

GUIDANCE MATERIAL FOR THE IMPLEMENTATION AND MONITORING OF PSCS OF EUR SAR PLAN

First Edition - 2021

DECEMBER 1, 2021

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1. Preamble

Guidance Material for the implementation and monitoring of Preferred SAR Capability Specifications (PSCS) of EUR SAR plan (hereinafter referred to as the GM for PSCS) reflects the instructions to assist EUR States to meet their SAR needs and obligations, as well as enhancing and improving national, sub-regional and regional SAR capability.

Also, GM for PSCS provide instructions to assist the EUR States in monitoring the implementation of PSCS and to promote the enhancement and improvement of Regional SAR capability within the EUR Region.

2. Objective

European States who are signatories to the Chicago Convention accept the responsibility for the provision of SAR services per the requirements of its Annex 12 - Search and Rescue.

The objective of this handbook is to:

- a) review the objective of the EUR Doc 039, EUR SAR Plan;
- b) following the EUR Doc 039, provide instructions to assist EUR States to meet their SAR needs and obligations;
- c) the GM should help to identify the way the EUR Doc 039 provides recommendations for EUR States to enhance and improve national, sub-regional and regional SAR capability;
- d) describe one or more acceptable means of complying with the requirements in the EUR Doc 039;
- e) provide practical advice for SAR experts on implementing the EUR Doc 039 or undertaking how to manage/achieve the basic requirements associated to the SAR activities; and
- f) describe information, including examples, to assist the SAR experts in the interpretation and application of the EUR Doc 039.

3. Scope

The GM will analyse, in accordance with the objective of EUR SAR Plan, all required standards and recommended practices (SARPs) of the Annex 12 and IAMSAR Manuals (Vol I, II and III), and provide recommendations for EUR States on how to implement those SARPs by describing one or more acceptable means of complying with those requirements. GM will include practical advice for SAR experts how to manage/achieve the basic requirements of EUR SAR Plan by including good examples from States that have already implemented those SARPs.

4. Definitions and Abbreviations

In the document, definitions and abbreviations are derived from:

- Annex 12 Search and Rescue;
- IAMSAR Manual (Vol. 1, 2 and 3); and
- EUR SAR Plan Doc 039;

5. Legal Framework

Applicable international standards and procedures regarding SAR:

- *The Convention on International Civil Aviation (Chicago Convention):*
 - **Articles 1 and 2** Airspace and Sovereignty;
 - **Article 12** Rules and Regulations;
 - **Article 25** Search and Rescue;
 - **Article 26** Accident and Incident Investigation;
 - **Article 28** Air Navigation Facilities;
 - **Article 31** Certificate of Airworthiness;
 - **Article 32** Licences of Personnel; and
 - **Article 68** Designation of Routes and Airports.
- *Annexes to the Chicago Convention:*
 - **Annex 2** Rules of the Air;
 - **Annex 3** Meteorological Services;
 - **Annex 6** Operation of aircraft (commercial air transport and general aviation) and helicopters (details include ELT types and carriage requirements);
 - **Annex 10** Communications (Volume III includes ELT specifications);
 - **Annex 11** Air Traffic Services (including the responsibilities for search and rescue alerting and in-flight emergency response);
 - **Annex 12** Search and Rescue;
 - **Annex 13** Aircraft Accident Investigation;
 - **Annex 14** Aerodrome and Heliport Design and Operations (including emergency planning with the RCC); and
 - **Annex 17** Security and Unlawful Interference.
 - **Annex 19** Safety Management
- EUR SAR Plan Doc 039;
- IAMSAR Manual (Vol. 1, 2 and 3);
- **INTERNATIONAL CONVENTION ON MARITIME SEARCH AND RESCUE (Hamburg, 27 April 1979);**
- **INTERNATIONAL COSPAS-SARSAT PROGRAMME AGREEMENT (Paris, 1 July 1988);**
- **Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Moscow, Washington, London, 22 April 1968);**
- **MANUAL ON AIR NAVIGATION SERVICES ECONOMICS (ICAO Doc 9161) AND**
- **INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974 (SOLAS).**

6. Guidance Material for the implementation of PSCS of EUR SAR plan

PSCS are the non-mandatory expectations on all EUR Region States to enhance SAR systems in order to meet a minimum level of SAR capability, with a high degree of interoperability and harmonization, with other ATM components such as Air Navigation Service Providers (ANSPs) and aerodrome operators. PSCS are not expected to contravene existing Annex 12 standards. The State's level of PSCS implementation will be not verified during the USOAP-CMA.

GM for PSCS will include PSCS areas for implementation:

- 6.1. Legal Framework and Structure Planning;
- 6.2. SAR Standards and Procedures;
- 6.3. RCC Facility;
- 6.4. Personnel and Training;
- 6.5. Oceanic Capability;
- 6.6. SAR Units;
- 6.7. Distress Beacons;
- 6.8. Contingency Facilities;
- 6.9. Provision of Information;
- 6.10. SAR Facilities and Equipment Lists;
- 6.11. SAR Library;
- 6.12. SAREX;
- 6.13. SAR Quality Assurance;
- 6.14. SAR Management Review;
- 6.15. SAR Promotion.

Each topic will be described with reference to the EUR SAR Plan, ICAO Chicago Convention annexes, IAMSAR Manual, and other international documents. For each topic it will develop a general example of good practice for the implementation of expected provision from EUR SAR Plan.

Besides SARPs provided in annexes of the Chicago Convention, we will provide references to the IAMSAR Manual as well, since the primary purpose of the three volumes of the IAMSAR Manual is to assist States in meeting their own SAR needs, and the obligations they accepted under the Chicago and SOLAS Conventions. These volumes of the IAMSAR Manual provide guidelines for a common aviation and maritime approach to organizing and providing SAR services. States are encouraged to develop and improve their SAR services, cooperate with neighbouring States and to consider their SAR services to be part of a global system.

6.1. Legal Framework and Structure Planning;

6.1.1 REFERENCE TO EUR SAR PLAN

Article 7.1 of the EUR SAR Plan defines SAR Legal Framework and Structure Planning.

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

- a) ensure that it is party to, and/or aligned with the following Conventions, Regional Agreements and Manuals as applicable:
 - i. Convention on International Civil Aviation 1944 and its Annexes;
 - ii. Regional Air Navigation Agreement approved by ICAO Council;
 - iii. EUR 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) when appropriate, establish a national SAR coordinating committee (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 of 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 Flight Information Regions (FIRs); and
- h) wherever applicable 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 neighbouring SRRs;
 - iii. details the National SAR Committee;
 - iv. details the governmental and non-governmental agencies with authority and responsibility for SAR coordination within its territories and designated area of responsibility;
 - v. details required and available SAR facilities, personnel, and equipment;
 - vi. details the SAR manuals, plans and procedures for national and regional cooperative SAR response arrangements;
 - vii. details the SAR personnel training and competency programme, qualification standards, SAR certification if applicable and SAR cooperation training;
 - viii. details the SAR agreements required;
 - ix. is electronic and accessible on the Internet, such details to be submitted to the ICAO EUR/NAT Regional Office; and

x. is monitored by quality assurance processes.

6.1.2 REFERENCE TO CONVENTION ON INTERNATIONAL CIVIL AVIATION 1944 (CHICAGO CONVENTION)

The Convention on International Civil Aviation (Chicago Convention). Articles of Chicago Convention specific to search and rescue and aircraft emergencies are as follows:

Articles 1 and 2 Airspace and Sovereignty;
Article 12 Rules and Regulations;
Article 25 Search and Rescue;
Article 26 Accident and Incident Investigation;
Article 28 Air Navigation Facilities;
Article 31 Certificate of Airworthiness;
Article 32 Licences of Personnel; and
Article 68 Designation of Routes and Airports.

6.1.3 REFERENCE TO ANNEXES

Details of the Articles are elaborated in Annexes to the Chicago Convention. The Annexes that have a bearing on emergency situations involving aircraft are the following:

Annex 2 Rules of the Air;
Annex 3 Meteorological Services;
Annex 6 Operation of aircraft (commercial air transport and general aviation) and helicopters (details include ELT types and carriage requirements);
Annex 10 Communications (Volume III includes ELT specifications);
Annex 11 Air Traffic Services (including the responsibilities for search and rescue alerting and in-flight emergency response);
Annex 12 Search and Rescue;
Annex 13 Aircraft Accident Investigation;
Annex 14 Aerodrome and Heliport Design and Operations (including emergency planning with the RCC); and
Annex 17 Security and Unlawful Interference.

6.1.4 REFERENCE TO ANNEX 12

CHAPTER 2. ORGANIZATION

Articles:

- 2.1 Search and Rescue Services;
- 2.2 Search and Rescue Region;
- 2.3 Rescue coordination centres and rescue subcentres;
- 2.5 Search and rescue units;

CHAPTER 3. COOPERATION

Articles:

- 3.1 Cooperation between States;
- 3.2 Cooperation with other services;

- 3.3 Dissemination of information;
- 2.2 Search and Rescue Region;

CHAPTER 4. PREPARATORY MEASURES

CHAPTER 5. OPERATING PROCEDURES

6.1.5 REFERENCE TO REGIONAL AIR NAVIGATION AGREEMENT APPROVED BY ICAO COUNCIL

EUROPEAN AIR NAVIGATION PLAN (EUR ANP) – ICAO Doc 7754

- *Part VI – Search and Rescue Services (SAR).*

6.1.6 REFERENCE TO EUR SAR REGIONAL AGREEMENT APPROVED BY ICAO COUNCIL

EUROPEAN SAR PLAN – ICAO Doc 039.

6.1.7 REFERENCE TO IAMSAR MANUAL

IAMSAR Manual Vol I – ORGANIZATION AND MANAGMENT

- *Chapter 1 - General system concept:*
 - *Article 1.3 Legal Basis for Services;*
- *Chapter 2 - System components;*
- *Chapter 5 - System management;*
- *Appendixes:*
 - *A – Sample legislation establishing a SAR organization;*
 - *H – National self-assessment on search and rescue system;*
 - *I – SAR agreements;*
 - *J – Sample national SAR committee interagency agreement;*
 - *K – Model agreement for the division of responsibility between the SAR authority and the Air Traffic Services provider in providing emergency response services for aircraft;*
 - *M - National responsibilities of Contracting States under international conventions*

6.1.8 REFERENCE TO OTHER INTERNATIONAL DOCUMENTATION

- *INTERNATIONAL CONVENTION ON MARITIME SEARCH AND RESCUE (Hamburg, 27 April 1979);*
- *INTERNATIONAL COSPAS-SARSAT PROGRAMME AGREEMENT (Paris, 1 July 1988);*

- *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* (Moscow, Washington, London, 22 April 1968);
- *MANUAL ON AIR NAVIGATION SERVICES ECONOMICS* (ICAO Doc 9161) AND
- *INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974 (SOLAS).*

6.1.9 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR LEGAL FRAMEWORK AND STRUCTURE PLANNING

All States must recognize the great importance of saving lives and the need to be directly involved in rendering aeronautical and maritime search and rescue (SAR) services to persons in distress.

Besides reduction of loss of life and suffering by providing rescue services, a State's concern and involvement with SAR may offer other advantages, such as the following:

- (a) safer and more secure environment for aviation and maritime related industries, commerce, recreation, and travel. Increased safety may promote use and enjoyment of aviation and maritime environments, tourism and economic development. This is especially true when the SAR system is associated with programmes aimed at preventing or reducing the effects of mishaps, sometimes referred to as "Preventive SAR."
- (b) Availability of SAR resources often provides the initial response and relief capabilities critical to saving lives in early stages of natural and man-made disasters. Therefore, SAR services are sometimes made an integral part of any local, national or regional emergency management system.
- (c) Well performed SAR operations can provide positive publicity about situations which may otherwise be viewed negatively. However, the opposite is also true; a poor response or ineffective response to a major accident or disaster can also result in worldwide publicity and adversely affect sensitive industries such as tourism and transportation.
- (d) SAR provides an excellent means for promoting cooperation and communication among States and between organizations at local, national, and international levels, because it is a relatively non-controversial and humanitarian mission. Cooperation in this area can lead to cooperation in other areas as well and can be used as a leadership tool for promoting good working relationships.
- (e) The value of property which can be saved in association with SAR activities can be high and provide additional justification for SAR services.

All States as a Party to the Convention on International Civil Aviation must arrange to provide certain aeronautical SAR coordination and services.

The SAR service can be provided by State individually by establishing effective national SAR organization/s, or it can be established jointly with one or more other States.

States must have in place statutes and related provision that establish a legal foundation for establishing a SAR organization and its resources, policies and procedures.

Very importance role in establishing SAR system should have SAR managers (State SAR agency/s (preferably) or one or more persons that serve as a National SAR coordinator) or where is established a national SAR coordinating committees (SCCs) which should consist of SAR system

stakeholders to enable a whole-of-government approach. SAR managers should seek legal advice on how domestic and international laws pertain to SAR policies and procedures.

State SAR legislative provision must be aligned with accepted principles of international law, and should serve purposes to:

- recognize the SAR function as a State responsibility;
- implement ICAO SARPs;
- designate SAR agencies and their general responsibilities;
- define the jurisdiction and legal authority of the RCC in accordance with the SARPs.

Sample of legislation is provided in Appendix A of IAMSAR Manual Vol. I.

SAR system should be structured to provide all SAR services:

- receive, acknowledge, and relay notifications of distress from alerting posts;
- coordinate search response;
- coordinate rescue response and delivery of survivors to a place of safety; and
- provide medical advice, initial medical assistance or medical evacuation.

The general levels and functions of the SAR system are shown in table 1.

