

Chapter 6: Rescue Planning Operations

6.1 General

- 6.1.1 The primary purpose of any SAR action is the speedy return to a place of safety of the survivors of a distress situation.
- 6.1.2 It is essential that from the start of any SAR action, the RCC plans for the rescue of survivors and ensures that the appropriate resources are alerted, briefed and positioned so that the rescue may take place with the minimum of delay after the location of the survivors.
- 6.1.3 Without jeopardising the ultimate safety of survivors, foremost consideration shall be given to the potential impact on any medical condition of survivors by the method of recovery or the actions of unqualified persons.
- 6.1.4 The method of rescue to be used shall be decided after consideration of all relevant factors including:
- a) Action taken by sighting unit and the action that can be taken by other units at the distress scene;
 - b) Location of the survivors;
 - c) Condition of survivors and medical considerations;
 - d) Number of persons reported to be on board the craft and number who have been located;
 - e) Environmental considerations;
 - f) Available SAR facilities and their state of readiness;
 - g) Effect of weather;
 - h) Time of day; and
 - i) Any risks involved to SAR personnel at a crash site e.g. dangerous goods.
- 6.1.5 To reduce delay, the SAR facilities that are likely to be used should be alerted and deployed to a suitable location while the search is still in progress.

6.2 Preparation

- 6.2.1 It is the responsibility of the SMC to ensure that appropriate rescue resources are brought to a state of readiness and, as necessary, strategically positioned to be moved quickly into action immediately survivors are located.
- 6.2.2 The SMC shall ensure that proper attention is given to the preparation and execution of the rescue effort.

6.3 Medical Assistance

- 6.3.1 It must be assumed that the survivors of an emergency will be in need of medical attention, and arrangements should be made to include medically qualified persons in the rescue team.

6.4 Crashed Aircraft

Overview

- 6.4.1 When it is known that an aircraft will crash or has crashed and the crash position is incidentally reported or known with reasonable certainty, the RCC shall confirm the crash site and ensure the provision of medical assistance to the occupants and rescue of survivors.
- 6.4.2 ATSB and police should be given early notification of a crash for a decision for their attendance at the crash site. Next of kin should be kept fully informed through the appropriate liaison channel; normally the police.
- 6.4.3 Pending assumption of the responsibility by ATSB or relevant ADF authority, the RCC shall endeavour to arrange security at the crash site to prevent interference with the wreckage or with marks made by the aircraft in landing. State police are responsible for securing the accident scene. Instructions for police officers and emergency services personnel can be found in the ATSB handbook: [Civil and Military Aircraft Accident Procedures for Police Officers and Emergency Personnel](#).

Health Hazards - Aircraft Accidents

- 6.4.4 Movement in the vicinity of crash sites can be extremely hazardous for ground parties on account of toxic fumes, dangerous substances and explosives. Deaths have resulted from ground personnel breathing noxious air and contacting extremely poisonous substances in the proximity of wrecked aircraft.
- 6.4.5 Some points made in the ATSB handbook are in Appendix L. Personnel should refer to the ATSB handbook for more detailed procedures and precautions to be taken.
- 6.4.6 To the extent that it can be governed, the RCC shall advise that permission should be secured from the appropriate ADF authority before members of the public or other agencies approach a crash site of a service aircraft.
- 6.4.7 There have been aviation mishaps where search and rescue personnel became ill or died as a result of exposure to gases and hazardous materials that were present at aircraft accident sites.
- 6.4.8 Modern aircraft use composite materials for some of their structure, skin, and access panels. Significant health hazards exist at crash sites from the effects of crash damage and fire on composite materials. When burnt, released fibres and resins may be toxic through inhalation and/or skin and eye contact. Damaged composites may also produce needle-like edges that render handling hazardous. Carbon fibres are electrically conductive and may short-circuit nearby electrical equipment.
- 6.4.9 Certain exotic metals (radioactive substances) can also be found in ADF aircraft types, which are also poisonous in their own right. The inhalation, ingestion or absorption of radioactive substances is hazardous, as low-level radiation will continue to be emitted inside the body, possibly resulting in damage to surrounding tissues and organs.
- 6.4.10 ATSB and CASA officers and police shall be given reasonable access to SAR facilities and staff during salvage operations.

6.5 Rescue on Land

- 6.5.1 Although the location of the distress scene may be known, it may be extremely difficult for a land party to reach it. Therefore the operation should be undertaken only after proper and complete planning.

