



NATIONAL SEARCH AND RESCUE PLAN

VERSION : 5.0
DATE OF IMPLEMENTATION : 12-03-2018
OFFICE OF PRIME INTEREST : AIRSPACE & AIR NAVIGATION STANDARDS BRANCH- DAAR






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TYPE OF DOCUMENT	PLAN (PLN).		
STATUS OF DOCUMENT	CONTROLLED		

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1. **INTRODUCTION:**

- 1.1 Pakistan being signatory to Chicago Convention and a member of ICAO, conforms to meet the requirements of Annex 12, "Search and Rescue". The Rule 76 of CARs 1994 refers, that the Authority may make arrangements for the establishment, maintenance and operation of a search and rescue service for the purpose of assisting aircraft which may be in need of search and rescue assistance. The Government of Pakistan within its territorial limits, waters and over high seas where the responsibility of provision of air traffic services has been delegated to Pakistan under Regional Air Navigation Agreements, is committed to render assistance to all aircraft in distress and facilitate immediate assistance.
- 1.2 This SAR Plan has been developed with due regard to the Standards and Recommended Practices mentioned in Annex 12 of International Civil Aviation Organization (ICAO), guidance contained in IAMSAR Manual Vol-I / Vol-II & Asia Pacific Regional SAR Plan. The success of search and rescue depends to a large extent on prompt receipt of information needed for evaluation of the situation by the Rescue Coordination Centre (RCC) and timely decision on the best course of action. Based on the situation, activation of SAR facilities be assured, making it possible to:
 - 1.2.1 Locate, reach and rescue survivors in the shortest possible time; and
 - 1.2.2 Facilitate self-help by survivors while they are still capable of doing so.
- 1.3 The topography of Pakistan is highly challenging. It has a chain of very high and inaccessible mountains to the North and North-West, arid deserts both on its eastern and western flanks and a vast expanse of Indian Ocean to the South, with an approximate 1000Kms of coast-line. The general terrain is mostly inaccessible, therefore, it is extremely necessary that an efficient Search and Rescue System is established and organized in a manner to provide a prompt SAR service. It is urged that all organizations incorporated in this National SAR Plan must extend maximum cooperation in the interest of life saving.
- 1.4 This National SAR Plan is redefined to include only regulatory guidance for ANSP, where as areas of operational activity and related aspects shall be included in SAR Plan of operation to be prepared by Operations Directorate.

2. **PURPOSE:**

- 2.1 The purpose of this National Search and Rescue (SAR) plan is:
 - 2.1.1 To provide outlines for SAR operational concepts, related organizational arrangements, responsibilities and procedures for Search and Rescue (SAR) operations for aircraft and its occupants during emergencies in the territory and territorial waters of Pakistan. It also covers the area over high seas where air traffic services are being provided by Pakistan.
 - 2.1.2 To be dealt as State's requirement for Aeronautical Search and Rescue in Pakistan, which define the parameters for preparation of Plan of operations.
 - 2.1.3 To define Regulatory requirements for SAR service providers regarding Search and Rescue services in Pakistan.
 - 2.1.4 To prepare Plans of Operation by ANSP and concerned RCCs in the light of this document and under rule 77 of CARs-94.

3. **SCOPE:**

- 3.1 Scope of this National SAR Plan is to provide guidance for preparation of SAR Plan of operation by Operations Directorate under ANS Division.

4. RESPONSIBILITIES FOR RESCUE COORDINATION :

- 4.1 **Director Operations** shall be responsible to ensure availability and maintenance of facilities required for Rescue Coordination in both Rescue Coordination Centers.
- 4.2 **Director Airport Services** shall be responsible to ensure availability and maintenance of facilities at all Airports (Ground SAR Units).
- 4.3 **Additional Director Search and Rescue** shall be over all responsible for the organization, maintenance and operation of Rescue Coordination Centers / Sub Centers within Pakistan.
- 4.4 **Respective RCC Chief** of Karachi and Lahore RCCs shall:
 - 4.4.1 Be responsible for the smooth operation of RCCs on round the clock basis;
 - 4.4.2 Be responsible to designate Search and Rescue Mission Coordinator for the particular SAR Operation; and
 - 4.4.3 Directly supervise the SAR operations.
- 4.5 **Airport Managers** of all PCAA's controlled aerodromes shall be responsible for operation of respective Search and Rescue units established at their aerodromes.

The Owners of the other / private aerodromes shall have the responsibility of the Search and Rescue units of their aerodromes in both SRRs of Pakistan

5. DEFINITIONS:

The following terms, when used in this plan, shall have the meanings assigned to them. Any term used in this plan but not defined herein, shall have the same meaning as given in Civil Aviation Ordinance 1960, Pakistan Civil Aviation Authority Ordinance 1982, CARs-1994, relevant Regulations, ANOs, ICAO Annex-12 and related Manuals.

- 5.1 **Air Navigation Services:** Services provided to air traffic during all phases of operations including Air Traffic Management (ATM), Communications, Navigation and Surveillance (CNS), Meteorological services for air navigation (MET), Search and Rescue (SAR) and Aeronautical Information Services (AIS).
- 5.2 **Alerting Post:** Any facility intended to serve as an intermediary between a person reporting an emergency and a rescue coordination centre or rescue sub centre.
- 5.3 **Alert Phase:** A situation wherein apprehension exists to the safety of aircraft and its occupants.
- 5.4 **COSPAS-SARSAT System:** A satellite system designed to detect and locate activated distress beacons transmitting in the frequency of 406.0-406.1 MHz.
- 5.5 **Distress Phase:** 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.
- 5.6 **Ditching:** The forced landing of an aircraft on water.
- 5.7 **Emergency locator transmitter (ELT):** A generic term (related to aircraft) describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated.
- 5.8 **Emergency Phase:** A generic term meaning as a case may be, uncertainty phase, alert phase or distress phase.
- 5.9 **Joint Rescue Coordination Centre (JRCC):** A rescue coordination centre responsible for both aeronautical and maritime search and rescue operations.
- 5.10 **Local user terminal (LUT):** An earth receiving station that receives beacon signals relayed by COSPAS-SARSAT satellites processes them to determine the location of the beacons and forwards the signals.

- 5.11 **On-scene coordinator (OSC):** A person designated to coordinate search and rescue operations within a specified area.
- 5.12 **Operator:** A person, organization or enterprise engaged in or offering to engage in an aircraft operation.
- 5.13 **Pilot-in-command:** 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.
- 5.14 **Rescue:** An operation to retrieve persons in distress, provide for their initial medical or other needs, and deliver them to a place of safety.
- 5.15 **Rescue Coordination Centre (RCC):** 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.
- 5.16 **Rescue Sub-centre (RSC):** A unit subordinate to a rescue coordination centre, established to complement the latter according to particular provisions of the responsible authorities.
- 5.17 **Search:** An operation normally coordinated by a rescue coordination centre or rescue sub-centre using available personnel and facilities to locate persons in distress.
- 5.18 **Search and Rescue Aircraft:** An aircraft provided with specialized equipment suitable for the efficient conduct of search and rescue missions.
- 5.19 **Search and Rescue Coordinator (SC):** One or more persons or agencies within an Administration with overall responsibility for establishing and providing SAR services and ensuring that planning for those services is properly coordinated.
- 5.20 **Search and Rescue Facility:** Any mobile resource, including designated search and rescue units, used to conduct search and rescue operations.
- 5.21 **Search and Rescue Mission Coordinator (SMC):** The official temporarily assigned to coordinate response to an actual or apparent distress situation.
- 5.22 **Search and rescue plan:** A general term used to describe documents which exist at all levels of the national and international search and rescue structure to describe goals, arrangements and procedures which support the provision of search and rescue services.
- 5.23 **Search and Rescue Service:** 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.
- 5.24 **Search and Rescue Region (SRR):** An area of defined dimensions, associated with a Rescue Coordination Centre, within which search and rescue services are provided.
- 5.25 **Search and Rescue Unit:** A mobile resource composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations.
- 5.26 **Uncertainty Phase:** A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

6. **PRIORITY:**

- 6.1 Search and Rescue mission will have priority over every other activity. Upon receipt of request from CAA's RCCs every Authority, Department responsible for SAR activities will provide all possible assistance including equipment, supplies, human resources and facilities necessary to meet the National obligation.