General levels	General functions
SAR coordination	Management
SAR mission coordination	Mission planning
On-scene coordination	Operational oversight

Table 1. – Coordination structure

SAR systems can be established on a national or regional level, or both. Either way, the process involves establishment of one or more SRRs, along with capabilities to receive alerts, and to coordinate and conduct SAR services within each SRR via an RCC. Each SRR needs an RCC, but each State does not necessarily need an SRR if one RCC can be supported by and serve more than one State. This is especially true in ocean areas. In such cases, each State may establish an RSC.

A regional approach of establishing SAR system can reduce cost and improve distribution of distress alerts, coverage and services.

Establishment of national or regional SAR systems is typically based on development of multilateral national or regional plans, agreements, etc, to suit the desires and needs of the States involved. These documents may discuss establishment of RSCs, equivalent arrangements in lieu of establishing SRRs, etc., but usually provide for:

- effective use of all available resources for SAR;
- delineation of SRRs;
- description of relationships between the parties;
- discussion of how higher-level conventions, plans, agreements, etc., will be implemented and supported.

The basic requirements for developing an effective SAR system includes:

- legislative establishment of the SAR service(s);
- arrangements for use of all available resources, and provision of others if necessary;

- establishing geographic areas of responsibility with associated RCCs and RSCs;
- staffing, training, and other personnel support to manage and operate the system;
- adequate and functioning communications capabilities; and
- agreements, plans and related documents, to achieve goals and define working relationships;
- empower SAR Mission Coordinators with the authority to adequately carry out their responsibilities.

Each SRR is associated with an RCC. For aeronautical purposes, SRRs often coincide with flight information regions (FIRs). State should conduct a study to align, as far as practicable, aeronautical and maritime Search and Rescue Regions (SRRs); and SRRs and Flight Information Regions (FIRs).

State should 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 to establish JRCC 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.

For non-urgent, administrative matters, such details to be submitted to the ICAO Regional Office State, State should establish an Administrative Single Point of Contact for SAR (ASPOCS) – usually it should be CAA or Ministry of Transport in charge for SAR services (or other applicable Ministry);

SAR plans describe how SAR services will be provided, organized and supported. Wherever applicable establish a single State SAR Plan that:

- 1) designates the responsible RCC(s), RSC(s) and 24-hour SPOC/ASPOC;
- 2) describes the relevant SRRs, including the coordinates and geographical chart depiction of the SRR and neighbouring SRRs;
- 3) details the National SAR Committee;
- 4) details the governmental and non-governmental agencies with authority and responsibility for SAR coordination within its territories and designated area of responsibility;
- 5) details required and available SAR facilities, personnel, and equipment;
- 6) details the SAR manuals, plans and procedures for national and regional cooperative SAR response arrangements;
- 7) details the SAR personnel training and competency programme, qualification standards, SAR certification if applicable and SAR cooperation training;
- 8) details the SAR agreements required;
- 9) is electronic and accessible on the Internet, such details to be submitted to the ICAO EUR/NAT Regional Office; and
- 10) is monitored by quality assurance processes.

Sometimes, Ministers of Transport sign regional SAR plans since often both civil aviation and maritime safety programmes are under their purview. They are usually in the best position to designate and support SCs, who may include the Directors of Civil Aviation, Merchant Marine Safety or other officials with similar duties. The Ministers of Transport are often in the best position to promote coordination and harmonization of maritime and aeronautical SAR.

Example of the Russian Federation:

- I. Federal Law dated 17 March 1997 No. 60-FZ (Air Code of the Russian Federation, Article 69, Chapter XIII).
- II. Federal Law dated 22 August 1995 No. 151-FZ “On Emergency Rescue Services and the Status of Rescuers”.
- III. Government Resolution dated 23 August 2007 No. 538 “On the Enactment of the Regulation on the Joint Aerospace Search and Rescue System in the Russian Federation”.
- IV. Government Resolution dated 15 July 2008 No. 530 “On the Enactment of the Search and Rescue Federal Aviation Rules in the Russian Federation”.
- V. Government Resolution dated 4 September 2000 No. 654 “On the Enactment of the Regulation on Procedures for the Russian Federation State Border Crossing by Foreign SAR Units and their Sojourn on the Russian Federation Territory for Search and Rescue Purposes”.
- VI. Order of the Ministry of Transport dated 3 June 2014 No. 148 “On the Enactment of Requirements Regarding the Training of Aeronautical Staff of Units and Services of the Russian Federation Joint Aerospace Search and Rescue System and Aeronautical SAR Forces for the Conduct of Search and Rescue Missions (Operations) as well as Survival Training of Aircraft Crews; the Composition of Ground Search and Rescue Units and Pararescue Teams; the List of Equipment, Survival and Emergency Tools for the Equipage of SAR Aircraft, Ground SAR Units and Pararescue Teams; Requirements for Aerodrome Premises Equipage for SAR Aircraft Crews, Ground SAR Units and Pararescue Teams; Methodologies for Radiotechnical and Visual Search for Aircraft in Distress; Signals used for SAR Missions (Operations); Timeframes for Radiotechnical Search of Aircraft in Distress, their Passengers and Crews”.
- VII. Order of the Ministry of Transport dated 23 July 2020 No. 248 “On the Enactment of the Joint Air Traffic Management System Area Borders, Terminal Area Borders (TMAs, Heliports), Class A and C Airspace Borders”.
- VIII. Order of the Federal Air Transport Agency dated 21 June 2011 No. 350 “On Determining the Requirements to the Structure and Content of the Instruction for Search and Rescue within an Aerospace Search and Rescue Area”.
- IX. Order of the Federal Air Transport Agency dated 15 February 2013 No. 734 “On Determining the Deployment Sites of Search and Rescue Facilities on the Russian Federation Territory, the Total Number and Types of Standby Search and Rescue Aircraft”.
- X. Orders of Interregional Territorial Administrations of the Federal Air Transport Agency “On the Enactment of the Instruction on Search and Rescue within the Aerospace Search and Rescue Area”.
- XI. Intergovernmental agreements on aeronautical search and rescue with adjacent states.

6.2. SAR Standards and Procedures

6.2.1 REFERENCE TO EUR SAR PLAN

Article 7.2 of the EUR SAR Plan defines SAR Standards and Procedures. All States should take into consideration:

- 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 neighbours;
- 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; and
- e) adjacent RCCs should periodically execute SAR 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 co-ordinating 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's 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.

6.2.2 REFERENCE TO ANNEX 11

Annex 11 defines Standards and Recommended Practices for Air Traffic Services.

CHAPTER 5. ALERTING SERVICE

Article:

- 5.1 Application*
- 5.2 Notification of rescue coordination centres*
- 5.3 Use of communication facilities*
- 5.4 Plotting aircraft in state of emergency*
- 5.5 Information to the operator*
- 5.6 Information to aircraft operating in the vicinity of an aircraft in a state of emergency*

6.2.3 REFERENCE TO ANNEX 12

Annex 12 defines Standards and Recommended Practices for Search and Rescue area. Regarding standards and procedures defined in EURSAR Plan, several chapters in Annex 12 provides necessary standards and recommended practices for standards and procedures.

CHAPTER 2. ORGANIZATION

Article:

- 2.1 Search and Rescue services*
- 2.2 Search and Rescue regions*
- 2.3 Rescue coordination centres and rescue subcentres*
- 2.4 Search and Rescue communications*
- 2.5 Search and Rescue units*
- 2.6 Search and Rescue equipment*

CHAPTER 3. COOPERATION

Article:

- 3.1 Cooperation between States*
- 3.2 Cooperation with other services*

CHAPTER 4. PREPARATORY MEASURES

Article:

- 4.1 Preparatory information*
- 4.2 Plans of operation*
- 4.3 Search and Rescue units*
- 4.4 Training and exercises*

CHAPTER 5. OPERATING PROCEDURES

Article:

- 5.1. Information concerning emergencies*
- 5.2 Procedure for RCC during emergency phases*
- 5.3 Procedures where responsibility for operations extend to two or more Contracting States*
- 5.4. Procedure for authorities in the filed*

6.2.4 REFERENCE TO IAMSAR MANUAL

6.2.4.1 VOL. 1 ORGANIZATION AND MANAGEMENT

Article:

5.2.11-5.2.17 SAR Plan

5.4 Resources

6.4.11 Using international cooperation to improve SAR services

Appendix:

I - SAR agreements

J - Sample national SAR committee interagency agreement

K - Model agreement for the division of responsibility between the SAR authority and the Air Traffic Services provider in providing emergency response services for aircraft

O – Sample template for a joint search and rescue exercise

6.2.4.2 IAMSAR MANUAL VOL. 2 MISSION COORDINATION

Chapter 1. The search and rescue system

Article:

1.6 Plans of operation

1.8 Training and exercises

Chapter 2. Communications

Chapter 3. Awareness and initial action

Chapter 4. Search planning and evaluation concepts

Chapter 5. Search techniques and operations

Chapter 6. Rescue planning and operations

Chapter 7. Multiple aircraft SAR operations – General guidance

Appendix:

C- Mass rescue operations - MRO exercise, industry roles and incident management;

I – SITREPs and MAREC Code;

L – Search planning and evaluation worksheets;

T – Checklists and guides for multiple aircraft SAR operations;

6.2.4.3 IAMSAR MANUAL VOL. 3 MOBILE FACILITIES

Section 2. Distress alerts and messages

Section 5. Aircraft emergencies

Section 8. On-scene communication

Section 10. Multiple aircraft SAR operations

Section 11. Aircraft coordinator

Section 12. Searching

Section 13. Rescue action plan

Section

6.2.5 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR STANDARDS AND PROCEDURES

Aviation arrangements for SAR SARPs

The Convention on International Civil Aviation (Chicago Convention). Articles of Chicago Convention specific to search and rescue and aircraft emergencies are as follows:

- Articles 1 and 2** Airspace and Sovereignty;*
- Article 12** Rules and Regulations;*
- Article 25** Search and Rescue;*
- Article 26** Accident and Incident Investigation;*
- Article 28** Air Navigation Facilities;*
- Article 31** Certificate of Airworthiness;*
- Article 32** Licences of Personnel; and*
- Article 68** Designation of Routes and Airports.*

Details of the Articles are elaborated in Annexes to the Chicago Convention. The Annexes that have a bearing on emergency situations involving aircraft are the following:

- Annex 2** Rules of the Air;*
- Annex 3** Meteorological Services;*
- Annex 6** Operation of aircraft (commercial air transport and general aviation) and helicopters (details include ELT types and carriage requirements);*
- Annex 10** Communications (Volume III includes ELT specifications);*
- Annex 11** Air Traffic Services (including the responsibilities for search and rescue alerting and in-flight emergency response);*
- Annex 12** Search and Rescue;*
- Annex 13** Aircraft Accident Investigation;*
- Annex 14** Aerodrome and Heliport Design and Operations (including emergency planning with the RCC); and*
- Annex 17** Security and Unlawful Interference.*

The State must meet obligations imposed by adopted annexes of the Chicago Convention. These obligations are expressed as a standard that must be met, or by recommended practices. Several annexes are providing Standards and Recommended Practices (SARPs) for Search and Rescue area. Annex 12 applies to the establishment, maintenance, and operation of search and rescue services in the territories of State and over the high seas, and the coordination of such services between States.

Important to note is that states are required to notify the ICAO of any differences between national regulation and practices and the ICAO SARPs (Article 38, Chicago Convention).

Annex 12 is supplemented by the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, Volume I – Organization and Management, Volume II – Mission Coordination, and Volume III – Mobile Facilities (Doc 9731).

Maritime arrangements for JRCCs for SAR SARPs

The International Convention for the Safety of Life at Sea (SOLAS) is generally regarded as the most important of all international treaties concerning the safety of merchant ships.

The International Convention on Maritime Search and Rescue, 1979, known as the SAR Convention 1979, is designed to provide a framework for carrying out search and rescue operations following accidents at sea.

Standards and procedures

Standards are specifications with a goal the uniform application of which is recognized **as necessary (MUST)** for the safety or regularity of international air navigation, and the Contracting States will conform.

Recommended Practices are any specification with a goal the uniform application of which is recognized **as desirable (NEED)** for the safety or regularity of international air navigation and to which the Contracting States should conform.

Contracting States shall meet the relevant requirements from SARPs from the Chicago Convention, Annex 12, and associated annexes, as well the guidelines of the IAMSAR Manual regarding the procedures.

Alerting

The State should ensure that SAR Alerting service is implemented as operating procedures and instructions of ATS Units, according to the Annex 11 of the Chicago Convention. Alerting services must be provided for all aircraft provided with ATS Unit, and in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the ATS Unit, and to any aircraft known or believed to be the subject of unlawful interference. It is very important that ATS Units immediately notify RCCs when an aircraft is considered to be in a distress situation, whether is Uncertainty, Alert, or Distress phase is declared. The State should follow the agreed procedures published as SARPs in Annex 11, Chapter 5, to agree on procedures between ATS Units and RCCs or SAR Authorities.

SAR

The State should ensure that SARPs listed in Annex are implemented properly at a national and regional level. The state must, individually or in cooperation with other States, arrange to provide SAR services on a 24-hour basis. The portions of the high seas and areas undetermined sovereignty will be established and determined by regional air navigation agreements. Basic elements of SAR service are legal framework (SAR service to be recognized by National Law), a responsible authority (where RCC will be located ANSP, CAA or some other service), organized available resources (defined primary SAR Unit e.g. Helicopter Units of ministries of defence, police or some private sector or mountain rescue services, red cross/crescent, etc. and sign some kind of arrangements between SAR Authorities/RCC and SAR Unit), communication facilities (State to provide appropriate communication for the RCCs and SAR Units) and a workforce skilled in coordination and operational functions (State must ensure trained SAR personnel capable to perform coordination and operational functions). State should establish joint RCC where practical.

The State must delineate its SAR Region (SRR) where State will provide SAR services. State SRR must not overlap with those of neighbouring SRR, and it must be contiguous.

