Standards Document

Civil Aviation Authority of Fiji

SEARCH AND RESCUE

SD - SAR

2nd Edition
August 2012

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Civil Aviation Authority of Fiji
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Standards Document

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PREFACE

General

Fiji's National Aviation Law consists of a three tier or triple system regulatory system, comprising Acts, Regulations and Standards Documents; the purpose of which is to ensure, where deemed appropriate, compliance and conformance with ICAO Standards and Recommended Practices (SARPS).

The 'three tier' or 'triple system' regulatory system represents Fiji's Primary Legislation System and Specific Operating Regulations to meet Critical Elements CE1 and CE2 of ICAO's Eight Critical Element of a safety oversight system

Standards Documents (SD) are issued by the Civil Aviation Authority of Fiji under the provision of Section 14 (3) (b) of the Civil Aviation Authority Act 1979 (CAP 174A)

Where appropriate, the SD also contains technical guidance (Critical Element CE5) on standards, practices, and procedures that are acceptable to the Authority.

Notwithstanding the above, and where specifically indicated in this Standards Document that such a provision is available, consideration may be given to other methods of compliance that may be presented to the Authority provided they have compensating factors that can demonstrate a level of safety equivalent to or better than those prescribed herein. Accordingly, the Authority will consider each case based on its own merits holistically in the context of and relevancy of the alternative methods to the individual applicant.

When new standards, practices, or procedures are determined to be acceptable, they will be added to this document.

Purpose

This Standards Document - Search and Rescue is issued by the Civil Aviation Authority of Fiji pursuant to the Civil Aviation Reform Act 1999 (as amended), section 6 (3) and (4) (c), where, although the State is responsible for the provision of a search and rescue service in respect of aircraft, arrangements may be made with Fiji Airports for the provision of this service on the State's behalf. Fiji Airports in performing its functions under this arrangement shall be duly approved/certified by the Authority and act in accordance with the standards contained in this SD-SAR.

Change Notice

This Standards Document has been developed pursuant to the Authority's obligation to provide oversight on the organisation authorised to provide search and rescue service in respect of aircraft, as well as their obligation to comply with standards notified by the Authority and is the means by which such notification is given.

THERESA LEVESTAM
ACTING CHIEF EXECUTIVE

AMENDMENT RECORD

The following space is provided to keep a record of all amendments.

Amendment No.	Effective Date	Entered By	Date Entered
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From time to time the Authority will issue amendments to the requirements stipulated in this publication. This will be done in the form of 'Notice of Amendments' including an attachment 'Notification of Approval/Disapproval' of all or part of the proposed amendment.

The Amendments will also be accessible through CAAF, website.

Contents **Page No.**

Historical Summary of Amendments

The Civil Aviation Reform Act (1999) requires the Authority to produce standards for the provision of search and rescue.

SD-SAR, details the SAR standards for the provision of a Class III SAR service in compliance with ICAO Annex12.

Amendment	*Source(s)*	*Subject(s)*	*Effective Date*
1st Edition	*CAAF*	*Standards Document – Search and Rescue (SDSAR) (includes Certification of ATS Provider)*	*1st December 2008*

Chapter 1— General

1.1 Definitions

(a) In this Standards Document —

Alerting post means:
Any facility intended to serve as an intermediary between a person reporting an emergency and a rescue coordination centre or rescue sub centre.

Alert phase means:
A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

Distress phase means:
A situation wherein there is a reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger and require immediate assistance.

Ditching means:
The forced landing of an aircraft on water.

Emergency phase means:
A generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase.

Joint rescue coordination centre (JRCC) means:
A rescue coordination centre responsible for both aeronautical and maritime search and rescue operations.

Operator means:
A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Pilot-in-command means:
The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

Rescue means:
An operation to retrieve persons in distress, provide for their initial medical or other needs, and deliver them to a place of safety.

Rescue coordination centre (RCC) means:
A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.

Rescue sub centre (RSC) means:
A unit subordinate to a rescue coordination centre, established to complement the latter according to particular provisions of the responsible authorities.

Search means:
An operation normally coordinated by a rescue coordination centre or rescue subcenter using available personnel and facilities to locate persons in distress Search and rescue aircraft. An aircraft provided with specialized equipment suitable for the efficient conduct of search and rescue missions.

Search and rescue facility mean:
Any mobile resource, including designated search and rescue units, used to conduct search and rescue operations.

Search and rescue service means:
The performance of distress monitoring, communication, coordination and search and rescue functions, initial medical assistance or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installations.

Search and rescue region (SRR) mean:
An area of defined dimensions, associated with a rescue coordination centre, within which search and rescue services are provided.

Search and rescue unit means:
A mobile resource composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations.

State of Registry means:
The State on whose register the aircraft is entered.

Uncertainty phase means:
A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

(b) Where terminology used herein is not defined, it shall be interpreted in accordance with ICAO Doc 9731 Part 1 & Part 2 or the Annexes.

1.2 Introduction

1.1.1 The Controller Ground Safety shall be responsible for authorising the contents of and amendments to this Standards Document Search and Rescue (SAR), which shall reflect, at all times the policies and procedures for the delivery of Class III SAR services by the Nadi Rescue Coordination Centre (RCC) within Fiji Search and Rescue Region.

1.1.2 This Standards Document is supplemented by the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manuals, Volume I — Organization and Management, Volume II — Mission Co-ordination, and Volume III — Mobile Facilities (Docs 9731), Annex 12 and Fiji Search and Rescue Manual issued by the Ministry of Home Affairs.

1.1.3 Fiji has obligations to establish and provide Search and Rescue services under the following international conventions to which it is a signatory:

a. The Convention on International Civil Aviation, 1944 – Annex 12 to this Convention is applicable to the establishment, maintenance and operation of search and rescue services in the territories of Contracting States and over the high seas, and to the coordination of such services between States.

b. The International Convention on Maritime Search and Rescue 1979 – This Convention and its Annex is applicable to the development and promotion of search and rescue services by establishing an international search and rescue plan responsible to the needs of maritime traffic for the rescue of persons in distress at sea.

c. The International Convention for Safety of Life at Sea 1974 – Regulation 15 to Chapter V of this Convention is applicable to search and rescue and requires Contracting Governments to make all necessary arrangements for coast watching and for the rescue of persons in distress at sea around its coasts.

1.1.4 Each State is obligated to establish one or more Search and Rescue Regions (SRR) associated with an RCC to receive alerts, and to coordinate and conduct search and rescue in order to assist anyone in distress within the SRR without regard to nationality or circumstances.

1.1.5 To ensure positive control and co-ordination, SAR operations are classified as follows:

- Class I – Land Search.
  This is coordinated by the Police and involves SAR action for persons missing on land. It is treated as a routine police matter.

- Class II – Sea Search.

This involves extensive local search for missing persons and vessels in the Domestic SAR area. (Search effort on the land is coordinated by the police and search at sea is coordinated by the Naval division.) Aircraft may be charted to assist.

- Class III – Air Search.
  All searches other then Class I and Class II searches, being:
  - **i.** all searches associated with activated emergency location transmitters (ELT);
  - **ii.** all searches associated with missing or distressed aircraft;
  - **iii.** search and rescue operations, including those for missing or distressed surface vessels or aircraft, requiring the use of national and international civil and/or military resources, or coordination with other States, controlled by the Nadi RCC;
  - **iv.** search and rescue operations begun as Class I or Class II when responsibility is transferred by mutual agreement to the Nadi RCC.