7. **REGULATORY OVERSIGHT:**

- 7.1 Directorate of Airspace and Aerodrome Regulations shall carryout regulatory oversight of Rescue coordination system in Pakistan.
- 7.2 Oversight of PCAA's SAR administration, Rescue Coordination Centers (RCCs) and SAR units shall be ensured through Continuous Monitoring Approach (CMA) and by periodic inspections / Audits and surprise / random visits of SAR system.

8. NATIONAL SEARCH AND RESCUE COORDINATION COMMITTEE (NSARCC):

- 8.1 National Search and Rescue Coordination Committee (NSARCC) shall be established with the objective to enhance SAR capability of Pakistan in coordination with all stakeholders.
- 8.2 NSARCC shall comprise of members from all stakeholders, while Operations Directorate of CAA shall act as OPI.
- 8.3 NSARCC shall carryout all functions as defined by DGCAA from time to time in the interest of objective explained under 8.1 above.
- 8.4 NSARCC shall meet at least twice per year.

9. PCAA INTERNAL SEARCH AND RESCUE (SAR) COMMITTEE:

- 9.1 The internal SAR committee shall be formed by the OPI office i.e Operations Directorate of CAA after approval of DGCAA. It should comprise of appropriate members under the chairmanship of Additional DGCAA for the primary objective to deal with all SAR related matters, and to present CAA in the NSARCC or any other forum domestic / international, related with SAR matters.
- 9.2 The Operations Directorate of CAA shall determine the frequency of committee meetings on as required basis especially prior to NSARCC meeting.

10. CRISIS MANAGEMENT CELL (NATIONAL):

- 10.1 Pakistan Civil Aviation Authority (Director Airport Services), in consultation with DGCAA / Federal Government, shall establish Crisis Management Cell at the most appropriate location / aerodrome to facilitate:
 - 10.1.1 Establishment of relative handling centre;
 - 10.1.2 Coordination with concerned airline office for the handling of survivors and deceased;
 - 10.1.3 information to the Press, And
 - 10.1.4 Any other emergency related issue.
- 10.2 RCC and/or Chief Operation Officer of ACC JIAP Karachi / AIIAP Lahore shall inform the Director Operations and their Airport Managers regarding any emergency situation in their area of responsibility.
- 10.3 APM JIAP Karachi or AIIAP Lahore, as appropriate, upon receipt of information from RCC / Chief Operation Officer shall inform Director Airport Services who shall, in consultation and permission of higher authorities, liaise with Aviation Division for the establishment of Crisis Management Cell.

11. SEARCH AND RESCUE (SAR) IN PAKISTAN:

- 11.1 The Director General PCAA, under Rule 78 of CARs-94, may requisite aircraft, land vehicles or water craft and may engage persons to operate those craft or vehicles for the purpose of SAR operations in connection with search for a missing aircraft or rescue of its crew and passengers.
- 11.2 SAR services shall be provided to the aircraft in distress and to the survivors of aircraft accidents within Pakistan's territory regardless of the nationality of such aircraft or survivors.
- 11.3 The Search and Rescue in Pakistan is provided jointly by civil and military services / facilities. Civil Aviation Authority is responsible to coordinate SAR services over entire territory of Pakistan.
- 11.4 PMSA, in close liaison with CAA, will be the coordinator for all maritime / aeronautical SAR related activities over the surface of the sea within the boundaries of Karachi Search and Rescue Region in accordance with National Marine Disaster Contingency Plan (NMDCP) 2007.

- 11.5 SAR in prohibited areas shall be the responsibility of Defence Services. However, the Civil agencies may also be authorized to do so with the permission of concerned military authorities.
- 11.6 Aerial Search in prohibited areas shall only be carried out by Military aircraft. In case it is desired to send civil aircraft in those areas, the permission from the concerned authority must be obtained.
- 11.7 RCCs shall coordinate the SAR operations conducted by PAF, Army, Navy, PMSA, Coast Guards, Civil Administration and Private Organizations for aircraft accidents over entire land and territorial waters of Pakistan. (Note: specific coordination with PMSA shall be made in case of territorial waters as deemed necessary).

12. SEARCH AND RESCUE REGIONS (SRRs):

The territory of Pakistan, in order to have an efficient organization for Search and Rescue Operations, has been divided into two regions - corresponding to FIRs i.e. Karachi and Lahore Search and rescue regions as shown in Figure-1.

