

Operational Aerospace Doctrine

SEARCH, RESCUE, AND RECOVERY OPERATIONS

The USAF has global SAR responsibility for USAF aerospace forces. Within the USAF, Air Rescue Service (MATS) is the primary search, rescue, recovery force. In addition, the Executive Branch of the U.S. Government has designated the USAF as Regional SAR Coordinator for the Inland Region. The USAF has assigned Air Rescue Service (MATS) as its Executive Agent for SAR coordination within the Inland Region. This manual presents operational doctrine and policies governing aerospace search, rescue, and recovery operations for personnel and materiel during both peace and war. It also provides guidance for personnel and activities supporting, being supported by, or coordinating with Air Rescue Service (MATS).

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Chapter 1

INTRODUCTION

1-1. Essential Element of Airpower:

a. Search, rescue, and recovery activities constitute an essential element in the total aerospace posture of the United States. The basic contributions of SAR/recovery forces are the preservation of human life, including highly trained combat aircrews, and the conservation of costly, high priority materiel. The global operations of United States aerospace forces under widely diverse weather, terrain, and operational conditions inevitably lead to exigencies which result in the potential or actual loss of life and materiel. Loss potential to the USAF is substantially reduced by providing SAR/recovery forces organized, trained, and equipped to assist aerospace crews in distress and to search for, locate, and recover downed personnel and/or equipment.

b. Search and Rescue (SAR) is the use of aircraft, surface craft, submarines, and other special equipment to conduct overt search for and/or rescue of personnel. Air recovery refers to the use of aircraft to locate and recover personnel and/or aerospace hardware in the air, on land, or in the water, and return the retrieved personnel/materiel to a designated area, excluding salvage operations. Combining the two terms SAR and air recovery thus provides a combination which covers the spectrum from the use of aerospace forces in rendering preplanned assistance, to the location of persons and property in jeopardy, the rendering of on-scene physical assistance, and removal to safety.

c. Prior to WW II, there were only spasmodic efforts to use the aircraft as a humanitarian tool, primarily in the evacuation role with improvised ambulance planes. The

success of aerial rescue vehicles during WW II was somewhat limited by a lack of aerial rescue equipment and experience, but the number of airmen saved by aerial search and rescue was of sufficient significance to lead the way to the establishment of a small professional aerial rescue force. Rescue forces during the war were assigned to individual commands without centralized administrative or technical control, which resulted in a piecemeal evolution of techniques depending on the theater of operations. After WW II the USAF assigned the responsibility for providing an aircraft search and rescue service to the Air Transport Command. Subsequent to assignment of this responsibility, the Air Rescue Service was established and assigned to Air Transport Command, which was the forerunner of the Military Air Transport Service.

d. The ultimate goal of the Air Rescue Service was to provide centralized control of all aerial rescue capability to insure maximum effective SAR coverage wherever US Air Forces might operate under peacetime or wartime conditions. The rapid demobilization after WW II, coupled with the austere budgets typical of the period, severely hampered plans for the training and deployment of professional SAR forces and the development of aircraft specifically designed for rescue work. The Korean War and the changing political scene again gave impetus to the requirement for professional aerial rescue forces in being, ready for any contingency, and capable of performing the SAR mission anywhere the requirement existed.

1-2. SAR/Recovery Objectives. The United States stands in the vanguard of all nations

which place a high value on human life. While SAR/recovery is essentially a humanitarian function, its practical military advantages transcend this aspect. The resources (personnel and aerospace hardware) available to a nation are always limited; therefore, it is essential that positive efforts be exerted toward the recovery of these resources when potential or actual losses are evident. Over and above the actual monetary value of the recovered resources are the intangible benefits which accrue as a

result of recovery. These include an increase in combat effectiveness through preservation of combat resources; improved morale of aerospace crew members; the scientific value of technical data represented in recovered aerospace hardware; and regional, national, and international good will generated as a result of SAR/recovery operations. SAR/recovery forces, properly oriented, can provide a significant contribution to the furtherance of the national interests of the United States.