The relationship of CLASS III type searches within Fiji's SAR organization

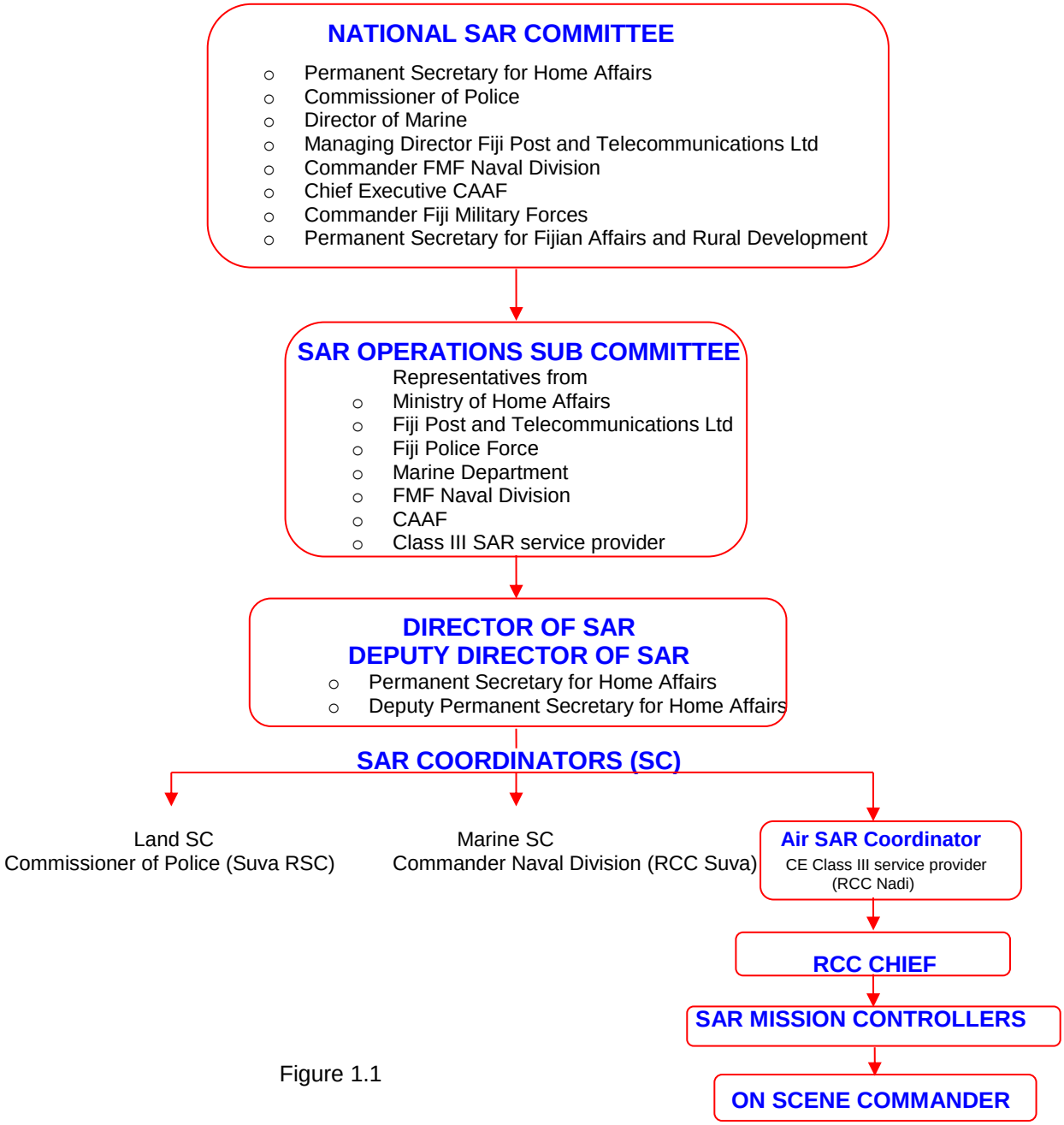

Figure 1.1

1.3 Applicability

This Standards Document prescribes standards governing the policies and procedures for the delivery of Class III search and rescue services by the Nadi rescue coordination centre within Fiji Search and Rescue Region.

Chapter 2 — Organisation

2.1 Search and Rescue Services

2.1.1 Fiji Island's designated Class III SAR service provider shall, individually or in cooperation with other States, arrange for the establishment and prompt provision of Class III SAR services within Fiji's SRR to ensure that assistance is rendered to persons in distress. Such services shall be provided on a 24-hour basis.

2.1.2 This Search and Rescue service shall be provided in accordance with the requirements of this SD SAR, Fiji SAR Manual, Annex 12 and the IAMSAR Manuals (Doc 9731); Volumes I, II and IIII.

2.1.3 The Class III SAR service provider having accepted the responsibility to provide search and rescue services to aircraft within Fiji SRR shall ensure that the basic elements of the search and rescue services include:

(1) a legal framework,
(2) a responsible authority,
(3) organized available resources,
(4) communication facilities and
(5) a workforce skilled in coordination and operational functions.

2.1.4 The Class III SAR service provider shall ensure that:

(1) Processes are established to improve service provision, including the aspects of planning, domestic and international cooperative arrangements and training.

(2) Assistance provided to aircraft in distress and to survivors of aircraft accidents shall be done regardless of the nationality or status of such persons or the circumstances in which such persons are found.

(3) Arrangements are in for the place for the use of search and rescue units and other available facilities to assist any aircraft or its occupants that are or appear to be in a state of emergency.

(4) The closest practicable coordination between the aeronautical and the marine rescue coordination centers are maintained.

(5) Consistency and cooperation are facilitated between the aeronautical and maritime search and rescue services.

2.2 Search and Rescue Region (SRR)

2.2.1 Fiji Search and Rescue Region is coincident with the boundaries of the Nadi Flight Information Region.

2.3 Rescue Coordination Centers (RCC)

2.3.1 Fiji Island's designated Class III SAR service provider shall ensure that:

(1) A Rescue Coordination Centre is established for provision of Class III SAR services within Fiji Search and Rescue Region.

(2) Any Class III SAR services within, and if necessary, outside of Fiji SRR shall be provided from this RCC.

(3) This RCC shall be the search and rescue point of contact for the receipt of COAPAS/SARSAT distress data and the repository for the 406MHZ emergency locator beacon register.

(4) This rescue coordination centre shall be staffed 24 hours a day by trained and qualified personnel; as per requirements prescribed in Chapter 6.

(5) RCC personnel involved in the conduct of radiotelephony communications should be proficient in the use of the English language (minimum Level 4 rating on the ICAO Language Proficiency Scale).

(6) In areas where public telecommunications facilities would not permit persons observing an aircraft in emergency to notify the rescue coordination centre concerned directly and promptly, suitable units of public or private services should be designated as alerting posts.

(7) The rescue coordination centre is provided with the following minimum requirements:

Required	**Desirable**
• 24-hour availability	• Large scale wall charts showing assigned SRRs and locations of SAR resources along with a SAR facility status board or computer file reflecting the current status of all SAR facilities, telephone numbers and other useful information as appropriate
• Trained persons (as prescribed in Chapter 6) with a minimum "Level 4" rating on the ICAO Language proficiency scale	• Computer resources
• Charts which apply to the SRR (aeronautical, nautical, topographic and hydrographic charts)	• Databases
• Plotting space, equipment and material	
• Ability to receive distress alerts, e.g., from Mission Coordination Centers etc	
• Communication requirements as prescribed in 2.4	
• General office equipment, desk, chairs and filing space	
• Documentation as prescribed in 7.3	

(8) The RCC is located where it can effectively perform its functions within Fiji SRR.

Note: The RCC may be located close to or within a well equipped centre such as the Air Traffic Management Centre, so that additional communications facilities can be kept to a minimum, so long as the centres and their staff meet the SAR requirements. Co-ordination skills used for other purposes are similar to those used to manage a SAR mission. This arrangement makes use of existing equipment and trained, experienced staff. However, additional personnel or space may be needed depending on the expected number and complexity of SAR operations.

(9) The location of the RCC and the description of its area of responsibility is published in the Aeronautical Information Publication (AIP) Fiji.

2.4 Search and Rescue Communications

2.4.1 The Class III SAR service provider shall ensure that the rescue coordination centre has means of rapid and reliable two-way communication with—

(1) associated air traffic services units;
(2) the Suva rescue coordination centre (Suva Maritime Surveillance Centre);

(3) the Suva rescue sub centre (Joint operations command centre, Central Police station Suva) and Tontouta rescue sub centre;
(4) appropriate direction-finding and position-fixing stations;
(5) where appropriate, coastal radio stations capable of alerting and communicating with surface vessels in the region – Suva Radio 3DP;
(6) the headquarters of search and rescue units in the region;
(7) aeronautical, maritime or joint rescue coordination centers in adjacent regions;
(8) Nadi meteorological office
(9) search and rescue units;
(10) alerting posts; and
(11) the Cospas-Sarsat Mission Control Centre servicing the search and rescue region (Canberra, Australia).

2.4.2 The Class III SAR service provider shall ensure that:

(1) all voice equipment, including telephones, is attached to a multi-channel recorder, with a time recording, and

(2) in addition to telephone or mobile phones with published numbers, one telephone line should have an unlisted confidential number to ensure the availability of one outgoing line in situations where there are many incoming calls

2.5 Search and Rescue Units

2.5.1 The Class III SAR service provider shall establish the following in respect of SAR Units:

(1) Elements of public or private services suitably located and equipped for search and rescue operations shall be designated as search and rescue units.

Note. — The minimum units and facilities necessary for the provision of search and rescue operations within Fiji SRR has been determined by regional air navigation agreements and are specified in ICAO Doc 9673; Air Navigation Plan Volume I - Basic ANP and Volume II - Facilities and Services Implementation Document publications.

(2) Elements of public or private services that do not qualify as search and rescue units but are nevertheless able to participate in search and rescue operations shall be designated as parts of the search and rescue Operation Plan.

2.6 Search and Rescue Equipment

2.6.1 The Class III SAR service provider shall ensure that SAR units/aircraft as established under 2.5.1:

(1) are provided with equipment for locating promptly, and for providing adequate assistance at the scene of an occurrence.

(2) have means of rapid and reliable two-way communication with other search and rescue facilities engaged in the same operation.

(3) are equipped to be able to communicate on the aeronautical distress and on-scene frequencies and on such other frequencies as may be prescribed.

(4) Where available, are equipped with a device for homing on distress frequencies.

Note 1. — Emergency locator transmitter (ELT) carriage requirements are given in Annex 6, Parts I, II and III.

Note 2.— Specifications for ELTs are given in Annex 10, Volume III.

(5) when used for search and rescue over maritime areas, are equipped to be able to communicate with vessels

Note. — Many vessels can communicate with aircraft on 2182 kHz, 4125 kHz and 121.5 MHz. However, these frequencies, and in particular 121.5 MHz, may not be routinely monitored by vessels.

(6) when used for search and rescue over maritime areas, carry a copy of the International Code of Signals to enable it to overcome language difficulties that may be experienced in communicating with ships.

Note. — The International Code of Signals is published in English, French and Spanish by the International Maritime Organization as documents I994E, I995F and I996S.

(7) consist of at least one aircraft (participating in a search and rescue operation) carrying droppable survival equipment unless it is known that there is no need to provide supplies to survivors by air.

(8) Where necessary, have access to survival equipment suitably packed for dropping by aircraft. Such equipment should be located at appropriate aerodromes.

Chapter 3 — Cooperation

3.1 Cooperation between States

3.1.1 The Class III SAR service provider shall ensure that:

(1) Arrangements are in place for the coordination of SAR with those of neighbouring States. *This is essential when these operations are proximate to adjacent search and rescue regions.*

(2) In so far as practicable, common search and rescue plans and procedures are developed to facilitate coordination of search and rescue operations with those of neighbouring States.

(3) Subject to such conditions as may be prescribed by the State, arrangements for immediate entry into Fiji's territory by search and rescue units of other States for the purpose of searching for the site of aircraft accidents and rescuing survivors of such accidents, shall be made. In addition, where it is required that Fiji search and rescue units enter the territory of another Contracting State for search and rescue purposes, procedures shall be in place for the processing of such requests.

(4) Agreements with neighboring States are in place to strengthen search and rescue cooperation and coordination, setting forth the conditions for entry of each other's search and rescue units into their respective territories. These agreements should also provide for expediting entry of such units with the least possible formalities.