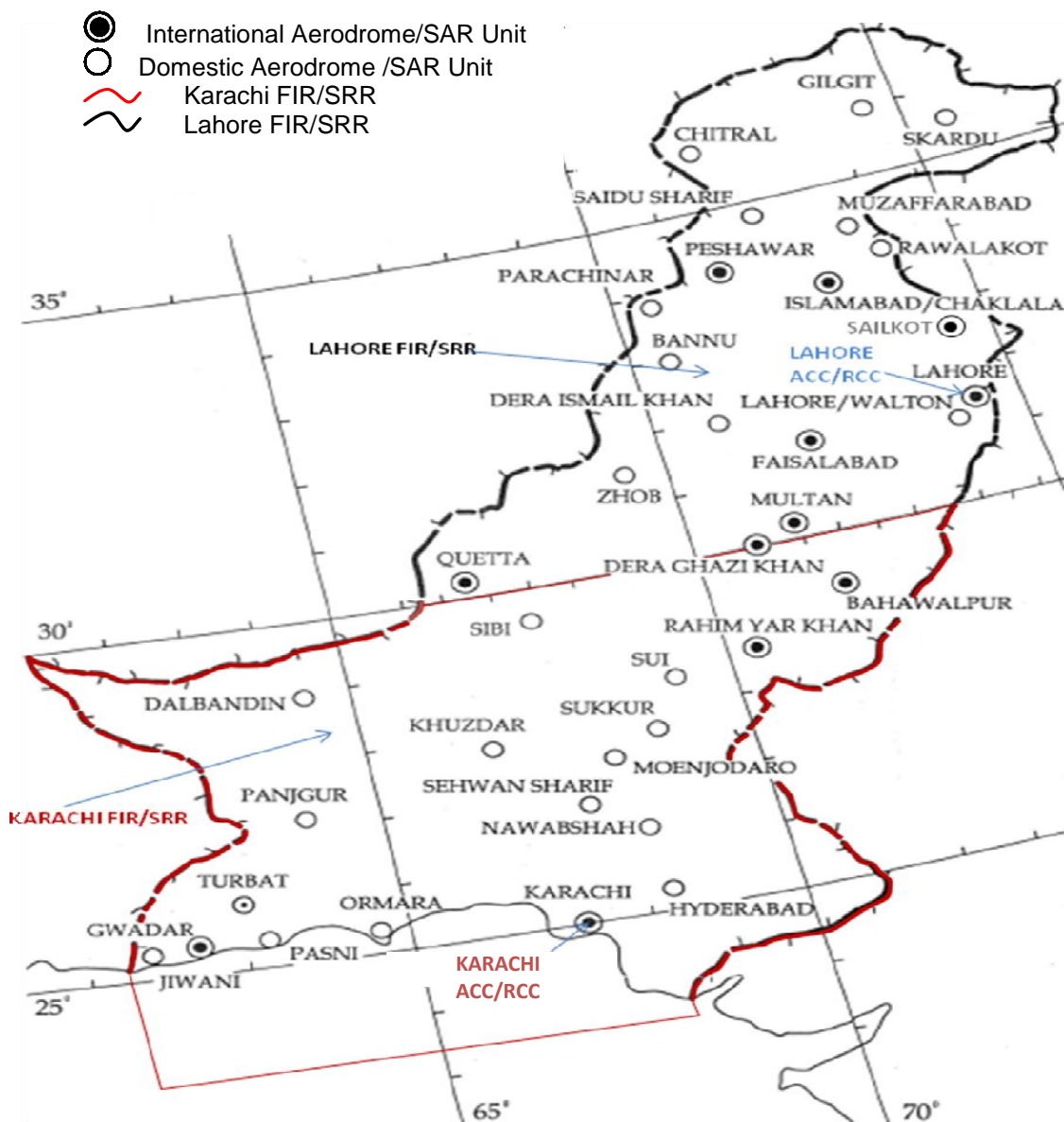


Figure-1 (SAR Regions and SAR Units)

13. RESCUE COORDINATION CENTERS:

Depending upon Search and Rescue Regions (SRRs), following two Rescue coordination centers are established to cover entire territory of Pakistan.

13.1 RCC KARACHI:

It is located in ACC building at Jinnah International Airport, Karachi and is responsible for the coordination of SAR services on 24-hour basis within Karachi SRR.

13.2 RCC LAHORE:

It is located adjacent to ACC building at Allama Iqbal International Airport Lahore and is responsible for the coordination of SAR services on 24-hour basis within Lahore SRR.

14. MANNING AND OPERATION OF RCCs:

14.1 Karachi and Lahore RCCs shall be manned and equipped on round the clock basis.

14.2 Qualified and trained workforce on all related SAR matters shall be deployed for SAR coordination having:

14.2.1 proficiency in English;

14.2.2 Ability to receive, evaluate and respond Distress Alerts from MCC (SUPARCO);

14.2.3 Ability to communicate and coordinate with aerial / ground SAR units and participating agencies / authorities; and

14.2.4 Ability to understand Aeronautical, Topographical and Hydrographic charts of concerned SAR regions.

15. FUNCTIONS OF RCCs:

15.1 Functions of RCCs shall be to:

15.1.1 Receive, acknowledge and reply notification of distress;

15.1.2 Coordinate SAR response; and

15.1.3 Coordinate SAR Operations with the concerned SAR agencies such as:

15.1.3.1 Pakistan Army;

15.1.3.2 Pakistan Air Force(PAF);

15.1.3.3 Pakistan Navy;

15.1.3.4 Pakistan Maritime Security Agency;

15.1.3.5 Pakistan Coast Guards;

15.1.3.6 National Disaster Management Authority;

15.1.3.7 Provincial Disaster Management Authorities;

15.1.3.8 Pakistan Rangers;

15.1.3.9 Airport Security Force;

15.1.3.10 Pakistan Civil Defence;

15.1.3.11 SUPARCO;

- 15.1.3.12 Provincial Rescue Services;
- 15.1.3.13 Provincial Police;
- 15.1.3.14 NADRA;
- 15.1.3.15 Pakistan Meteorological Department;
- 15.1.3.16 Airline Operators / General Aviation Clubs;
- 15.1.3.17 Pakistan Post;
- 15.1.3.18 Pakistan Railways;
- 15.1.3.19 Pakistan National Shipping Corporation;
- 15.1.3.20 OMV Pvt Ltd; and
- 15.1.3.21 Any other related agencies.

15.2 Each Rescue Coordination Centre (RCC) shall have following up-to-date information in respect of its search and rescue region readily available at all time:

- 15.2.1 Search and Rescue units and Alerting posts;
- 15.2.2 Air Traffic Services units;
- 15.2.3 Means of communication that may be used in search and rescue operations;
- 15.2.4 Latest addresses and telephone numbers of all operators or their designated representatives engaged in operations in the region; and
- 15.2.5 Other public and private resources including medical and transportation facilities that are likely to be useful in search and rescue.

16. RESCUE SUB CENTRE (RSC):

- 16.1 Rescue Sub Centers (RSCs) may be established at suitable locations in order to:
 - 16.1.1 Exercise direct and effective coordination with SAR facilities in areas where RCCs are not able to do the expeditious coordination;
 - 16.1.2 Make control of SAR operations more effective; and
 - 16.1.3 Coordinate for tasking of local SAR facilities through local authorities.
- 16.2 Rescue sub Centers, so established, shall act as subordinate units to concerned RCC and complement the latter according to particular provisions defined in the relevant Plan of Operation.

17. ALERTING POSTS:

Ops Directorate may designate following units / airports as alerting posts of respective SRRs in its operational plan. Such designation shall be made through signing of MOUs between Ops Directorate and concerned units.

- 17.1 CAA / PAF / Private airports / aerodromes;
- 17.2 Pakistan Coast Guard units;
- 17.3 Pakistan Maritime Security Agency (PMSA will provide SAR aircraft / helicopters including the ones from PNS Mehran);

