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AFRICA - INDIAN OCEAN SEARCH AND RESCUE PLAN

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RECORD OF AMENDMENTS

Amendment Number	Date	Subject	Parts/Pages
01	June 2021	Draft 1st Edition version 1	All pages
02	August 2021	1st Edition -English version only	All pages
03	April 2025	2nd Edition	All pages

1. SCOPE OF THE PLAN

Plan Structure

1.1
The Africa and Indian Ocean (AFI) Search and Rescue (SAR) Plan (hereinafter referred to as the 'Plan') references different levels. At the higher level are global requirements established by ICAO Annex 12 to the ICAO Convention on International Civil Aviation (ICAO Doc 7300). Global guidance material is provided by the Global air navigation plan (GANP), the global aviation safety plan (GASP), the International Maritime Organization (IMO) and ICAO's joint publication, the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual. Beneath this is the AFI air navigation Plan (AFI eANP), the AFI regional aviation safety plan (AFI-RASP), the regional planning guidance primarily provided by this Plan and other regional guidance material such as guide templates, to enable States to define the goals and means of meeting objectives for State.

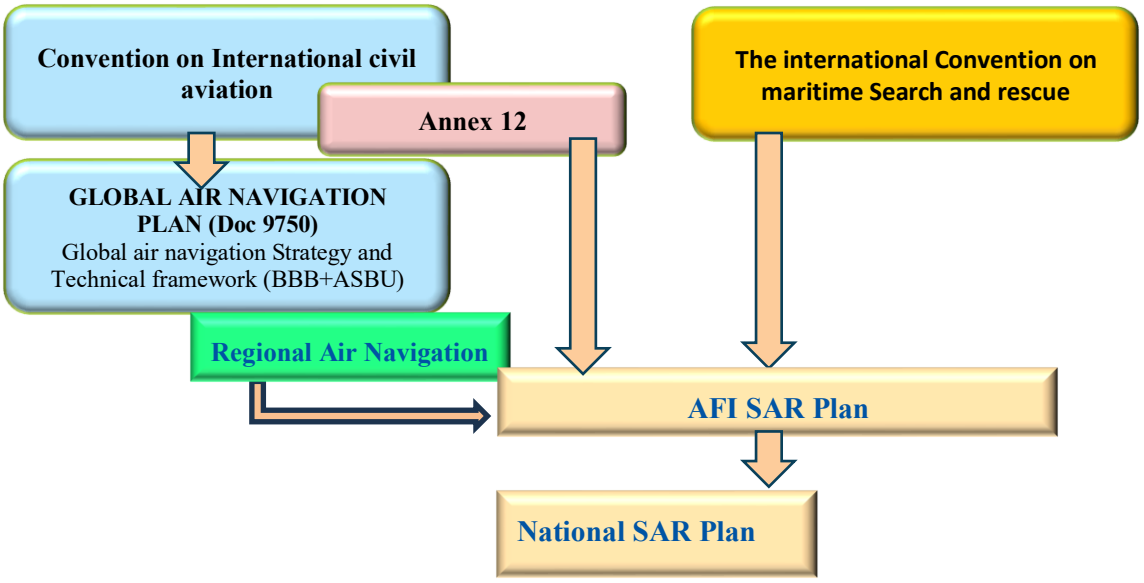

Chart 01- AFI SAR plan outer structure

1.2 The scope of the Plan is the identification of:

- the current status of SAR preparedness of African Indian Ocean (AFI) Search and Rescue Plan, AFI Region States and State SAR arrangements;
- recommendations for SAR planning and preparedness enhancements, in terms of compliance with the Convention on International Civil Aviation, Annex 12, IAMSAR Manual guidance, and accepted best international practices;
- recommendations to IMO for harmonized and interoperable delivery of both aeronautical and maritime SAR services; and
- the modernization of SAR services and facilities through the implementation of ASBU related elements emanating from the 6th Edition of the GANP.

1.3 References in the Plan to 'States' are intended to include all AFI States.

Plan Review

1.4 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 the AFI Aviation System Planning and Implementation Group (AASPG) and its contributory bodies conduct a complete review **every three years** (or a shorter period determined by the AASPG 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 ICAO and IMO. The plan review will also be aligned with the SAR survey cycle (chart 02 below).

Table 01- AFI SAR plan review cycle

Review cycle	Edition #	Status
2021	1	Current
2025	2	expected
2028	3	expected
2031	4	expected

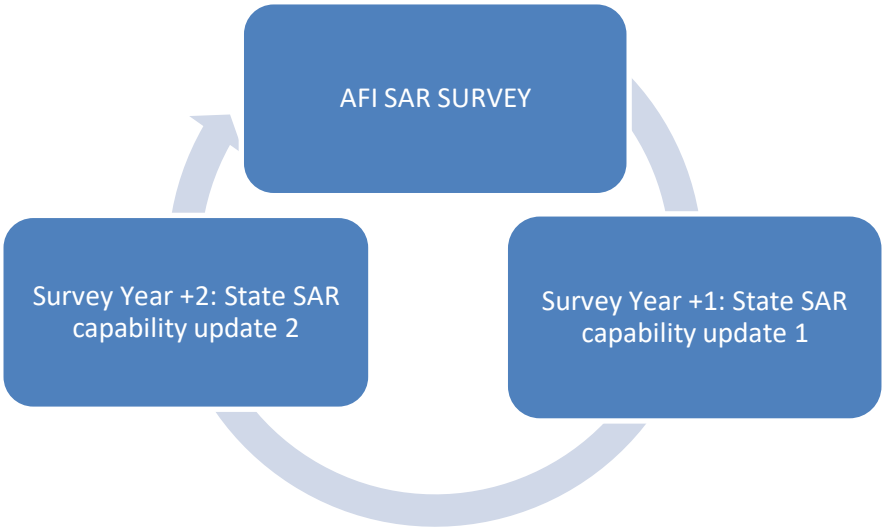

Chart 02- AFI SAR survey cycle

Plan applicability

1.5 AFI SAR Plan is a regional guidance document developed to assist States in the Africa and Indian Ocean Region for a harmonized , collaborative , effective and efficient planning and implementation of Search and Rescue service.

1.6 The AFI SAR plan forms part of the regional air navigation plan volume III and aligns with the implementation performance framework set in the regional plan.

1.7

The plan is applicable to all States in the AFI region as well as the Search and Rescue Regions expanding over the high seas placed under the responsibility of specific designated AFI States,

Chart 03- AFI States Map

2. OBJECTIVES

Introduction

2.1 Africa and Indian Ocean States who are signatories to the Chicago Convention accept the responsibility for the provision of SAR services per the requirements of Annex 12. Increases in aviation traffic throughout the AFI Region place additional importance on the ability for States to be adequately prepared for potentially increased demand for aeronautical SAR services.

2.2 The world's citizens, who frequently fly over AFI region, 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 their respective Search and Rescue Regions (SRRs). To assist in achieving this, it is essential for States to cooperate, collaborate and in some cases assist with resources the neighboring and sub-regional RCCs after request from the appropriate RCC.

2.3 ICAO Regional Offices maintain 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 high seas areas. The ICAO Universal Safety Oversight Audit Program – 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 in their area of responsibility. 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 can result in damage to that State's reputation internationally and potential economic loss to sensitive State industries such as tourism and transport. Conversely, this same ability to communicate rapidly, also provides the opportunity to States to improve their response, and to quickly reach a global audience. However, the benefits of an effective and reliable SAR service offers many advantages to States. Besides reduction of loss of life and human suffering, other advantages include:

a) Safer and more secure environment for aviation related industries, commerce, recreation, and travel. Increased safety may promote use and enjoyment of aviation environment, tourism, and economic development. This is especially true when the SAR system is associated with programs 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.

e) States should however, implement measures to prohibit and control the immediate spreading of Aviation accident on-scene footage by all media and should find a way to integrate the permission for such with the Annex 13 and Annex 19 requirements. (Protection of Safety Information)

f) ARCC/MRCC/JRCC must be manned by suitably qualified personnel, with a vast Aviation/Maritime background.