(5) Arrangements are established to authorize the RCC to:

a. request from other RCCs such assistance, including aircraft, vessels, persons or equipment, as may be needed;
b. grant any necessary permission for the entry of such aircraft, vessels, persons or equipment into its territory; and
c. make the necessary arrangements with the appropriate customs, immigration or other authorities with a view to expediting such entry.

(6) Procedures are in place for the RCC to provide, when requested, assistance to other RCCs, including assistance in the form of aircraft, vessels, persons or equipment.

(7) Arrangements are made for joint training exercises involving search and rescue units, those of other States and operators, in order to promote search and rescue efficiency.

(8) Arrangements are made for periodic liaison visits by personnel of rescue coordination centres and subcenters to the centres of neighbouring States.

3.2 Cooperation with other services

3.2.1 A number of Government agencies and civil organizations contribute expertise and/or resources to the Class III SAR activity. The Class III SAR service provider shall ensure that:

(1) The resource contribution and responsibilities to the SAR organization by each participating organization is identified in a Memorandum of Understanding (MOU) or Letter of Agreement (LOA).

(2) Agreements are in place to ensure the closest practicable coordination between the relevant aeronautical and maritime authorities to provide for the most effective and efficient search and rescue services.

(3) Arrangements are made to ensure that search and rescue services cooperate with those responsible for investigating accidents and with those responsible for the care of those who suffered from the accident.

(4) To facilitate accident investigation, rescue units should, when practicable, be accompanied by persons qualified in the conduct of aircraft accident investigations.

3.3 Dissemination of Information

3.3.1 The Class III SAR service provider shall ensure that:

(1) All information necessary for the entry of search and rescue units of other States into Fiji's SRR shall be published and disseminated or, alternatively, include this information in search and rescue service arrangements.

(2) When such information could benefit the provision of search and rescue services, information regarding their search and rescue Operations Plan should be made available, through the rescue coordination centers or other agencies.

(3) Information should, to the extent desirable and practicable, be disseminated to the general public and emergency response authorities regarding actions to be taken when there is reason to believe that an aircraft's emergency situation may become cause for public concern or require a general emergency response.

Chapter 4 — Preparatory measures

4.1 Preparatory Information

4.1.1 The Class III SAR service provider shall ensure that:

(1) The rescue coordination centre shall have readily available at all times, up-to-date information concerning the following in respect of Fiji SRR:

a. search and rescue units, rescue subcentres and alerting posts;

b. air traffic services units;

c. means of communication that may be used in search and rescue operations;

d. addresses and telephone numbers of all operators, or their designated representatives, engaged in operations in the region; and

e. any other public and private resources including medical and transportation facilities that are likely to be useful in search and rescue.

(2) In addition, the following information of interest to search and rescue, is readily available:

a. the locations, call signs, hours of watch, and frequencies of all radio stations likely to be employed in support of search and rescue operations;

b. the locations and hours of watch of services keeping radio watch, and the frequencies guarded;

c. locations where supplies of droppable emergency and survival equipment are stored; and

d. objects which it is known might be mistaken for unlocated or unreported wreckage, particularly if viewed from the air.

(3) The RCC has ready access to information regarding the position, course and speed of ships within such areas that may be able to provide assistance to aircraft in distress and information on how to contact them.

Note. — This information may either be kept in the rescue coordination centers or be readily accessible.

(4) The RCC establishes, individually or in cooperation with other States, ship reporting systems in cooperation with maritime authorities or arrange communication links with AMVER or regional ship reporting systems to facilitate search and rescue operations at sea.

4.2 Search and Rescue Operations Plan

4.2.1 The Class III SAR service provider shall ensure that:

(1) the RCC has a detailed SAR Operations Plan for the conduct of Class III SAR operations within Fiji SRR and for coordinated actions within adjacent SRRs.

(2) SAR operations plans cover the whole SRR and be based on agreements (MOU or LOA) between the SAR service and the providers of facilities or other support for SAR operations.

Note: -Plans are intended to be valuable aids for time-critical search planning and SAR co-ordination processes.

(3) the SAR Operations Plan is developed jointly with representatives of the operators and other public or private services that may assist in providing search and rescue services or benefit from them, taking into account that the number of survivors could be large.

(4) where necessary, the SAR Operations Plan specifies arrangements for the servicing and refueling, to the extent possible, of aircraft, vessels and vehicles employed in search and rescue operations, including those made available by other States.

(5) the SAR Operations Plan is a comprehensive document describing contact procedures and the actions to be taken by all personnel employed in the RCC in the conduct of SAR operations and shall include information on the following:

a. The RCC mission statement and functions;

b. Responsibilities and duties of all personnel employed in the RCC, their relationship to the SAR Mission Coordinator (SMC), and to their parent organizations;

c. A list of all designated rescue units including their locations, capabilities, equipment and availability;

d. Distress phases and procedures for activating the RCC and arrangements for staffing it;

e. Methods for obtaining and evaluating essential information such as aircraft flight plans, sail plans, weather reports and forecasts, ocean data, local area conditions (land, sea, air), NOTAM, Coastal Navigation Warnings, etc.;

f. Methods of alerting en route aircraft and ships;

g. Methods of notifying the operator or owner of a distressed aircraft or ship;

h. Procedures for search area planning, and tasking of rescue units and other participating air, land, or sea elements;

i. The expeditious promulgation of “Restricted Areas” where appropriate;

j. The use of available communication systems and facilities and the means for communication between rescue units and the RCC;

k. Procedures for notifying adjacent RCC’s and the exchange of information with them. This should include, the obtaining of such assistance, including aircraft, vessels, persons or equipment, as may be needed;

l. Arrangements for Media relations;

m. Procedures for the provision of assistance at the incident scene, including command/control/co-ordination responsibilities;

n. Procedures for termination and suspension of SAR operations;

o. Procedures for preparing and disseminating “Situation Reports”;

p. Procedures for logging and recording all activities associated with searches involving the RCC;

q. Procedures for, and attendance at, SAR operations de-briefings;

r. Procedures for the review of amendments to the SAR Operations Plan;

s. The methods for assisting distressed aircraft being compelled to ditch to rendezvous with surface craft;

t. The methods for assisting search and rescue or other aircraft to proceed to the aircraft in distress; and

u. Cooperative actions to be taken in conjunction with air traffic services units and other authorities concerned to assist aircraft known or believed to be subject to unlawful interference.

(6) where required, the SAR Operations Plan is integrated with airport emergency plans to provide for rescue services in the vicinity of aerodromes including, for coastal aerodromes, areas of water.

(7) the Search and Rescue Operations Plan is reviewed and updated regularly and be in a convenient form for quick and easy use.

4.3 Search and Rescue Units

4.3.1 The Class III SAR service provider shall ensure that each search and rescue unit identified in the SAR Operations Plan shall:

(1) be aware of all parts of the SAR Operations Plan, as prescribed in 4.2, that are necessary for the effective conduct of its duties; and

(2) keep the rescue coordination centre informed of its preparedness.

4.3.2 The Class III SAR service provider shall make arrangements to ensure that the required number of search and rescue facilities is maintained in readiness and that adequate supplies of rations, medical stores, signaling devices and other survival and rescue equipment are maintained.

4.4 Training and Exercises

4.4.1 To achieve and maintain maximum efficiency in search and rescue, the Class III SAR service provider shall ensure that regular training is provided and the appropriate search and rescue exercises are arranged for search and rescue personnel, requirements of which are prescribed in Chapter 6.

4.5 Wreckage

4.5.1 The Class III SAR service provider shall have in place arrangements for dealing with wreckage as a result of an aircraft accident within Fiji search and rescue region; this should be removed, obliterated or charted following completion of the accident investigation, if its presence might constitute a hazard or confuse subsequent search and rescue operations.

Chapter 5 — Operating Procedures

5.1 Information concerning emergencies

The Class III SAR service provider shall establish procedures to ensure that:

(1) Any authority or any element of the search and rescue organization having reason to believe that an aircraft is in an emergency shall give immediately all available information to the rescue coordination centre concerned.

(2) The RCC shall, immediately upon receipt of information concerning aircraft in an emergency, evaluate such information and assess the extent of the operation required.

(3) When information concerning an aircraft in an emergency is received from sources other than an air traffic services unit, the RCC shall determine to which emergency phase the situation corresponds and shall apply the procedures applicable to that phase.

5.2 Procedures for Rescue Coordination Centers during emergencies

5.2.1 The Class III SAR service provider shall establish procedures to ensure that the following actions are taken during the Uncertainty phase: -

Upon the occurrence of an uncertainty phase, the rescue coordination centre shall cooperate to the utmost with air traffic services units and other appropriate agencies and services in order that incoming reports may be speedily evaluated.

5.2.2 The Class III SAR service provider shall establish procedures to ensure that the following actions are taken during the Alert phase: -

Upon the occurrence of an alert phase the rescue coordination centre shall immediately alert search and rescue units and initiate any necessary action.

5.2.3 The Class III SAR service provider shall establish procedures to ensure that the following actions are taken during the Distress phase: -

Upon the occurrence of a distress phase, the rescue coordination centre shall:

(1) immediately initiate action by search and rescue units in accordance with the appropriate Operations Plan;

(2) ascertain the position of the aircraft, estimate the degree of uncertainty of this position, and, on the basis of this information and the circumstances, determine the extent of the area to be searched;

(3) notify the operator, where possible, and keep the operator informed of developments;

(4) notify other rescue coordination centers, the help of which seems likely to be required, or which may be concerned in the operation;

(5) notify the associated air traffic services unit, when the information on the emergency has been received from another source;

(6) request at an early stage such aircraft, vessels, coastal stations and other services not specifically included in the appropriate Operations Plan and able to assist to:

i. maintain a listening watch for transmissions from the aircraft in distress, survival radio equipment or an ELT;

Note. — The frequencies contained in the specifications for ELTs given in Annex 10, Volume III, are 121.5 MHz and 406 MHz.

ii. assist the aircraft in distress as far as practicable; and

iii. inform the rescue coordination centre of any developments;

(7) from the information available, draw up a detailed plan of action for the conduct of the search and/or rescue operation required and communicate such plan for the guidance of the authorities immediately directing the conduct of such an operation;

(8) amend as necessary, in the light of evolving circumstances, the detailed plan of action;

(9) notify the appropriate accident investigation authorities; and

(10) notify the State of Registry of the aircraft.