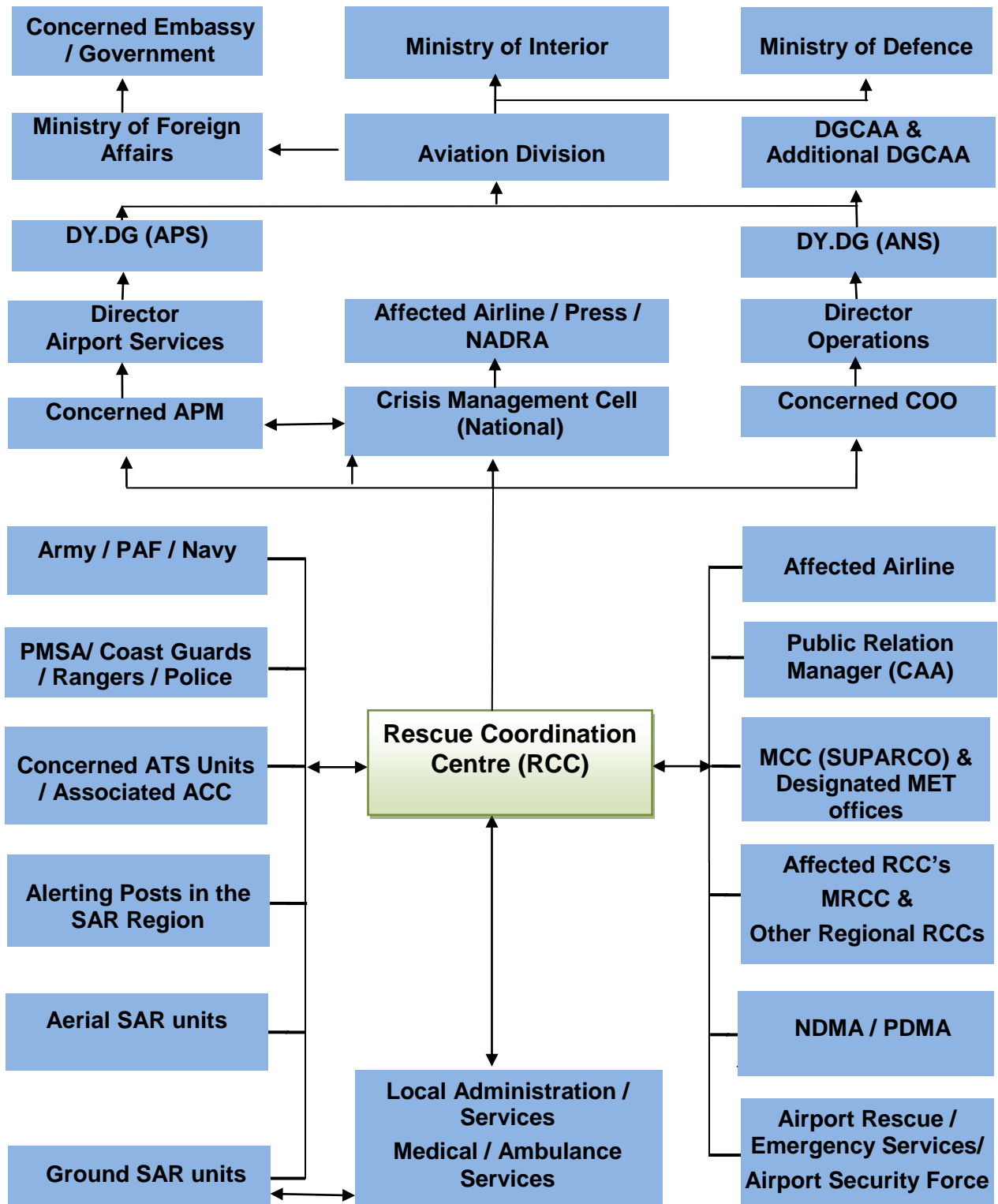
- 17.4 District and Tehsil Headquarters;
- 17.5 Police Stations;
- 17.6 Railway Stations;
- 17.7 Army and Rangers Units;
- 17.8 Pakistan Navy Units through Commander Pakistan Fleet PN;
- 17.9 Division Forest Offices;
- 17.10 Met Observation Stations;
- 17.11 Post, Telegraph and Telephone Stations; and
- 17.12 Engineers In-charges of River and Canal Headwork.

18. COMMUNICATION / COORDINATION REQUIREMENTS FOR RCC:

- 18.1 RCC shall be provided with sufficient communication capabilities as required, including exclusive Telephones and Means of Communication with:
 - 18.1.1 Associated ACC and ATS Units in the FIR;
 - 18.1.2 Rescue Units;
 - 18.1.3 Mission Control Centre (SUPARCO);
 - 18.1.4 Maritime Rescue Coordination Centre (MRCC);
 - 18.1.5 Parent agencies of SRUs;
 - 18.1.6 Adjacent RCCs / ACCs (including RCCs of neighboring states);
 - 18.1.7 Designated MET offices;
 - 18.1.8 Alerting Posts; and
 - 18.1.9 Higher management of CAA.

19. PROPOSED SEARCH & RESCUE COORDINATION SYSTEM DESCRIPTION:

19.1 The description of flow of information to various elements of CAA and other agencies involved or likely to be involved has been depicted below:



20. RECOMMENDED FACILITIES FOR RCC / SEARCH AND RESCUE UNITS:

20.1 FACILITIES FOR RCC:

- 20.1.1 Operations Directorate should ensure that RCCs are of sufficient size with adequate provision for operational positions designed in accordance with human factors principles (such as human machine interface) for a major search involving civil and military assets where applicable, and facilities such as:
 - 20.1.1.1 Workstations, telephones (with international access), plotting tables, wall notice / status boards, computer, communications equipment and systems, briefing / debriefing areas room for storage including incident records and recorders and RCC staff break / rest facilities;
 - 20.1.1.2 Computer resources which may provide support to RCCs with incident management, plotting, search planning, mapping, contact databases and web-based information, etc.;
 - 20.1.1.3 Charts, electronic or paper, which:
 - 20.1.1.3.1 Apply to SAR (aeronautical, topographic and hydrographic);
 - 20.1.1.3.2 Depict SRR, neighbouring SRRs, FIR(s), SAR resources and made available for all relevant aeronautical and maritime RCCs, ATS units, aircraft operators; and
 - 20.1.1.3.3 provide a means of plotting;
- 20.1.2 Ability to reliably receive and acknowledge distress alerts 24 hours a day;
- 20.1.3 A means of recording, playback and archiving of communications;
- 20.1.4 Shipping / vessel communications and maritime broadcast facilities such as Coast Radio Stations, RCC radio and satellite communications, marine radio networks;
- 20.1.5 Aircraft communications – via ATS units, aircraft operators, satellite communications or direct between RCC and aircraft;
- 20.1.6 Access to aircraft and ship tracking data, e.g. ADS-B, Automatic Identification System and Long Range Identification and Tracking of Ships (LRIT) allowing rapid identification of potential aircraft and vessels that may divert to assist;
- 20.1.7 A means of obtaining meteorological information – forecast, present and historical data;
- 20.1.8 RCC documentation and reference material such as plans of operation, procedures, manuals, guidance material, ICAO and IMO references, SAR agreements; and
- 20.1.9 COSPAS-SARSAT equipment and reference material.

