

NATSAR Manual Amendment Schedule – approved at NATSAR 42

Date received	NATSAR Manual reference	Reason for amendment	Previous Wording	New Wording	Approval Status	Responsible
23/08/2018	Appendix D-9	Change in AMSA's SAR Unit arrangement	Refer to Attachment 1 to see track changes to Appendix D-9		Approved	Scott Constable. Mike Wytcherley
23/08/2018	Appendix D-9	Change in AMSA's SAR Unit arrangement	Update all Tiered references in accordance with new arrangement		Approved	Scott Constable. Mike Wytcherley
20/08/2018	Appendix E-5	Update wording for clarity	Koester's (ISRID) International Search and Rescue Incident database www.dbs-sar.com collating thousands of incidents, statistics and previous studies for an international database. This information is continually being analysed and updated with Koester currently dividing missing person statistics to eco regions around the world that will enable more defined distances of travel for particular areas such as Victoria, a temperate terrain, as opposed to Northern Territory a hot dry terrain. The only specific Australian project on missing person behaviour was the SARBAYES project which was completed by Charles Twardy: http://sarbayes.org/natsar.pdf . The current Australian data base for the entry of LPB details is: http://goo.gl/OLZmW	There have been numerous studies on missing person behaviour with the most recent being Robert Koester's (ISRID) International Search and Rescue Incident database www.dbs-sar.com . This study collates thousands of incidents, statistics and previous studies for an international database. This information is continually being analysed and updated with Koester, currently dividing missing person statistics to eco regions around the world that will enable more defined distances of travel for particular areas. For instance Victoria, a temperate terrain, as opposed to Northern Territory a hot dry terrain. The only Australian specific project on missing person behaviour was the SARBAYES project which was completed by Charles Twardy: http://sarbayes.org/natsar.pdf . The current Australian data base for the entry of LPB details is: http://goo.gl/OLZmW	Approved	Jim Whitehead
17/07/2018	Vol 2. 4.13.53	'Fast' and 'Reconnaissance' land searches are practically the same now.	<p>Search Strategies for Land SAR</p> <p>4.13.53 Although specific search plans will vary with the circumstances, a system has evolved which can apply to most situations. Land searching may be divided into four strategies:</p> <ol style="list-style-type: none"> Fast Search Reconnaissance Search General Search Contact Search <p>4.13.54 In land search, it is not necessary to go through the strategies in order. The SMC has to apply the most appropriate search strategy in order to maximize the POD.</p> <p>4.13.55 Therefore, in the initial time of a search the SMC may employ a Fast strategy, as later resources arrive, a Reconnaissance strategy may be employed. As time goes by and a person approaches their TFFS and/ or the search area expands for whatever reason, the SMC may employ a General Strategy in a high probability search segment, other teams for further Reconnaissance or Fast strategies in other segments. The fact is, all strategies can be used at the same time in different search segments. It is a Strategy that is applied to the search, NOT a stage that the search goes through.</p>	<p>Search Strategies for Land SAR</p> <p>Although specific search plans will vary with the circumstances, a system has evolved which can apply to most situations. Land searching may be divided into three strategies:</p> <ol style="list-style-type: none"> Fast / Reconnaissance General Search Contact Search <p>In land search, it is not necessary to go through the strategies in order. The SMC has to apply the most appropriate search strategy in order to maximize the POD.</p> <p>Therefore, in the initial time of a search the SMC may employ a Fast / Reconnaissance strategy, as later resources arrive, a Reconnaissance strategy may be employed. As time goes by and a person approaches their TFFS and/ or the search area expands for whatever reason, the SMC may employ a General Strategy in a high probability search segment, other teams for further Reconnaissance or Fast strategies in other segments. The fact is, all strategies can be used at the same time in different search segments. It is a Strategy that is applied to the search, NOT a stage that the search goes through.</p>	Approved	Jim Whitehead