Note: The order in which these actions are described shall be followed unless circumstances dictate otherwise

5.2.4 The Class III SAR service provider shall establish procedures to ensure that in the event that an emergency phase is declared in respect of an aircraft whose position is unknown and may be in one of two or more search and rescue regions, the following shall apply:

(1) When an RCC is notified of the existence of an emergency phase and is unaware of other centers taking appropriate action, it shall assume responsibility for initiating suitable action in accordance with 5.2.1, 5.2.2 or 5.2.3 and confer with neighboring RCCs with the objective of designating one RCC to assume responsibility forthwith.

(2) Unless otherwise decided by common agreement of the RCCs concerned, the RCC to coordinate search and rescue action shall be the centre responsible for:

- the region in which the aircraft last reported its position; or
- the region to which the aircraft was proceeding when its last reported position was on the line separating two search and rescue regions; or
- the region to which the aircraft was destined when it was not equipped with suitable two-way radio communication or not under obligation to maintain radio communication; or
- the region in which the distress site is located as identified by the Cospas-Sarsat system.

(3) After declaration of the distress phase, the rescue coordination centre with overall coordination responsibility shall inform all rescue coordination centers that may become involved in the operation of all the circumstances of the emergency and subsequent developments. Likewise, all rescue coordination centers becoming aware of any information pertaining to the emergency shall inform the rescue coordination centre that has overall responsibility.

5.2.5 The Class III SAR service provider shall establish procedures to ensure that whenever applicable, the RCC responsible for search and rescue action shall forward to the air traffic services unit serving the flight information region in which the aircraft is operating, information of the search and rescue action initiated, in order that such information can be passed to the aircraft.

5.3 Procedures where responsibility for operations extends to two or more Contracting States

5.3.1 The Class III SAR service provider shall establish procedures to ensure that where the conduct of operations over the entire search and rescue region is the responsibility of more than one Contracting State, each involved State shall take action in accordance with their relevant SAR Operations Plan when so requested by the RCC of the region.

5.4 Procedures for authorities in the field

5.4.1 The Class III SAR service provider shall establish procedures to ensure that the authorities immediately directing the conduct of operations or any part thereof shall:

a. give instructions to the units under their direction and inform the rescue coordination centre of such instructions; and

b. keep the rescue coordination centre informed of developments.

5.5 Procedures for rescue coordination centers — termination and suspension of operations

5.5.1 The Class III SAR service provider shall establish procedures to ensure that search and rescue operations will continue, when practicable, until all survivors are delivered to a place of safety or until all reasonable hope of rescuing survivors has passed.

5.5.2 The Class III SAR service provider shall establish procedures where the responsible RCC is responsible for determining when to discontinue search and rescue operations.

Note. — Contracting States may require input from other appropriate State authorities in the decision-making process leading to termination of SAR operations.

5.5.3 The Class III SAR service provider shall establish procedures to ensure that:

(1) when a search and rescue operation has been successful or when the RCC considers, or is informed, that an emergency no longer exists, the emergency phase will be cancelled and the search and rescue operation shall be terminated and any authority, facility or service that has been activated or notified shall be promptly informed.

(2) if a search and rescue operation become impracticable and the RCC concludes that there might still be survivors, the centre shall temporarily suspend on-scene activities pending further developments and shall promptly inform any authority, facility or service which has been activated or notified. Relevant information subsequently received shall be evaluated and search and rescue operations resumed when justified and practicable.

5.6 Procedures at the scene of an accident

5.6.1 The Class III SAR service provider shall establish procedures to ensure that when multiple facilities are engaged in search and rescue operations on-scene, the RCC shall designate one or more unit's on-scene to coordinate all actions to help ensure the safety and effectiveness of air and surface operations, taking into account facility capabilities and operational requirements.

5.6.2 The Class III SAR service provider shall establish procedures to ensure that when a pilot-in-command observes that either another aircraft or a surface craft is in distress, the pilot shall, if possible and unless considered unreasonable or unnecessary:

(1) keep the craft in distress in sight until compelled to leave the scene or advised by the rescue coordination centre that it is no longer necessary;

(2) determine the position of the craft in distress;

(3) as appropriate, report to the rescue coordination centre or air traffic services unit as much of the following information as possible:

- type of craft in distress, its identification and condition;
- Its position, expressed in geographical or grid coordinates or in distance and true

bearing from a distinctive landmark or from a radio navigation aid;
- time of observation expressed in hours and minutes Coordinated Universal Time (UTC);
- number of persons observed;
- whether persons have been seen to abandon the craft in distress;
- on-scene weather conditions;
- apparent physical condition of survivors;
- apparent best ground access route to the distress site; and

(4) act as instructed by the rescue coordination centre or the air traffic services unit.

5.6.3 The Class III SAR service provider shall establish procedures to ensure that:

(1) if the first aircraft to reach the scene of an accident is not a search and rescue aircraft, it shall take charge of on-scene activities of all other aircraft subsequently arriving until the first search and rescue aircraft reaches the scene of the accident. If, in the meantime, such aircraft is unable to establish communication with the appropriate rescue coordination centre or air traffic services unit, it shall, by mutual agreement, hand over to an aircraft capable of establishing and maintaining such communications until the arrival of the first search and rescue aircraft.

(2) when it is necessary for an aircraft to convey information to survivors or surface rescue units, and two-way communication its not available, it shall, if practicable, drop communication equipment that would enable direct contact to be established, or convey the information by dropping a hard copy message.

(3) when a ground signal has been displayed, the aircraft shall indicate whether the signal has been understood or not by the means described in 5.6.4 or, if this is not practicable, by making the appropriate visual signal.

(4) when it is necessary for an aircraft to direct a surface craft to the place where an aircraft or surface craft is in distress, the aircraft shall do so by transmitting precise instructions by any means at its disposal. If no radio communication can be established, the aircraft shall make the appropriate visual signal.

Note. — Air-to-surface and surface-to-air visual signals are published in Volume III of Doc 9731.

5.7 Procedures for a pilot-in-command intercepting a distress transmission

5.7.1 The Class III SAR service provider shall establish procedures to ensure that whenever a distress transmission is intercepted by a pilot-in-command of an aircraft, the pilot shall, if feasible:

(1) acknowledge the distress transmission;

(2) record the position of the craft in distress if given;

(3) take a bearing on the transmission;

(4) inform the appropriate rescue coordination centre or air traffic services unit of the distress transmission, giving all available information; and

(5) at the pilot's discretion, while awaiting instructions, proceed to the position given in the transmission.

5.8 Search and rescue signals

5.8.1 The Class III SAR service provider shall establish procedures to ensure that:

(1) the air-to-surface and surface-to-air visual signals when used shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.

(2) upon observing any of the signals, aircraft shall take such action as may be required by the interpretation of the signal.

5.9 Maintenance of records

5.9.1 The Class III SAR service provider shall establish procedures to ensure that:

(1) the RCC records all information about each SAR incident as it is received, either in full or by reference to other permanent records such as separate reports, forms, folders, charts, telegrams, recorded radio frequencies and telephones etc. The form that this record keeping takes must be logically organized for easy retrieval. Sufficient information must be recorded and retained to completely re-create the case and show the rationale for all decisions at some later date.

(2) as events unfold during a SAR incident, they should be recorded in a diary or log which will become part of the permanent case folder. Entries will be the primary record of the chronology of the case. Each page should have the date and case name or case identifying number, all pages be consequently numbered and time for every entry recorded.

(3) the RCC prepares appraisals of actual search and rescue operations in its region and that these appraisals should comprise any pertinent remarks on the procedures used and, on the emergency, and survival equipment, and any suggestions for improvement of those procedures and equipment. Those appraisals which are likely to be of interest to other States should be submitted to ICAO for information and dissemination as appropriate.

5.10 Dealing with the Media

5.10.1 The Class III SAR service provider shall establish procedures to ensure that:

(1) the management of media affairs is treated as an important element in SAR operations and is made an integral part of the SAR system and that appropriate consideration and planning is carried out

Note: -If the media do not obtain information from the primary source, they will seek it elsewhere. Incorrect or misleading information may then emerge which will benefit no-one and may lead to undue concern amongst Next of Kin.

(2) the information that emerges is correct

Note: -The SAR service has a responsibility to ensure that an accurate picture is reported. As the primary source, the SAR service should be proactive in communicating facts to the media. Holding back information that is available from other sources may lead to incorrect information being communicated by the media.

(3) all personnel who may be required to have direct contact with the media has received the appropriate training.

Chapter 6 — Staffing, Training, Qualification, Endorsements and Exercises

6.1 Staffing

6.1.1 The Class III SAR service provider shall engage, employ, or contract: -

(1) An RCC Chief: -
The RCC chief may be a person who also performs other functions. Whenever an RCC is established in conjunction with an ATS unit or similar operations centre, responsibilities for the RCC may be placed on the chief of that facility. In such instances, another person should be appointed to handle day-to-day management of the RCC. The RCC chief must make appropriate preparations, plans, and arrangements as well as oversee, if not delegated, the daily operations of the RCC, to ensure that when an incident occurs the SAR operation can be promptly performed.

(2) SAR Mission Coordinator: -
A SMC should be designated for each specific SAR operation, and adequate numbers of personnel qualified to perform the SMC function must be readily available on a 24-hour basis. This is a temporary function which may be performed by the RCC chief or a designated SAR duty officer, assisted by as many staff as may be required. A SAR operation may continue over a prolonged period of time. The SMC is in charge of a SAR operation until a rescue has been affected or until it has become apparent that further efforts would be of no avail. The RCC Operations Plan should give the SMC the freedom to employ any facility, to request additional ones and to accept or reject any suggestions made during the operation. The SMC is responsible for planning the search and coordinating the transit of SRUs to the scene.