20.2 FACILITIES FOR SEARCH AND RESCUE UNITS:

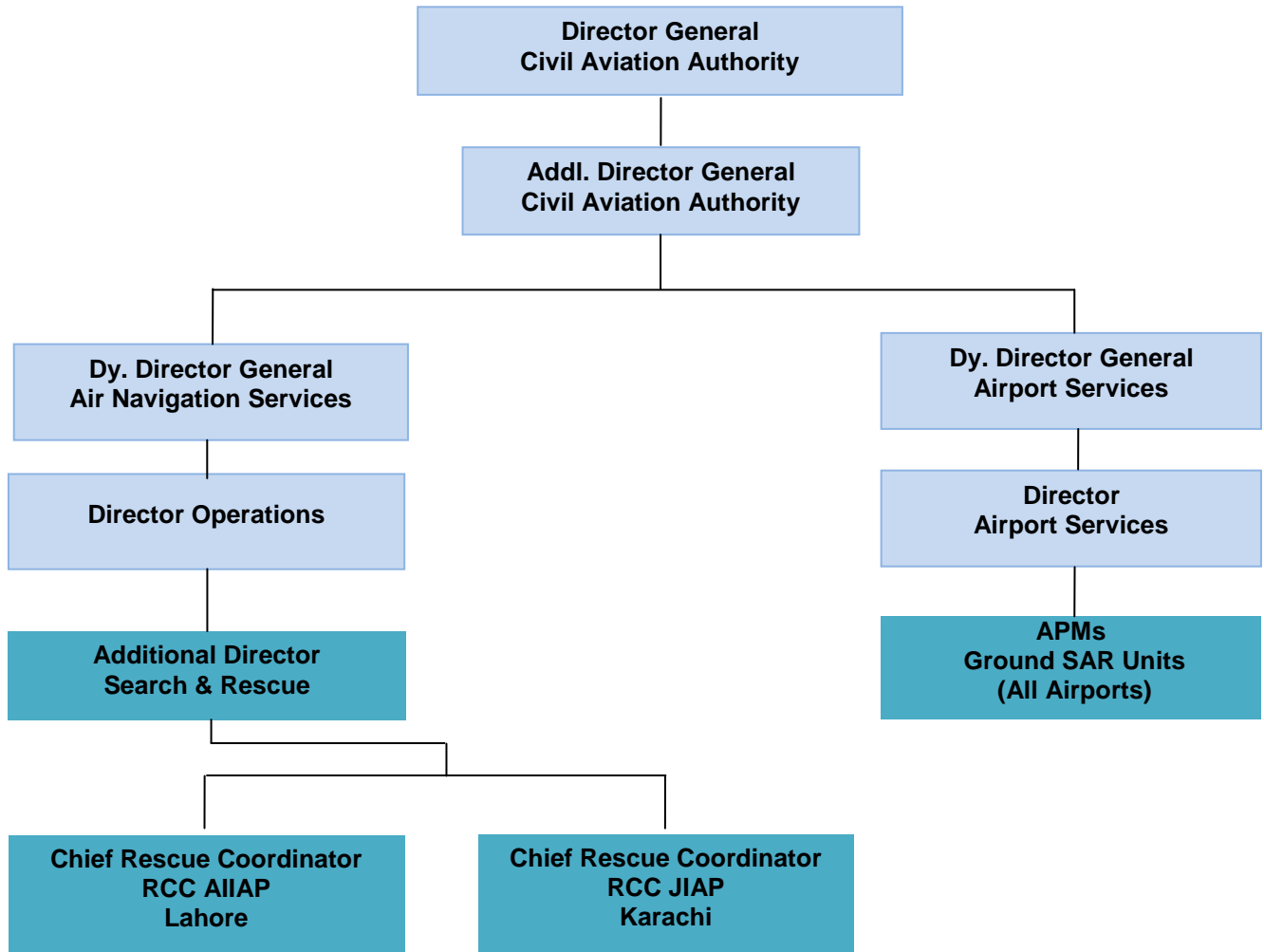
- 20.2.1 All Search and Rescue units shall be adequately equipped with necessary facilities / equipments required for prompt search & rescue actions; and
- 20.2.2 List of all such facilities and equipment shall be clearly mentioned in the SAR Plan of Operation and this list shall be updated regularly.

21. HUMAN RESOURCES / TRAINING OF SAR PERSONNEL:

- 21.1 Operations Directorate through SAR branch shall ensure availability of trained manpower in both RCCs on round the clock basis.
- 21.2 Operation Directorate shall deploy qualified officials as SAR coordinators and ensure to:
 - 21.2.1 Provide regular training to all search and rescue personnel;
 - 21.2.2 Conduct search and rescue exercises as per defined frequency reflected in SAR Operational Plan; and
 - 21.2.3 Develop a comprehensive training program that includes SAR training for:
 - 21.2.3.1 RCC SAR Coordinators (SCs) based on a competency-based assessment approach to ensure technical and English language proficiency, periodic instructions that provide continuous training to ensure competency is maintained, and a system for maintaining training records;
 - 21.2.3.2 SRU staff, including military personnel;
 - 21.2.3.3 RCC staff to be proficient in the English language; and
 - 21.2.3.4 Regular liaison visits between relevant RCCs, ATC units and airline operating centres in order to understand the capabilities and the extent of facilities of these Organizations.
- 21.3 All other designated positions to function during a crises related to SAR activity shall also be adequately trained by their respective organization / unit

22. SEARCH AND RESCUE ORGANIZATION:

22.1 Recommended organization chart for PCAA SAR system is proposed as:



22.2 Service providers (Operation & APS Directorates) may amend the above recommended structure as required.

23. PROCEDURES FOR SAR NOTIFICATION:

23.1 When notification is based on the flight plan, the most time consuming and difficult task is to determine whether or not a distress situation exists. In some cases, aircraft communication capability may be limited to a single radio. Communication search may be difficult or delayed due to fixed hours of operation at destination or alternate aerodromes or other aerodromes en-route, or lack of communication facilities in the area in which the aircraft was operating.

23.2 The most difficult problems arise for RCC's (including ATS units) with uncontrolled Visual Flight Rules (VFR) Flights for which flight plan has been filed, and / or not equipped with en-route HF communication channels, and with aircraft engaged in amphibious operations in areas lacking communications. In such situations, information with regard to the pilot's intentions is limited and communications search may be prolonged. Delays arising from communications search may extend into the hours of darkness, further hampering search and rescue operations which rely upon visual sighting of the emergency aircraft and its occupants based on their distress signals.

23.3 NOTIFICATION BY ATS UNITS:

- 23.3.1 ACC and / or ATS units shall notify the associated RCC, whenever an aircraft is, or is considered to be in a state of emergency by the most expeditious means. Usually this notification is determined in relation to an aircraft flight plan, transmission made by the distressed aircraft in emergency, reports by other aircraft (by visual observations and / or transmissions from emergency locator transmitters etc), loss of RADAR contact, loss of communication or from other sources.
- 23.3.2 ACC and / or ATS units shall immediately notify RCC, whenever a pilot transmits information indicating that the operating efficiency of the aircraft has become impaired.

23.4 NOTIFICATION BY ATS UNITS IN RELATION TO EMERGENCY PHASES:

- 23.4.1 When an ATS unit decides that an aircraft is in the uncertainty or the alert phase, it shall, when practicable, advise the operator prior to notifying the RCC.
- 23.4.2 Without prejudice to any other circumstances that may render such notification advisable, Air Traffic Services Units shall, except as prescribed in 5.6, Notify RCC immediately when an aircraft is considered to be in a state of emergency in accordance with the following:
- 23.4.2.1 Uncertainty phase (INCERFA) when:
- 23.4.2.1.1 No communication has been received from an aircraft within a period of thirty minutes after the time a communication should have been received, or from the time an unsuccessful attempt to establish communication with such aircraft was first made, whichever is the earlier; or when
- 23.4.2.1.2 An aircraft fails to arrive within thirty minutes of the estimated time of arrival last notified to or estimated by air traffic services units, whichever is the later, except when no doubt exists as to the safety of the aircraft and its occupants.
- 23.4.2.2 Alert phase (ALERFA) when:
- 23.4.2.2.1 Following the uncertainty phase, subsequent attempts to establish communication with the aircraft or inquiries to other relevant sources have failed to reveal any news of the aircraft; or when
- 23.4.2.2.2 An aircraft has been cleared to land and fails to land within five minutes of the estimated time of landing and communication has not been re- established with the aircraft; or when
- 23.4.2.2.3 Information has been received which indicates that the operating efficiency of the aircraft has been impaired, but not to the extent that a forced landing is likely, except when evidence exists that would allay apprehension as to the safety of the aircraft and its occupants; or when
- 23.4.2.2.4 An aircraft is known or believed to be the subject of unlawful interference.
- 23.4.2.3 Distress phase (DETRESFA) when:
- 23.4.2.3.1 Following the alert phase, further unsuccessful attempts to establish communication with the aircraft and more widespread unsuccessful inquiries point to the probability that the aircraft is in distress; or when
- 23.4.2.3.2 The fuel on board is considered to be exhausted, or to be insufficient to enable the aircraft to reach safety, or when

23.4.2.3.3 Information is received which indicates that the operating efficiency of the aircraft has been impaired to the extent that a forced landing is likely; or when

23.4.2.3.4 Information is received or it is reasonably certain that the aircraft is about to make or has made a forced landing, except when there is reasonable certainty that the aircraft and its occupants are not threatened by grave and imminent danger and do not require immediate assistance.