Chapter 2

CHARACTERISTICS OF SAR/RECOVERY FORCES

2-1. Composition of USAF SAR Forces:

a. United States aerospace operations are conducted over the entire surface of the earth, and the potential exists for a SAR incident, day or night, under any climatological or topographical conditions. Economically, it is impractical to establish a static SAR force structure of sufficient strength to have forces close at hand regardless of area. For this reason, it is essential that forces having an inherent SAR capability be identified and utilized where and when needed in connection with a SAR incident.

b. Agencies organized and maintained for the primary purpose of conducting SAR operations are called primary rescue agencies. Those that are organized and maintained for a primary purpose other than SAR, but which are capable of assisting SAR operations with their facilities through prior indoctrination and coordination, are called secondary rescue agencies.

c. Primary USAF SAR/recovery forces are deployed so as to provide maximum SAR coverage along those aerial lines of communication most used by the USAF outside the United States. Additionally, small aerial units are provided for local crash and rescue coverage at Air Force bases requiring immediate coverage because of the type mission assigned and/or a continuous high volume of aerial traffic. In the event of an incident exceeding the capability of the primary rescue agency, additional assistance is requested from other primary rescue agencies and secondary rescue agencies, depending on the scope of the requirement.

d. Primary SAR/recovery aircraft must have performance characteristics compatible within the systems to be supported. In order

to accomplish the search mission, the aircraft must reach the objective area with minimum delay; have sufficient endurance capability to remain on scene for an effective search, and the capability of locating the object of the search by electronic and visual means. The rescue mission requires the capability to deploy material or human assistance directly or by paradrop, and the recovery mission must have the ability to retrieve the objective from land or sea, and in specific preplanned recovery missions, from mid-air.

e. The principal value of aircraft provided by secondary rescue agencies is in the conduct of the search phase of the mission. Aircraft with relatively slow speeds and long endurance capability are well suited to the search mission. USAF organizations possessing a SAR capability are responsible for being familiar with SAR procedures contained in the National Search and Rescue Manual (NO. 64-2).

2-2. USAF Aircrew Responsibilities. The successful rescue/recovery of personnel from an emergency situation is greatly influenced by factors over which the SAR force has no control. Each individual responds to an emergency in a different manner. The variance in reaction is governed basically by his training, experience, and the degree to which he adheres to the disciplines demanded of military aerospace operations. Basic to survival are the thoughtful preparation and appreciation of the condition and quantity of personal equipment; the suitability and quantity of survival equipment; and above all, the intelligent use and conservation of the resources available. Other major factors include the physical condition of the

survivor(s), mental attitude(s), and the will to survive. If the survivor is materially, physically, and psychologically equipped to meet the emergency and the survival situation, the recovery task is usually simplified, and the chances of successful recovery are increased in direct proportion to the preparatory actions taken.

2-3. Pattern for Deployment:

a. USAF SAR/recovery forces are in being primarily to satisfy global USAF requirements. However, because of their unique capabilities, these forces frequently provide SAR/recovery for other DOD forces, other agencies of the Government, allied or friendly governments, and distressed civilians, regardless of nationality. The growing number and varied nature of the search, rescue, and aerospace recovery tasks dictate that primary SAR forces be deployed in a pattern which provides maximum SAR coverage in the areas and along the routes most used by the USAF. Because of the humanitarian nature of the mission and the collateral benefits accruing to the host country, SAR forces represent a highly acceptable military capability as a tenant on foreign soil. Of necessity, the basic deployment pattern must be linked to a base complex providing efficient logistic support.

b. Local Base Rescue (LBR) units are established at Air Force bases where the accident or incident potential is high by virtue of the type aircraft assigned and/or the nature of the operations conducted. Normally, LBR units are static; however, they may be deployed as necessary in support of high priority requirements.

c. Although the primary SAR/recovery forces may be deployed to provide optimum coverage of the primary aerial lines of communication, the global nature of aerospace operations, coupled with the economic requirement to limit primary SAR/recovery forces, requires a high degree of operational flexibility.

2-4. Mobility and Flexibility. Primary SAR/

recovery forces must be prepared for the rapid deployment of all SAR capability, or elements thereof, tailored as necessary to the scope of the operation. The organization, the authorized equipment, and the posture of the SAR unit must be such that the capability exists to deploy rapidly and operate anywhere suitable minimal facilities exist. Minimal facilities are POL, essential critical spares, communications, housing, and messing accommodations. Although the entire unit should be prepared to move by planned airlift, the urgency of SAR incidents may require immediate dispatch of aircraft, aircrews, critical spares, and minimum support personnel. Deployment to bases with limited supplies results in a gradual erosion of capability until resupply is established.