2.5 Previous accidents like Malaysia Airlines flight MH370 in 2014 and Air France flight AF447 in 2009 resulted in probably the largest and most expensive search response for a missing aircraft in human history. These tragedies have highlighted vulnerabilities in the current air navigation system, including the SAR system, which have hampered timely identification and localization 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 AFI States, SAR administrations and other technical bodies. States should consult with stakeholders nationally, regionally, and internationally as appropriate and determine actions to commit to achieving the objectives of this Plan 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 It is a common practice for the military to conduct or have a major role in SAR operations to fulfil or assist in fulfilling the State's obligation to provide SAR services. From the perspective of providing SAR services, civil-military coordination takes on many forms. This includes coordination during an actual SAR response, national coordination with other agencies to determine the military role, part of an international agreement or set of procedures with a neighbouring State to assist in SAR response, or other types of coordination. The Manual on Civil-Military Coorporation in Air Traffic Management (Doc 10088) is focused on airspace management and includes SAR matters relevant to civil-military coordination in airspace management.

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

2.9 States should aim to meet their obligations progressively in a strategically structured and planned manner with improvement goals set for short term, medium term and long term implementation. It may be more productive to make gains in small steps commencing with measures that are more easily achievable in the short term and have a minimal cost, progressing to measures which will take longer to implement over the medium to long term. Short term measures that may be implemented relatively easily include the establishment of a national SAR Committee and ensuring SAR Agreements are in place with neighboring 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 (MOU) 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, according to the national legislation of every State.

2.10 A regional approach can reduce cost and improve distribution of distress alerts, coverage, and services. For example, it is usually less operationally complex, and more economical and effective, for States within a region to share the use and support of long-range terrestrial and satellite

communications facilities and communications registration databases to support SAR. States can sometimes support each other with Search and Rescue Units (SRUs) to reduce the total number of units needed for adequate coverage and readiness. Training and other types of resources can be shared to everyone's benefit. Nevertheless, participation in a regional system may not be the best approach for every State.

2.11 Each SRR is associated with an RCC. Search and rescue regions should, in so far as practicable, be coincident with corresponding flight information regions (FIR) and, with respect to those areas over the high seas, maritime search and rescue regions. The purpose of having an SRR is to clearly define who has primary responsibility for coordinating responses to distress situations in every area of the world and to enable rapid distribution of distress alerts to the proper RCC. For this reason SRRs shall not overlap and neighboring regions shall be contiguous. Aeronautical SRRs often are aligned with FIRs for specific reasons but experience shows that in most areas there are operational advantages in harmonizing aeronautical and maritime SRRs.

2.12 A regional SAR plan is a way to provide a framework to guide national SAR authorities towards attaining this co-operation. Once a regional SAR plan is developed, high-level commitment between States can be reached by means of written agreement or through a multilateral MOU.

2.13 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 aviation SAR incident within their area of responsibility, or during cooperative responses involving more than one Search and Rescue Region (SRR) and under coordination of the appropriate RCCs.

Plan Objective

2.14 The objective of this SAR Plan is to provide a framework to assist AFI States to meet their SAR needs and obligations accepted under the Convention on International Civil Aviation and to improve the cooperation between aeronautical and maritime SAR services, within their area of responsibility and across other ICAO regional boundaries, where applicable.

2.15 The Plan is to be consistent with the SARPs of Annex 12 - and aligned with the AFI Air Navigation Plan and where appropriate with the SAR technical and operational standards and guidance of the IAMSAR Manual.

2.16 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.

2.17 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. For this reason ICAO and IMO jointly developed the IAMSAR Manual and working together under ICAO/IMO Joint Working Group on SAR (ICAO/IMO JWG) to assist State authorities to economically establish effective SAR services, to promote harmonization of aeronautical and maritime SAR services, and to ensure that persons in distress will be assisted without regard to their locations, nationality, or circumstances. State authorities are encouraged to promote, where possible, harmonization of aeronautical and maritime SAR services.

2.18 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.

2.19 State SAR plans describe how SAR services will be provided, organized, and supported for States to meet their obligations under the relevant Conventions. Search and Rescue Administrations 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.

Plan Development

2.20 The Plan was developed by the AFI SAR Project Team (AFI SAR TET) as part of a requirement of the AFI Planning and Implementation Regional Group (APIRG) and the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan). In addition, the Plan should consider the AFI ATM Master Plan, the Air Traffic Flow Management (ATFM) Framework, the AFI Civil Military Cooperation in ATM framework and the Regional Contingency Arrangements, so the Plan should not be considered in isolation.

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

a) compliance with ICAO 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 high seas SAR response capability (including provision for Mass Rescue Operations (MRO);

g) establishment and review of arrangements between neighboring 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 AASPG and related 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, ICAO Annex 12 compliance and SAR performance data to the relevant accredited ICAO Regional Offices through appropriated contributory groups;

m) implementation of a SAR System Improvement and Assessment measures, including Safety Management System, Quality Assurance program and risk assessments;

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

2.22 The Plan elements should be periodically reviewed by the ICAO Regional Offices ESAF and WACAF in close coordination with the SAR TET to ensure that they remain relevant to the SAR system, particularly for new technology developments and alignment with other relevant global SAR plans.

3. EXECUTIVE SUMMARY

3.1 Africa is increasingly showing strong growth in Air passenger traffic. The 2024 report released by the International Air Transport Association (IATA) indicates that African airlines' annual traffic rose 13.2% in 2024 versus the prior year. Full year 2024 capacity was up 9.5% and load factor climbed 2.5 % points to 74.5%, the lowest among regions but a record high for Africa. December 2024 traffic for African airlines rose 12.4% compare to December 2023.

Table 02- Global Air transport market performance 2024

Air Passenger Market in Detail - 2024

2024 (% YEAR-ON-YEAR)	WORLD SHARE[1]	RPK	ASK	PLF(%-PT)[2]	PLF(LEVEL)[3]
Total Market	**100%**	**10.4%**	**8.7%**	**+1.3%**	**83.5%**
Africa	2.2%	13.2%	9.9%	+2.2%	74.9%
Asia Pacific	33.5%	16.9%	12.3%	+3.2%	83.4%
Europe	26.7%	8.7%	8.1%	+0.5%	84.8%
Latin America	5.3%	7.8%	7.1%	+0.6%	83.7%
Middle East	9.4%	9.5%	8.4%	+0.8%	80.8%
North America	22.9%	4.6%	4.6%	0.0%	84.3%

Source: IATA 2024

RPK: Revenue Passenger Kilometers measures actual passenger traffic
ASK: Available Seat Kilometers measures available passenger capacity
PLF: Passenger Load Factor is % of ASKs used.

3.2 For the maritime industry, the United Nations Conference on Trade and Development (UNCTAD) Review of Maritime Transport 2023 reported that The African Continental Free Trade Area (AfCFTA) Agreement is expected to increase intra-African freight by 28% and demand for maritime freight by 62%. A significant increase in traffic flows is expected across all transport modes throughout Africa in the coming years. Enormous investment in transport equipment and infrastructure will be required, including 100 more vessels, if the AfCFTA is fully implemented. The investments expected due to the AfCFTA also provide an avenue for a green economic recovery in Africa. Growth in the cruise ship industry together with the many other forms of maritime transport such as fishing vessels and passenger ferries created added potential demand for regional SAR services. Whilst IMO assists the Parties to the Maritime SAR Convention, particularly their implementation related to the provision of maritime SAR services, the demand for aeronautical SAR services which frequently support responses to maritime SAR incidents is also likely to rise.

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

3.4 Considering that some AFI States have the challenging responsibility for providing a SAR service over vast and remote areas, the importance for States with high seas to cooperate, collaborate and share resources with their neighboring and regional/sub-regional RCCs is essential.