23.5 NOTIFICATION BY ATS UNITS TO OPERATOR:

23.5.1 When an Area Control Centre decides that an aircraft is in the uncertainty or the alert phase, it shall, when practicable, advise the operator prior to notifying the RCC.

Note:-If an aircraft is in the distress phase, the RCC has to be notified immediately.

23.5.2 All information notified to the RCC by an Area Control shall, whenever practicable, also be communicated, without delay, to the Operator.

23.6 NOTIFICATION BY PILOTS IN DISTRESS:

Pilot of the aircraft may inform to the ATS unit under whose jurisdiction it is operating or to any other ATS unit nearby / enroute. These units shall pass the information to associated ACC / RCC by most expeditious means of communication available.

23.7 NOTIFICATION BY EMERGENCY TRANSMITTER:

23.7.1 SAR Plan of operation shall account for the COSPAS-SARSAT services provided by SUPARCO in the best interest of timely SAR actions.

23.7.2 Modern technology like Satellite aided Space System such as Search and Rescue Satellite Aided Tracking (COSPAS-SARSAT), supplemented by well-coordinated arrangements and timely deployment of needed SAR elements will help in saving the lives in distress. The development of this system has the capability of reducing the search time as a result of pinpointing accurate location of a distress call. This modern technology was inducted by government of Pakistan through SUPARCO to enhance search capabilities. COSPAS-SARSAT ground receiving station of SUPARCO provides information of entire Pakistan territory for any signal from Distress beacon on Frequency 406 Mhz.

23.7.3 Emergency transmitters emit a distinctive tone recognizable to overflying aircraft monitoring the emergency frequency. This signal alerts flight crews to the possibility of distress and they notify the **Air Traffic Services Unit**.

23.7.4 Emergency transmission on 406 MHz by aircraft may be identified by the COSPAS-SARSAT System. The system terminal shall be monitored by the RCCs.

23.7.5 The ATS Unit shall notify ACC and RCC by most expeditious means of communication available.

23.8 NOTIFICATION BY AN INDIVIDUAL:

23.8.1 The individuals may also report to an Alerting Post, any Agency or Police etc. that an aircraft has met an accident or is in a state of emergency.

23.8.2 Upon receipt of such information from an individual, the ATS unit or the official receiving the information shall notify the concerned RCC by the quickest means of communication available, and if appropriate to the situation, initiate local rescue actions.

23.9 FORMAT AND CONTENTS OF NOTIFICATION TO RCC:

23.9.1 It is highly necessary that all relevant and essential information is included in the notification to RCC. Following format of notification, as far as practicable, shall be used by all ATS units and other Authorities / Alerting Posts concerned:

- 23.9.1.1 INCERFA, ALERFA or DETRESFA, as appropriate to the phase of the emergency;
- 23.9.1.2 Agency or person calling;
- 23.9.1.3 Nature of emergency;
- 23.9.1.4 Significant information from flight plan (Air Traffic Services only) stating:
 - 23.9.1.4.1 Persons onboard;
 - 23.9.1.4.2 Time last communication received, by whom and frequency used (normally aviation unit only);
 - 23.9.1.4.3 Last position report and how determined (Air Traffic Services only);
 - 23.9.1.4.4 Colour and distinctive marks of the aircraft together with its registration;
 - 23.9.1.4.5 Dangerous goods carried as cargo;
 - 23.9.1.4.6 Any action taken by the person or the office notifying the emergency; and
 - 23.9.1.4.7 Any other pertinent information which may include number of persons observed alive, number of injured, extent of damage to aircraft, type of ground assistance required, position if on the ground or water.
- 23.9.2 The above notification by reporting agency shall be made to the Rescue Coordination Centre as expeditiously as possible.

23.10 **ACTIONS OF ATS UNITS:**

- 23.10.1 In the event of a state of emergency arising to an aircraft which is under the control of an ATS unit shall be notified to RCC concerned.
- 23.10.2 Whenever the urgency of the situation so requires, the Area Control or Approach Control or the Aerodrome Control unit responsible; shall first alert and take other necessary steps to set in motion all local and required emergency services / organizations before notifying RCC. The assistance of other officials available in the unit may be sought to facilitate expeditious action without jeopardizing safety of other aircraft.
- 23.10.3 Concerned ACC shall take initial SAR actions which may require necessary coordination and declaration of appropriate phase of emergency regarding emergency aircraft and shall transfer actions to concerned RCC in accordance with rule 66 (2) (e) of CARs 1994 and ANO-002-DRAN.

23.11 **INITIATION OF SEARCH AND RESCUE ACTIONS BY RCC:**

- 23.11.1 RCC, upon the receipt of notification based on the flight plan, shall determine whether or not a distress situation exists.
- 23.11.2 When a pilot transmits information indicating that the operating efficiency of the aircraft has become impaired, reaction by RCCs shall be prompt.
- 23.11.3 Upon knowing that a distress situation exists, the location of the aircraft is the most important piece of information needed by search and rescue organization.

23.12 **EVALUATION:**

- 23.12.1 The first intimation that Search and Rescue assistance is required may result from no more than a telephone call. All such reports and subsequent reports, must be carefully evaluated to determine their validity, urgency for action and the extent of operation required.

23.12.2 While evaluation may be difficult and time consuming because of many variable factors involved and the need to check the information with other reliable local sources, decision must be made and action must be taken as quickly as possible. If confirmation of uncertain information cannot be obtained without undue delay, the RCC shall act on the doubtful message rather than wait for confirmation.

23.12.3 The evaluation of reports on overdue or missing aircraft shall take account of the following:-

23.12.3.1 **COMMUNICATION DELAYS:**

In many areas common and frequent communication delays may preclude prompt reporting of aircraft position and / or arrival. The RCC shall take into account its experience of such delays in communication when estimating the validity of the incident to prevent the SAR Service from being alerted unnecessarily.

23.12.3.2 **WEATHER CONDITION:**

Adverse weather may be a contributing factor in communication delays or deviation from flight plans.