The State RCC and RSC in each of SRR. These RCC, and if practicable RSC, must be operational 24-hour a day, staffed by trained operators with proficient use of language for radio-telephony communications.

Each RCCs must have readily available preparatory information in respect of its SRR.

The State must designate as a part of the SAR Plan of Operations elements of public or private service that are suitably located and equipped for SAR Operations. The State must also designate elements of public or private services that do not qualify as an SRU but can participate in SAR Operations.

National SAR plan will describe various roles of all SAR supporting agencies involved.

The National SAR Coordination Committee as a high-level national body will oversee interagency SAR support and policymaking.

The State must ensure that primary SRU are equipped for locating promptly (e.g. Direction Finders for 406 MHz distress beacons) and be able to provide adequate assistance at the distress location.

RCCs, ATS Units must determine which emergency phase (Uncertainty, Alert, or Distress phase) is the situation that corresponds to received information that the aircraft is in an emergency.

Therefore, RCC, ATS Units, and SRUs must prepare procedures to act for any of the emergency phases Uncertainty, Alert, or Distress. Procedures for RCCs are stipulated in Annex 12, Chapter 5.

Besides procedures during the emergency phases, each State must have procedures in place for operations that extend to two or more States, the procedure for authorities in the field, as well as procedures for termination and suspension of operation.

Important procedures for State are to ensure the safety and effectiveness at the scene of an accident, and procedure when a pilot in command intercepts a distress transmission.

The State should ensure the proper use of SAR signals by SRUs, as well as for the RCCs and SRUs to keep a record of operational efficiency.

Whenever is possible, considering the benefits of operational and cost advantage, State should harmonize aeronautical and maritime SAR service within SRRs. It could help to minimize confusion over alerting procedures, better coordination, shared use of SAR expertise and assets, avoid duplication of efforts, and ensuring the efficiency of SAR services. JRCC can be established at minimal cost by combining aeronautical and maritime RCCs.

More information about SAR procedures for SAR administration could be found in IAMSAR Manual – Vol. 1, Vol. 2, and Vol. 3.

As guidelines from EUR SAR Plan all States in EUR region should take into consideration:

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

Coordination and cooperation between aerodrome rescue services and rescue RCCs is very important due to the high risk for an accident during the arrival and departure from the airports. Annex 14, Attachment A, Chapter 18 Rescue and firefighting services, part 18.1 Administration providing SARPs for airport administration regarding necessity that aerodrome management, following 4.2.1 of Annex 12, coordinates its emergency plans

with relevant rescue coordination centres to ensure that the respective limits of their responsibilities for an aircraft accident within the vicinity of an aerodrome are delineated.

Coordination between aerodrome rescue services and relevant RCC should be achieved by National legislation but also writing SLA prior agreement for assistance in dealing with an aircraft accident should help to delineate responsibilities.

Aerodrome emergency plans should contain SOPs for cooperation and coordination with RCCs, and aerodrome emergency plan should be in accordance with adopted National SAR Plan.

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

Article 3.1 of Annex 12, defines that State must coordinate its SAR activity with those of neighbouring States. It means that State must agree with each of neighbouring State for:

- SRRs (Annex 12, Article 2.2 – These SRRs shall not overlap and neighbouring SRR shall be contiguous. SRR should be, in so far as practicable, be coincident with the corresponding FIR, and with respect, to those areas over the high seas, should be coincident with corresponding Maritime SRR)
- SOPs (Neighbouring States should develop common SAR Plans and Procedures to facilitate coordination of the joint SAR operations. States must prepare procedures to permit immediate entry into its territory of SRU of other States for purpose of SAR.

The State should also authorize its RCC to assist other RCCs.

To strengthen SAR cooperation and to facilitate SOPs and SRRs, neighbouring States should enter into agreements.

IAMSAR Manual Vol 1. in Appendix I provides the template of SAR Agreements. SRR delimitation over international waters is not intended to obstruct the provision of SAR services in any way.

The provision of SAR services within an SRR shall be without regard to the nationality or circumstances of the persons in distress.

If agreements discuss territorial entry for SAR, provisions should account for a balance of concerns for sovereignty and concerns for saving lives.

IMO and ICAO use the term “agreement” but many States view this as a type of legal instrument. Different terms may be used for the title of a legal instrument, such as “Agreement”, “Memorandum of Understanding”, “Arrangement” and other related terms. The type of instrument can be decided by the States involved as long as the document meets the intent of the international conventions to serve as the basis for cooperation and the provision of expeditious and effective SAR services.

Cooperation between the States regarding the SAR operation are examples of searching for MH 370 and AF447.

- 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);

The State must ensure that all necessary information about its SAR services, SAR capabilities are published and up to date in GEN. 3.6 of Aeronautical Information

Publication (AIP). If States have signed agreements with neighbouring states, then information regarding signed agreements should be written in GEN 3.6 of AIP.

If States have not concluded agreements with neighbouring states, but State has agreed a national procedure and conditions for permitting immediate entry into its **Search and Rescue Region (SRR)** of SRU of other States for purpose of SAR, then those procedures should be written in GEN 3.6 of AIP.

- 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);

Annex 12, Article 4.4. Training and exercises: To achieve and maintain maximum efficiency in search and rescue, Contracting States shall provide for regular training of their search and rescue personnel and arrange appropriate search and rescue exercises.

The State should develop a program for organizing SAR exercises (SAREX), in accordance with ICAO SARPs. It should have three levels of SAR exercises:

- I level – Communication SAREXs (the most simple type of SAREX, requires the least planning. It consists of period use of all means of communication between all potential users to ensure capability for actual emergency);
- II level – Coordination SAREXs (involves a simulated response to a crisis based on a series of scenarios. All levels of the SAR service are involved but do not deploy. This type of exercise requires considerable planning, and usually one to three days to execute);
- III level – Full-scale SAREXs. (or a field exercise, differs from the previous types in that actual SAR facilities are deployed. This increases the scope of SAR system-testing and adds realistic constraints due to times involved in launching, transit, and activities of the SRUs).

The State could organize following the program of exercise Table-top exercises (TTXs) or Desktop exercises with a simulation of response to the various types of scenarios.

The State should prepare an annual plan of SAREXs.

The Success of an exercise is measured by:

- how many problems are discovered;
- how much is learned;
- how much operating plans are improved; and
- how few mistakes are repeated during the next exercise.

It is safer to have shortcomings revealed by exercises rather than during actual operations. Appendix O of IAMSAR Manual Vol. 1, provides a sample template to serve as a guide to assist a State to develop a SAR exercise with its local SAR supporting agencies as well as with one or more neighbouring States.

- e) adjacent RCCs should periodically execute SAR 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 co-ordinating 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's essential that these exercises be coordinated from the appropriate RCC which is responsible for the SRR.

Important matters to be addresses in SAR agreements between neighbouring States should include, among provision for RCCs and common SOPs, the cooperation on international SAR projects of common interest, but also liaison visits and joint training exercises. Much may be learned by exchanging information on training methods, especially of those SAR units which are likely to operate together.

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

MROs are characterized by a need for immediate response to large numbers of persons in distress such that capabilities normally available to SAR authorities are inadequate, and sometimes governments will declare MRO as a State Emergency Situation. Therefore, procedures for MRO within the National SAR plan and RCC Plans of Operation should be integrated with national disaster plans.

MROs occur less frequently than typical rescue efforts but have high potential consequences. Flooding, earthquakes, terrorism, and large passenger aircraft or ship disasters are examples of scenarios that may involve the need for MROs. Extensive preparations and resources are required to conduct MROs successfully.

In an MRO an OSC should normally be designated by the SMC.

MROs are relatively rare low-probability high-consequence events compared to normal SAR operations. But major incidents leading to the need for MROs have not been infrequent on a worldwide basis and can occur anywhere at any time.

Article 6.15 of IAMSAR Vol. 2 will give MRO overview.

MRO exercises provide opportunities to improve MRO preparedness by:

- validating plans, policies, doctrine, procedures, and the ability to conduct contingency operations;
- building, clarifying, and strengthening relationships with partners and stakeholders before an actual MRO incident;
- assessing preparedness/readiness with an emphasis on identifying shortfalls and closing gaps;
- refining plans, identifying available resources and capabilities, conducting training, and evaluating training plans; and
- providing familiarization and on-the-job training for players in their roles and responsibilities for conducting contingency operations.

- 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;

The State should develop common SOPs for cooperation with national and foreign SRUs. SOPs for the national level should be defined in National SAR Plan.

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

SAR Authority should sign MoUs with Ministries of Foreign Affairs regarding procedures for immediate entry of state aircraft for SAR purposes, but also to agree of support of translators and liaison officers or embassy officers for the daily tasking of SRUs. Local and international interest in the SAR operation may require the use of a common language or the availability of translators.

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

The State should agree on provisions for logistic and administrative support for SAR operations, especially for those foreign SRUs.

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

The State should develop common SOPs for cooperation with national and foreign SRUs, regarding communications, SITREPs, SOPs to the SAR areas, SOPs within the SAR area.

- v. daily end of day report by SRUs to the RCC (via mobile, email, fax, etc.); and
The State should develop common SOPs for cooperation with national and foreign SRUs, regarding daily reports of SRUs that participate in SAR operations.

h) establish SAR Alerting procedures which:

- iv. 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;

The State must establish SAR Alerting procedures according to Annex 11 and Annex 12. RCCs must be rapidly notified of any SAR event 24/7 within its SRR.

- v. 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

The State must ensure reliable delivery and acknowledgment of Cospas-Sarsat distress alerts within national SPOC. Cospas-Sarsat Council decided that all MCCs should sign MCC/SPOC Agreement with SPOCs in their service area, to ensure proper distribution and reception of Cospas-Sarsat distress alert data between Cospas-Sarsat Mission Control Centres(MCC) and search and rescue points of contact (SPOC). Template of those model MCC/SPOC agreement can be found on Cospas-Sarsat webpage (link: <http://www.cospas-sarsat.int/en/mcc-spoc-model-agreement-template>)

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

The State should ensure that civil-military protocols are established on the national level, in a situation where military SRU participating in SAR operations. Proper military support and sharing of information could be achieved by signing MoU between SAR Authorities and military services.

6.3. RCC Facility

6.3.1 REFERENCE TO EUR SAR PLAN

Article 7.3 of the EUR SAR Plan defines that all States should ensure that RCCs are of sufficient size with adequate provision for operational positions designed in accordance with human factors principles (such as human machine interface) for a major search involving civil and military assets where applicable, and facilities such as:

- a) Workstations, telephones (with international access), plotting tables, wall notice/status boards, computer, and communications equipment and systems, briefing/debriefing areas room for storage including incident records and recorders, RCC staff break and rest facilities;
- b) computer resources which may provide support to RCCs with incident management, plotting, search planning, mapping, contact databases, web-based information, etc.;
- c) charts, electronic or paper, which:
 - i. apply to SAR (aeronautical, nautical, topographic and hydrographic);
 - ii. depict SRR, neighbouring SRRs, FIR(s), SAR resources and made available for all relevant aeronautical and maritime RCCs, ATS units, aircraft operators; and
 - iii. provide a means of plotting;
- d) ability to reliably receive and acknowledge distress alerts 24 hours a day;
- e) maritime broadcast facilities, 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; and
- n) RCC documentation and reference material such as plans of operation, procedures manuals, guidance material, ICAO and IMO references, SAR agreements; and
- o) COSPAS-SARSAT equipment and reference material.

6.3.2 REFERENCE TO ANNEX 12

Annex 12 defines Standards and Recommended Practices for RCC FACILITY.

CHAPTER 2. ORGANIZATION

Article: 2.3 RCC and RSC

2.4 Search and Rescue Communications

CHAPTER 4. PREPARATORY ACTIONS

Article:

4.1 RCC and RSC

4.2 Plans of Operation

CHAPTER 5. OPERATING PROCEDURES

Article: 5.9 Maintenance of Records

6.3.3 REFERENCE TO IAMSAR MANUAL

6.3.3.1 VOL. I ORGANIZATION AND MANAGEMENT

CHAPTER 2. SYSTEM COMPONENTS

Article:

2.3.8 Facilities and Equipment

2.7.2 Computer Resources

CHAPTER 4. COMMUNICATIONS

Article:

4.1 RCC and RSC

4.2 Plans of Operation

4.5.5 - 4.5.13 SAR Communications Network

4.6 Supplemental Capabilities

CHAPTER 5. SYSTEM MANAGEMENT

Article:

5.3.2 Establishment of RCCs and RSCs

6.3.3.2 VOL. II ORGANIZATION AND MANAGEMENT

CHAPTER 1. THE SEARCH AND RESCUE SYSTEM

Article:

1.11 Computer Resources

CHAPTER 2. COMMUNICATIONS

Article:

2.16 RCC and RSC Communications

6.3.4 GENERAL EXAMPLE / GOOD PRACTICES FOR RCC FACILITY

RCC Facility shall meet the relevant provisions of Annex 12 and the guidelines of the IAMSAR Manual regarding the equipment required to execute its mission effectively, in accordance with its responsibilities (JRCC, MRCC, ARCC) and based on the challenges of its SRR (high seas, desert, jungle).

The interaction with other States with similar activities, the exchange of informative visits and the participation in regional and international SAR forum and meetings, contribute to the States to share good practices and improve their organisation.

6.4. Personnel and Training; RCC Personnel and Training

6.4.1 REFERENCE TO EUR SAR PLAN

Article 7.4 of the EUR SAR Plan defines Personnel and Training.

All States should, where applicable to maintain a 24-hour service:

- a) provide adequate ATC resources (either an ATS supervisor or other staff) that can provide relief within Area Control Centres (ACCs) to allow timely SAR alerts and information to RCCs;
- b) provide sufficient RCC staffing;
- c) provide a sufficient number of trained specialists RCC officers including SMCs and Assistant SMCs (A/SMCs);
- d) develop SAR personnel position 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 in order to understand those organizations, facilities and capabilities (reference Annex 12, paragraph 3.1.9).