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

- COSPAS-SARSAT
- ;
- The African Union (AU)
- Regional Economic Communities (RECs) such as -the East African Community (EAC);
  -COMESA
  -the Economic Community of Central African States (ECCAS)
  -The Economic Community of West African States (ECOWAS)
  -The Southern African Development Community (SADC)
  -The Western African Economic and Monetary Union (WAEMU/UEMOA)

SAR System Funding

3.6 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 SAR conventions. This may require the development of business cases to governments outlining where additional funding is required.

3.7 Such business cases should include consideration of amendments to existing State SAR arrangements which may provide more efficient delivery of the SAR service by better utilisation of existing resources (for example by establishing Joint RCCs/RSCs (JRCCs/JRSCs), 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).

3.8 The business case may also be based on collaboration between States within same SRR on same REC or group of RECs to co-invest in the acquisition and maintenance of SAR equipment and facilities as well as the establishment of shared pools of SAR operational and regulatory technical staff that can be deployed within defined delay through SAR agreements.

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.

4. ABBREVIATIONS AND ACRONYMS

A/SMC	Assistant SMC
AAMAC	Autorité Africaine et Malgache de l'Aviation Civile
AANDD	Air Navigation Deficiency Database
AAO SG	AASPG Airspace and Aerodrome Operations Sub Group
ACO	aircraft coordinator
ADT	Autonomous Distress Tracking
AFI	Africa and Indian Ocean
ANSP	Air Navigation Service Provider
APIRG	AFI Planning and Implementation Regional Group
AASPG	African Aviation System Planning and Implementation Group
ARCC	Aeronautical Rescue Coordination Centre
ARSC	Aeronautical Rescue Sub-Centre
ASPOCS	Administrative Single Point of Contact for SAR ATC
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
BAGASOO	Banjul Accord Group Safety Oversight Organization
CASSOA	Civil Aviation Safety and Security Oversight Agency
CONOPS	Concept of Operations
COSPAS-SARSAT	International Satellite System for Search and Rescue -Search and Rescue Satellite-Aided Tracking
EI	Effective Implementation
ELT	Emergency Locator Transmitter
ELT(DT)	Emergency Locator Transmitter (ELT) Distress Tracking
EPIRB	Emergency Position-Indicating Radio Beacon
GADSS	Global Aeronautical Distress and Safety System
GANP	Global Air Navigation Plan
GASP	Global Aviation Safety Plan
GLONASS	Russian Federation Global Navigation Satellite System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
IAMSAR	International Aeronautical and Maritime SAR (Manual)
IMO	International Maritime Organization
iSTARS	Integrated Safety Trend Analysis and Reporting System
JRCC	Joint (aeronautical and maritime) Rescue Coordination Centre
JWG-SAR	ICAO/IMO Joint Working Group on the Harmonisation of Aeronautical and Maritime Search and Rescue
LOA	Letter of Agreement
MCC	Mission Control Centre
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
OSC	On-scene Co-ordinator
PLB	Personal Locator Beacon
PQs	Protocol Questions
PSCS	Preferred SAR Capability Specifications
QMS	Quality Management System
RCC	Rescue Coordination Centre
REC	Regional Economic Community

RPAS	Remotely Piloted Aircraft Systems
RPK	Revenue Passenger Kilometres
RSC	Rescue Subcenter
RSOO	Regional Safety Oversight Organization
SAR	Search and Rescue
SAREX	SAR Exercise
SARPs	Standards and Recommended Practices
SASO	SADC Aviation Safety Organization
SC	SAR Coordinator
SCC	Search and Rescue Coordinating Committee
SMC	Search and Rescue Mission Coordinator
SMS	Safety Management System
SPOC	SAR Point of Contact
SRR	Search and Rescue Region
SRU	Search and Rescue Unit
SWIM	System Wide Information Management
USOAP-CMA	Universal Safety Oversight Audit Programme – Continuous Monitoring Approach
VSP	Variable Set Parameter

5. 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, and associated procedures and guidance material. The USOAP-CMA programme is based on the use of a set of protocol questions (PQs), in the established audit areas, to assess the State's capability of safety oversight of its aviation system. An effective implementation (EI) score is allocated to the State as the percentage of satisfactory PQs as compared to the total number of applicable PQs. State's SAR capability is assessed in the Air Navigation Service (ANS) audit area through 16 PQs.

5.2 **ICAO Regional Office Assistance to States:** is an established annual programme made of several assistance activities to the States in strengthening their State aviation safety system. The programme is conducted by the Regional offices based on prioritization criteria. It consists of fact finding onsite missions as well as remote support in the effective development of robust corrective action plans.

5.3 **RSOO support**: ICAO has established the Global Aviation Safety Oversight System (GASOS) to provide support to the States in all the regions through established Regional Safety Oversight Organizations (RSOOs) specialized in various audit areas. AFI RSOOs specialized in ANS include AAMAC, AASA-AC, BAGASOO, CASSOA and SASO which support States in developing legislation; guidance material and conducting surveillance of State's ANS activities.

5.4 **The AANDD Tool:** ICAO Regional Offices accredited for AFI maintain an Air Navigation Deficiency Database (AANDD). The AANDD is based on the uniform methodology for identification, assessment and reporting of such deficiencies in the AASPG Handbook. By identifying and addressing specific deficiencies, AASPG and its Sub-groups facilitate the development and implementation of action plans by States to resolve identified deficiencies, where necessary. The AANDD represents an opportunity for the States to identify and address safety and operational deficiencies through a well-engineered corrective action plan reviewed and validated by ICAO experts that may serve as a decision-making tool for State's SAR authorities.

5.5 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.

AFI SAR System Monitoring

5.6 Significant Annex 12 compliance weaknesses had been identified within the AFI region based upon information provided by States to the ICAO Regional Offices in the framework of the 2025 Regional SAR survey. This regional information status of the SAR capability and SAR agreements was recorded in tables in section 6.

ICAO Global Aeronautical Distress and Safety System (GADSS)

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

5.8 As part of the response to the Conclusions and Recommendations from the ICAO Multi-disciplinary Meeting on Global Tracking, ICAO developed standards for a Global Aeronautical Distress

and Safety System (GADSS) through amendment 19 to Annex 12 which became effective as from 28 November 2024. The standards in amendment 19 obligates RCC/RSC to maintain an up-to-date contact details in the OPS Control Directory and to subscribe and maintain access to the location of an aircraft in distress repository (LADR). The implementation of these standards will have implications for the provision of services such as air traffic control, SAR, and accident investigation. They contain many measures targeting improvements in SAR system response integrated within the wider ATM and aviation operations systems.

5.9 The GADSS Concept of Operations (CONOPs), which led to the new standards, noted that the effectiveness of the current alerting and SAR services should be increased by addressing several key improvement areas. The CONOPS also included aspects which potentially involve use of different distress systems, including for example 406 MHz Emergency Locator Transmitters (ELTs) and the COSPAS-SARSAT system as part of the proposed GADSS solution.

5.10 Guidance on the aircraft tracking process, the location of an aeroplane in distress, the post flight localization and recovery, the GADSS information management are provided in Doc 10165, *Manual on Global Aeronautical Distress and Safety System (GADSS)*.. This guidance material is targeted to aircraft operators, air traffic services units (ATSUs), rescue coordination centres (RCCs), SAR services and accident investigation authorities (AIAs) along with the States responsible for the oversight of these services. The manual is accessible through https://portal.icao.int/icao-net subject to access right.

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COSPAS-SARSAT System

5.11 The International COSPAS-SARSAT System is available to maritime and aviation users and to persons in distress situations who activate a distress beacon operating at 406 MHz. Access is provided to all States on a non-discriminatory basis and is free of charge for the end-user in distress. On average, about 7 persons are rescued every day with the assistance of COSPAS-SARSAT alert and location data. The System is composed of:

- distress beacons operating at 406 MHz,
- SAR payloads on satellites in low- and mid-altitude Earth orbit, and in geostationary orbit,
- ground receiving stations (LUTs) spread around the world; and
- a network of Mission Control Centres (MCCs) to distribute distress alert and location information to SAR authorities, worldwide.