2-5. Operational Essentials:

a. The ability to provide a rapid response to a SAR requirement is the most essential characteristic of aerial SAR forces, since the probability for survival following an incident decreases rapidly with the passage of time, particularly if injuries or severe climatological conditions exist. USAF SAR/recovery forces must be organized and equipped to be capable of rendering immediate rescue service on a limited basis at all times, followed by full scale operations as soon as possible thereafter. Therefore, trained crews are maintained on alert status with aircraft equipped to perform essential SAR tasks.

b. The second essential characteristic is the ability to conduct extended search and rescue operations. The key to effectiveness and economy in successful rescue/recovery operations is the rapid location of personnel/materiel to be recovered. In addition to the exposure aspects, rapid location of the target results in decreased direct operating expenses with the attendant benefit of conserving limited SAR resources. Although this is a desired goal, experience has shown that SAR primary aircraft must have a capability for extending the operation to provide complete and effective coverage of the search area in a minimum period of time.

c. The third operational essential of SAR/recovery forces is the capability to render on-scene assistance. In the case of vertical lift aircraft, this requirement is simplified in that the aircraft may alight or hover to permit crew members to assist the survivor(s). With fixed wing aircraft, survival gear may be launched or, if the survivor(s) is/are disabled, highly trained pararescuemen may be parachuted to the scene to provide emergency medical care and survival assistance until evacuation can be achieved.

d. Finally, the capability must exist to retrieve the distressed personnel or hardware and to remove the object of the search to a safe location. An aircraft capable of vertical lift is the prime vehicle in the case of retrieval of personnel; however, specific primary fixed wing SAR aircraft have the capability of retrieving hardware in air, on preplanned recoveries, or from the land or sea. When the aircraft cannot retrieve the objective of the recovery, pararescuemen may assist or secure the object, with subsequent pickup by surface vessel or land vehicle, dependent on the recovery area. Commitment of pararescue teams is a responsibility of supervisory personnel experienced in the employment of pararescue forces and qualified to evaluate the numerous factors affecting successful parachute penetration.

2-6. Pararescue. In the recovery phase for personnel, the recovery may be impossible or extremely hazardous for a vertical lift aircraft for many reasons; e.g., heavy jungle or rain forest, slope of mountain, or high altitude. In addition, the time interval until arrival of a vertical lift aircraft to a remote incident could well mean the difference between life and death for the survivor(s). In all cases, when the site of an incident is located, it must be assumed that there are survivors until proven otherwise. Use of pararescue is a phase of aerial recovery which is unique to air operations in that pararescue teams penetrate incident sites by parachute, provide emergency medical care, provide for survival, and assist in re-

turning personnel and materiel to safety. Pararescue personnel are highly trained in precision parachuting during day or night operations, and parachuting into water areas when equipped with SCUBA (self-contained underwater breathing apparatus). These professional teams are normally deployed as part of USAF primary SAR forces and function as integrated aircrew members of the alert SAR aircraft. The decision that pararescue forces are required to attempt to accomplish the recovery mission rests with the Rescue Crew Commander or the on-scene commander. The technical decision that successful parachute penetration is feasible rests with the pararescue team leader after evaluating applicable factors such as terrain, weather, wind, sea conditions, and means of team/survivor recovery. Once the team is committed to an incident, it is essential that communications be established with the team and continued support provided until recovery is completed. When parachute penetration is not feasible, it may be necessary to reach the scene by surface means to provide survival assistance and recovery. Pararescue team members are also highly qualified, physically and professionally, to organize and lead land search or recovery teams.