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			<p>Fast Search</p> <p>4.13.62 This method is best used when the search team arrives at the scene not long after the target has been reported missing. There is an assumption that teams are looking for a responsive target. This search provides an immediate SAR effort and requires minimal search planning to commence.</p> <p>4.13.63 Fast Search techniques: Teams are briefed to check the LKP and tracks or route intended by the target. This is normally done by lightly burdened teams of faster searchers. Track running, with regular stops for aural searching, is the standard technique. Checks of perimeters or barriers, roads, track cutting, ridge running and obvious hazards or attractions can also be incorporated.</p> <p>4.13.64 Fast Search considerations: Teams used in this type should have some experience in clue and track detection and bush awareness. While there is a high percentage change that this type of search will locate a missing target it will also assist in defining the search area and providing information to the SMC of areas that need not be searched.</p> <p>Reconnaissance Search</p> <p>4.13.65 The main reason for the reconnaissance is to carry out a quick check of the specific area of probability, and also to obtain essential information about the search area, both of which have a bearing on the future search plan. Reconnaissance teams may also find the missing person or object. A reconnaissance search can be conducted using ground teams, vehicles or aircraft. A reconnaissance can be used, not only early in a search, but at any time to check on unconfirmed sightings or to re-check specific areas of probability.</p> <p>4.13.66 Reconnaissance Search, Containment: In any search, containment should be effected by cordoning the area where possible. This may through identifying physical barriers around the search area, regular patrols of roadways or tracks or the placing of physical barriers such as ropes, bon fires or vehicles across likely exit points from the search area.</p> <p>4.13.67 Composition of reconnaissance teams: Since they must travel light and fast, these teams should be kept small; ideally four persons. It is desirable that the leader or at least one member of the team have a good local knowledge of the task area and that all members are fit and capable.</p> <p>4.13.68 Task of reconnaissance teams: The area to be covered by these teams will concentrate on the area of highest probability. This area may be further limited by the existence of natural barriers such as large rivers, cliffs, etc.</p> <p>Orders given to the reconnaissance team may include the following:</p> <p>a) Check of all hazards which may have trapped or caused injury to the missing persons such as waterfalls, cliffs and caves.</p>	<p>Fast/Reconnaissance Search</p> <p>4.13.62 This method is best used when the search team arrives at the scene not long after the target has been reported missing. There is an assumption that teams are looking for a responsive target. This search provides an immediate SAR effort and requires minimal search planning to commence.</p> <p>4.13.63 Search techniques: Teams are briefed to check the LKP and tracks or route intended by the target. This is normally done by lightly burdened teams of faster searchers. Track running, with regular stops for aural searching, is the standard technique. Checks of perimeters or barriers, roads, track cutting, ridge running and obvious hazards or attractions can also be incorporated.</p> <p>4.13.64 Search considerations: Teams used in this type should have some experience in clue and track detection and bush awareness. While there is a high percentage change that this type of search will locate a missing target it will also assist in defining the search area and providing information to the SMC of areas that need not be searched.</p> <p>4.13.66 Search Containment: In any search, containment should be effected by cordoning the area where possible. This may through identifying physical barriers around the search area, regular patrols of roadways or tracks or the placing of physical barriers such as ropes, bon fires or vehicles across likely exit points from the search area.</p> <p>4.13.67 Composition of fast/reconnaissance teams: Since they must travel light and fast, these teams should be kept small; ideally four persons. It is desirable that the leader or at least one member of the team have a good local knowledge of the task area and that all members are fit and capable.</p> <p>4.13.68 Task of fast/reconnaissance teams: The area to be covered by these teams will concentrate on the area of highest probability. This area may be further limited by the existence of natural barriers such as large rivers, cliffs, etc.</p> <p>Orders given to the fast/reconnaissance team may include the following:</p> <p>a) Check of all hazards which may have trapped or caused injury to the missing persons such as waterfalls, cliffs and caves.</p> <p>b) Check tracks, huts, routes, sand-bars, waterways, waterholes, waterfalls and other likely areas for clues such as footprints, discarded items of clothing and equipment, food scrapes or wrappings.</p> <p>c) At regular intervals call out to a missing person and listen for a reply. When vehicles are employed, the vehicle should be stopped and the engine turned off.</p> <p>d) Interview any person found in the search area and brief them on the situation. Record their names, addresses, car registrations and other details.</p> <p>e) Notify the Field Search Headquarters of any clues found. Do not disturb the clues, mark off the area as well as recording the time found and the name of the finder.</p> <p>Fast/Reconnaissance Team Briefing: The fast/reconnaissance team must be supplied with as much relevant information as possible about the missing person. Details of clothing, footwear, equipment or items carried, all of which if discarded by the missing person, could provide vital clues. Often the importance of clues is only realised long after they have been dismissed as irrelevant.</p>		
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4/4/2018	Vol 1 Section 1.1.16	To include AMSA's responsibility for DCVs	<p>AMSA is the regulatory authority for maritime safety standards for SOLAS compliant shipping. AMSA also manages the National Plan for marine pollution response. JRCC Australia is AMSA's operational point of contact and provides a communications and coordination support function for marine pollution response. The Australian Maritime Safety Act 1990 sets out the functions of AMSA, including "the combating of pollution in the marine environment". The Protection of the Sea (Powers of Intervention) Act 1981 implements the International Convention relating to intervention on the high seas in cases of oil pollution casualties and the protocol to that convention. AMSA is the managing agency for the National Marine Oil Spill Contingency Plan, and the National Marine Chemical Spill Contingency Plan.</p>	<p>The Australian Maritime Safety Authority (AMSA) is a Commonwealth statutory authority that provides support and commercial services to the Australian maritime industry. AMSA is responsible for setting and regulating standards for the operation of commercial shipping and domestic commercial vessels, the operation of an extensive network of marine navigation aids around the Australian coast, aviation and maritime search and rescue and the protection of the marine environment.</p> <p>JRCC Australia is AMSA's operational point of contact and provides a communications and coordination support function for marine pollution response. The Australian Maritime Safety Act 1990 sets out the functions of AMSA, including "the combating of pollution in the marine environment". The Protection of the Sea (Powers of Intervention) Act 1981 implements the International Convention relating to intervention on the high seas in cases of oil pollution casualties and the protocol to that convention. AMSA is the managing agency for the National Marine Oil Spill Contingency Plan, and the National Marine Chemical Spill Contingency Plan.</p>	Approved	Scott Constable
	Vol 1 Section 1.1.19	JRCC is not a division within AMSA.	<p>Medical Assistance to Vessels at Sea</p> <p>1.1.19 The JRCC Australia is a Division of the Australian Maritime Safety Authority (AMSA), a Commonwealth statutory authority established under the Australian Maritime Safety Act 1990.</p>	<p>Medical Assistance to Vessels at Sea</p> <p>1.1.19 The JRCC Australia is located within the Australian Maritime Safety Authority (AMSA) in Canberra, a Commonwealth statutory authority established under the Australian Maritime Safety Act 1990.</p>	Approved	Scott Constable