- 6.5.2 The land party should be taken to a locality as near as possible to the distress scene by some means of rapid transport. If access to the site is possible, an aerial survey of the site may be made to determine the best route. The equipment carried should be carefully selected and arrangements made for supplies to be dropped should re-equipment be necessary.
- 6.5.3 The police will determine equipment necessary for land rescue parties. A portable radio capable of communicating with other SAR Units should always be included in a rescue party's equipment. RCC Australia can authorise the issue of radios and other supplies from SAR stores for this purpose upon request.
- 6.5.4 In cases where all occupants of a crashed aircraft are not immediately accounted for, the search for missing persons must be continued. In the meantime, activities for the rescue of the others should be started.
- 6.5.5 Advice to police officers, other emergency services personnel and the public of the necessary actions to be taken in the event of a civilian aircraft crash in their area is obtained from the ATSB publication, [Civil and Military Aircraft Accident Procedures for Police Officers and Emergency Personnel](#).
- 6.5.6 The ground rescue party should make a report to the SMC as soon as possible. The SMC will relay advice of the condition of persons on board and disposition of wreckage to other authorities as appropriate.
- 6.5.7 The aircraft wreckage should not be disturbed except to assist in the recovery of survivors. Not only may the wreckage pose dangers by way of toxic materials and fumes, but also the position of flight controls, the location of debris and other factors are important to the accident investigation.
- 6.5.8 Survivors should be removed from the distress scene and transported to receiving medical facilities by the most expeditious means. When selecting the method of transport, the SMC should consider:
- a) The condition of survivors;
 - b) The capability of the rescue unit(s) to reach the survivors in the shortest possible time;
 - c) The medical training, qualifications and operational abilities of the rescue personnel;
 - d) The rescue units' capability to transport survivors without aggravating injuries or producing new complications;
 - e) The difficulties that may be encountered by land parties, e.g. provision of shelter;
 - f) The need for food and water;
 - g) The weather conditions; and
 - h) Methods of maintaining communication with the rescue party, either directly or through their organisation's operational office.
- 6.5.9 Evacuation of survivors will be relatively simple if they are located in an area where medical and rescue facilities are available locally and from where aerial, road or water transport is possible. However, if the distress site is in a difficult or inaccessible area, the evacuation will have to be made on foot to a place from where transport can be provided. This may require sufficient foliage to be cleared by the land party to allow helicopter operation into the site.
- 6.5.10 The overland route to be followed should be made known to the RCC. This will simplify the provision of aerial coverage, if this is considered necessary.
- 6.5.11 If it is decided to evacuate the survivors by air, the rescue party may provide advice of a suitable landing area for fixed wing aircraft or a landing or hovering site for a helicopter. If verbal communication is not possible, the land party should prepare the appropriate ground/air visual signals.

6.6 Rescue at Sea

- 6.6.1 The SMC is responsible for the coordination of surface vessels engaged in the rescue of survivors in or on the sea except that in-shore rescue may be arranged and coordinated by the police.
- 6.6.2 The RCC shall make flotation equipment available for use by survivors whilst awaiting transportation to the shore. Details of the availability and types of equipment held by SAR Resources and Training, AMSA may be obtained from RCC Australia.
- 6.6.3 When an aircraft has ditched or a vessel is in danger of sinking, or sunk, it is imperative that rescue action is taken immediately. The time that a craft will float may be very limited, entry to life rafts is difficult, especially for children, aged or infirm personnel in rough seas, and the sea is a hostile survival environment.
- 6.6.4 When both maritime rescue units and helicopters are dispatched to the same distress scene, it may be advisable to transfer survivors to the helicopters for a more rapid delivery to medical facilities.

Use of Rescue Boats and Vessels

- 6.6.5 Specialised rescue vessels are available only in scattered localities and their capacity is small. Each vessel dispatched to a distress scene should, if possible, carry additional life-saving devices to enable those survivors, who cannot be rescued immediately, to stay afloat while awaiting the arrival of another unit.
- 6.6.6 If specialised rescue units or vessels are not available, merchant vessels may be the only means of implementing an early rescue. However, if possible, support or alternative rescue units should be considered because merchant ships have significant limitations as a rescue platform, including:
 - a) Generally not readily available;
 - b) Relatively slow speed;
 - c) Restricted manoeuvrability;
 - d) High freeboard, making retrieval of survivors difficult;
 - e) Small crew numbers; and
 - f) Language difficulties if foreign-crewed.
- 6.6.7 Ocean oilrigs and production platforms maintain fixed positions for periods of time. The RCC Australia maintains data on their positions and means of contact for SAR purposes.
- 6.6.8 It is desirable that SAR vessels be equipped to lift survivors from the water without expecting any help from the survivors.