6.4.2 REFERENCE TO ANNEX 12

6.4.2.1 CHAPTER 2. ORGANIZATION

Article

2.3 Rescue coordination centres and rescue subcentres

CHAPTER 4. PREPARATORY MEASURES

Article

4.4 Training and exercises

6.4.3 REFERENCE TO IAMSAR MANUAL

6.4.3.1 VOL. 1 ORGANIZATION AND MANAGEMENT

CHAPTER 2 SYSTEM COMPONENTS:

Article:

2.3.11 – 2.3.12 Staffing

CHAPTER 3 TRAINING, QUALIFICATION, CERTIFICATION AND EXERCISES

All articles

CHAPTER 4 COMMUNICATIONS

Article 4.2 (e) Common language, Basic functions and requirements

6.4.3.2 VOL. 2 MISSION COORDINATION

CHAPTER 1 THE SEARCH AND RESCUE SYSTEM

Article:

1.8.1 – 1.8.11 Training and exercises

1.8.12 - 1.8.16 Training of RCC and RSC personnel

6.4.4 REFERENCE TO OTHER INTERNATIONAL DOCUMENTATION

Some results of studies on best SAR and RCC practices could be found in the reports of the ICAO/IMO JOINT WORKING GROUP ON SEARCH AND RESCUE (SAR).

6.4.5 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR PERSONNEL AND TRAINING

According to ICAO Annex 12, contracting states have to establish RCC in each of SRR. These RCCs, and if practicable RSCs, must be operational 24-hour a day, staffed by trained operators with proficient use of language for radio-telephony communications.

Reference to the IAMSAR Manual Vol. 1, article 2.3.11 says that training and experience are crucial to proper SAR response. In this connection, RCC chiefs, SMCs, and RCC staff need specific training in watch standing, coordination of assorted resources, search planning, and rescue planning. SAR managers have the responsibility to ensure that the overall training programme is effective. It will normally be the responsibility of the RCC chief to ensure that all SAR service personnel reach and maintain the required level of competence. Qualification and certification processes are used to ensure that sufficient experience, maturity and judgement are gained.

With respect to recommendations in IAMSAR Manual on training, qualification and certification processes of RCC /SAR personnel, all States should establish procedures to ensure that in their entities of which the SAR organization is composed personnel possess the skills and competencies required in the provision of its SAR services, RCC and SAR unit technical personnel undergo a suitable period of supervised on-the-job training before being tasked for duties. Also, periodic assessment should be established to demonstrate the required competencies.

More information about training, qualification, certification and exercises could be found in Chapter 3 of IAMSAR Manual Vol. 1.

Due to the absence of any binding international standard of training of SAR personnel, such training is left to states authorities. In this regard, following the training guidelines of the IAMSAR manual is very helpful for RCC and other watch-keeping staff, although it is recommendatory.

Regional initiatives (such as the Regional Aeronautical SAR Advisory Committee in cooperation with EUROCONTROL - RASARAC) related to SAR topics are also mutually beneficial in domain of identification of training requirements and sharing good practices in SAR. States should active cooperate on training domain of SAR personnel, an example of which could be the establishment of a directory of training courses available in the various training institutions. Finally, regional cooperation will help to unified approach of training, certification and SAR exercises and result joint formal training of SAR personnel and certainly make it easier enable organisation of formal or informal regional SAR school /courses/seminars. The most important elements of a national and a regional SAR system should involve comprehensive training programmes on a national and regional basis.

6.5. Oceanic Capability

6.5.1 REFERENCE TO EUR SAR PLAN

Article 7.5 of the EUR SAR Plan defines Oceanic Capability.

Where applicable, States should establish additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response is available to all oceanic areas of their SRRs. This may be met through cooperative arrangements with neighbouring States or other RCCs and such regions shall not overlap and shall be contiguous.

6.5.2 REFERENCE TO ANNEX 12

CHAPTER 2. ORGANIZATION

ARTICLE:

ORGANISATION – 2.1.1.1 AND 2.1.1.2

CHAPTER 3 CO-OPERATION BETWEEN STATES

6.5.3 REFERENCE TO IAMSAR MANUAL

VOLUME 1

APPENDIX 1- SAR AGREEMENTS

VOLUME II

CHAPTER 6 RESCUE PLANNING AND OPERATIONS. PARA 6.16 SEARCH AND RESCUE WITHIN AREAS REMOTE FROM SAR FACILITIES

6.5.4 REFERENCE TO OTHER INTERNATIONAL DOCUMENTATION

ASIA/PACIFIC SAR PLAN V3.0

6.5.5 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR OCEANIC CAPABILITY

The subject of oceanic SAR capability remains difficult to address, mainly due to the vast oceanic areas that require coverage, for example in the EUR region, the UK SRR covers in the region of 2 million square miles, making the provision of SAR services extremely difficult to deliver in isolation.

Accordingly, and following ICAO and IMO guidance, the establishment of SAR agreements/Memoranda of understanding between member states that aim to provide mutual support in response to both Maritime and Aviation SAR incidents and where the States SRR are contiguous is vital.

The purpose of these agreements is to:

- Ensure SAR operations are conducted in an efficient and co-ordinated manner
- Lending assistance as capabilities allow, deploying SRU's as available and appropriate
- Provide clarity on which state has primary responsibility for the co-ordination of the SAR response
- Provide expeditious and effective SAR services to save lives and reduce suffering

The participants of each country will endeavour to promote mutual SAR co-operation, by giving due consideration to collaborative efforts, including, but not limited to

- Carrying out joint SAR exercises and training
- Using various ship reporting systems for SAR purposes (AMVER for example)
- Developing SAR procedures, techniques, equipment, facilities and information systems
- Supporting and conducting joint research and development initiatives aimed at reducing search time, improving rescue effectiveness and minimising risk to SAR personnel
- Conducting regular communications checks and exercises

Development of a SAR Response Plan for areas remote from SAR facilities

IAMSAR VOL II Chapter 6 Section 6.16 discusses the topic of SAR within areas remote from SAR facilities and recommends the development of a SAR Response Plan for areas remote from SAR facilities, listing the following factors to consider when doing so:

- The number of people potentially at risk as the result of an incident in the area
- The total recovery capacity of any SAR facilities available to reach the scene of the incident and rescue those at risk within survival times
- The nature of the risk and whether containment strategies can mitigate its effects to enable those at risk to survive until rescued
- The distance (in time) between individual SAR facilities starting points and the scene of the incident
- The terrain, weather and sea conditions
- Any restrictions on SAR facility deployment and their ability to respond even if theoretically within reach of the scene of the incident
- The survival time in the prevailing terrain, and /or likely weather and sea conditions
- The capability of available SAR facilities to rescue those at risk in the prevailing terrain and or likely weather and sea conditions
- Ability and quality of communications
- The ability of tasked SAR facilities to provide mutual SAR response assistance if an emergency occurs to a deployed SAR facility.

6.6. SAR Units

6.6.1 REFERENCE TO EUR SAR PLAN

Article 7.6 of the EUR SAR Plan defines the required capabilities of each State to enable:

- 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.

6.6.2 REFERENCE TO ANNEX 12

ANNEX 12 defines Standards and Recommended Practices for SAR Units.

Articles:

- 2.5 Search and Rescue Units*
- 2.6 Search and Rescue Equipment*
- 4.3 Plans of operation for SAR Units*

6.6.3 REFERENCE TO IAMSAR MANUAL

6.6.3.1 VOL. I ORGANIZATION AND MANAGEMENT

CHAPTER 2. SYSTEM COMPONENTS

Article:

- 2.5 SAR Facilities*
- 2.7.2 Computer Resources*

CHAPTER 4. COMMUNICATIONS

Article:

- 4.4.7 Search and Rescue Units*

CHAPTER 5. SYSTEM MANAGEMENT

Article:

- 5.4 Resources*

Appendix C. Sources for SAR Assistance

6.6.3.2 VOL. II ORGANIZATION AND MANAGEMENT

Appendix G. Facilities and Equipment Selection

6.6.4 GENERAL EXAMPLE / GOOD PRACTICES FOR SAR UNITS

The SAR Units, literally speaking are the hands of the RCC on the field. The availability of high specification SAR Units, ready to be scrambled in case of a SAR incident is crucial because many times these units will be called to operate in rough weather conditions.

Additionally, the SAR units must be able to cover the full extent of the boundaries of their SRR and to be deployed, at least part of them in less than 30 minutes. The SAR units in readiness will be under the command and control of the RCC only in case of a SAR incident and the Chief of the RCC has no administration authority but only operational for certain time and place.

Moreover, the signing of MoU with the involved SAR units and Services (e.g. Civil Aviation Department) will be a key factor for the effective cooperation with the RCC. Training, equipment, running costs and even response time will be described and agreed in the MoU.

6.7. Distress beacons

6.7.1 REFERENCE TO EUR SAR PLAN

Article 7.7 of the EUR SAR Plan defines what is necessary for Distress Beacons:

All States should:

a) where separate ARCCs and MRCCs exist with responsibility for coincident aviation and maritime SRRs (noting the 121.5 MHz distress signal transmitted for homing purpose might be reported to SAR services by aviation and/or maritime radio stations), 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 possibly 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

Note 1: Note: Information on beacon regulations is in C/S S.007 (Handbook of Beacon Regulations). Information on national Beacon Registration Point of Contact is at:

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

Information on International Beacon Registry Database (IBRD) is at:

<https://cospas-sarsat.int/en/beacons-pro/beacon-regulations-pro/ibrd-user-information-for-professionals>

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

6.7.2 REFERENCE TO ANNEX 6

Part I International Commercial Air Transport – Aeroplanes

Article:

6.17 EMERGENCY LOCATOR TRANSMITTER (ELT)

6.18 LOCATION OF AN AEROPLANE IN DISTRESS

Appendix 9. Location of an aeroplane in distress

Part II International General Aviation – Aeroplanes

Article: 2.4.12 Emergency locator transmitter (ELT)

Part III International Operations – Helicopters

Section II – International Commercial Air Transport

Article 4.7 EMERGENCY LOCATOR TRANSMITTER (ELT)

6.7.3 REFERENCE TO ANNEX 10

VOLUME III, PART II – VOICE COMMUNICATION SYSTEMS

Chapter 5. Emergency locator transmitter (ELT) for Search and Rescue

Appendix to chapter 5. Emergency locator transmitter coding

6.7.4 REFERENCE TO ANNEX 12

CHAPTER 2. ORGANIZATION

Article: 2.4 Search and Rescue Communications

2.6 Search and Rescue Equipment

3.2.5 Cooperation with other services

6.7.5 REFERENCE TO IAMSAR MANUAL

6.7.5.1 VOL. 1 ORGANIZATION AND MANAGEMENT

2.2.5-2.2.7 – Locating

Appendix:

E – False alerts

G – Mobile communication services

6.7.5.2 VOL. 2 MISSION COORDINATION

2.6 - 406 MHz distress beacons- EPIRB, ELT and PLB

Appendix B – Message formats – RCC-Cospas-Sarsat message formats

6.7.5.3 VOL. 3 MOBILE FACILITIES

Section 2 – Distress alerts and messages – EPIRBs, ELTs and PLBs

Section 7 – Initial action by assisting aircraft

Section 8 – On-scene communications

6.7.6 OTHER INTERNATIONAL DOCUMENTATION

I- IMO (www.imo.org)

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

- Resolution MSC.83(70) of the Maritime Safety Committee – regarding SOLAS
 - o Annex
 - 8 Guidelines for surveys for the cargo ship safety radio certificate
- COMSAR/Cir.32
 - o HARMONIZATION OF GMDSS REQUIREMENTS FOR RADIO INSTALLATIONS ON BOARD SOLAS SHIPS – ANNEX
- Resolution A.662(16): Performance Standards for Float-Free Release and Activation Arrangements for Emergency Radio Equipment,
- Resolution A.694(17): General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids,
- Resolution A.810(19): Performance Standards for Float-Free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz,
- Resolution A.814(19): Guidelines for the Avoidance of False Distress Alerts,
- Resolution A.887(21): Establishment, Updating and Retrieval of the Information Contained in the Registration Databases for the Global Maritime Distress and Safety System (GMDSS),
- Resolution MSC.83(70): Adoption of Amendments to the Survey Guidelines Under the Harmonized System of Survey and Certification (Resolution A.746(18)),
- IMO Resolution MSC.471(101): Performance standards for float-free emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz
- MSC Circular 861: Measures to Reduce the Number of False Distress Alerts,
- MSC Circular 863: Recommendation on Prevention of Harmful Interference to 406 MHz EPIRBs Operating with the Cospas-Sarsat System,
- MSC Circular 1039: Guidelines for Shore-Based Maintenance of Satellite EPIRBs,
- MSC Circular 1040: Guidelines on Annual Testing of 406 MHz Satellite EPIRBs,
- MSC Circular 1174: Basic Safety Guidance for Oceanic Voyages by non-Regulated Craft,
- MSC.1 Circ. 1210/Rev.1: Guidance on the Cospas-Sarsat International 406 MHz Beacon Registration Database,
- COMSAR Circular 32: Harmonization of GMDSS Requirements for Radio Installations on Board SOLAS Ships.

II -COSPAS-SARSAT (www.cospas-sarsat.int)

- C/S S.007 HANDBOOK OF BEACON REGULATIONS
- C/S S.011 Cospas-Sarsat Glossary,
- C/S G.005 Cospas-Sarsat Guidelines on 406 MHz Beacon Coding, Registration and Type approval,

- C/S G.007 Handbook on Distress Alert Messages for RCCs, SPOCs and IMO Ship Security Competent Authorities,
- C/S T.001 Specification for Cospas-Sarsat [First-Generation] 406 MHz Distress Beacons,
- C/S T.007 Cospas-Sarsat [First-Generation] 406 MHz Distress Beacon Type Approval Standard,
- C/S T.018 Specification for Second-Generation Cospas-Sarsat 406-MHz Distress Beacons,
- C/S T.021 Cospas-Sarsat Second-Generation 406-MHz Distress Beacon Type Approval Standard.