The number of persons to be available for assignment as SMC will depend on:

- possible need to co-ordinate operations from a location other than the RCC, e.g., from available communications facilities;
- expected frequency of SAR incidents, including the possibility of more than one incident occurring simultaneously;
- size of the area and prevailing conditions (e.g., climate or topography); and - need to allow for vacation, training courses, illness, relief and travel.

Note: - Duties of the SMC are detailed further in APPENDIX B.

(3) RCC Staff: -
The RCC staff consists of sufficient personnel who are trained and capable of planning and coordinating SAR operations. If the RCC staff has duties besides SAR, the additional functions should be considered when determining the staffing needs. The number of personnel required will vary with local requirements, traffic density, seasonal conditions, meteorological conditions and other SRR conditions. An RCC must be in a constant state of operational readiness. Where the RCC does not maintain continuous staffing, or only has one trained and capable RCC person on duty, provision must be made for stand-by RCC staff to be mobilized rapidly.

6.1.2 The Class III SAR service provider shall establish procedures to ensure that administrative duties, including planning, co-operation with providers of facilities, exercises and case studies are shared so that more than one person is capable of performing these duties.

Note: - Effective administrative actions help to ensure proficient SAR operations. In areas of low SAR activity, the administrative duties are of high importance since they are the best way to keep the staff in readiness for SAR cases.

6.1.3 The Class III SAR service provider shall establish procedures to ensure that personnel from services or organizations providing facilities can be used as part of the RCC team if they are duly trained and qualified.

Note: -They will normally serve in support of expert functions such as firefighting, or air or marine safety.

6.2 Training

6.2.1 The Class III SAR service provider shall establish procedures to ensure that:

(1) RCC staff are qualified in SAR incident analysis, search planning, and SAR operations management.

(2) RCC chiefs, SMCs, and RCC staff are trained in watch-standing, co-ordination of assorted resources, search planning, and rescue planning by undergoing an appropriate SAR training course.

6.2.2 The Class III SAR service provider shall establish procedures that delegate the responsibility for ensuring that all SAR service personnel reach and maintain the required level of competence, to the RCC Chief.

6.2.3 The Class III SAR service provider shall establish procedures to ensure that periodic refresher training is conducted, especially where search planning expertise gained from formal training is not used on a regular basis for operations or exercises,

Note: - More details on SAR training requirements are contained in APPENDIX B.

6.2.4 The Class III SAR service provider shall establish procedures to ensure that should RCC and RSC watch standers be unable to immediately attend formal training, they must receive a period of on-the-job training and an *interim* qualification and endorsement.

Note: - An individual's training must be based on a need's analysis. This analysis compares actual performance and behaviour with required performance and behaviour at a currently held position. Based on this analysis, training needs and methods to overcome the deficiencies can be identified.

For more information on Training of SAR personnel, see Appendix A

6.3 Qualification

6.3.1 The Class III SAR service provider shall establish qualification procedures to ensure that all RCC personnel are competent to carry out RCC duties. The qualification procedure should:

(1) cover fundamental knowledge necessary for the duties of that position and testing of individuals on the systems they will be required to operate or maintain; and

(2) require demonstration of abilities, show mental and physical competence to perform as part of a team

Note: -Training in itself can provide only basic knowledge and skills; the purpose of qualification is to validate an individual's ability to perform certain duties. It is a minimum level of knowledge and skills which should be required to be correctly demonstrated. This validation activity may take place at a specific position, while maintaining specific equipment or performed as a team member within a unit. Qualification is not designed as a training programme but can result in training.

6.4 Endorsements

6.4.1 The Class III SAR service provider shall establish a process to enable the endorsement of its RCC staff.

Note: -The purpose of endorsement is to authorize an individual to serve in a stated capacity. Training alone can provide only basic knowledge and skills. Qualification and endorsement processes are used to ensure sufficient experience, maturity and judgment are gained.

6.4.2 Such endorsements will be issued by the Authority to candidates who meet the requirements for training and qualification. Endorsements will be in writing prior to the person assuming watch standing duties.

Note: -The Authority should believe that a qualified person has the maturity, leadership and integrity to perform as a team member before issuing an endorsement, the final step leading to full assumption of duties.

6.5 Exercises

6.5.1 To reach a high degree of proficiency, the Class III SAR service provider shall establish a process to ensure that all SAR facilities periodically take part in coordinated SAR exercises.

Note: -Exercises assist in areas when the number of SAR operations is low, and especially with neighbouring States.

6.5.2 The Class III SAR service provider shall establish procedures to ensure that:

(1) a major SAR exercise (either b or c as described in Appendix C paragraph C1.4) involving key elements of the SAR organization and joint operations with a neighbouring RCC is to be conducted at least once every three years, and

(2) a Communications exercise; to test communication facilities and individual responses to a simulated SAR incident, be conducted at least once every year.

Note: -More detailed information on "Exercises" is contained in APPENDIX C

6.5.3 The Class III SAR service provider shall ensure that a permanent record of the exercise, addressing each element, is completed, to disseminate valuable information and to maintain a historic file for later case studies, analyses and system improvements.

Note: -A system of indexing and filing the reports is recommended for later retrieval.

6.5.4 Where practicable, the Class III SAR service provider should make arrangements for its RCC personnel to observe Search and Rescue Exercises (SAREX) of adjacent RCCs.

Chapter 7 –Documentation and Control

7.1 Hierarchy of SAR Documents

7.1.1 There are different levels and types of SAR documents as illustrated in Figure 7-1. Global SAR plans include IMO's SAR Plan and ICAO's Regional Air Navigation Plans (RANPs). These 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 would be followed by a regional SAR plan where a regional SAR system exists. Next would be the national SAR plan, and so forth down to the RCC and local levels.

7.1.2 SAR manuals provide guidance on implementing the plans. International SAR manuals may be followed by regional or national manuals, and then by plans of operation for the RCCs and RSCs. Some plans have an administrative character while others have an operational focus.

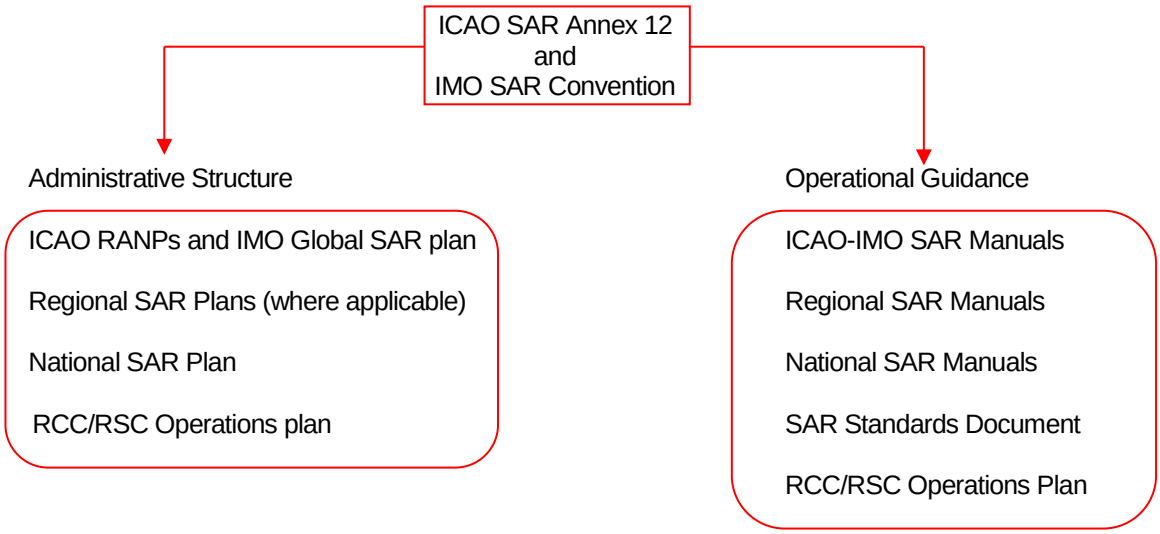

Figure 7-1

7.2 Document Control

7.2.1 The Class III SAR service provider shall ensure that RCC personnel have access to those documents needed for operational applications and references within the RCC.

7.2.2 The Class III SAR service provider shall ensure that there is in place a documentation control system that will ensure that the documents listed in 7.3 below are timely amended and that there are procedures to ensure that operational RCC personnel will be notified and that they have read and understood the amendments.

7.3 List of Publications and Documents

7.3.1 The Class III SAR service provider shall ensure that the minimum scale of fully amended publications and documents as tabulated below is held within the RCC and available for RCC personnel to consult.

1.	Annex 12
2.	ICAO Doc 9673 – Regional Air Navigation Plan (Asia and Pacific Region)
3.	ICAO Doc 9731 - International Aeronautical and Maritime Search and Rescue Manuals (Volumes I, II & III)
4.	ICAO Doc 9432 – Manual of Radiotelephony
5.	Annex 2 – Rules of the Air
6.	Annex 10 –Aeronautical Telecommunications
7.	Annex 11 – Air Traffic Services
8.	ICAO Circular 185 – The COSPAS-SARSAT system
9.	CAAF Standards Document – SAR
10.	Fiji Search and Rescue Manual
11.	Nadi Rescue Coordination Centre SAR Operations Plan
12.	SAR publications of national and neighboring SAR authorities;
13.	Letters of Agreement/Memorandums of Understanding with neighouring SAR authorities and SAR facilities
14.	Current Fiji Civil Aviation Legislation including but not limited to: Acts Regulations Relevant Standards Documents
15.	Fiji Manual of Air Traffic Services
16.	Local Unit Orders
17.	ATS Temporary Instructions
18.	Fiji AIC
19.	AIP Fiji & AIP Supplement
20.	Pacific AIP & AIP Supplement
21.	Aerodrome Manuals
22.	Fiji Domestic Aerodrome Data
23.	Aerodrome Emergency Plans
24.	File containing information on all SAR facilities available, capability and contact numbers for activation
25.	Fiji Nautical Almanac
26.	Indexes of names, addresses, telephone and facsimile numbers
27.	Relevant checklists and forms

7.4 SAR Forms

7.4.1 The Class III SAR service provider shall ensure that the appropriate SAR forms are available for use in the RCC.

Note: -SAR forms serve many purposes and are in different formats. Their purposes include documenting information from the distressed craft, facilitating communications between RCCs and RSCs, briefing SAR crews, search planning, and facilitating communications among the SMC, OSC and SAR facilities.