Use of Aircraft for Rescue

- 6.6.9 When considering the use of aircraft to bring about the recovery of survivors, care must be taken to ensure that the rescue aircraft and crew are not exposed to inordinate danger.
- 6.6.10 Fixed wing aircraft should only be used to retrieve survivors when there is significant advantage over the use of surface transport and when there is a suitable aerodrome or landing area near the scene. Pilots shall be discouraged from attempting to land at other than prepared landing areas to pick up survivors. However, should this prove to be the best or only viable option, all available specialist advice concerning the operation shall be obtained. It may be possible to have a qualified person lowered or parachuted in to survey the area. Helicopters may be employed to shuttle survivors from a distress site to a suitable fixed-wing landing area.

Use of Helicopters for Rescue

- 6.6.11 When available, helicopters should be considered for rescue work. While eminently suited to the task in many respects, helicopters do have specific limitations that may be summarised as:
- The adverse effects of turbulence;
 - The need for a level, or near level, landing area;
 - A requirement for a cleared landing area of specific dimensions to avoid rotor blade damage;
 - A requirement for safe approach and take-off paths;
 - Potential for adverse effects on certain serious injuries;
 - Limited endurance;
 - Inability to hover with loads at high altitudes; and
 - Limited accommodation.
- 6.6.12 Helicopters can be used to rescue survivors by winching or by landing at a suitable location. Owing to their unique flying characteristics, helicopters should be considered for use as a rescue unit as a matter of course.
- 6.6.13 They are particularly suitable for rescues at locations where surface units are unable to operate. At the same time, some helicopter evacuations may be hazardous, particularly in mountainous areas at high altitudes and over rough seas. Such evacuations should therefore only be carried out by specially qualified and experienced crews and then only in the event of serious injury or illness or when lack of other means of rescue might result in loss of life. It is important that any information on the condition of survivors is considered by specialists before committing to helicopter use.
- 6.6.14 Operations by surface parties may be hampered by the noise and rotor wash produced by helicopters. To avoid damage to rotor blades, the landing site should be cleared to a diameter specified by the pilot-in-command for each proposed operation. To facilitate the coordination between helicopters and surface rescue units and to minimise the hazard of collision associated with helicopters operating in a confined space during rescue operations, their operations should be carefully planned by the RCC and coordinated by the ATS unit in communication with them.
- 6.6.15 The helicopter's mass may be a factor limiting the number of survivors that may be taken aboard each trip. It may, therefore, be necessary to reduce weight by all possible means, e.g. removal of non-essential equipment, minimum fuel, use of advance bases with fuelling capabilities, etc.
- 6.6.16 It must be ensured that the route followed by the helicopter as well as the location where the survivors are to disembark are known to the SMC.
- 6.6.17 A medically qualified person, medical equipment and respiratory equipment, when available, should be carried on a helicopter recovery mission, at least on the first flight to the distress scene.
- 6.6.18 When being rescued by helicopter, survivors in a liferaft may have to leave the raft to catch the sling since the rotor downwash below the helicopter will blow the raft away.
- 6.6.19 Survivors may not know how to operate a strop. A two-person winch is preferred to a single winch. A double strop allows one rescuer to supervise while being winched down and up again with each survivor.

Note: A helicopter should not be approached unless directed and/or escorted by a member of the helicopter's crew. Helicopters may require approach from different aspects dependant on type.

Use of Top Cover Aircraft with Rescue and MEDEVAC Helicopters

- 6.6.20 The provision of a top cover aircraft should be considered during operations that may expose the helicopter to undue risk.
- 6.6.21 The SMC is to discuss the requirement for a top cover aircraft with pilot in command of the helicopter. The decision to task a top cover aircraft can be made by the SMC alone or on request by the pilot in command.
- 6.6.22 Circumstances that may require the provision of a top cover aircraft may include:
- Helicopters operating over water. This will vary with the type of helicopter involved. If in doubt, consult with the crew;
 - Helicopters operating at or near the limit of their endurance;
 - Helicopters operating in poor or marginal weather conditions; and
 - Helicopters operating at a rescue scene presenting special dangers, e.g. night.
- 6.6.23 Aircraft tasked for top cover should be a SRU aircraft carrying suitable supply drop equipment. The primary tasks of the top cover aircraft will be to:
- Provide navigation assistance to the helicopter to locate the target;
 - Provide communications assistance to the helicopter; and
 - Provide immediate assistance by way of supply drop should the helicopter ditch.

6.7 Supply Dropping and Delivery of Survival Equipment

General

- 6.7.1 Situations will arise where the immediate recovery of survivors is not possible and arrangements will have to be made to deliver sustenance, medical and survival equipment. Such situations shall be anticipated and planned for by the SMC during the conduct of a search.
- 6.7.2 Where possible delivery will be by way of surface vehicle or craft, or by helicopter or aircraft landing nearby. An example of this would be a situation with seriously injured survivors who may need stabilising prior to being moved, or where specialised evacuation vehicles/craft needed are not immediately available.
- 6.7.3 Supply of survival equipment by air should be considered where there is an expected delay in the recovery of survivors from remote locations either at sea or on land.