2-7. Local Base Rescue Forces. In order to provide an immediate capability for aerial rescue at Air Force bases with a high accident exposure potential, small units of vertical lift aircraft are assigned. These units are equipped for rapid response to an aircraft incident on or near the base of assignment and provide both a fire suppression capability and an effective rescue capability within the limited scope for which intended. Although this limited function force is not compatible with the operational essentials desirable for global rescue and recovery, the homogeneity of purpose and the applicability to other rescue/recovery roles dictate incorporation of these units into the area SAR system. The total local base rescue resource must be assigned to, and controlled by, the primary SAR force, to provide depth

in experience and standardization of procedures and to prevent duplication of supervisory and support staffs. Local base rescue forces provide rapid response to incidents without regard to terrain; the ability to control and suppress aircraft fires and to

reduce fatal cockpit/cabin concentrations of heat and carbon monoxide; the capability to remove crash victims concurrently with fire suppression; and a means of rapidly removing victims to sophisticated medical facilities.

Chapter 3

PLANNING AND OPERATIONS

3-1. Area Planning. SAR forces are an integral element of tactical forces and are identified in each emergency plan wherein USAF tactical forces are to be employed. Responsibilities and logistic requirements of the SAR force must be specified for proper utilization of the SAR resources. During peacetime tactical deployments and exercises, SAR elements are similarly identified, programmed, and utilized as a tactical element of the deployed force. Because of the lesser SAR requirement of the noncombat situation, and other global SAR commitments, fewer SAR forces are normally employed than in a combat situation. In order to meet the SAR requirements of major air commanders quantitatively and qualitatively, close coordination must exist between major air commands and the Air Rescue Service. Coordination in CONUS is accomplished with the oversea ARS Deputy Commander(s). The oversea ARS Deputy Commanders also command the area Air Rescue Centers which Air Rescue Service establishes and maintains for planning and directing SAR/recovery operations. The major air commander may facilitate planning for both commanders by coordinating anticipated requirements with the ARS Commander to insure that the appropriate SAR coverage is defined by technically qualified SAR personnel. This enables the ARS Commander to recommend the type and quantity of SAR equipment best suited to the task to be accomplished. If sufficient forces are not available to prosecute the mission, the ARS Commander has direct access to, and liaison with, SAR forces in adjacent areas to obtain temporary assistance. Normally, the oversea ARS Commander would refer the requirement to HQ

ARS for augmentation from other resources as necessary to satisfy a temporary requirement. However, if augmenting USAF SAR forces from external sources are required to support an area plan, these forces should be specified in the area commander's plan for JCS review and coordination of airlift and transportation requirements.

3-2. Liaison. The cooperation and assistance of many agencies with widely dispersed facilities are vital to the SAR commander in achieving efficiency and economy in SAR operations. In addition to the primary and secondary SAR capabilities of all military services, other Federal, State, and local governmental agencies have facilities which have inherent value to SAR. Commercial facilities, merchant vessels, and amateur capabilities (radio, aero clubs, skin-diving, etc.) must be included in the secondary agencies as possible assisting agencies. All organizations having a potential assisting capability within a given area must be identified and liaison established to insure availability if required. Communications with all primary and secondary agencies should be rapid and reliable to provide prompt receipt of distress information, to alert assisting agencies, to dispatch SAR facilities, and to direct or coordinate subsequent SAR operations.

3-3. Operational Missions:

a. SAR missions essentially group into four primary spheres of operational activity:

(1) Route, area, and local base precautionary missions.

(2) Emergency search, rescue, and recovery over aerial routes and in remote areas, including crash rescue on or near air bases.

(3) Recovery of personnel and hardware associated with U.S. space operations.

(4) Recovery of military personnel from hostile areas.

b. Of the types of missions normally flown by primary USAF SAR forces, pre-planned and precautionary missions are, with rare exception, the most effective and economical in terms of assistance rendered versus SAR effort expended. Ideally, SAR aircraft would accompany all deploying single engine aircraft on overwater or hazardous route segments. Practically, however, it would be impossible to provide SAR aircraft with the characteristics to operate in the flight envelope of each USAF aircraft and also retain the essential SAR characteristics. Where practical, SAR aircraft accompany deploying aircraft when speeds and altitudes are compatible or, alternately, orbit a designated position along the proposed track. Although not as totally effective as an accompanying escort, orbiting SAR aircraft can provide many services other than communications. For example, an airborne SAR aircraft orbiting along the overwater track of deploying fighter aircraft is in a position to provide rapid rescue assistance to an aircraft in difficulty. The position of the distressed aircraft can be fixed either visually or electronically and vectors provided to the nearest airfield or surface vessel, if applicable. An evaluation of sea conditions can be provided if ditching is feasible; all possible assisting agencies can be alerted; flotation equipment, illuminating flares, and other pyrotechnics may be launched if required; pararescue teams may be employed; surface pickup may be made with the SAR aircraft if amphibious or VTOL; or a surface vessel may be directed to the incident to make the pickup. In direct contrast to this efficient, economical method of rapidly prosecuting a SAR incident is the large scale search and rescue mission involving thousands of square miles of search and innumerable aircraft hours expended searching for a target whose location is unknown or vague.