5.12 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.

5.13 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.

5.14 The SAR/Galileo and SAR/GLONASS space segment, and SAR/Galileo ground 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.

5.15 The technical specifications for the second generation 406 MHz distress beacon has been approved, including ELTs. This new generation of beacons should further improve speed and accuracy in locating an activated distress beacon. The period from beacon activation to first transmission was expected to be reduced from 50 seconds to 3 seconds. The specification would consider a specific type of in-flight triggered ELT (ELT (DT)) designed to be activated prior to a crash when certain flight parameters were exceeded and to function in compliance with the ICAO GADSS requirements for the Location of an Aircraft in Distress Repository (LADR).

5.16 The new ELT(DT), which was introduced by COSPAS-SARSAT in 2023, allows an aircraft in distress to be tracked in-flight, prior to any crash, without human intervention. ELT(DT)s use both the existing beacon transmission method (first-generation) and the second-generation (spread-spectrum) modulation schemes. Distress data from activated ELT(DT)s will be delivered directly to distress authorities as well as the ICAO Location of an Aircraft in Distress Repository (LADR).

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

5.18 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 registry is in C/S S.007 Handbook of Beacon Regulation, Information on national Beacon Registration Point of Contact is at:

http://www.cospas-sarsat.int/en/contacts-pro/contacts-details-all

Information on IBRD is at:

http://www.cospas-sarsat.int/en/beacons-pro/beacon-regulations-pro/ibrd-user-information-for-professionals

5.19 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*.

Annex 15 – *Aeronautical Information Services, particularly Section 6.3.2 NOTAM*;

Annex 19 – *Safety Management*;

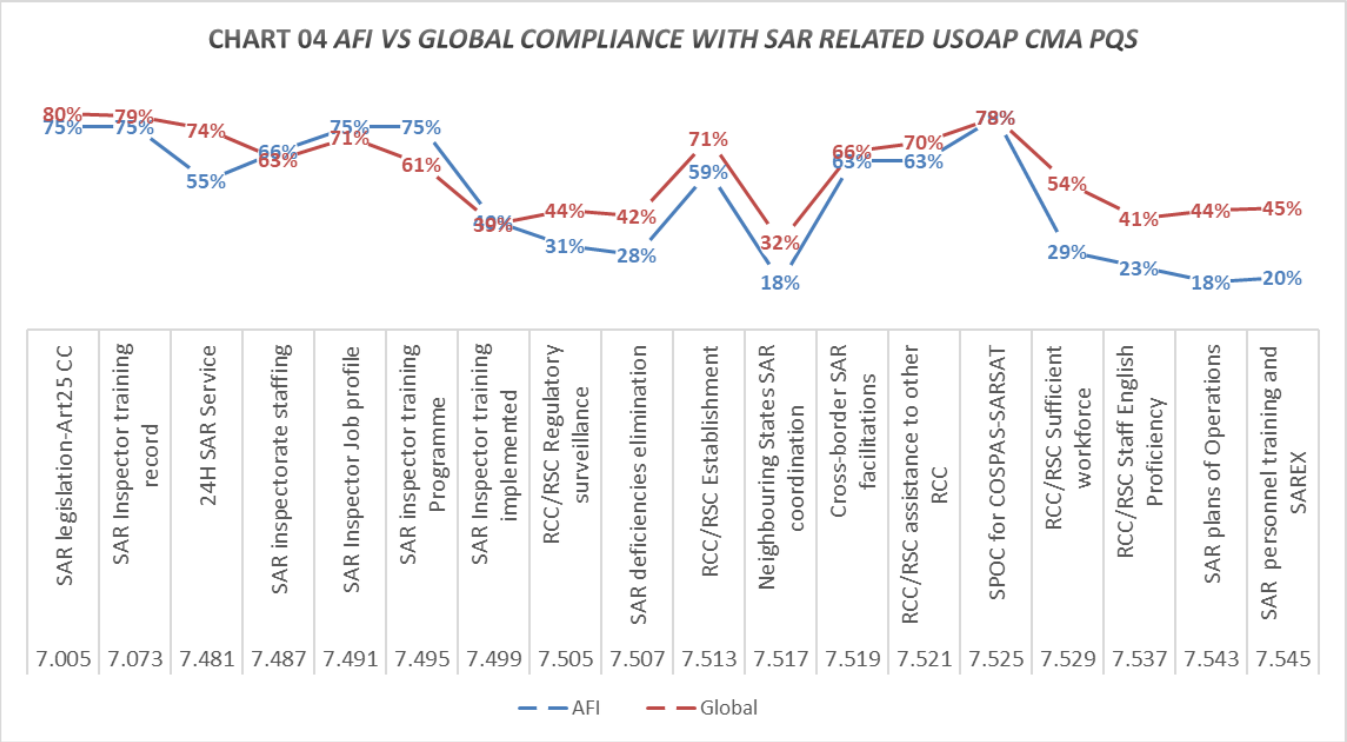
DOC 4444 – *PANS-ATM*

Doc 8168 – *PANS-OPS Volume III, particularly Section 10-Flight Tracking*; and

Doc 10066 – *PANS –Aeronautical Information Management (PANS-AIM)*

6. CURRENT SITUATION

Global vs Regional Situation



6.1 The ICAO USOAP CMA global data for 2024 indicates that:

- 34% 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;
- 56% 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
- 68% of States had not established the necessary coordination of their SAR organisations with those of neighboring States, including the conclusion of bi-lateral SAR agreements to coordinate SAR operations; and
- regarding RCCs –
    - i. about 30% of States had developed job descriptions for their technical staff;
    - ii. 59% did not ensure that RCC personnel using radiotelephony communications were proficient in the use of the English language; and
    - iii. about 55% of States do not regularly train their SAR personnel, and nor did they conduct SAREXs.

6.2 The figure in chart 04 shows that the AFI region is performing below the global average in many areas except in SAR inspectorate training and Staffing. It is a clear indication that more should be put in almost all focus areas to catch up the pace with global performance in SAR.

AFI SAR Analysis

Table 03-AFI SAR compliance with USOAP CMA PQs-Year 2024

			% COMPLIANT		
Critical Element	**PQ**	**Description**	**ESAF**	**WACAF**	**AFI**
CE-1	7.005	SAR legislation-Art25 CC	67%	83%	75%
CE-4	7.073	SAR Inspector training record	76%	74%	75%
CE-6	7.481	24H SAR Service	52%	58%	55%
CE-3	7.487	SAR inspectorate staffing	57%	75%	66%
CE-3	7.491	SAR Inspector Job profile	71%	79%	75%
CE-4	7.495	SAR inspector training Programme	71%	79%	75%
CE-4	7.499	SAR Inspector training implemented	38%	42%	40%
CE-7	7.505	RCC/RSC Regulatory surveillance	33%	29%	31%
CE-8	7.507	SAR deficiencies elimination	38%	17%	28%
CE-6	7.513	RCC/RSC Establishment	65%	52%	59%
CE-6	7.517	Neighbouring States SAR coordination	14%	21%	18%
CE-2	7.519	Cross-border SAR facilitations	71%	54%	63%
CE-3	7.521	RCC/RSC assistance to other RCC	70%	55%	63%
CE-6	7.525	SPOC for COSPAS-SARSAT	86%	71%	79%
CE-7	7.529	RCC/RSC Sufficient workforce	29%	29%	29%
CE-7	7.537	RCC/RSC Staff English Proficiency	33%	13%	23%
CE-7	7.543	SAR plans of Operations	14%	21%	18%
CE-7	7.545	SAR personnel training and SAREX	10%	29%	20%