23.13 **STRATEGY:**

23.13.1 Following strategy should be adopted invariably:

23.13.1.1 Consider every element of information as vital for evaluation.

23.13.1.2 Take appropriate actions in an organized manner according to the situation.

23.13.1.3 If the information requires Search, determine what resources will be needed to carry out the mission, and:

23.13.1.4 Establish the probable boundaries of the search area. Factors to be taken into consideration include:

23.13.1.4.1 Statistical data;

23.13.1.4.2 History of the area;

23.13.1.4.3 Vital clues;

23.13.1.4.4 Search profile;

23.13.1.4.5 Natural routes of travel – Air and land;

23.13.1.4.6 Analysis of time / distance to be travelled;

23.13.1.4.7 Search area - the natural barriers to travel;

23.13.1.4.8 The most suitable and nearest search units in the probable area; and

23.13.1.4.9 Experience of the unit being deployed.

23.13.2 If the information requires immediate Rescue determine what resources will be needed to carry out the mission, and:

23.13.2.1 Establish the probable boundaries of the Rescue area. Factors to be taken into consideration include:

23.13.2.1.1 Location of the area;

23.13.2.1.2 The natural barriers to reach the site;

23.13.2.1.3 Natural routes of travel – Air and land;

23.13.2.1.4 Analysis of time / distance to be travelled.

23.13.2.1.5 The nearest and most suitable rescue units including resources at its disposal; and

23.13.2.1.6 Experience of the rescue unit to be deployed.

23.13.3 Following factors shall be kept in mind by the RCC while initiating SAR operations:

23.13.3.1 Relative urgency;

23.13.3.2 One (alone) or more;

23.13.3.3 Circumstances at the time of emergency to aircraft;

23.13.3.4 Conditions like weather and clothing for the units to be deployed;

23.13.3.5 Hazards associated with terrain of the area; and

23.13.3.6 Equipment profile of the SAR units nearest to the area and required equipment.

23.13.3.7 In case the quick response is required (generally in distress phase), the RCC shall:

23.13.3.7.1 Dispatch the available rescue teams immediately, and supplement them by additional teams as required;

23.13.3.7.2 Determine the resources at its disposal and resources required for its operation at the outset;

23.13.3.7.3 Use the immediate available aerial SAR aircraft if required;

23.13.3.7.4 Determine the initial action required at the scene; and

23.13.3.7.5 Ensure details of briefing for the incoming shift.

23.14 **INCIDENT CLOSURE OR DEFERMENT:**

23.14.1 If the communication search or flight reconstruction indicates that the aircraft has landed safely, the RCC will close the incident and immediately inform the operating agency and all the facilities and authorities it has alerted.

23.14.2 If, however, apprehension to the safety of the aircraft and its occupants continues to exist, the uncertainty phase shall be progressed to the alert phase.

23.14.3 When the efforts to locate the aircraft has been successful and the survivors, if any, have been rescued or it has become clear that further efforts would be of no avail, the RCC will terminate the operations, close the incident and immediately inform the operating agency as well as any authority, centre, service or facility it has alerted or activated.

23.14.4 When, however, a search has been prolonged and unsuccessful, it sometime happens that after the original hopes of rescuing survivors have faded and the RCC has terminated active participation in the field, operation by other concerns continue, e.g. by the aircraft operating agency. These activities should, if it is not requested, be coordinated by the RCC. On other occasions it may happen that active prosecution of a search and rescue operations is temporarily discontinued pending further developments. In both cases, a suspended case file should be maintained and regularly screened, so that if additional leads develop they may be reactivated without delay. These cases cannot therefore be considered as closed, at least not until any other search and rescue operation, have either been brought to a successful conclusion or have been abandoned because expenditure of further efforts would serve no useful purpose.

23.15 **MAINTENANCE OF RECORDS:**

23.15.1 The Rescue Coordination Centre shall maintain a "Log" for each particular search and will keep a record of each action as soon as a formal Search and Rescue Operation for a particular aircraft has been initiated.

- 23.15.2 The initial notification of an incident shall be entered on a standard initial report form. The completion of this form shall be recorded in the log opened for the search of a particular aircraft along with the procedures and survival equipment used at the time of emergency and suggestions for improvement of these procedures and equipment which are likely to be of interest to other States. It should be submitted to ICAO for information and dissemination, as appropriate.

24. OPERATIONAL MEMORANDUM OF UNDERSTANDING:

- 24.1 Operational Memorandum Of Understanding shall be signed with :
- 24.1.1 All RCCs of adjacent FIRs.
 - 24.1.2 All National agencies who will participate in SAR activities.
 - 24.1.3 Federal and Provincial Governments including AJK and FATA.
 - 24.1.4 All National Carriers.
 - 24.1.5 Aircraft Operator committee (AOC).

25. SEARCH AND RESCUE (SAR) PLAN OF OPERATION:

- 25.1 Rescue coordination Centers (RCCs), Government Departments, Agencies, Aerial and Ground Search and Rescue (SAR) Units and the personnel assigned with the responsibilities of SAR Mission, shall assume full responsibility for the identification, evaluation and utilization of SAR resources in respective jurisdiction. They shall:
- 25.1.1 Ensure training and proficiency requirements for SAR operations are being met and refresher training is conducted on regular basis;
 - 25.1.2 Ensure maintenance of the SAR resources, and strive to enhance the capability with respect to regional requirements; and
 - 25.1.3 Develop and maintain alerting and communication procedures that will ensure timely notification and reliable communications with all stake holders that may be involved during a SAR event.
- 25.2 Operations Directorate shall prepare detailed SAR Plan of operation for the conduct of search and rescue operations for entire territory of Pakistan in consultation with all stakeholders.
- 25.3 SAR Plan of operation shall define the role and responsibilities of all stake holders in detail.
- 25.4 SAR Plan of operation shall also define in detail the available assets with each SAR unit.
- 25.5 SAR Plan of operation shall be 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.
- 25.6 SAR Plan of operation shall specify arrangements for the servicing and refueling, to the extent possible, of aircraft, vessels and vehicles employed in search and rescue operations.
- 25.7 SAR Plan of operation shall contain details regarding actions to be taken by the persons engaged in search and rescue, including:
- 25.7.1 The manner in which search and rescue operations are to be conducted in the search and rescue region;
 - 25.7.2 The use of available communication systems and facilities;
 - 25.7.3 The actions to be taken jointly with other rescue coordination centers;
 - 25.7.4 The methods of alerting en-route aircraft;
 - 25.7.5 The duties and prerogatives of persons assigned to search and rescue;
 - 25.7.6 The possible redeployment of equipment that may be necessitated by meteorological or other conditions;
 - 25.7.7 The methods for obtaining essential information relevant to search and rescue operations, such as weather reports / forecasts, appropriate NOTAM, etc.;

- 25.7.8 The methods for obtaining, from other rescue coordination centres, such assistance, including aircraft, vessels, persons or equipment, as may be needed;
 - 25.7.9 The methods for assisting distressed aircraft being compelled to ditch;
 - 25.7.10 The methods for assisting search and rescue or other aircraft to proceed to aircraft in distress; and
 - 25.7.11 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.
- 25.8 SAR Plan of operation shall also specify:
- 25.8.1 Area / region wise role and capabilities of SAR agencies and their compliance level;
 - 25.8.2 Area / region wise facilities along with list of assets;
 - 25.8.3 Operational capabilities for day and night Operation separately;
 - 25.8.4 Reaction time range of SAR services in each region;
 - 25.8.5 Proper and effective coordination with all Government SAR agencies including Local Governments and adjacent SAR Units;
 - 25.8.6 Procedures for cooperation and deployment of foreign SRUs;
 - 25.8.7 Provision of translators / liaison Officers / Embassy Officers for the daily tasking of the SRUs at the RCC;
 - 25.8.8 Provision of information for logistic and administrative support (hotels, fuel, security passes, food, medicine, etc.);
 - 25.8.9 Instructions on communication (ops normal reports, sightings, etc.) for search planning, command and control to foreign SRUs;
 - 25.8.10 Daily end of day report by SRUs to the RCC (via mobile, email, fax, etc.); and
 - 25.8.11 Point of contact for each SAR agency with telephone, fax, Email & related addresses.
- 25.9 SAR Plan of operation shall establish SAR Alerting procedures which:
- 25.9.1 Shall be tested and fully integrated with RCC procedures so that RCCs may be rapidly notified of any SAR event 24 hours a day;
 - 25.9.2 Shall include procedures for joint aeronautical and maritime distress alert notification, including reliable delivery and acknowledgement of Cospas-Sarsat distress alerts, support and response to both aviation and maritime SAR incidents; and
 - 25.9.3 where applicable, include protocols for civil and military support and sharing of information.
- 25.10 The Director Operation shall be responsible for review and updating of SAR Plan of operation including SAR Plans prepared by respective RCCs. Initiation of review process shall be the responsibility of Additional Director Search and Rescue. A review shall be carried out as and when required in order to ensure that the information contained in the plan is current.