c. Extended search and rescue missions

in oceanic areas and in remote areas require direction by highly experienced and trained professional SAR personnel. An evaluation of the available incident data to determine correctly the type and extent of SAR assistance required is essential to formulate the mission plan and designate the SAR participants. Advance bases may be necessary because of distance to the search area; the terrain may require specialized SAR forces; primary and secondary search areas must be established; primary and secondary SAR crews must be briefed and instructed commensurate with SAR experience; search patterns must be selected for most effective search dependent upon weather, terrain, and crew experience; communications and control of participants must be established; and clearance procedures, designation of on-scene commanders, and a myriad of other details dictate mission prosecution by professionals.

d. Recovery of personnel and hardware associated with U.S. space operations requires careful preplanning and deployment of SAR forces capable of performing the recovery mission. In general, rescue and recovery techniques are so similar that one centrally controlled force can accomplish both functions, with a minimum of operational and equipment variance.

e. Recovery of military personnel from hostile areas is a responsibility of the Unified Commander or Joint Commander normally assigned to the Air Component Commander. The Air Component Commander discharges his responsibility through the SAR controller of the Joint Search and Rescue Center. To insure optimum utilization of USAF SAR resources, a professional SAR/recovery advisor functions as a member of the Air Component Commander's staff. The SAR staff member advises the commander of the capabilities and limitations of available SAR forces and makes recommendations for their employment. SAR procedures used in the combat zone are an extension of peacetime procedures supported as necessary by tactical aircraft.

Chapter 4

COMMAND AND CONTROL

4-1. Centralized Control. The diversity of SAR operations emphasizes the necessity for mobility and flexibility of the limited primary SAR forces. Coupled with these necessary capabilities is the requirement for centralized control because of the transcendence of geographic and theater boundaries by aerospace forces. Command of primary USAF SAR forces is vested in the Commander, Air Rescue Service, who establishes subordinate organizational structures for the detailed operation and execution of the tasks assigned to the primary SAR forces. Day-to-day control of oversea USAF SAR forces is exercised by an ARS control agency responsive to SAR requirements of area and major air commander(s).

4-2. Control in Special Situations. For specialized operations or contingencies, operational control of specific SAR forces may be passed to the Air Component Commander of a joint force for SAR operations within a specified area. In such cases, the Air Component Commander is responsible for the assignment of tasks and the plan of employment. Normally, a SAR advisor is provided from the professional SAR forces to act as a member of the Air Staff to advise the

Air Component Commander on SAR/recovery matters. Control is exercised through the air element of the Joint Search and Rescue Center, if established, or the SAR element of the Air Operations Center. SAR controllers are normally assigned from Air Rescue Service resources and must be highly qualified to direct aerial search, rescue, and recovery operations. SAR forces allocated to the operational control of an Air Component Commander are employed as a unit, and integrity of the force is preserved. Upon completion of the task brought about by the unusual situation or contingency, the operational control of those allocated SAR forces immediately reverts to the Commander, Air Rescue Service.

4-3. Operational Control of Local Base Rescue Detachments. Operational control of LBR detachments is vested in the commander of the base of assignment. Where the helicopter element is an integral part of an Air Rescue Squadron, operational control is exercised through the ARS Squadron Commander. Operational control is assumed by the Commander, Air Rescue Service, when USAF directs diversion in support of special activities.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

R. J. PUGH
Colonel, USAF
Director of Administrative Services

J. P. McCONNELL
General, U.S. Air Force
Chief of Staff