III- ITU (www.itu.int/ITU-R/)

Recommendation ITU-R M.633: Transmission Characteristics of a Satellite Emergency Position-Indicating Radio Beacon (Satellite EPIRB) System Operating through a Low Polar-Orbiting Satellite System in the 406 MHz Band.

IV- Other international and regional Standards from:

- International Electrotechnical Commission (IEC),
- European Telecommunications Standards Institute (ETSI),
- The European Organization for Civil Aviation Equipment (EUROCAE),
- The European Union Aviation Safety Agency (EASA),
- Radio Technical Commission for Aeronautics (RTCA).

6.7.7 GENERAL EXAMPLE / GOOD PRACTICES OF DEALING WITH DISTRESS BEACONS

ELT – Emergency locator transmitter (ELT) A generic term (related to aircraft) describing equipment which transmit distress signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated.

EPIRB – Emergency position-indicating radio beacon (EPIRB) A device, usually carried on board maritime craft, that transmits a 406 MHz distress signal that alerts search and rescue authorities and enables rescue units to locate the scene of the distress. These can be manually activated or automatically, if immersed in water, and may have an additional homing signal on a separate frequency

PLB - Personal locator beacon (PLB) A portable device, manually activated, which transmits a distress signal on 406 MHz, and may have an additional homing signal on a separate frequency.

Most 406 MHz distress beacons are designed to activate automatically when a vessel sinks or an aircraft crashes (EPIRB alerts tell whether the beacon was activated automatically or manually). PLBs are manually activated. Some PLB users may carry the devices for use aboard aircraft or vessels, though they are not designed to be equivalent to, nor suitable for use as, EPIRBs or ELTs.

All three types of this distress beacon have their signals relayed via Cospas–Sarsat satellites, local user terminals (LUTs) and Mission Control Centres (MCCs) to SAR points of contact (SPOCs) which include RCCs.

Many civil aircraft worldwide, especially operating on international flights and over ocean areas, are required to carry the 406 MHz distress beacon. However, some national regulations may allow

for the 121.5 MHz ELT on domestic flights. This old-style ELT depends on other aircraft or airport facilities to detect its aural signal.

Most 406 MHz distress beacons provide a homing capability on 121.5 MHz, 243 MHz and 406 MHz and some may also integrate SARTs into their designs.

Users of ELTs and EPIRBs need to be made aware how to properly install, register, and use this equipment and of what happens when these devices are activated. They should understand that these are the alerting means of last resort and should not be depended upon to replace two-way communications as the primary means of alerting.

Most EPIRBs and all fixed ELTs are designed to activate automatically when a vessel sinks or an aircraft crashes (EPIRB alerts tell whether the beacon was activated automatically or manually).

The PLB is not a mandated international carriage requirement but may be carried on a person and has similar characteristics to EPIRBs and ELTs. However, the PLB has different specifications.

Maritime Emergency Position-Indicating Radio Beacons (EPIRBs) have been accepted into the GMDSS. These beacons operate on 406 MHz and may have a 121.5 MHz final homing signal. The signals for all 406 MHz distress beacons are relayed via Cospas-Sarsat satellites, local user terminals (LUTs) and mission control centres (MCCs) to SAR points of contact (SPOCs) which include RCCs.

LUTs are Cospas-Sarsat earth stations (ground receiving antenna and related equipment) MCCs collect, store, and sort data from LUTs and other MCCs, exchange data within the system, and provide alert messages to the SPOCs, which include points outside the SAR system where no RCC is available.

Cospas-Sarsat also relays alerts from aviation ELTs, and from PLBs. Signals from 121.5 MHz and 243.0 MHz ELTs and EPIRBs may also be relayed by aircraft in flight via an ATS unit, but signals from these beacons are not processed by satellites and are not part of GMDSS. Some national regulations may allow for the 121.5 MHz ELT on domestic flights. This old-style ELT depends on other aircraft or airport facilities to detect its aural signal.

All 406 MHz distress beacons are electronically similar, the main differences being construction, activating mechanisms and slight differences in coding protocols. While ELTs, EPIRBs and PLBs each have intended user communities, unintended users may activate the devices in an emergency.

Cospas-Sarsat position information can be determined by several methods:

- The LEOSAR system uses a Doppler plot resulting from relative motion between the 406 MHz distress beacon signal source and the orbiting satellites. Alert messages provide two positions an equal distance on each side of the satellite track, and a confidence level (annotated as a percentage) to help in assessing which position is correct.
- The GEOSAR system uses search and rescue instruments on board geostationary satellites. The GEOSAR system consists of repeaters carried on board various geostationary satellites and the associated ground facilities called GEOLUTs which process the satellite signal. Geostationary satellites orbit the Earth at an altitude of 36,000 km, with an orbit period of 24 hours, thus appearing fixed relative to the Earth at approximately 0 degrees latitude (i.e. over the equator). Therefore, three geostationary satellites equally spaced in longitude can provide continuous coverage of all areas of the globe between approximately 70 degrees

North and 70 degrees South latitude. For a beacon to be detected by the GEOSAR system, it must have a GPS chip within it.

- Cospas-Sarsat is transitioning to a system (MEOSAR) which is now live and will calculate position based on time of arrival (TOA) and frequency (FOA) of arrival, of the beacon signal, at multiple satellites. This method will provide a single position, called Difference of Arrival (DOA). Some 406 MHz distress beacon messages may also include information derived from the Global Navigation Satellite System (GNSS). RCCs should consult the *Cospas-Sarsat Handbook on Distress Alert Messages for Rescue Coordination Centres* (RCCs), search and rescue points of contact (SPOCs) and IMO Ship Security Competent Authorities (C/S G.007, available on the Cospas-Sarsat website) and other appropriate Cospas-Sarsat documentation for more information.

RCCs use the message country codes to direct them to the appropriate States where information can be obtained about the distressed craft from emergency databases (if owners of coded 406 MHz distress beacons properly register the ELTs); 121.5 and 243 MHz beacons are not coded and registered. (The country codes directly correspond to the ITU maritime identity digits (MIDs) used to identify flag States.)

For more information on equipment, performance standards, alert messages, distribution procedures, user instructions, and other Cospas-Sarsat related matters, Cospas-Sarsat Secretariat should be contacted.

Users of 406 MHz distress beacons need to be informed about how to properly install, register, and use this equipment, and what happens when these devices are activated. They should be made to understand that these are the distress alerting means of last resort, which should not be depended upon to replace two-way communications as the primary means of alerting.

Cospas-Sarsat calculates position information for the 406 MHz distress beacons.

The followings steps should be followed when a distress beacon is inadvertently activated:

1. switch the distress beacon OFF; and immediately attempt to notify the RCC and MCC that the alert is false.
2. In cases where the beacon cannot be turned OFF, take measures to prevent or inhibit transmission of signal (e.g. shielding of transmission, battery removal, etc.). Such actions may prevent future use of the distress beacon. Note: there is no penalty for inadvertent activation of a distress beacon.

All States should coordinate distress beacon alerts with procedure to ensure all RCCs (ARCCs/MRCCs/JRCC) and RSCs are aware of any distress beacon activation within their SRR in order to avoid unnecessary duplication of response.

The State must have a reliable distress beacon registration system that needs to provide a readily-accessible mechanism to enable beacon owners to fulfil their obligation to register distress beacons, or to update the registration data as information changes (e.g. ownership). If the State can not provide reliable distress beacon registration system, then the State can use the resources of International 406MHz Beacon Registration Database (IBRD) which is provided by the International Cospas-Sarsat Programme. (<https://www.406registration.com/>). Use of the IBRD is free of charge. States just need to send the request to the IBRD administration by form provided in the link: <http://www.406registration.com/en-US/contact-us-4.aspx>.

Some States have both distress beacon registration systems, as National, and IBRD ones. In that case, they should ensure that regular updates are made to both registry in order to make them consistent one with another.

This National distress beacon registration system must be available to the RCCs (ARCCs/MRCCs/JRCC) and RSCs 24 hours a day and includes up-to-date registration details for all national civil and military distress beacons (ELTs, EPIRBs and PLBs).

A very important part of using the distress beacons is that national administrations and beacon owners prepare for, and implement changes related to the introduction of second-generation beacons (e.g. update beacon registration systems to be compatible with new beacon hexadecimal identifications) and the transition to the MEOSAR C/S systems, GADSS ELT (DT) data.

Additional information about beacon registry can be found in C/S S.007 Handbook of Beacon Regulation. You can find this document on Cospas-Sarsat webpage.

Cospas-Sarsat also maintain the information about national Beacon Registration Point of Contact.

Make sure that State contact information regarding SPOC and Beacon Registration Point of Contacts are up-to-date on the Cospas-Sarsat database. If not, you can request for update of all State contact details about this issue. Here is the link <http://www.cospas-sarsat.int/en/contacts-pro/contacts-details-all>

False Alerts:

The vast majority of false alerts generated within the Cospas-Sarsat system come from users of emergency beacons. And most often, not as a result of their negligence, but ignorance. In order to avoid problems of this kind, it is necessary to pay attention to system user education about the negative effects of false alarms and how to avoid them.

In the first place, reducing the number of false alerts increases the efficiency of the Cospas-Sarsat system, on which maritime, aviation and land users rely for the safety of their lives. Responding to false alerts can cause significant delays to respond to real emergencies as well as unnecessary deployment of SAR assets and SAR people sometimes endangering their lives for you.

If beacon owner/user accidentally activate his emergency beacon and he does not need help, it is necessary that beacon owner/user momentarily contact Rescue Coordination Center (no matter what time of day or night it is), to cancel an upcoming SAR operation.

Disposal of Old 406 MHz Distress Beacons (ELT, PLB, EPIRB):

At the end of a beacon's service life (ELT, PLB, EPIRB), the device must be disposed of carefully to prevent false alerts. This can be achieved by removing the battery. False alerts could divert limited search and rescue resources from a real emergency, putting other lives at risk.

Beacon Testing

Users should fully familiarise themselves with the correct process in which to test the beacon, which is a different process to activating the beacon in 'Live' distress mode. Users must test their beacons using the correct test function. Knowingly testing a beacon in 'Live' distress mode, when there is no distress, is an offence under the International Telecommunications Union. (See EASA Safety Information Bulletin: SIB No.: 2019-09R1 about ELT or PLB annual testing).

6.8. Contingency Facilities

6.8.1 REFERENCE TO EUR SAR PLAN

Article 7.8 of the EUR SAR Plan defines 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.

6.8.2 REFERENCE TO IAMSAR MANUAL

6.8.2.1 VOL. 1 ORGANIZATION AND MANAGEMENT

Article:

5.3.3. Establishment of RCCs and RSCs

6.4.7

Appendix

H – National self-assessment on SAR

I – Sample national SAR committee interagency agreement

6.8.2.2 VOL. 2 MISSION CO-ORDINATION

Appendix C – Mass rescue operations: exercises, industry roles and incident management;

6.8.3 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF CONTINGENCY FACILITIES

SAR managers have the overall responsibility for establishing, organizing, staffing, equipping and controlling the SAR system. One of those responsibilities is to develop contingency plans for SAR resources. That contingency plan should cover either situation when SAR resources need to respond to natural and man-made disasters or situations when a SAR service is not able to be provided.

This contingency plan should have procedures in place for the temporary delegation of the SAR responsibility to another appropriate national body or State.

In remote areas from SAR facilities, for the purpose of providing unique process and procedure State should include contingency plans and facilities.

The effective process for SAR coordination is the establishment and use of SAR coordinating committees (SCCs) comprising SAR system cooperation and stakeholders to provide a strategic, whole-of-government approach to national SAR system cooperation and coordination. The most efficient way to establish contingency plans and contingency facilities is throughout national or regional SCCs, where it is expected from SCC to develop contingency plans and facilities for SAR services.

Information about contingency plans and facilities should be published by State. That can be done via National State SAR Plan, or via other SAR publications if there is agreed in advance which national body or which State is taking over temporary provision of SAR services.

Contingency planning and contingency facilities are mostly necessary during the Mass Rescue Operations where successful MROs depend on advance provision of flexible and at all-levels contingency plans. Intense integrated planning and operational efforts must be carried out in real time throughout the rescue efforts. States should consider opportunities to handle actual incidents involving MROs through exercising MRO plans so MRO preparedness can be improved. Among various MRO scenarios, State though MRO exercises could provide familiarization and on-the-job training for players in their roles and responsibilities for conducting contingency operations.

States should test their contingency arrangements periodically, but not less than once every six months.

Appendix H – National self-assessment on SAR system from IAMSAR Manual Vol. I, providing for state SAR managers questions about contingency planning and facilities during system outages or natural disasters.

6.9. Provision of Information

6.9.1 REFERENCE TO EUR SAR PLAN

Article 7.9 of the EUR SAR Plan defines Provision of Information.

All States should ensure the:

- a) establishment of a centralised information source publishing all EUR State Aeronautical Information Publication (AIP) information as required by ICAO Annex 15 Appendix 1, page APP 1-8 including:
 - i. The agency responsible for providing SAR services;
 - ii. The area of SAR responsibility where SAR services are provided;
 - iii. The type of SAR services and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft;
 - iv. SAR agreements;
 - v. The conditions of SAR facility and service availability; and
 - vi. SAR procedures and signals used;
- b) establishment of an Internet-based SAR information sharing system (with security protocols) 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.