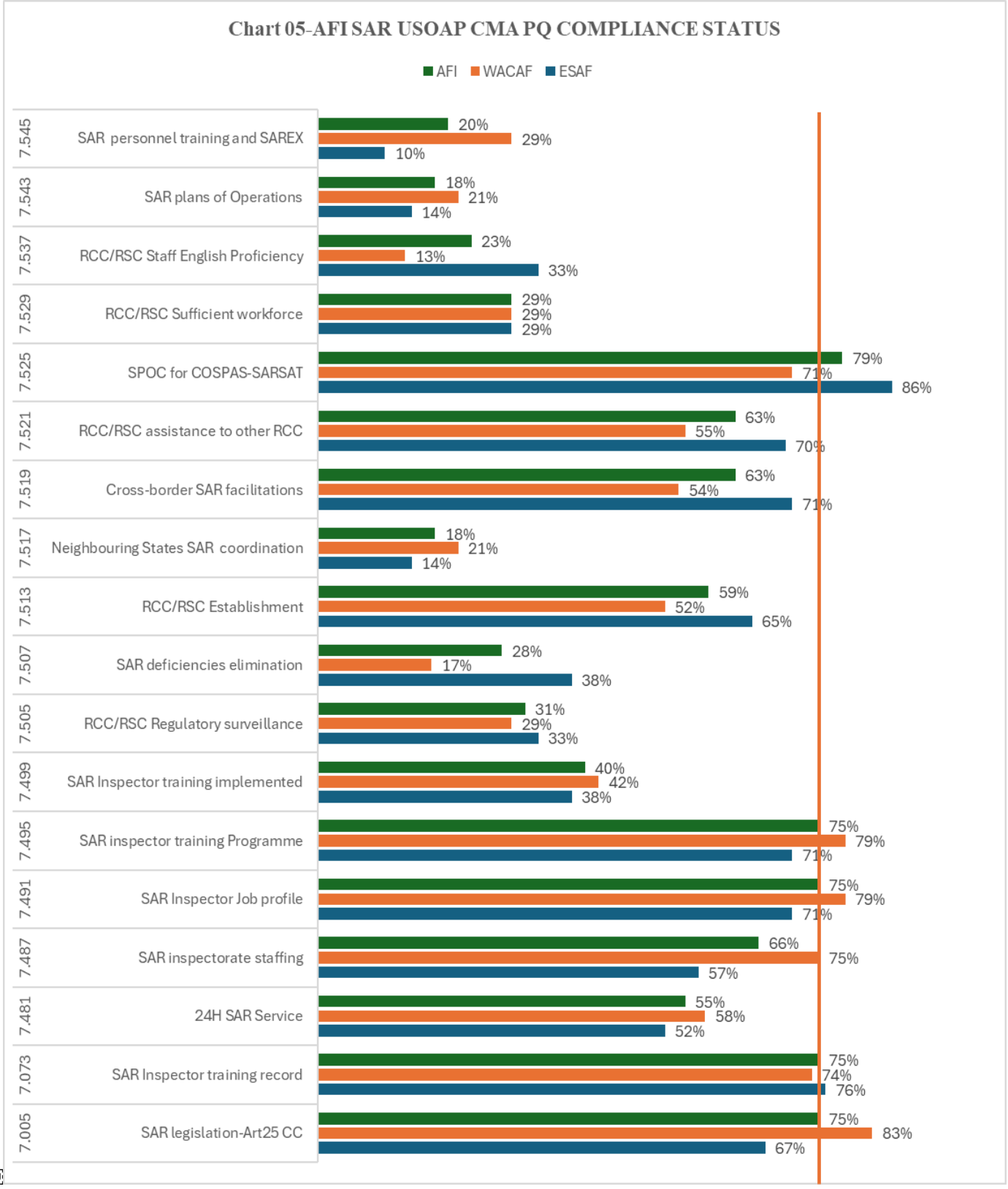
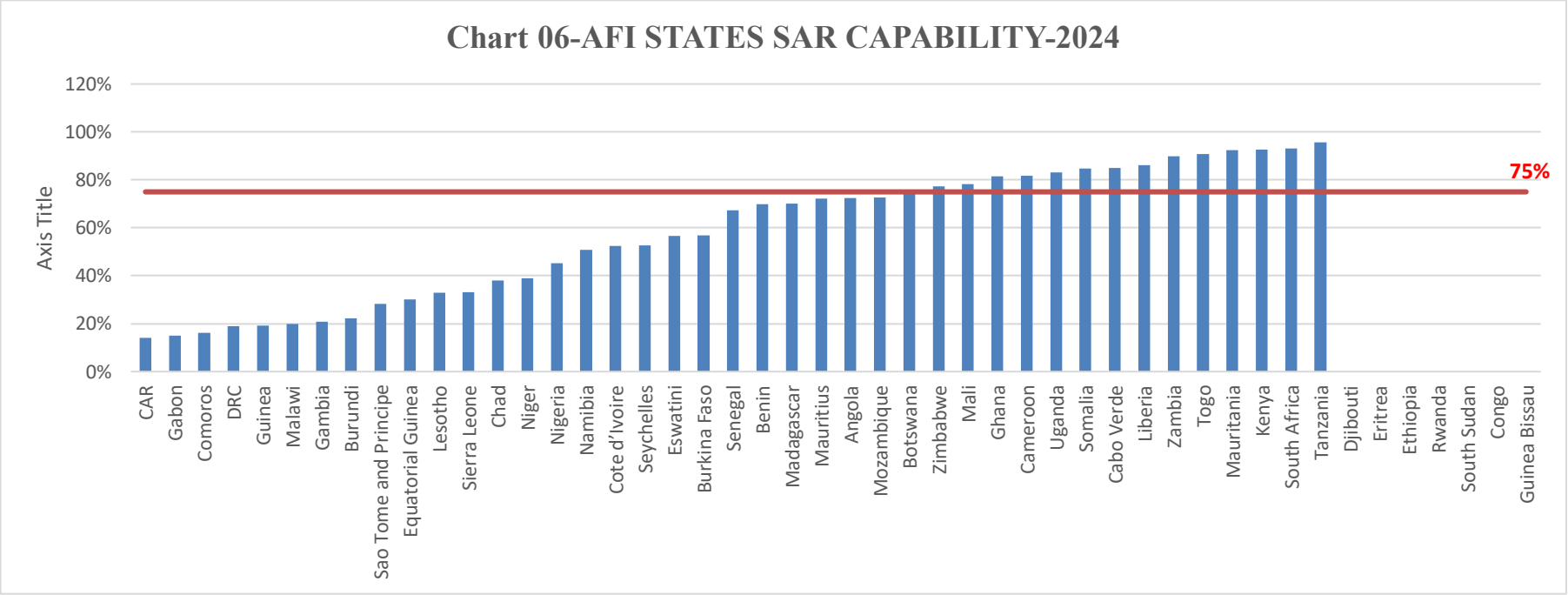


Chart 05-AFI SAR USOAP CMA PQ COMPLIANCE STATUS
AFI
WACAF
ESAF
7.545 SAR personnel training and SAREX 20% 29% 10%
7.543 SAR plans of Operations 18% 21% 14%
7.537 RCC/RSC Staff English Proficiency 23% 13% 33%
7.529 RCC/RSC Sufficient workforce 29% 29% 29%
7.525 SPOC for COSPAS-SARSAT 79% 71% 86%
7.521 RCC/RSC assistance to other RCC 63% 55% 70%
7.519 Cross-border SAR facilitations 63% 54% 71%
7.517 Neighbouring States SAR coordination 18% 21% 14%
7.513 RCC/RSC Establishment 59% 52% 65%
7.507 SAR deficiencies elimination 28% 17% 38%
7.505 RCC/RSC Regulatory surveillance 31% 29% 33%
7.499 SAR Inspector training implemented 40% 42% 38%
7.495 SAR inspector training Programme 75% 79% 71%
7.491 SAR Inspector Job profile 75% 79% 71%
7.487 SAR inspectorate staffing 66% 75% 57%
7.481 24H SAR Service 55% 58% 52%
7.073 SAR Inspector training record 75% 74% 76%
7.005 SAR legislation-Art25 CC 75% 83% 67%

6.2 From this analysis, it appeared that the major areas of weakness is in coordination with adjacent States and their appropriate RCCs/RSCs (18%), effective SAR regulatory oversight (31%), training of SAR staff that provide the SAR services in their area of responsibility and conduct of SAREX (20%), RCC/RSC staffing (29%) and elimination of SAR safety deficiencies (28%). 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 was vital. Finally, there was a need for improved systemic approaches to training for both national SAR inspectors and personnel responsible for the provision of SAR services, including the regular organisation of effective SAR exercises that test systems and personnel.