7.5 SAR Charts and Overlays

7.5.1 The Class III SAR service provider shall ensure that:

(1) the appropriate SAR Charts and overlays are available for use in the RCC, and

(2) a SAR mission chart must be kept for every search mission. All relevant details should be plotted as they are received.

Note: -It is recommended that all case-related information is plotted on flimsy paper or clear plastic laid over the top of the appropriate chart. If a separate flimsy overlay is used for basic case information and for laying out each search, it is

much easier to evaluate what areas have been covered adequately and what areas will need further effort. To correlate SAR action over a period of days, the overlays can be placed over one another to give a total search picture.
At the end of the case, these overlays should be marked with the date that each pertains to and with the case name or identifying case number. They should then be filed in the case incident folder.

7.5.2 The Class III SAR service provider shall establish procedures to ensure that the following information is clearly displayed on each overlay:

(1) Date and times of period covered by the chart
(2) Search and designations
(3) Detection probability at the end of an area search
(4) Total size of area searched

7.6 SAR Case Files

7.6.1 The Class III SAR service provider shall ensure that procedures are in place for all information pertaining to a specific SAR incident to be placed in an easily identified and labeled file folder and then stored. Such records shall be retained in storage for a period of 7 years. After this period the RCC Chief shall be responsible for placing files dealing with significant, historically important, or sensitive incidents into permanent secure storage, discarding those dealing with routine matters.

7.6.2 The Class III SAR service provider shall establish a policy to determine which types of cases belong in the "routine" category. Files pertaining to incidents that become the subject of legal proceedings should be retained until those proceedings are complete, including all appeals and legal reviews. Files that are to be permanently retained should be prominently marked so that they are not inadvertently discarded with the routine files.

7.7 SAR Case Analysis

7.7.1 The Class III SAR service provider shall ensure that procedures are in place for SAR case analysis to be conducted in an effort to improve the overall SAR system effectiveness. This would involve:

(1) reviewing specific cases to uncover lessons learned that can be applied in future operations; and

(2) analysing cumulative data to discover trends that may impact the allocation and location of SAR resources.

APPENDIX A

TRAINING

Training is critical to performance and safety.

A1.1 The formal training of RCC personnel should include the following disciplines:

- organization:
  - knowledge of the SAR organization and its relationship to the air traffic services;
  - knowledge of the SAR organization and its relationship to maritime safety and communication services;
  - knowledge of agreements made with facilities, neighbouring SAR services, etc.;
  - knowledge of capabilities and limitations of available facilities; and
- knowledge of legal aspects, e.g., in a maritime incident, policies on towing and salvage procedures:
  - how to obtain and evaluate information and reports;
  - alerting of facilities and commencement of SAR operations; interpretation of different systems of position reporting; determination of a search area;
  - search techniques and patterns for air, maritime and land facilities; plotting of search information;
  - communications procedures;
  - rescue procedures;
  - supply-dropping procedures;
  - ditching assistance, interception and escort procedures; and briefing and questioning of SAR personnel;
- knowledge of accident investigation, particularly preservation of the accident site and powers/responsibilities of the investigator in charge;
- administration:
  - routine administrative functions; and
- information:
  - visits to SAR facilities and supply depots, and participation in exercises, including packing and loading of survival stores; and
  - instruction through films, relevant journals, etc., on recent developments in the field of SAR.

A1.2 RCC and RSC SAR training should also include at least the following specific topics:

Aeronautical drift
AFN
AFTN
Bailout scenarios and planning
Briefing/questioning SRUs
Case studies
Charts
Coastal SAR planning
Computer applications
Cospas-Sarsat
Datum marker buoys
Datum determination
Dealing with public and news media
Dealing with families
Documentation of incidents
Electronic sweep width
Emergency care
Environmental factors
Evaluation of flare sightings
Fatigue factors
GPS/WGS 84
Medical advice
Obtain and evaluate data
On board observer skills and limitations
On-scene coordinator duties
Parachute drift
Plotting skills
Registration databases
Rescue procedures
Resource allocation
Risk assessment
SAR agreements
SAR communications
SAR mission co-ordination
SAR operations conclusion
SAR phases, stages, and components
SAR resource capabilities
SAR system organization
SAR technology
Search areas
Search patterns
Search planning

Inmarsat
International aspects
Interviewing techniques
Leeway drift
Legal concerns
Manoeuvring boards
Medical evacuations
Ship reporting systems for SAR
SRU selection
Stress management
Supply dropping methodologies
Survival equipment
Visual sweep width
Water currents

A1.3 How to Train SAR Personnel

A1.3.1 There are three ways to train:

(1) Training based on performance helps SAR specialists and teams to perform their duties effectively. The SAR manager has the responsibility to ensure that the overall training programme is effective. The RCC chief and others must ensure that all SAR service personnel reach and maintain the required level of competence.
(2) Training based on knowledge provides information necessary for the SAR experts and students to perform their duties. One method is to provide knowledge to enable them to review SAR cases. Resulting recommendations can be used to review policy, update standard procedures, and improve training and other processes.
(3) Awareness training is required for those persons infrequently involved in SAR, such as high-level executives, budget authorities, general transportation operators and national transportation authorities.

A1.3.2 On-the-Job Training. With on-the-job training, trainees learn and, at the same time, contribute to the aims of the organization. This economical approach requires competent specialists who can teach and coach trainees.
(1) Checklists - Training specialists develop checklists of job duties, skills, tasks, and procedures to be taught through on-the-job training. This ensures that all trainees receive the same information. Items on the checklist can typically be covered in any order.
(2) Planned Progression - This technique gives SAR specialists a clear idea where they are going. The specialist knows the requirements for advancement and the means to achieve it. Planned progression is a step-by-step approach which requires tasks to be performed well at each level before proceeding to the next level.
(3) Assignment Rotation. This broadens the knowledge of specialists. Rotation to different jobs allows the specialist to understand broader aspects of the organization.
(4) Coaching. This is the responsibility of every specialist in a management position. Effective coaches develop the strengths and potential of subordinates and help them overcome their weaknesses. Coaching saves time, money and costly mistakes by subordinates.
(5) Library - A training library is useful for students to increase their level of knowledge. Libraries can include different materials such as video tapes, lesson plans, reference books and papers, and audio tapes. Video tapes can be made by simply taping good classroom training sessions. A professionally produced video tape can be even more effective.

A1.3.3 Formal Classroom Training: Many facilities now conduct courses, workshops, conferences and other programmes for training SAR specialists.

(1) Train-the-trainer. When a person must travel abroad to receive formal SAR training, it may be more cost-effective if arrangements are made for the person to also observe use of the procedures in real operations, and to learn how to teach them. States could then make maximum use of this person upon return to conduct well-planned and organized training within the home State or region. Part of the SAR training strategy should be to train individuals in such a way that they can help train others where they work. This reduces the reliance on formal training centres and the burden of training costs.
(2) Maintain a Training Facility. A formal training facility within the State or region helps to maintain professionalism and standardization. Sending students long distances for training is costly and inefficient and courses may include irrelevant topics. Importing formal training from other nations has mostly short-term benefits and is seldom possible on a consistent and reliable

basis. Local trainers understand local needs best, can provide an ongoing programme and are particularly useful when a language difference could be a problem.

(3) Add to Curriculum. Usually the most economical and effective way to provide formal SAR training is to add SAR to the curriculum of an existing training centre. The staff might be jointly provided by organizations that use the training, providing good cross-exposure for instructors and students. For aeronautical SAR, it is particularly useful to have staff expertise in maritime and land SAR since rescues must be carried out within both environments.

(4) Conferences. Formal training should be supplemented to enhance SAR professionalism. Through mutual visits and conferences between operating units, individuals learn from real-life experiences of others and obtain information about a particular topic of interest.

APPENDIX B

SAR CO-ORDINATION

B1.1 The SAR system has several levels of co-ordination associated with SAR coordinators (SC), RCC Chiefs, SAR mission co-ordinators (SMCs), and on-scene co-ordinators (OSCs).

B1.1.1 SAR Co-ordinators. SCs have the overall responsibility for establishing, staffing, equipping, and managing the SAR system, including providing appropriate legal and funding support, establishing RCCs and rescue sub-centres (RSCs), providing or arranging for SAR facilities, coordinating SAR training, and developing SAR policies. SCs are the top-level SAR managers; each State normally will have one or more persons or agencies for which this designation may be appropriate. More information on SAR management responsibilities may be found in the International Aeronautical and Maritime Search and Rescue Manual on Organization and Management. SCs are not normally involved in the conduct of SAR operations.

B1.1.2 RCC Chief. The RCC chief may be a person who also performs other functions. Whenever an RCC is established in conjunction with an ATS unit or similar operations centre, responsibilities for the RCC are often placed on the chief of that facility. In such instances, another person should be appointed to handle day-to-day management of the RCC. The RCC chief must make appropriate preparations, plans, and arrangements as well as oversee, if not delegated, the daily operations of the RCC, to ensure that when an incident occurs the SAR operation can be promptly performed.

B1.1.3 SAR Mission Co-ordinator. Each SAR operation is carried out under the guidance of an SMC. This function exists only for the duration of a specific SAR incident and is normally performed by the RCC chief or a designee. For complex cases or those of long duration, the SMC usually has an assisting team.

- The SMC is in charge of a SAR operation until a rescue has been affected or until it has become apparent that further efforts would be of no avail, or until responsibility is accepted by another RCC. The SMC should be able to use readily available facilities and to request additional ones during the operation. The SMC plans the search and co-ordinates the transit of SAR facilities to the scene.
- The SMC should be well trained in all SAR processes and be thoroughly familiar with the applicable SAR plans. The SMC must competently gather information about distress situations, develop accurate and workable action plans, and dispatch and co-ordinate the resources which will carry out SAR missions. The SAR Operations Plan maintained by the RCC provide information to assist in these efforts.