6.9.2 REFERENCE TO ANNEX 12

CHAPTER 3. COOPERATION

Article 3.3 Dissemination of information

Recommendations 3.3.2 and 3.3.3

6.9.3 REFERENCE TO IAMSAR MANUAL

6.9.3.1 VOL. 1 ORGANIZATION AND MANAGEMENT

Articles:

- 1.5.8 Facilities and equipment of RCC;*
- 4.9.1 Social media;*
- 5.2.2 Planning activities;*
- 5.3.3*
- 5.7.1-5.7.3 Dealing with the media;*
- 6.4.3 Cooperating to improve services;*
- 6.4.7 SAR coordinating committees;*
- 6.6.7 MRO;*

Appendix C - Sources for SAR assistance;

Appendix D – Information sources;

6.9.3.2. VOL. 2 MISSION COORDINATION

Articles:

- 1.10 Public relations;*
- 2.37 Social media;*
- 6.15.42-49 Public and media relation for MROs;*

6.9.3.3 VOL. 3 MOBILE FACILITIES

Section 22. Public relations; 5.9.4 Reference to other International Documentation

6.9.4 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF PROVISION OF INFORMATION

All states need to provide information about their SAR system. There are different ways to provide information about national SAR systems.

Aeronautical Information Publication (AIP) represents the basic aeronautical information document intended primarily to satisfy international requirements for the exchange of permanent aeronautical information and long duration temporary changes essential for the safe conduct of international and domestic air traffic. Every State needs to publish its AIP. Section GEN 3.6 of AIP contains information about SAR services.

As required by ICAO Annex 15, Appendix 1, page APP 1-8, information about SAR services in AIP should include:

- 1) The agency responsible for providing SAR services;
- 2) The area of SAR responsibility where SAR services are provided;
- 3) The type of SAR services and facilities provided including indications where SAR aerial coverage is dependent upon significant deployment of aircraft;
- 4) SAR agreements;
- 5) The conditions of SAR facility and service availability; and
- 6) SAR procedures and signals used;

Each State must publish and disseminate all information necessary for the entry of SAR Units of other States into its territory or, alternatively, include this information in SAR arrangements/agreements. If a State doesn't have signed SAR arrangements/agreements with all neighbouring states, then all information necessary for the entry of SAR Units of other State into its territory needs to be published in section GEN 3.6 of AIP.

Usually, the State publishes its AIP in hard copy and online.

In EUR Region, for EUROCONTROL member states, EUROCONTROL has developed an EAD application portal. What is EAD? EAD is a centralized reference database of quality-assured aeronautical information for airspace users and an integrated AIS solution for service providers, provided by the EUROCONTROL Member States. <https://www.ead.eurocontrol.int/cms-eadbasic/opencms/en/login/ead-basic/>

If your neighbouring State has joined the EUROCONTROL, then by accessing the EAD portal, you will have a chance to see AIP GEN 3.6. information of neighbouring States.

The establishment of an Internet-based SAR information sharing system (with security protocols) could be an additional tool for sharing State SAR activities with other States, National Authorities and key stakeholders participating in a SAR system. This Internet-based system, together with social media, should include a means of handling media and next of kin enquiries, and also to recognise the need to avoid premature media statements).

Social media are not part of the international distress alerting system and are not monitored as a primary means of distress notification. However, the public uses social media to create online

communities to share information, ideas, personal messages and other content. This can raise a public expectation that SAR authorities, especially for prolonged SAR incidences with news media interest, should either provide information to or accept information from social media sites. RCCs should have procedures in place for efficient management of social media. Using social media can be very effectively utilized for disaster preparation and MROs.

The state should establish 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). The prompt receipt of all available information by the RCC is necessary for a thorough evaluation of the situation and immediate decision on the best course of action using the best available resources, through the timely activation of SAR facilities.

SAR Management planning process among other activities includes sharing information among programmes and participating organizations.

Lessons identified from SAR cases, accidents, exercises, and other information of use to the SAR community, should be shared as appropriate at the local, national, regional and/or international level.

6.10. SAR Facilities and Equipment Lists

6.10.1 REFERENCE TO EUR SAR PLAN

Article 7.10 of the EUR SAR Plan defines 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.

6.10.2 REFERENCE TO ANNEX 12

Annex 12 defines Standards and Recommended Practices for RCC FACILITY.

CHAPTER 4. PREPARATORY MEASURES

Article:

4.1 Preparatory information

4.2 Plans of Operation

6.10.3 REFERENCE TO IAMSAR MANUAL

6.10.3.1 VOL. I ORGANIZATION AND MANAGEMENT

CHAPTER 2. SYSTEM COMPONENTS

Article:

2.5 SAR Facilities

CHAPTER 5. SYSTEM MANAGEMENT

Article:

5.1.5 Regional Approach

5.2.12 SAR Plans

5.4.5 Resources

APPENDIX C. Sources for SAR assistance

Article:

C1.1. State, provincial and local government departments

APPENDIX I. SAR Agreements

Article:

6. Cooperation

6.10.4 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF 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.

According to the relevant provisions of Annex 12 and the guidelines of the IAMSAR Manual, this information should be always updated and available by RCC. Also, this information could be included in the National SAR Plan and in the SAR Agreements of the States.

6.11. SAR Library;

6.11.1 REFERENCE TO EUR SAR PLAN

Article 7.11 of the EUR SAR Plan defines SAR Library. All States should:

- a) establish a web-based SAR Library, or cooperate by contributing to an Internet-based EUR 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:
 - a. ICAO Annex 12;
 - b. IAMSAR Manual Volumes I, II and III;
 - c. International Convention on Maritime SAR (SAR Convention);
 - d. EUR SAR Plan/electronic Air Navigation Plan; and
 - e. relevant regional, national and agency SAR documents.

6.11.2 REFERENCE TO IAMSAR MANUAL

6.11.2.1 VOL. 1 ORGANIZATION AND MANAGEMENT

Article:

- 2.3.8-2.3.10 Facilities and equipment of RCC;
- 2.3.10 d) Publications and supplies;
- 5.2.18 Hierarchy of SAR documents;

Appendix:

- D – Information sources.

6.11.2.2. VOL. 2 MISSION COORDINATION

Article:

- 2.5.3 GMDSS;
- 2.6. 406 MHz distress beacons – EPIRB, ELT and PLB;
- 2.25 Codes, signals and standard phrases;
- 2.28.3 RCC Cospas-Sarsat message formats.

6.11.2.3 VOL. 3 MOBILE FACILITIES

- Section 7. Initial action by assisting aircraft;

6.11.3 REFERENCE TO OTHER INTERNATIONAL DOCUMENTATION

- IMO CIRCULAR – “List of Documents and Publications Which Should Be Held by A Maritime or Joint Rescue Coordination Centre (if applicable);

6.11.4 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR LIBRARY

Whenever is possible State should establish a web-based SAR Library in order to have ready access to operational information that will help SAR participants to take immediate and appropriate actions, whether in planning process or in distress situation.

Other possibility for State is to cooperate by contributing to an Internet-based EUR resource.

In reference to the IAMSAR Manual Vol. 2, article 5.2.18, Hierarchy of SAR documents are shown in Figure 5-1 – Basic SAR documents.

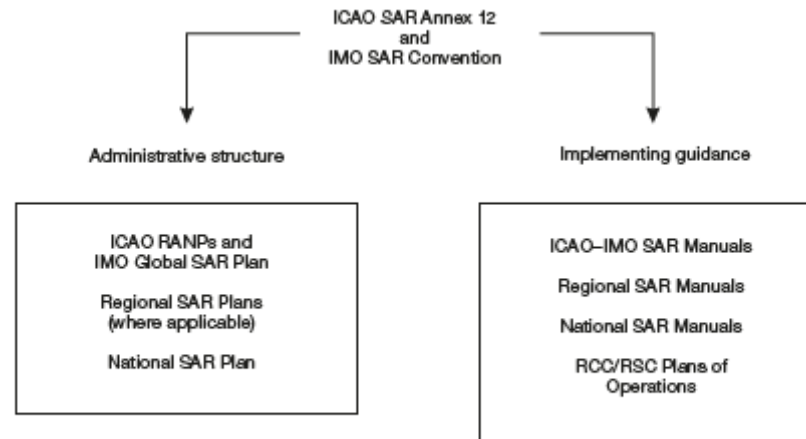


Figure 5-1 – Basic SAR documents

These global plans are a basis for implementing national and regional (bilateral or multilateral) plans, manuals, agreements and related SAR documents.

The IMO Global SAR Plan and applicable ICAO RANP are followed by a regional EUR SAR plan.

Next would be the national SAR plan, and so forth down to the RCC and local levels.

The State should ensure that each RCC, RSC, SAR Authority and SAR Units have ready access to a current copy of the following documents at a minimum:

- a. ICAO Annex 12;
- b. IAMSAR Manual Volumes I, II and III;
- c. International Convention on Maritime SAR (SAR Convention);
- d. EUR SAR Plan/electronic Air Navigation Plan; and
- e. relevant regional, national and agency SAR documents.

State should consider to share (either electronic or hard copy) the publications and supplies in order to make them available at the RCC, RSC, SAR Authority and SAR Units.

These publications and supplies will vary, but should include:

- SAR publications of ICAO, IMO, the national and neighbouring SAR authorities;
- relevant State documents, e.g. Air Navigation Regulations and Notices to Mariners and, if considered necessary, those of adjacent States;
- communications publications;
- aeronautical information publications (AIPs);
- indexes of names, addresses, telephone and facsimile numbers; and
- relevant checklists and forms.

Most of reference documents State could obtain directly from International Organization (ICAO, IMO, ITU, Cospas-Sarsat, Inmarsat, Amver). In Appendix D of the IAMSAR Manual, Vol. 1, RCC, SAR Authority can look for a contact details of those International organizations.

Each RCC or SAR Authority should contact Cospas-Sarsat Secretariat for more information on equipment, performance standards, alert messages, distribution procedures, users instructions, and other Cospas-Sarsat related matters. All Cospas-Sarsat message samples are also available in Cospas-Sarsat document G.007 Handbook on distress alert messages for RCCs, and this G.007 Handbook should be also a part of State SPOC for receiving Cospas-Sarsat alert data.

International Code of Signals, IAMSAR Vol 3, International Regulations for Preventing Collisions at Sea, the IMO Standard Marine Communication Phrases (SMCP) (Assembly resolution A.918(22)), Annex 10 to the Convention on International Civil Aviation and PANS-ATM (ICAO Document 4444) are the publications which can be used to assist in overcoming language barriers and communication difficulties between vessel and aircraft crews, survivors, and SAR personnel.

These documents should be included in RCC, RSC and SRU libraries and be understood by the staff, who should be able to comprehend and transmit messages using these phrases.

SRUs should always carry the International Code of Signals and a copy of IAMSAR Manual Vol 3.

The State should ensure that RCC, RSC, SAR Authority and SAR Units be familiar with SOLAS GMDSS provisions and ICAO GADSS provisions.

6.12. SAREX

6.12.1 REFERENCE TO EUR SAR PLAN

Article 7.12 of the EUR SAR Plan provide important information regarding the execution of a SAREX. All States should conduct regular SAREX (at least once every two years) to test and evaluate existing coordination procedures, data and information sharing and aeronautical SAR response arrangements involving:

- a) both aeronautical and maritime SAR authorities including both civil and military agencies as applicable, and related bodies such as Air Navigation Service Providers (ANSPs) and Airline Operations Centres (AOCs);
- b) where appropriate, cross-aeronautical SRR coordination; 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: 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 2: Real SAR incident responses which include an adequate post-response review and evaluation with lessons learned may replace the need for a SAREX.

Appendix A provides a Roadmap describing the sequence of actions required for the planning, preparation, and execution of a Multinational SAREX.

6.12.2 REFERENCE TO ANNEX 12

ANNEX 12, PARA 4.4 (TRAINING AND EXERCISES) - defines that Contracting states shall provide for regular training of their search and rescue personnel and arrange appropriate search and rescue exercises.

6.12.3 REFERENCE TO IAMSAR MANUAL

6.12.3.1 VOL. I ORGANIZATION AND MANAGEMENT

CHAPTER 3. TRAINING, QUALIFICATION, CERTIFICATION AND EXERCISES

Article

3.3: Exercises

Appendix O: Sample template for a joint search and rescue exercise

6.12.3.2 VOL. II MISSION COORDINATION

CHAPTER 1. THE SEARCH AND RESCUE SYSTEM

Article:

1.8 Training and exercises

6.12.4 GENERAL EXAMPLE / GOOD PRACTICES OF THE EXECUTION OF MULTINATIONAL SAREX

A state level SAREX could test different distress scenarios, involving assets and personnel of the public and the private sector as well as voluntary organisations, to promote the cooperation among them and to prepare them for possible participation in SAR operations whenever needed.

The positive influence of a SAREX to all the involved services operational capabilities emerges even from the initial coordination meeting, where all share the experiences, challenges and thoughts, and based on that discussion an appropriate SAR scenario is created.

Then during the execution of the SAREX, the lessons learnt and the realities on the ground, will develop or improve the existing Standard Operation Procedures.

The planning and execution of a SAREX and especially a Multinational SAREX, provides many benefits to the SAR System of the country that has the overall coordination, to those services (from public and private sector) that are involved, to the countries that participate and to the region in which exercise takes place.

A Multinational SAREX promotes and enhances cooperation and operational coordination between neighbouring countries, establishing a common operational language and practices in the field, in case of a real distress incident. Taking advantage of the debriefing and the Final SAREX Report, each State's decision-makers recognize the improvement or the gaps of their National SAR System.

Furthermore, the cooperation through SAREX, could be beneficial for the involved countries and assist in the establishment of a regional SAR community/system and this will contribute to the upgrade of the existing level of cooperation by signing SAR agreements.

6.13. SAR Quality Assurance

6.13.1 REFERENCE TO EUR SAR PLAN

Article 7.13 of the EUR SAR Plan defines SAR Quality Assurance.