Overall SAR capability of AFI States in 2024



6.3 The Chart 06 provides the status of SAR capability of AFI States in 2024. The data used to develop this graphic were derived from the AFI 2025 gap analysis survey conducted in the first quarter of 2025. It was noted that 48 AFI States were interrogated out of which 41 States (86%) responded positively.

6.4 The States were classified based on capability level and all were compared to the target level of Safety of 75% set by the Global Aviation Safety plan (GASP) up to 2024.

6.5 It appears from the gap analysis survey that fifteen (15) States have reached at least 75% of global target, while fourteen (14) are yet to reach 40% capacity.

6.6 The SAR capability matrix table, ICAO Annex 12 compliance, is indicated in **APPENDIX C**. The status of capability indicators in the table should be updated regularly by the States (at least once per year).

AFI SAR Coordination Forums

6.7 The AFI Region will benefit from the cooperation and coordination of States and ICAO involved in the AFI SAR TET. After the AFI SAR TET completes its tasks, the establishment of permanent Regional SAR Forums to enable collaboration and cooperation on high seas, including adjacent ICAO regions should be considered, such as:

a) ICAO/IMO JWG;

b) COSPAS-SARSAT;

c) SAR Regional Support Team (to be established); and

d) ICAO inter-regional SAR workshops

6.8 There were several regional initiatives for cooperative support and development already being undertaken in the AFI Region to assist with aeronautical SAR capability enhancement. These meetings are rotated between the different Regions and are endeavoring a recurring schedule mostly biennial.

6.9 Such improvement programs could result from a request by a State needing assistance, or from ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) Online Framework, or by the users of the SAR system (RCCs), that identifies weaknesses in the State's SAR capability. The programs can be conducted by a 'Go Team' that normally consists of external SAR experts from ICAO, or through a cooperative effort by several States or external agencies such as COSPAS-SARSAT.

CHALLENGES

6.10 The following potential ***challenges*** 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 coordinating 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;

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

i) absence of alleviation for civil SAR aircraft from the 'rules of the air';

j) low number of qualified SAR regulators/inspectors; and

k) low number of qualified workforce in RCC/RSC;

Global and Regional SAR Issues

6.11 States should monitor outcomes from global and regional ICAO 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 AASPG and its Sub-Groups, other ICAO Region SAR groups, the ICAO/IMO JWG-SAR, ICAO High Level Safety Conferences, etc.

6.12 The provision of sufficient resources was critical in their area of responsibility (national responsibility), including:

a) Financial:

- funding for 24-hour RCC/RSC 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 or other legal issues.

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

c) RCC/RSC facilities:

- appropriate RCC/RSC facility space;
- minimum RCC/RSC tools (such as current charts, plotting equipment, documentation, etc.);
- identify and task available SRUs;
- Aircraft and vessel tracking information, Automatic Identification System, etc.;
- reliable and rapid H24 communications, and a suitable means to-
    - receive and communicate distress alerts
    - 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:
    - RCC workstation computers;
    - Software including basic databases, drift modelling, incident management, etc.;
    - High speed internet connectivity

d) Contingency- back-up RCC/RSC facility, or arrangement with another RCC or other national operation Centres as a contingency against inability to operate from the primary RCC/RSC due to the need to evacuate or loss of systems, etc.;

e) Search and Rescue Units (SRUs):

- available and suitable SAR units (e.g. aircraft, helicopters, vessels, land units, medical teams etc.);
- 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.: droppable life rafts and survival supplies, etc.);

f) Training support:

- SCs, SMCs and OSCs staff – basic and On-the-Job Training (OJT);
- Operational facilities which need training include:
  - aeronautical units
  - maritime units
  - land units
  - specialized units (para-rescue, paramedical, desert rescue, mountain rescue, urban SAR teams that deploy to disasters), divers, etc.
  - supply depots; and
- RCC support staff – basic and refresher.
- SAR inspectorate staff– basic and On-the-Job Training (OJT).

7. PERFORMANCE FRAMEWORK

7.1 The SAR performance framework for the AFI Region provides a performance framework for AFI States to improve their SAR system in an effective, harmonized and efficient manner. The performance framework may be supported by the key performance areas (KPA) such as: Legal Framework and Structure Planning, SAR Standards and Procedures, SAR Facilities and Resources, SAR Information, SAR Improvement, and SAR modernization.

7.2 These keys performance areas are aligned with global and regional air navigation as well as aviation safety plans. The KPAs are supported by identified key performance indicators as well as performance targets. They should be consistently informed through the SAR capability matrix which States are expected to complete and share with ICAO regional offices for ESAF and WACAF for compilation and reporting on an annual basis.

Regional Key Performance Areas (KPA)

AFI SAR KPA 1-*Legal Framework and Structure Planning*:

Performance objective 1.1: Maintain or improve organizational process of SAR system

7.3 **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,:

a) ensure that it is party to, and/or aligned with the following Conventions, Regional Agreements, Manuals as applicable:
   i. Convention on International Civil Aviation 1944 and its Annexes;
   ii. Regional Air Navigation Agreement approved by ICAO Council;
   iii. AFI SAR Regional Agreement approved by ICAO Council; and
   iv. IAMSAR Manual

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

c) establish a national SAR coordinating committees (SCCs) consisting of SAR system stakeholders to enable a whole-of-government approach;

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

e) establish an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent,

administrative matters, such details to be submitted to the ICAO Regional Office;

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

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

h) establish a single State SAR Plan that:

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

   ii. describes the relevant SRRs, including the coordinates and geographical chart depiction of the SRR and neighboring 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 AFI Regional Offices; and

   x. is monitored by quality assurance processes.

AFI SAR KPA 2-*SAR Standards and Procedures*

Performance objective 2.1: Maintain or improve operational SAR outcomes

7.4 **All States** should take into consideration to:

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

b) establish SAR agreements with States having adjoining SRRs or FIRs, including trans-regional neighbors;

c) provide up to date cross-border information on SAR capability in GEN. 3.6 of Aeronautical Information Publication. (pre-arrange procedures for cross-border SAR responses (this should be included in bilateral SAR agreements);

d) establish a program for regular SAREX, which may be a desktop communications exercise, a co-ordination exercise with simulated response to a crisis based on a series of scenarios, a full exercise (this expectation may be fulfilled by participating in a sub-regional SAREX that tests the State's SAR system;

e) ensure adjacent RCCs periodically execute SAREX exercises together to develop and maintain efficient co-operation and co-ordination between their services. These exercises need not always be on a large scale, but at least those SAR units which are likely to operate together should engage periodically in coordinating exercises. Much may be learned by exchanging information on training methods (e.g., programmes, literature, and films) and visits between staff of adjacent SRRs. It is essential that these exercises be

coordinated from the appropriate RCC which is responsible for the SRR.

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

g) establish arrangements or MOUs with States or other national agencies and include in the SAR Operations Plans:

   i. procedures for cooperation and deployment of foreign SRUs or other national services;

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

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

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

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

h) establish SAR Alerting procedures which:

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

   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 (for JRCC) or accordingly; and

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

AFI SAR KPA 3-SAR Facilities and Resources

Performance objective 3.1: Maintain or improve the provision of SAR infrastructure and services

7.5 *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, neighboring 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, if applicable;

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, if applicable;

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., Automatic Identification System allowing rapid identification of potential aircraft and vessels that may divert to assist if applicable;

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;

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.

