SAR systems;
  - e) programs to enhance cooperation between SAR services and other State agencies and other States.





# Conclusions

- Supporting the civil air navigation system (including SAR) is consistent with the goals of military services
- The Asia/Pacific had clear and comprehensive expectations of States in accordance with the Asia/Pacific SAR Plan:
  - to enhance basic SAR capability
  - to develop strong civil/military cooperation mechanisms
  - to strengthen SAR cooperation and harmonisation between States
  - to conduct cooperative research (including use of SAR Unmanned Aircraft Systems)





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THANK YOU

*Aviation is safe because it has the culture to learn and react*