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

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

6.13.2 REFERENCE TO ANNEX 19

Provisions of Annex 19 for a Safety Management System (SMS) may apply where a SAR service is provided under the authority of an ATS provider.

6.13.3 REFERENCE TO IAMSAR MANUAL

IAMSAR MANUAL VOL. I

CHAPTER 1 - GENERAL SYSTEM CONCEPT:

- Article 1.5.2;

CHAPTER 3 – TRAINING, QUALIFICATION, CERTIFICATION AND EXERCISES;

- Article 3.1.2;

CHAPTER 5 – SYSTEM MANAGEMENT;

- Article 5.4.12;

CHAPTER 6 – IMPROVING SERVICES;

- Articles:

- 6.1 (specifically with Focus on quality);
- 6.2;
- 6.3;
- 6.4;
- 6.5;
- 6.8; and
- 6.9.

APPENDIX H – NATIONAL SELF-ASSESSMENT ON SAR SYSTEM

APPENDIX L - APPLYING RISK MANAGEMENT PRINCIPLES TO ASSESS SAR RESPONSE AND SAR SYSTEM PERFORMANCE

6.13.4 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR QUALITY ASSURANCE

Advanced planning, training, and some specialized equipment can often economically improve the quality of SAR services performed by alternative existing resources. This may reduce or eliminate the need for specially designated SAR units (SRUs) for some States.

The mission of SAR is to find persons in distress, assist them, and deliver them to a place of safety. A key to building successful SAR services is the SAR manager, whose mission is to carry out duties that result in better SAR operations, i.e. improved services to persons in distress.

No SAR system, domestic or otherwise, is built overnight. Neither is there, nor will there ever be, sufficient SAR resources to ensure successful response to every distress incident. Therefore, the manager must first identify available resources, either under the manager's direct control or available through cooperative arrangements, and ensure that these resources are being used to their full potential to support or carry out SAR operations.

Focus on improving the quality of SAR services simultaneously improves results and reduces costs, goals important to any Administration regardless of the amount of resources at its disposal. SAR organizations which focus on quality tend to:

- do more and make fewer mistakes;
- enjoy a sound reputation; and
- attract resources needed for growth and better performance.

SAR organizations that do not focus on quality are susceptible to errors that could lead to:

- reduction in lives saved;
- poor or late operational decisions;
- confusion, accidents, and equipment failures; and
- under-use or mis-use of resources.

Successful SAR managers typically emphasize areas such as those below:

- 1) Processes more than results. Mission statements, goals, and objectives are important to any organization, but if sound processes are used the desired results are more naturally identified and achieved;
- 2) Important matters more than urgent matters. A SAR manager must first manage time. Planning, coordinating, directing, evaluating, and other basic management functions

which bring lasting improvements require dedicated time which must be set aside, protected and used for those purposes;

- 3) Satisfaction of the needs of others. The manager depends on people throughout and outside the SAR organization to accomplish the SAR mission. All these people, in turn, depend upon the SAR manager to provide what they need; the manager should involve them in identifying these needs. Such needs include information, training, policies and funding. The successful manager will identify these people and strive to see that what they need to support the SAR system is provided; and
- 4) A philosophy of continuous improvement.

A similar process to reducing system problems could be used to examine how risk management methodology can be applied to improve SAR response and SAR system performance. This process can be applied to any State regardless of its political system or organization structure.

All States should implement SAR System Improvement and Assessment measures, including Safety Management and Quality Assurance systems accordingly with ICAO standards.

State should 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;

Search and rescue (SAR) organizations have a lot to learn from the emergency management community where risk management principles are used so that the uncertainties that exist in potentially hazardous situations can be minimized and public safety maximized. Emergency managers commonly use three phases to describe their response to natural or technical disasters. They are preparedness (i.e. the pre-disaster phase), response (i.e. the immediate post-disaster phase), and recovery (i.e. return to a normal state). From a SAR perspective, we could call these phases pre-incident, incident response and post-incident, with each phase requiring attention from SAR practitioners as they have a need to understand their particular role at that time, whether lead or support, and the interaction that is occurring within a broader government context.

The application of risk management can bring order to the uncertain environment in which SAR organizations exist. It is a very valuable tool to determine future work priorities and to improve the ability to meet the organizational objective of finding persons in distress and removing them to a place of safety.

For the risk analysis to be effective it needs to take a broad view of the SAR system or response and, ideally, all stakeholders and interest groups should be involved. The process should be documented, noting that the value of the risk analysis is that it is an iterative process that, when repeated, provides valuable feedback on risk mitigation effectiveness. The steps in the risk management process are shown at figure L-1, and provide a logical and systematic methodology for identifying, analysing, assessing, treating and monitoring risks.

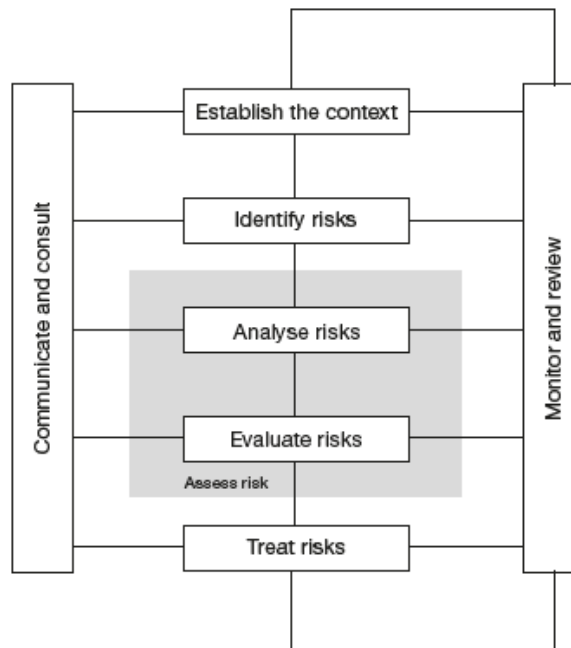


Figure 2. The risk management process

States need to establish 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. State could use Appendix H National self-assessment on SAR system from the IAMSAR Manual Vol. I. as Check List for internal quality assurance. It is necessary to ensure 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.

Lessons learned and experiences from a quality assurance programme should be submitted to the ICAO Regional offices, in order to share with other global States for the continuous improvement of the worldwide SAR system.

6.14. SAR Management Review

6.14.1 REFERENCE TO EUR SAR PLAN

Article 7.14 of the EUR SAR Plan defines SAR Management Review.

All States should conduct an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability against the minimum requirements of Annex 12 to:

- a) enable the ICAO EUR 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 alert (ELT, PLB) have received / TRUE-FALSE;
 - v. Number versus Distribution 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.

6.14.2 REFERENCE TO ANNEX 12

Annex 12 defines Standards and Recommended Practices for SAR Services.

CHAPTER 5. OPERATING PROCEDURES

Article

5.9 Maintenance of records

5.9.1 Recommendation

5.9.2 Recommendation

6.14.3 REFERENCE TO IAMSAR MANUAL

6.14.3.1 VOL. 1 ORGANIZATION AND MANAGEMENT

CHAPTER 1 GENERAL SYSTEM CONCEPT

Article:

1.5 System Management and Support

CHAPTER 5 SYSTEM MANAGEMENT

Article

- 5.1 Understanding the SAR System*
- 5.2 Planning Processes*
- 5.3 Organization*
- 5.4 Resources*
- 5.5 Leadership and Operations*
- 5.6 System Assessment*
- 5.7 Dealing with the Media*

CHAPTER 6 IMPROVING SERVICES

Article

- 6.1 Managing for Success*
- 6.2 Reducing System Problems*
- 6.3 Applying Risk Management*
- 6.4 Co-operating to Improve Services*
- 6.5 Reducing Response Time*
- 6.6 Mass Rescue Operations*
- 6.7 Research and Development*
- 6.8 Other Factors*

APPENDIX:

- H National Self-Assessment on Search and Rescue*
- L Applying Risk Management Principles to Assess SAR Response and SAR System Performance*

6.14.3.2 VOL. II MISSION CO-ORDINATION

CHAPTER 1 THE SEARCH AND RESCUE SYSTEM

Article

- 1.9 Improving Professionalism*

CHAPTER 8 CONCLUSION OF SAR OPERATIONS

Article

- 8.6 Performance Improvement*
- 8.7 Case Studies*
- 8.8 Archiving Case Files*
- 8.9 Incident Debriefings*

6.14.4 REFERENCE TO OTHER INTERNATIONAL DOCUMENTATION

ICAO USOAP-CMA Protocol Questions for SAR may assist States with their reviews.

6.14.5 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR MANAGEMENT REVIEW

Identifying gaps in SAR system capability against the minimum requirements of Annex 12 is one of the crucial processes of SAR Authority. States should not wait for ICAO to do the USOAP Audits or CMA in order to change SAR system capability, to achieve minimum requirements of SARPs from Annex 12 and to have better Effective Implementation of SAR SARPs.

Each State should assess its own responsibilities and requirements and then evaluate its abilities as a SAR service provider for both national and regional needs.

Whether establishing a SAR system or conducting a periodic review of an established one, assessment provides a factual basis on which to make improvements. Such assessment also helps to gain continued support for SAR system funding, to obtain assistance from other agencies, or to justify procurement of additional resources.

Establishing well-defined and realistic goals with system overview is an excellent way to ensure continuous improvement in the SAR system. Goals should clearly promote public well-being by seeking to minimize injury, death and property damage related to air, sea and land transportation. Goals also should promote cooperation among Government agencies, ensuring efficient use of public resources. Such goals are often addressed by national legislation that establishes a SAR system.

SAR managers should periodically assess their programme and update their Long-Term plans. An annual review is suggested.

PSCS recommends that analysis of State SAR system should review the following areas:

- a) *to enable the ICAO EUR 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 alert (ELT, PLB) have received / TRUE-FALSE;*
 - v. *Number versus Distribution 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.*

All incidents should be recorded properly with all available data and outcome of SAR incidents.

Useful goals to improve SAR system are consistent with SAR mission and purpose; they are associated with specific objectives, clear implementation plans, reasonable yet firm target dates and measurable outcomes. Some typical SAR goals are:

- a) Minimize loss of life, personal injury, and property loss or damage;
- b) Minimize time spent searching for persons in distress by using technology, research and development, education, regulation, and enforcement;
- c) Improve safety so that the number of distress events is reduced. Achieving this goal may require close cooperation with other aeronautical and maritime authorities, since they, and not the SAR managers, may be responsible for the necessary safety programmes;
- d) Improve cooperation between aeronautical and maritime SAR authorities, which is important because:
 - aircraft may need assistance over either land or water;
 - sharing SAR resources is usually the most efficient way to maximize system success;
 - coordination of SAR operations and sharing of operational information can be simplified and expedited;

- accountability for SAR system personnel is increased; and
- routing of distress alerts to appropriate RCCs is expedited by harmonized communications plans and SAR regions.

Effective SAR services consist of more than just the response to distressed persons. For the SAR system to realize maximum effectiveness, certain activities must take place:

- a) A high degree of readiness must be maintained. Distress alerts may come at any time and the system must always be ready to receive and respond to them.
- b) Periodic training and exercises must be conducted with the various SAR system components in order to maintain proficiency and safety. Training, and especially exercises, allow early detection and correction of procedural and equipment problems before an emergency arises.
- c) “Preventive SAR” is important. All SAR systems should include activities aimed at the prevention and mitigation of SAR incidents.
- d) The focus of all activities other than actual SAR operations should be on the continuous improvement of the SAR system.

6.15. SAR Promotion

6.15.1 REFERENCE TO EUR SAR PLAN

Article 7.15 of the EUR SAR Plan defines what is necessary for 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:
 - a. civil, military, police and other agencies;
 - b. ANSPs;
 - c. aerodrome and port operators (hydroplanes);
 - d. aircraft operators;
 - e. meteorological agencies;
 - f. accident investigation agencies;
 - g. government and non-government agencies affected by SAR operations, in particular large scale national and international responses involving whole of government agencies; and
 - h. other States.

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

6.15.2 REFERENCE TO ANNEX 12

CHAPTER 2. ORGANIZATION

Article:

2.5 Search and Rescue Units

6.15.3 REFERENCE TO IAMSAR MANUAL

6.15.3.1 VOL. 1 ORGANIZATION AND MANAGEMENT

Article:

5.3.2-5.3.3 Establishment of RCCs and RSCs

5.3.10 Maximizing system effectiveness and benefits;

6.4.2 Cooperating to improve services – National SAR system;

6.4.7 SAR Committees;

Appendix:

I – SAR Agreements.

6.15.4 GENERAL EXAMPLE / GOOD PRACTICES OF THE IMPLEMENTATION OF SAR PROMOTION

Wherever possible States should conduct SAR promotional programs, in order to promote effectiveness of its established SAR system. By promoting SAR system's, States could encourage all elements of public or private services that do not qualify as search and rescue units to be informed about SAR capabilities and to be able to participate in SAR operations.

The State should organize public safety awareness campaigns with the aim of preventing persons from getting into distress situations. These campaigns should be organized by publishing safety regulations and recommendations via different webpages (SAR Authorities, RCCs, SRUs), News, brochures/leaflets, social media. States should also consider activities regarding SAR promotion in participation of a national, regional, or ICAO safety seminars/workshops, or SAR task forces. Patrols, supervision of large events such as regattas, air shows, safety inspections and public awareness campaigns are some of the ways to help prevent SAR incidents or mitigate the effects of those that do occur.

Preventative SAR activity should result in decreasing distress incidents, raising awareness among the aviation community, and SAR personnel, but it could also affect and ensure the support of government decision-makers in finding additional resources for adequate funding of the SAR system.

Volunteer organizations can often assist in these activities at little or no cost to the SAR authorities.