7.6 *Personnel and Training*

All States should, maintain a 24 hour service to:

a) provide adequate ATC resources 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) develop SAR personnel job descriptions that detail responsibilities and eligibility criteria for recruitment of operational staff;

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

   i. RCC SAR Mission Coordinators (SMCs) 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.

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

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

7.7 *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 neighboring States or other RCCs and such regions shall not overlap and shall be contiguous.

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

a) availability and deployment of suitably crewed, trained and equipped SRUs, public and/or private, civil and military, for rapid SAR response;

b) availability and deployment of SRU 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, if needed;

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 manual Volume III.

7.9 *Distress Beacons*: **All States** should:

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

b) have a reliable distress beacon registration system that:

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

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

c) take steps (including education) required to prepare for, and to implement changes related to, the introduction of 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: *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.*

7.10 *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.

AFI SAR KPA 4-*SAR Information*

Performance Objective 4.1: Improve SAR collaboration at global, regional and national levels

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

a) establishment of a centralised information source publishing all AFI State Aeronautical Information Publication (AIP) as required by ICAO Annex 15 Appendix 1, 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) to share SAR activity with States, National Authorities 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.

7.12 *SAR Facilities and Equipment Lists*: **All States** should maintain a current, comprehensive list of State SAR Facilities, SAR Equipment, and SAR Units (SRUs), including joint or shared facilities and equipment, and provide the info via AIP/SAR Section.

7.13 *SAR Library*: **All States** should:

a) establish a web-based SAR Library, or cooperate by contributing to an Internet-based AFI resource; and

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

   i. Annex 12;
   ii. IAMSAR Manual Volumes I, II and III;
   iii. International Convention on Maritime SAR (SAR Convention 1979);
   iv. AFI SAR Plan/electronic Air Navigation Plan; and
   v. relevant regional, national and agency SAR documents.

AFI SAR KPA 5-*SAR Improvement*

Performance objective 5.1 : Establish and Improve safety management systems and quality assurance in SAR

7.14 *Search and Rescue Exercises (SAREX)*: In order to test and evaluate existing coordination procedures, data and information sharing and aeronautical SAR response arrangements all States should conduct regular SAREX (at least one every two years) 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; 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 in the IAMSAR Manual, Volume I, Appendix O, Sample template for a joint SAREX.

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

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

7.15 <u>*SAR Quality Assurance*</u>:

All States should implement SAR System Improvement and Assessment measures, including Safety Management and Quality Assurance systems accordingly with ICAO standards, 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 or authority 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 ICAO 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: Peer review, either external or internal, may provide a useful internal quality assurance tool.

7.16 <u>*SAR Management Review*</u>: All States should conduct an annual or more frequent analysis of their current SAR system to identify specific gaps in capability against the minimum requirements of Annex 12 to:

a) enable the AFI SAR data to be updated to accurately reflect the State's capability;

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

c) establish a common set of basic SAR system statistics, which include:

   i. number of aeronautical SAR incidents per year;

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

iii. type of aircraft in distress (light, heavy, glide, etc.);

iv. number of electronic alerts (ELT, PLB) have received / TRUE-FALSE;

v. Number versus Distribution of electronic alerts in SRR;

vi. time from first alert to tasking the SRU;

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

viii. time from first alert to rescue.

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

e) 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.

7.17 *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, police and other agencies;

ii. ANSPs;

iii. aerodrome and port operators (hydroplanes);

iv. aircraft 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. States should, however, implement measures to prohibit and control the immediate spreading of Aviation accident on-scene footage by all media and should find a way to integrate the permission for such with the Annex 13 and Annex 19 requirements. (Protection of Safety Information.)

AFI SAR KPA 6-SAR Modernization

Performance objective 6.1: Optimize the implementation of operational SAR improvements within the ASBU framework

7.18 The 6th Edition of the Global Air Navigation Plan (GANP) brought in some significant changes in the ASBU framework with the move from the module based approach to the element based approach in three threads (information, operational, and technology). A new module (GADS) dedicated to the global aeronautical distress and safety system (GADSS) was introduced in the operational thread.

7.19 The GADS module contains six elements distributed in block 1 and block 2 namely:

- GADS-B1/1: Aircraft tracking
- GADS-B1/2: Contact directory service.
- GADS-B2/1: Location of an aircraft in Distress
- GADS-B2/2: Distress tracking information management
- GADS-B2/3: Post Flight Localization
- GADS-B2/4: Flight Data Recovery

7.20 GADS-B1/1 and GADS-B1/2 became standards following the publication of amendment 19 of Annex 12 with effective date of 26 November 2024 and they were listed as applicable elements in the AFI Air Navigation Plan Volume III.

All States must

- ensure that the rescue coordination centre (RCC) and, as appropriate, the rescue subcentre (RSC) maintains up-to-date contact details in the OPS Control Directory.
- ensure that the rescue coordination centre (RCC) and, as appropriate, the rescue subcentre (RSC) subscribe and maintain access to the location of an aircraft in distress repository (LADR).

Table 04-AFI SAR Key Performance Indicators (AFI SAR KPIs)

SAR KPA	Performance Objective	KPI 01	KPI 02	KPI 03	KPI 04
KPA1-Legal Framework and Structure Planning	**Performance objective 1.1:** Maintain or improve organizational process of SAR system	KPI01.1- % States with SAR legislation	KPI02.1- % States with H24 SAR Service established	KPI03.1- % States with promulgated national SAR coordinating committee (SCC)	KPI04.1- % States with promulgated national SAR plan
KPA2-SAR Standards and Procedures	**Performance objective 2.1:** Maintain or improve operational SAR outcomes	KPI01.2- % of States with SAR agreements signed with all neighboring States	KPI02.2- % of States with inter-agencies SAR agreement signed	KPI03.2- % of States with promulgated Mass Rescue Operation plan	KPI04.2- % of RCC/RSC with approved operational plans
KPA3-SAR Facilities and Resources	**Performance objective 3.1:** Maintain or improve the provision of SAR infrastructure and services	KPI01.3- % RCC/RSC with sufficient qualified workforce	KPI02.3- % of RCC/RSC possessing at least 75% of required minimum equipment	KPI03.3- % States with established distress beacon registration system	KPI04.3- % RCC/RSC with established contingency facilities or procedures
KPA4-SAR information	**Performance Objective 4.1:** Improve SAR collaboration at global, regional and national levels	KPI01.4- % of States having published all required SAR information in their AIP	KPI02.4- % of States with established internet-based SAR information sharing system	KPI03.4- % of States with established or collaborated web-based SAR Library	
KPA5-SAR improvement	**Performance objective 5.1 :** Establish and Improve safety and quality management systems in SAR	KPI01.5- % of States with coordination and large scale SAREX conducted every two years	KPI02.5- % of RCC/RSC with SMQ and/or SMS implemented	KPI03.5- % of States conducting annual SAR Management review	KPI04.5- % of States having conducted at least one seminar/workshop and public safety campaign in the last two years.
KPA6-SAR modernization	**Performance objective 6.1:** Optimize the implementation of operational SAR	KPI01.6- %RCC/RSC subscribed to the LADR	KPI02.6- %RCC/RSC with permanent up-to-date contact details in the ICAO		

	improvements within the ASBU framework		Ops control Directory		

Table 05-AFI SAR Performance Targets (AFI SAR Target)