B1.1.3.1 Guidelines for SMC duties include:

- obtain and evaluate all data on the emergency;
- ascertain the type of emergency equipment carried by the missing or distressed craft; remain informed of prevailing environmental conditions;
- if necessary, ascertain movements and location of vessels and alert shipping in likely search areas for rescue, lookout and/or radio watch on appropriate frequencies to facilitate communications with SAR facilities;
- plot the area to be searched and decide on the methods and facilities to be used;

- develop the search action plan (and rescue action plan as appropriate), i.e., allocate search areas, designate the OSC, dispatch SAR facilities and designate on-scene communications frequencies;
- inform the RCC chief of the search action plan;
- co-ordinate the operation with adjacent RCCs when appropriate; arrange briefing and debriefing of SAR personnel;
- evaluate all reports from any source and modify the search action plan as necessary;
- arrange for the fuelling of aircraft and, for prolonged search, make arrangements for the accommodation of SAR personnel;
- arrange for delivery of supplies to sustain survivors;
- maintain in chronological order an accurate and up-to-date record with a plot, where necessary, of all proceedings;
- issue progress reports;
- recommend to the RCC chief the abandoning or suspending of the search; release SAR facilities when assistance is no longer required; notify accident investigation authorities;
- if applicable, notify the State of registry of the aircraft in accordance with established arrangements; and
- prepare a final report on the results of the operation.

B1.1.4 On-scene Co-ordinator. When two or more SAR units are working together on the same mission, there is sometimes an advantage if one person is assigned to co-ordinate the activities of all participating units. The SMC designates this on-scene coordinator (OSC), who may be the person in charge of a search and rescue unit (SRU), ship or aircraft participating in a search, or someone at another nearby facility in a position to handle OSC duties. The person in charge of the first SAR facility to arrive at the scene will normally assume the function of OSC until the SMC directs that the person be relieved. Conceivably, the OSC may have to assume SMC duties and actually plan the search if the OSC becomes aware of a distress situation directly and communications cannot be established with an RCC. The OSC should be the most capable person available, taking into consideration SAR training, communications capabilities, and the length of time that the unit the OSC is aboard can stay in the search area. Frequent changes in the OSC should be avoided. Duties which the SMC may assign to the OSC, depending on needs and qualification, include any of the following:

- assume operational co-ordination of all SAR facilities on-scene; receive the search action plan from the SMC;
- modify the search action plan based on prevailing environmental conditions and keeping the SMC advised of any changes to the plan (do in consultation with the SMC when practicable);
- provide relevant information to the other SAR facilities;
- implement the search action plan;
- monitor the performance of other units participating in the search; co-ordinate safety of flight issues for SAR aircraft;
- develop and implement the rescue plan (when needed); and make consolidated reports (SITREPs) back to the SMC.

B1.1.5 Airborne SRUs should make a standard joining entry report to the ACO when entering a search and rescue mission area, including:

- call sign;
- nationality;
- type (specify fixed wing or helicopter and type); position;
- altitude (on pressure setting used);
- ETA (at relevant point or search area); endurance on scene; and
- remarks (specific equipment or limitations).

B 1.1.6 Aircraft Co-ordinator. The purpose of the aircraft coordinator (ACO) function is to maintain high flight safety and co-operate in the rescue action to make it more effective. The ACO function should be seen as a co-operating, supporting and advisory service. The ACO should normally be designated by the SMC, or if that is not practicable, by the OSC. The ACO function will normally be performed by the facility with the most suitable mix of communication means, radar, GNSS (Global Navigation Satellite System) combined with trained personnel to effectively co-ordinate the involvement of multiple aircraft in SAR operations while maintaining flight safety. Generally, the ACO is responsible to the SMC; however, the ACO work on-scene must be coordinated closely with the OSC, and if no SMC or OSC, as the case may be, the

ACO would remain in overall charge of operations. Duties of the ACO can be carried out from a fixed-wing aircraft, helicopter, ship, a fixed structure such as an oil rig, or an appropriate land unit. Depending on needs and qualifications, the ACO may be assigned duties that include the following:

- co-ordinate the airborne resources in a defined geographical area; maintain flight safety - issue flight information;
- practise flow planning (example: point of entry and point of exit); prioritize and allocate tasks;
- co-ordinate the coverage of search areas;
- forward radio messages (can be the only duty);
- make consolidated situation reports (SITREPs) to the SMC and the OSC, as appropriate; and work closely with the OSC; and
- it is important that the ACO is aware of the fact that the participating airborne units, if possible, try to avoid disturbing other participating units with, for example, noise and rotor wind.

APPENDIX C

EXERCISES

C1.1 Exercises test and improve operational plans and communications, provide learning experience, and improve liaison and co-ordination skills.

C1.2 Exercises, conducted on a realistic basis, help to demonstrate and assess the true effectiveness of training and the operational efficiency and competence of the SAR service. Exercises will reveal deficiencies that may exist in SAR plans and enable them to be improved. It is safer to have shortcomings revealed by exercises rather than during actual operations.

C1.3 The need for exercises varies. Some States have many SAR operations so exercises may add little to their learning experience, except when conducted with other States with which they may not routinely work. Other States may have very few SAR operations each year, so exercises will be critical to sustaining proficiency. Joint exercises among neighbouring States or parties to SAR agreements will also be valuable. It may be necessary to assign persons full-time to planning and evaluating exercises. 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.

C1.4 Exercises are conducted on the three levels:

(1) The simplest type of exercise, a Communications Exercise, requires the least planning. It consists of periodic use of all means of communications between all potential users to ensure capability for actual emergencies.
(2) A Co-ordination Exercise involves 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.
(3) The third type, a Full-Scale Exercise 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.

C1.5 Adjacent RCCs should periodically carry out 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 facilities which are likely to operate together should engage periodically in coordinating exercises. Much may be learned by exchanging information on training methods (e.g., programmes, literature, and films) and visits between staff of adjacent SRRs.

C2.1 Exercise Elements

Successful exercises require planning, execution and evaluation. Exercises are carried out for training, to evaluate established plans and procedures and to test new concepts. Exercises also offer experience in the management of risks and safety for SAR operations.

(1) Planning. The typical exercise sequence involves: development of the concept (broad goals and objectives) of what is to be exercised; selection of participants (staff and facilities); detailed planning for how the exercise will be conducted; conduct of the exercise; and evaluation to determine lessons learned and to develop recommendations for improvement. It is essential to have a clear understanding of which plans and procedures are being exercised. Scenarios can then be developed that include specific situations to which personnel will react and respond. Response, or lack of response, to established policy and guidance, and need for additional policy guidance, is evaluated.

(2) Execution. Those who plan exercises should not be the same ones who respond to the created scenarios. This avoids covering up known weaknesses to ensure ideal results, instead of revealing what would occur in an actual SAR situation.

i. Scenarios must be as realistic as possible. The decision as to how large and realistic exercises should be will depend on the extent of the SAR service, the demands expected to be made upon it and general considerations of economy. If primary responsibility for SAR has been delegated to military authorities or Government services, full-scale exercises involving as many units and facilities as possible may provide satisfactory means of implementing training programmes. Where private concerns are relied upon to play a major part in SAR, the timing of major exercises should be arranged so as to minimize disruption to normal activities.

ii. Opportunities should be taken to complement formal training programmes with exercises conducted on a unit basis by combining them with normal activities during quiet periods. They should be carried out at regular intervals and arranged so that all personnel participate. This is particularly important in respect of those facilities which seldom receive operational calls.

iii. Exercises carried out separately by facilities will not be as valuable as combined operations, but they can ensure that the SAR service will function in an emergency.

iv. As many facilities, including air and surface craft, should be exercised as possible. Communications between the SRUs is a vital test of co-ordination.

v. It is not always practicable for organizations to engage in formal SAR training programmes. Whenever possible, personnel from these organizations should be invited to participate in or observe training exercises. They should be provided with documents, publications or other literature which describe the SAR policies and procedures used by the SAR service, showing the desired roles of the participating organizations in SAR operations.

vi. 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 coordinating exercises. Much may be learned by exchanging information on training methods (e.g., programmes, literature, and films) and visits between staff of adjacent SRRs.

vii. Safety requirements, particularly when using live ‘‘survivors’’, may impose significant constraints on the conduct of SAR exercises. SAR co-ordinating authorities should ensure that specific safety rules and limitations are issued for use during both the planning and conduct of SAR exercises.

(3) Evaluation. The evaluation process is crucial. Inputs should come from a team of evaluation experts who observe the exercise, and from the people who actually participated in the exercise scenarios. Those observing and evaluating the response must have expertise in the areas they are evaluating, and clearly understand what is being evaluated. The evaluators should know the situations being posed and then record the participant’s response to the objectives of the exercise. The final step is identification of weaknesses and development of recommendations for improvement. Subsequent exercises would emphasize these recommended changes as well as other concerns.

C2.2 Sample scenarios for a co-ordination exercise are provided below.

(1) A light aircraft that has not filed a flight plan is reported missing. Based on information received subsequently, the flight is reconstructed and all necessary actions are taken.

(2) A transport aircraft with a flight plan fails to make a position report or makes a distress call without giving a position. A simulated communication search is carried out and an air search is planned. A simulated search is then conducted with input from various simulated sources.

(3) A ship is reported 24 hours overdue at its destination. A simulated search is carried out, using datum line search planning techniques. A simulated communication search is conducted involving relevant RCCs. Radio or satellite broadcasts are simulated.

C2.3 The full-scale exercise requires detailed planning since actual SAR facilities are deployed, and it offers detailed realistic experience. The following may serve as a guide in developing a distress scenario.