A national SAR system should be organized to promote the use of all available government agencies, industry stakeholders and volunteer organizations and resources to save lives. Funding and SAR resources must be made available to SAR authorities; training must be provided to ensure SAR planners and responders can effectively perform their assigned responsibilities.

An effective process for SAR coordination is the establishment and use of SAR coordinating committees (SCCs) comprising SAR system stakeholders to provide a strategic, whole-of-government approach to national SAR system cooperation and coordination. The SCC can be established at SAR agency, national or regional level, and, ideally, at all three levels. SAR agency SCCs should deal with local operational SAR issues and have the ability to refer matters higher if required. Committees established at a national level may consider strategic SAR policy matters and should have the ability to take matters to their respective governments for consideration. Regional SCCs should be able to refer SAR matters of a regional nature to their incorporated national committees for consideration.

Participation in organizations or systems such as IMO, ICAO, Cospas–Sarsat or other SAR bodies could help in enhancing cooperation among SAR stakeholders and promoting SAR system regionally, or internationally.

An important part of SAR promotion is through the organization of search and rescue exercises (SAREX), especially ones with demonstration parts of SAREX which include guests (VIPs from State level, different municipalities, SRUs manager level, Neighbouring States etc.), and representatives of the public or private sector that do not qualify as primary SRUs.

The State should prepare different SAREX scenarios, where different regions and scale of distress situations should be included in SAREX, and where the State could involve different representatives of the public or private sector that do not qualify as primary SRUs in order to

promote the SAR system and to raise awareness among them. Voluntary organizations should be a part of every SAREXs in order to prepare them for possible participation in SAR operations.

After every SAREXs or SAR mission, the State should publish a short Report from that action in order to raise awareness and promote an efficient SAR system. Publishing these reports will help SAR managers to enhance cooperation between primary SAR units but also with other elements of public or private services that do not qualify as search and rescue units to be nevertheless able to participate in SAR operations as well as to enhance cooperation with neighbouring states. Reports of SAREXs or SAR missions will help the SAR system and enable State decision-makers to recognize the improvements and effectiveness or lack of the SAR system. It is very important that SAR managers and SAR personnel organize, or participate in all, SAR seminars or workshops, at the national or regional level.

SAR Managers should establish good relations with the media. Media representatives should be involved in SAR Seminars, Workshops, SAREXs, or SAR Operations. Participation of media representatives could minimize the need of SAR managers or SMCs for an additional explanation during the SAR operations.

The state should designate personnel to publish information about SAR operations, progress and results, and those persons should complete some distress media training or seminars about reporting in distress situations.

Participation of neighbouring States SAR representatives to national SAR Seminars, Workshops, or SAREXs could help SAR Managers in enhancing cooperation between neighbouring States and in the process of signing the SAR Agreements among them.

Where there is a possibility, neighbouring States should enhance cooperation in the organization of mutual SAR training, liaison visits, SAREX, or establish some regional SAR bodies (e.g. RASARAC).

Usually, primary SAR Units are members of civil, military, or police forces, most likely helicopter units. The state should take into consideration what is necessary to enhance cooperation with:

- a. civil, military, police and other agencies;
- b. ANSPs;
- c. aerodrome and port operators (hydroplanes);
- d. aircraft operators;
- e. meteorological agencies;
- f. accident investigation agencies;
- g. government and non-government agencies affected by SAR operations, in particular large scale national and international responses involving whole of government agencies; and
- h. other States.

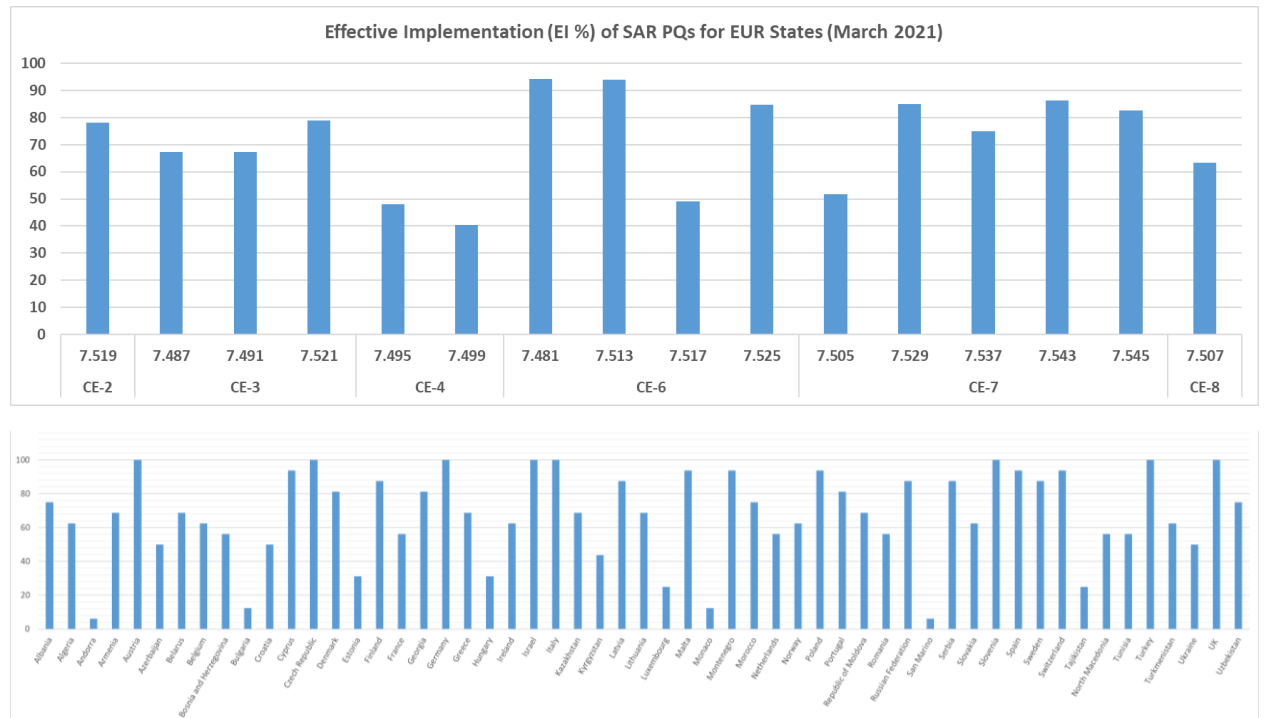
This cooperation should be formalized via the signing of some agreements or arrangements or MoU between SAR Authorities, or RCCs and SAR Units, in order to ensure 24/7 readiness and proper response from SAR Units to distress situations.

Social media nowadays is a very effective means of SAR promotions. The state should establish the presence of SAR Services on Social media in order to reduce the workload of SAR staff during major SAR responses or SAREXs. On Social media, SAR Services should inform viewers about SAR activities, mission reports, SAREX reports, safety campaigns, preventive SAR measures (SAR procedures, Beacon false alerting, etc.), National SAR plans and programs, SAR Seminars, or Workshops, etc.

6.16 SAR Organizations/RCCs that can provide further guidance regarding the implementation of 15 PSCS

States, if necessary, could seek for help with the additional information about the implementation of GM and SARPs regarding each of 15 topics of PSCS. States can find via ICAO EUR/NAT Office which States present good examples of the implementation of SARPS and GM regarding topics from PSCS.

Effective Implementation (EI) of SAR PQs for EUR States are published by EUR/NAT Office, together with States total score of EI:



It will be important that, with the help of EUR//NAT Office, States that seek additional help finds the States that have implemented these requirements, in correlation with USOAP reports and EI, as well as that the helping State is available/able to provide further guidance with the implementation process.

For example, regarding the training process, States could find SAR training help with recognized training organizations, or with some SAR organizations that could provide practical training information like:

1. Singapore civil aviation Academy;
2. JRCC Larnaca for SMC and SAR Administrator course;
3. ACO training - developed and implemented by Denmark, Finland and Sweden;
4. US CG;
5. Other International Organization under JAA TO;

OR, for distress beacons, State could look for additional information with the Cospas-Sarsat (www.cospas-sarsat.int) or it's nodal MCC.

OR, regarding SAREXs:

1. Cyprus— Multinational SAR Exercise “ARGONAUT” and “NEMESIS”;
2. Annual SAR exercise – “Dynamic Mercy” – North Atlantic and Baltic areas;

7. Guidance Material for the monitoring of PSCS implementation of EUR SAR Plan

PSCS are **the non-mandatory expectations** on all EUR Region States to enhance SAR systems in order to meet a minimum level of SAR capability, with a high degree of interoperability and harmonisation, and interoperability with other ATM components such as Air Navigation Service Providers (ANSPs) and aerodrome operators.

Monitoring of PSCS implementation is very important in order to meet the expectation of all EUR Region States with a goal to enhance SAR systems and meet a minimum level of SAR capability.

On Regional level, EUR/NAT Office, throughout two established means of monitoring:

- SAR Capability Matrix table (Appendix D of EUR SAR Plan) – In Attachment 1; and
- 41 questions from Regional SAR Plan monitoring and reporting form/SAR performance indicators – in Attachment 2,

will continue to monitor implementation of PSCS on Regional level. States need to inform EUR/NAT Office about any changes in a Matrix table or status of some questions from 41 SAR performance indicators. EUR/NAT Office will publish on SAR/TF Secure portal current situation regarding the implementation of PSCS of EUR SAR Plan

On a National level States should use the same indicators to monitor the implementation process, but also to use them as a tool to enhance SAR capability in national SAR systems. Other tools that can be used for monitoring and assist States with their reviews of process of the implementation of SARPs and EUR SAR Plan are the National Self-Assessment found in IAMSAR Manual Vol I Appendix H and the ICAO USOAP-CMA Protocol Questions for SAR.

SAR Managers together with trained auditors should perform annual reviews of national SAR system.

Attachment 1 - SAR Capability Matrix table

	Training	Alerting	Legislative	SAR Committee	SAR Agreement	Relationships	Communications	Quality Control	Civil-Military	Resources	SAREX	Library	Computerization	SAR Programme	Supply Dropping	Special Equipment	SAR Aircraft	Navigation	ELTs	Cospas-Sarsat Alerts
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
State A	D	E	E	D	D	E	E	E	E	E	E	E	D	E	E	E	E	E	E	E
State B																				

Legend:

A = Not implemented

B = Initial implementation

C = Meets ICAO Annex 12 requirements in some areas

D = Meets ICAO Annex 12 requirements in most areas

E = Fully meets ICAO Annex 12 requirements

Blank = No response

Attachment 2 – 41q SAR performance indicators

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

#	Performance indicators elements	Status
1	Enacted legislation that incorporates or is aligned to applicable international Conventions	0
2	Unless delegated, established an entity that provides H24, SAR services within its area of responsibility/SRR	0
3	Established a national SAR committee	0
4	Empowered SAR Mission Coordinators with the authority to adequately carry out their responsibilities	0
5	Established an Administrative Single Point of Contact for SAR (ASPOCS) for non-urgent, administrative matters	0
6	Conducted studies to integrate aviation and maritime SAR, and as far as practicable, civil and military activities	0
7	Conducted studies to align, as far as practicable, aeronautical and maritime SRRs, and SRRs and FIRs	0
8	Established a single State SAR Plan	0
9	Established aerodrome emergency plans that provide for co-operation and co-ordination with RCCs	0
10	Established SAR agreements with States having adjoining SRRS or FIRs	0
11	Provided up to date cross-border information on SAR capability to adjoining States	0
12	Pre-arranged procedures for cross-border SAR responses	0
13	Established RCC plans for response to Mass Rescue Operations (MROs) integrated with national disaster plans	0
14	Established operational plans and procedures for SRUs, provision of support, communication and reporting	0
15	Established SAR Alerting procedures which are tested, integrated and include civil/military protocols	0
16	Provided a fully equipped RCC of sufficient size with adequate provision for operational positions and human factors	0
17	Provided adequate supervisory ATC resources to allow timely SAR alerts and information to RCCs	0
18	Provided sufficient RCC staffing	0
19	Provided a sufficient number of trained specialists RCC officers including SMCs and A/SMCs	0

20	Availability of a pool of RCC support staff who are familiar with RCC operations, but not trained as coordinators	0
21	Developed SAR personnel position descriptions detailing responsibilities and eligibility criteria	0
22	Developed a comprehensive training programme that includes SAR training for SAR Coordinators and SRU staff	0
23	Facilitated RCC staff to be proficient in the English language	0
24	Facilitated a programme of regular liaison visits between relevant RCCs, ATC units and airline operating centres	0
25	Established additional oceanic SAR capability as far as practicable to ensure a timely and adequate SAR response	0
26	Established sufficient SRU capabilities (crews, availability, military assets, communications, authority, etc.)	0
27	Established procedures and necessary infrastructure to coordinate distress beacon alert responses	0
28	Established a reliable distress beacon registration system	0
29	Planned and prepared for the implementation of next generation beacons	0
30	Established an appropriate nationwide means of disposal for old distress beacons	0
31	Established contingency facilities, or procedures for the temporary delegation of SAR to another body or State	0
32	Established a centralised information source publishing all AIP information required on SAR	0
33	Established an Internet-based SAR information sharing system	0
34	Established systems for the maximum practicable cooperation between State entities for information when required	0
35	Developed and maintained a current, comprehensive electronic list of State SAR Facilities, SAR Equipment, and SRUs	0
36	Established an Internet-based SAR Library, or cooperate by contributing to an Internet-based EUR resource	0
37	Provided each RCC and SAR Authority with ready access to a current copy of SAR reference documents	0
38	Conducted regular SAREX to test and evaluate coordination procedures, data and information sharing and SAR responses	0
39	Implemented SAR System Improvement and Assessment measures, including Safety Management and QA systems	0
40	Conducted an annual or more frequent analysis of their current State SAR system to identify specific gaps in capability	0
41	Conducted SAR promotional programs	0