Civil SAR Equipment

- 6.7.4 The inventory of Civil SAR Equipment provided by AMSA includes:
- Six person droppable Marine Life Rafts;
 - Droppable Stores Containers, Marine Supply Containers, Light Stores Canisters and the Small Payload Delivery System for the supply of communications, sustenance, medical and survival equipment;
 - De-watering Pumps;
 - Self Locating Datum Marker Buoys;
 - Target marking devices including SAR Datum Buoys, See-Blitz Strobe Lights, Smoke Markers and Sea Marker Dye; and

- f) Search and Rescue Communicators (SARCOM) emergency AM transceiver operating on either the aviation band of 123.1 MHz or marine band Ch 16 that are suitable for dropping in Droppable Stores Containers, Marine Supply Containers, Light Stores Canisters and the Small Payload Delivery System. Droppable Life Rafts are also equipped with these transceivers.
- 6.7.5 AMSA staff are familiar with the type and disposition of Civil and ADF SAR equipment and its usage and can be contacted for advice. Detailed procedures and instructions relating to the operation and delivery of the equipment are incorporated in
- AeroRescue Operations Manuals, and
 - Search and Rescue Standards and Procedures Manual for Tier 2/3 Rotary Wing SAR Units.
- Note: These publications can be obtained from the SAR Resources and Training section of AMSA.*
- 6.7.6 Only suitably qualified, trained and equipped crews shall be tasked for supply dropping.
- 6.7.7 Aircraft tasked for supply dropping will be suitable for the purpose. It is the aircraft operator's responsibility to ensure the appropriate flight manual supplements / flight manual limitations and dispensations are held. Routinely such dispensations will be against:
- Civil Aviation Act Section 23 (Carriage of Dangerous Goods);
 - Civil Aviation Regulations 175(3) (IFR Flight); and
 - Civil Aviation Orders 29.5 (Dropping of articles from aircraft).

Marking Targets

- 6.7.8 Where recovery of maritime survivors is delayed it may be necessary to track their position by dropping visual or electronic aids, which have long and short term characteristics.
- 6.7.9 Long-term devices include:
- EPIRBS, which are packed in liferafts, transmit both a 406MHz digital identification code and a final stage homing signal on 121.5 MHz;
 - Self Locating Datum Marker Buoys;
- Note: The buoys can be configured for either a Person in Water or Life Raft. Details of each buoy deployed (including channel) are recorded and passed to the RCC Australia.*
- SAR Datum Buoys transmitting on:
 - 119.05 and 238.1 MHz (Green band);
 - 119.15 and 238.3 MHz (Black band);
 - 119.25 and 238.5 MHz (Blue band); or
 - 119.35 and 238.7 MHz (Red band).
- Note: The buoys are colour coded for ease of identification. Details of each buoy deployed are recorded and passed to the RCC Australia.*
- See-Blitz Strobe light. Provides a white strobe light for 4 – 5 hours.
- 6.7.10 Short term devices include:
- Marine Location Markers orange smoke markers; and
 - Sea Marker Dye.

Supply Drop from Aircraft over Sea

- 6.7.11 The following can be delivered from suitable fixed wing aircraft, including ADF aircraft:
- a) Light Stores Canisters or Marine Supply Containers containing communications, sustenance, medical and survival equipment etc;
 - b) One or more single Life Rafts;
 - c) One or more multi-unit drops consisting of two Life Rafts or a combination of Life Raft and Marine Supply Container linked by 400 metres of buoyant rope; and/or
 - d) De-watering Pumps.

Supply Drop from Helicopter over Sea

- 6.7.12 If recovery by helicopter is not feasible, or if recovery can be assisted by the supply of equipment such as rafts, a helicopter may be able to deliver a Life Raft using the Helicopter Delivery Line System or lower a Life Raft, Stores Container or De-watering Pump to survivors with great accuracy. Due to the limited capacity of some helicopters, not all survivors may be rescued at one time in which case the provision of additional floatation equipment (Life Rafts, Life Jackets) may be necessary to support the remaining survivors.

Supply Drop from Aircraft over Land

- 6.7.13 Where it may take too long to get to survivors by land, stores and equipment can be dropped from civil or ADF aircraft. The main method of delivering supplies to survivors on land from fixed wing aircraft is by Droppable Stores Containers, Light Stores Canisters or the Small Payload Delivery System. All these methods can contain a combination of food, water, blankets, transceivers and medical equipment. In situations where it is important to provide survivors with shelter, it may be appropriate to drop one or more Life Rafts using a Bag – Storage or Deployment Mk II and Parachute. Where there is no suitable landing place close to the survivors, vital survival equipment, food and stores could also be winched or dropped from a helicopter with great accuracy.