AFI SAR KPA		AFI SAR KPI	BASELINE 2025	TARGET 2026	TARGET 2027	TARGET 2028
KPA1-Legal Framework and Structure Planning	**Performance objective 1.1:** Maintain or improve organizational process of SAR system	KPI01.1- % States with SAR legislation	**75%**	**80%**	**85%**	**90%**
		KPI02.1- % States with H24 SAR Service established	**55%**	**60%**	**65%**	**70%**
		KPI03.1- % States with promulgated national SAR coordinating committee (SCC)	**46%**	**50%**	**60%**	**70%**
		KPI04.1- % States with promulgated national SAR plan	**46%**	**50%**	**65%**	**75%**
KPA2-SAR Standards and Procedures	**Performance objective 2.1:** Maintain or improve operational SAR outcomes	KPI01.2- % of States with SAR agreements signed with all neighboring States	**18%**	**25%**	**45%**	**65%**
		KPI02.2- % of States with inter-agencies SAR agreement signed	**18%**	**30%**	**45%**	**60%**
		KPI03.2- % of States with promulgated Mass Rescue Operation plan	**29%**	**40%**	**55%**	**65%**
		KPI04.2- % of RCC/RSC with approved operational plans	**18%**	**30%**	**45%**	**65%**
KPA3-SAR Facilities and Resources	**Performance objective 3.1:** Maintain or improve the provision of SAR infrastructure and services	KPI01.3- % RCC/RSC with sufficient qualified workforce	**29%**	**40%**	**55%**	**65%**
		KPI02.3- % of RCC/RSC possessing at least 75% of required minimum equipment	**44%**	**50%**	**55%**	**60%**

		KPI03.3- % States with established distress beacon registration system	**60%**	**70%**	**75%**	**80%**
		KPI04.3- % RCC/RSC with established contingency facilities or procedures	**33%**	**45%**	**55%**	**65%**
KPA4-SAR information	**Performance Objective 4.1:** Improve SAR collaboration at global, regional and national levels	KPI01.4- % of States having published all required SAR information in their AIP	**48%**	**55%**	**65%**	**75%**
		KPI02.4- % of States with established internet-based SAR information sharing system	**42%**	**55%**	**65%**	**75%**
		KPI03.4- % of States with established or collaborated web-based SAR Library	**48%**	**55%**	**65%**	**75%**
KPA5-SAR improvement	**Performance objective 5.1 :** Establish and Improve safety and quality management systems in SAR	KPI01.5- % of States with coordination and large scale SAREX conducted every three years	**20%**	**25%**	**35%**	**50%**
		KPI02.5- % of RCC/RSC with quality assurance and/or safety assurance implemented	**42%**	**55%**	**65%**	**75%**
		KPI03.5- % of States conducting annual SAR Management review	**50%**	**65%**	**75%**	**85%**
		KPI04.5- % of States having conducted at least one seminar/workshop and public safety campaign in the last two years.	**42%**	**55%**	**65%**	**75%**
KPA6-SAR modernization	**Performance objective 6.1:** Optimize the implementation of	KPI01.6-%RCC/RSC subscribed to the LADR	**29%**	**45%**	**65%**	**85%**
		KPI02.6-%RCC/RSC with permanent up-to-date contact	**31%**	**45%**	**65%**	**85%**

	operational SAR improvements within the ASBU framework	details in the ICAO Ops control Directory				

8. EMERGING ISSUES AND FUTURE DEVELOPMENTS

RESEARCH AND DEVELOPMENT

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 may manifest itself in joint projects such as:

- ICAO and/or IMO Regional SAR training opportunities provided to assist States that are unable to provide their own SAR training;
- Joint Sub-regional RCCs;
- Development of Training Centre of excellence that brings together civil and military SAR experts and provides a single SAR facility, 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.

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 exceeds a Variable Set of Parameters (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.

PLANNING FOR THE FUTURE

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

- the need to cater for increased growth or changes in air and maritime traffic through SAR regions which may increase the demand, or present changed capability requirements, for SAR services. This may include, for example, new air routes using longer range aircraft into more remote areas or increased numbers of, and/or larger, cruise ships; and
- new technology such as :
    - Unmanned Aircraft System (UAS),
    - autonomous vessels,
    - new distress alerting devices and systems.
    - new tracking systems,
    - new electronic search equipment (such as optical radar systems),
    - online virtual conferencing platforms,
    - smartphone apps,
    - artificial intelligence, and
    - data driven decision making tools.

9. MILESTONES, TIMELINES, PRIORITIES AND IMPLEMENTATION ACTIONS

Milestones

9.1 Section 7 (Performance Improvement framework) provides a scheme for the implementation of a set of SAR enhancement initiatives in support of the AFI SAR key performance areas.

9.2 States should implement, without delay, the various enhancement initiatives that are necessary to meet the expectations of the travelling public expressed through the AFI SAR KPAs, 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 over the next 10 years.

Priorities

9.4 It is a matter for each State to determine priorities in accordance with its own economic, environmental, safety and administrative drivers. However, States' attention is drawn on the need for collective and collaborative efforts to achieve SAR performance targets set in section 7 of this plan.

Actions

9.5 This Plan necessitates several implementation actions. It is expected that each AFI State report, to the AASPG through the accredited ICAO Regional Offices, on progress on each applicable element of the SAR capacity improvement system. All States should note the importance of SAR status monitoring, which is expected to be conducted. Reporting of implementation progress of SAR KPAs from this Plan is expected to be conducted by the Regional Offices through a reporting and monitoring tool available in the ICAO Regional Offices, using the following categories:

- SAR legal framework and organizational structure;
- SAR resources and facilities;
- SAR Information;
- SAR Improvement.
- SAR modernization

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 developmentneed 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 SAR exercise (SAREX) provides unique search and rescue training experience regarding the operational, technical, and planning aspects. A biennial SAREX program is expected to be established in each SRR or SRS, with the first year being for a desktop communications and coordination exercises, and the second year being a full exercise , taking into consideration the operational benefits and financial aspects. The SAREX outcomes and lessons learned should be reported to AASPG through the AAO Sub-Group.

9.9 Encourage joint exercises between RCCs and Airport (Annex 14) , to align and harmonise resources.

9.10 Inclusion of Accident Investigation Authorities (Annex 13) in exercises to test agreements and hamonisation.

9.11 The ICAO ESAF and WACAF Regional Offices are responsible for taking actions that assist the implementation of SAR within their accredited States in cooperation with the IMO. In addition, the ICAO Regional Offices are responsible for coordinating with adjacent ICAO regional offices on an ad hoc basis or at relevant trans-regional meetings.

APPENDIX A – SAR LEGISLATION TEMPLATE

25_AFI_SAR_ LEG001 to be included

APPENDIX B - BENEFITS TO THE SAR SYSTEM OF STATES ASSISTING OTHER STATES

AFI States face demanding SAR responsibilities with few resources

B.1. Many AFI States have the challenging responsibility of providing SAR services over vast and remote land and oceanic areas and several have few resources available to meet Annex 12 requirements.

Taking a Regional approach improves effectiveness and efficiency

B.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 neighboring and regional RCCs. It is expected that the more advanced States in SAR assist the neighboring less advanced States in the establishment and implementation of SAR services.

When advanced SAR States support Less Developed Neighbours, everyone wins

B.3. States that aren't compliant with Annex 12 and are unable to meet the minimum SAR service requirements could consult and seek assistance from 'champion' States that are compliant and have well developed SAR systems in place.

B.4. Examples of assistance that could be provided by States, International Organisations (such as IMO and 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 job descriptions for RCC/RSC personnel;

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/RSCs;

l) provision of operational search plan data;

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

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

APPENDIX C - SAR CAPABILITY MATRIX.

Reference : 25_AFI_SAR_FOR004 SAR Capability Matrix

APPENDIX D - SAR AGREEMENTS BETWEEN TWO STATES

Reference: 25_AFI_SAR_ORG002 Bilateral Agreement

APPENDIX E - SAMPLE MOU BETWEEN SAR SERVICE AND THE ACCIDENT INVESTIGATION AUTHORITY

Reference : AFI_SAR_ORG006_MOU SAR AND AIG

APPENDIX F-AFI SAR RISK CATALOGUE AND RISK MANAGEMENT MATRIX

Reference: 25_AFI_SAR_GUI005 , AFI SAR Risks catalogue