26. SAR LIBRARY:

Operations Directorate may:

- 26.1 Establish a web-based SAR Library, or cooperate by contributing to an Internet based Asia / Pacific resource (such as www.uscg.mil/nsarc); and
- 26.2 Ensure that each RCC and SAR Authority has access to a current copy (either electronic or hard copy) of the following reference documents as a minimum:
 - 26.2.1 ICAO Annex 12;
 - 26.2.2 IAMSAR Manual Volumes I, II and III;

- 26.2.3 International Convention on Maritime SAR (SAR Convention);
- 26.2.4 Asia / Pacific SAR Plan / electronic Air Navigation Plan;
- 26.2.5 National SAR Plan, SAR Plan of operation;
- 26.2.6 Relevant regional SAR Plans / documents; and
- 26.2.7 Any other related documents.

27. SAR SAFETY & QUALITY ASSURANCE:

Operations Directorate shall implement SAR System improvement and assessment measures, including Safety Management and Quality Assurance systems, that:

- 27.1 Provide performance and safety indicators, including post-incident / accident lessons learned and management reviews (RCC and SAR System Continuous Improvement process), and feedback from RCC officials, SAR system users or SAR stakeholders;
- 27.2 Identifies risk / corrective and preventive actions that prevent or minimize risk and the possibility of substandard SAR performance;
- 27.3 Establishes an internal quality assurance programme, which includes regular internal audits of the RCC, SAR operations, SAR facilities and procedures that are conducted by trained auditors; and
- 27.4 Ensures the person responsible for internal quality assurance within the entity responsible for SAR services has direct access to report to the Head of the entity responsible for SAR services on matters of quality assurance.

28. SAR MANAGEMENT REVIEW:

Operations Directorate shall conduct an annual analysis of current SAR system to identify specific gaps in capability against the minimum National and International requirements to:

- 28.1 Enable SAR data to be updated to accurately reflect the SAR capability;
- 28.2 Be informed regarding the availability and capability of SAR services ;
- 28.3 Identify SAR research and development programmes;
- 28.4 Establish a common set of basic SAR system statistics, which include:
 - 28.4.1 Number of SAR incidents per year;
 - 28.4.2 Number of lives at risk versus number of lives saved;
 - 28.4.3 Time from first alert to tasking the SRU;
 - 28.4.4 Time from first alert to arrival on scene of first SRU; and
 - 28.4.5 Time from first alert to rescue.
- 28.5 Plan for any necessary improvements to gradually build and improve capability over time, which would be detailed in the SAR Plan of operation; and
- 28.6 Regularly review and update SAR agreements as appropriate.

29. SAR PROMOTION:

Operations Directorate may also conduct SAR promotional programs (e.g. Seminars, Workshops and public safety campaigns) to:

- 29.1 Ensure the support from government decision-makers for SAR facilities and improvements;
- 29.2 Assist media in understanding SAR operations in order to minimise the need for explanations during SAR responses;
- 29.3 Recognize improvement in SAR systems;
- 29.4 Enhance cooperation between SAR services and –

- 29.4.1 Civil, military and police agencies;
- 29.4.2 ANSPs;
- 29.4.3 Aerodrome and port operators;
- 29.4.4 Aircraft operators;
- 29.4.5 Meteorological department;
- 29.4.6 Accident investigating agencies such as Safety Investigation Board;
- 29.4.7 Government and non-government agencies affected by SAR operations, in particular large scale national and international responses involving whole of government agencies; and
- 29.4.8 Other States. (Social media may be an effective means of SAR promotion that reduces the workload of SAR staff during major SAR responses.)

30. **AMENDMENT PROCEDURE:**

- 30.1 The Director Airspace and Aerodrome Regulations shall be responsible for review and updating of this National SAR plan. Initiation of review process shall be the responsibility of Additional Director AANS-DAAR. A review shall be carried out as and when required in order to ensure the currency of the plan.
- 30.2 Amendments to this document will be issued by the Directorate of Airspace and Aerodrome Regulation (DAAR). All stakeholders having controlled copy of this document are required to update their copies by incorporating the amendments issued from time to time.

31. **ABBREVIATIONS AND ACRONYMS:**

ACC	AREA CONTROL CENTRE
ADS-B	AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST
ANS	AIR NAVIGATION SERVICE
ANSP	AIR NAVIGATION SERVICE PROVIDER
ATC	AIR TRAFFIC CONTROL
ATS	AIR TRAFFIC SERVICES
CARs	CIVIL AVIATION RULES
COSPAS	SPACE SYSTEM FOR SEARCH OF VESSELS IN DISTRESS
DRONE	DYNAMIC REMOTELY OPERATED NAVIGATION EQUIPMENT
FIR	FLIGHT INFORMATION REGION
HQ	HEADQUARTERS
IAMSAR	INTERNATIONAL AERONAUTICAL AND MARITIME SEARCH & RESCUE
ICAO	INTERNATIONAL CIVIL AVIATION ORGANIZATION
IMO	INTERNATIONAL MARITIME ORGANIZATION
MCC	MISSION CONTROL CENTRE
NADRA	NATIONAL DATABASE & REGISTRATION AUTHORITY
NDMA	NATIONAL DISASTER MANAGEMENT AUTHORITY
OPI	OFFICE OF PRIME INTEREST
PDMA	PROVINCIAL DISASTER MANAGEMENT AUTHORITY
PMSA	PAKISTAN MARITIME SECURITY AGENCY
RCC	RESCUE CO-ORDINATION CENTRE
RSC	RESCUE SUB-CENTRE
SAR	SEARCH AND RESCUE
SARSAT	SEARCH AND RESCUE SATELLITE-AIDED TRACKING
SRR	SEARCH AND RESCUE REGION
SRU	SEARCH AND RESCUE UNIT
SUPARCO	SPACE & UPPER ATMOSPHERE RESEARCH COMMISSION
UAV	UNMANNED AERIAL VEHICLE (AIRCRAFT PILOTED BY REMOTE CONTROL OR ONBOARD COMPUTERS)

32. REFERENCES:

- 32.1 Civil Aviation Rules 1994
- 32.2 ANO-005- DRAN
- 32.3 ICAO Annex-12
- 32.4 ANO-002-DRAN
- 32.5 Asia Pacific Search and Rescue Plan
- 32.6 IAMSAR Manual Vol-I & Vol-II

33. IMPLEMENTATION:

- 33.1 This National Search and Rescue Plan (PLN-001-ARAN-5.0) shall be implemented with effect from 12th March, 2018.
- 33.2 Search and Rescue Plan (PLN-001-DRAN-4.0) of 2011 stand superseded.



(USAID UR REHMAN USMANI)
Air Vice Marshal
A/Director General
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Dated: - 6th March, 2018



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Dated: - 2nd March, 2018
File No. HQCAA/1111/237/ARAN/I