(1) A search object resembling an aircraft is set up at an undisclosed location. A simulated flight plan is filed and one or two simulated position reports are received, but nothing more is heard until the aircraft is overdue at its destination. The appropriate emergency phase is declared and a simulated communication search is conducted. The SMC will assess all available information, plan a search

(based on chapters 4 and 5 of this Volume), and dispatch search facilities. Also, simulated reports from other reporting sources are received. Some of these reports will help in determining the correct search areas while others may be deliberately misleading. The text of all messages between participants in the exercise should begin with "EXERCISE ONLY" to avoid any misunderstanding. The exercise ends when the search object is found.

(2) If the exercise concerns only the rescue of survivors, the SMC is given the exact location of the distress scene and the apparent condition of the survivors. The SMC must decide on the best method for rescue with available facilities and may send land vehicles, vessels and aircraft. A doctor, if available, could accompany the SAR facilities. On-scene SAR personnel may be required to transfer stretcher cases to the evacuation craft. Pararescue and medical teams could be sent and required to set up triage arrangements and support survivors using air-dropped survival stores.

C2.4 The scale on which a combined multiple-agency exercise should be conducted and the number of facilities which should take part will depend upon the following:

- extent of the particular SAR service;
- anticipated demands upon the SAR service;
- extent to which private organizations and other agencies could be involved and on the SAR experience of their personnel;
- time interval since the last combined exercise; and
- general considerations of economy and value to and availability of participating facilities and resources.

APPENDIX D

Applying Risk Management Principles to assess SAR Response and SAR System Performance

A process for 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.

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.

Risk analysis is a valuable tool for managers of SAR organizations as it can set the resource priorities for an organization and its output can be used externally to promote SAR issues. SAR organizations are encouraged to undertake a risk analysis process and to use the information gained to advance the objective of saving lives.

The Risk Management Process:

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 D-1, and provide a logical and systematic methodology for identifying, analysing, assessing, treating and monitoring risks.

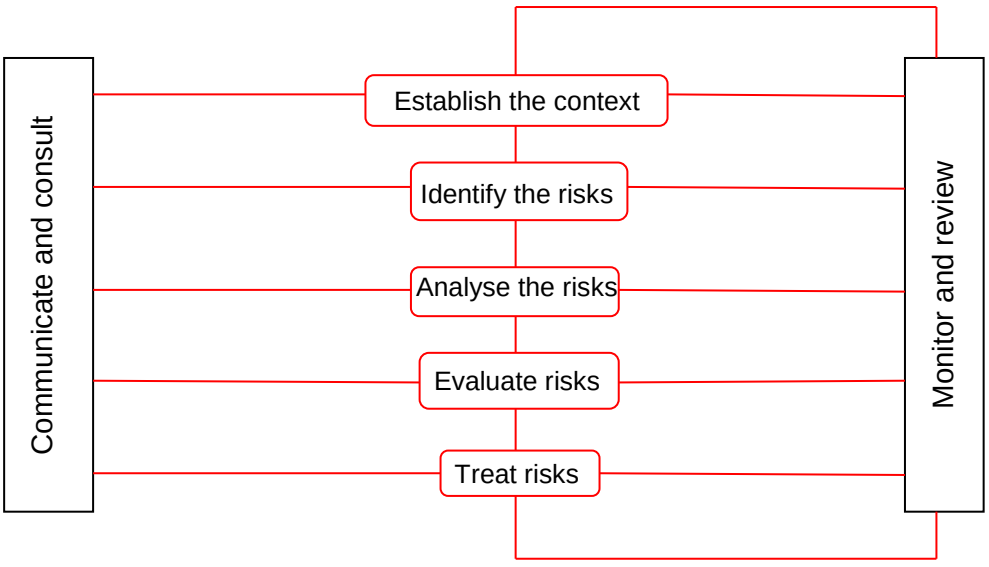

Figure D-1

The determining of risk requires a well-structured approach with all risk factors being subjected to an iterative process. Although from a SAR perspective it should be used to assess the overall SAR system, the technique can equally be applied to the SAR response phase.

Establishing the Context

The first step in the process is establishing the context in which the SAR risks will be determined. Will the analysis include the parts that other organizations, their resources and response plans play in assisting the SAR function? Will it make judgements on the complex national arrangements and their effectiveness if a major SAR incident occurs? If this is the context that is being examined, there is a need to gain wide support for the analysis by promoting stakeholder involvement from appropriate decision makers outside the SAR organization.

If the context is internally focused, there may still be a need to make judgements about the external environment and the analysis may be able to determine priorities and the order in which they should be addressed. There is also a need to understand the government policy framework in which the SAR organization exists and its funding basis. However, the risk process should put the question of limited funds being available aside until after the analysis is complete so that the outcomes are not distorted by self imposed constraints before it has begun.

Identifying the Risks

The second step in the process is identifying the risks, which is 'the process of determining what can happen, why and how' as the basis for further analysis. People have different risk perceptions and this step requires taking an objective view of current or potential situations where the objective of finding persons in distress and removing them to a place of safety may be compromised.

Some approaches used to identify risk include whether the risk is easily managed, if exposure is voluntary, whether the risk is familiar, making an assessment that the situation may become catastrophic, the innate fear of the worst occurring, and personal or organizational win/loss assessments. The process can be based on formal analysis tools (e.g., quantitative analysis, Pareto analysis, systems engineering, etc), where appropriate. However, in most circumstances for SAR it can be more simply accomplished by people that work in the activity sitting down and coming to a collective view of the exposures facing the organization (e.g., experience, brainstorming, scenario analysis, lessons learned, etc.).

The subject matter could be discussed by using the divisions used in IAMSAR to break down the analysis. These are Organization and Management (Volume I), Mission Co-ordination (Volume II), and Mobile Facilities (Volume III).

Analyse the Risks

The third step in the process is to analyse the risks. This is done by establishing the cause of the risk, which is important when it comes to treating it, and determining its likelihood and consequences. Likelihood is a qualitative description of probability or frequency; and consequences are the outcome of an event, expressed qualitatively or quantitatively, expressed in terms of loss, injury, disadvantage or gain.

A common approach to document this interaction is to set values for likelihood and consequences of each risk. An example that may be useful in terms of determining likelihood for SAR is shown in table D-2.

Level	Descriptor	General description
A	Almost certain	Is expected to occur in most circumstances, more than once a year
B	Likely	Will probably occur in most circumstances, once a year
C	Possible	Might occur at some time, once in 5years
D	Unlikely	Could occur at some time, once in 10years
E	Rare	May occur in exceptional circumstances, less than once in 30years

Table D-2 - Qualitative Measures of Likelihood

The assignment of consequences is also done using general descriptions and an example is shown in table D-3. Caution needs to be exercised in assigning consequences, as every incident is not necessarily a potential major catastrophe. The history of SAR incidents and their outcomes over the last ten years is a good starting point when approaching consequences.

Level	Descriptor	General description
1	Insignificant	Routine or business management task with no life saving consequence Non critical support role to another agency leading incident response Staff have good SAR support tools available robust communications systems available excellent level of response assets available
2	Minor	routine or business management task with potential life-saving consequence lead role in non-SAR/safety of life activity staff have adequate SAR support tools fair communications systems available adequate level of first response assets available
3	Moderate	routine or business management task with demonstrated life-saving consequence staff have inadequate SAR support tools poor communications systems available inadequate first response assets available a situation that may lead to an internal decision to make a major change to procedures, structure or staffing fatality (1-5 people) hull loss
4	Major	a situation that may lead to an external decision to make major changes to structure or staffing at the management level fatality (6-14 people) hull loss
5	Catastrophic	a political review of the SAR organization and its effectiveness fatality (>14 people) hull loss

Table D-3 - Qualitative Measures of Consequences or Impact

Once the likelihood and consequence elements are determined, a risk analysis matrix is developed and tested using sample scenarios. This is a most important step as it allows the risk analysis team to develop a common understanding of likelihood and consequence and their interrelationship. Also, there may be situations where there are multiple likelihood and consequence relationships, and each of these should be scored and the highest resultant value recorded in the next step of the risk analysis.

Evaluate the Risks

The fourth step in the process is to evaluate the risks. This is done by comparing likelihood against consequence as shown at table D-4 and comparing the results with any previous risk analysis. The table 3 comparison matrix will result in an ordering of risks and assist to develop an effective risk mitigation plan. An extreme risk requires immediate remediation, a high risk requires urgent attention, a medium risk should be addressed as a priority, and a low-level risk can be addressed through routine processes.

		Consequences				
		1	**2**	**3**	**4**	**5**
LIKELIHOOD	**A**	H	H	E	E	E
	B	M	H	H	E	E
	C	L	M	H	E	E
	D	L	L	M	H	E
	E	L	L	M	H	H

Table D-4 - Qualitative Risk Analysis Matrix
(Level of Risk E = Extreme, H = High, M = Medium, and L = Low)

Treat the Risks

The fifth step in the process is to treat the risks. In terms of SAR, it is important to minimize risk where it can be practically reduced on a cost benefit basis. It may be possible to reduce low level risk by introducing simple reduction measures such as additional staff training or SAR customer education. At the other end of the scale it may not be possible to treat extreme risks due to inadequate resources or Government policy decisions. However, the risk analysis process will prioritize these factors for the SAR Manager and it may be a powerful ally to assist in change management.

Monitor and Review

The sixth step in the process is to monitor and review the performance of the risk management system and the changes that may affect it. Regular reviews (e.g., six monthly) of the analysis should be conducted and the effectiveness of risk mitigation strategies re-examined. Some risks may be transitory (e.g., contract renewals, changes to procedures, etc.) and others may be inherent in operating a SAR system. The iterative approach of the analysis means that SAR organizations will have a good understanding of the challenges facing them and will have considered approaches to remediate them. It may only be possible to alleviate some risks rather than removing them entirely.

Communicate and Consult

The seventh and last step in the process is the most important being communicate and consult. It is important to have a communications plan for stakeholders and involve them in the process. Industry peak representative bodies, if they exist, can be important stakeholders as they have a vested interest in the outcomes and may have the ability to influence higher level Government decision making processes.