Attachment 1 – Appendix D-9

Appendix D-9 Civil Aircraft Search and Rescue Units (SRUs)

AMSA Aircraft SRU Capability Definitions

CAPABILITY	DESCRIPTION
TIER 1	Dedicated fixed wing aircraft and crews, capable of electronic and visual search, deployment of emergency supplies, command and control, and homing to distress beacons.
Rotary Wing Rescue (RWR)	Rescue capable and winch-equipped helicopters and crew for rescue, homing to distress beacons, visual search, and limited supply dropping
Rotary Wing Search (RWS)	Helicopters and crew for homing to distress beacons and visual search.
Fixed Wing Search (FWS)	Fixed wing aircraft and crew for homing to distress beacons, visual search and communications relay.

Table D-9:1 AMSA Aircraft SRU Definitions

Tier 1 SRUs

AMSA contracts four dedicated Bombardier Challenger 604 jet aircraft for SAR at bases in Perth, Cairns and Melbourne with the fourth aircraft an operational spare. These aircraft have been modified to have a large visual observation window on each side and are fitted with a range of communications (UHF, VHF, HF and satellite telephones) and sensor systems (search RADAR, high definition EO/IR turret, NVDs, DF, AIS, ADS-B, video anomaly detection). These Challenger 604s are able to drop a range of life-support equipment on land and sea, by day and night including life rafts, SAR datum marker buoys and de-watering pumps. Communications equipment (radios and satellite phones) can also be dropped which, using the multi-mode communications relay capability of the aircraft, enable communications to be established between the surface and JRCC Australia or another command/control or response facility.

The aircraft are available to other government agencies, such as the police, fire and emergency services, on a whole of government basis, for assistance with response to emergency operations.



Photo: AMSA Challenger 604

Opportunity Based SAR Services

In addition to the dedicated Challenger 604 services contracted to Cobham SAR Services Pty Ltd, AMSA has existing arrangements with a number of Federal, State and Territory governments and agencies and other fixed wing and helicopter operators to provide AMSA with SAR services on an opportunity basis, that is, they are not dedicated AMSA services. These fall into the three categories in Table D – 9.1 above.

The aircraft available to AMSA include a range of aircraft operated or used by Federal, State and Territory governments, such as Australian Border Force, State/Territory Ambulance and Police Services and Australian Defence Force aircraft. AMSA also has arrangements with commercial operators for the use of a large selection of aircraft located around Australia.

The tasks capable of being conducted by these aircraft will vary based on individual capability, but aircraft will be capable of providing one or possibly more of the following:

- **Visual searches** - (both fixed wing and rotary wing) conducted either over land or water. Visual searches will be conducted either over land or water. Visual searches will be conducted during daylight hours and will not usually be conducted at altitudes below 500ft for fixed wing, but often lower for rotary wing. Observers, trained in aerial visual searching techniques, may be nominated by AMSA for carriage on the aircraft during search operations.
- **Rescue** - generally effected by rescue winch either over land or water. Winching operations will typically be conducted only during day visual meteorological conditions (VMC) unless operators are equipped, trained and authorised to conduct winching operations at night.
- **Electronic searches** - will be conducted by aircraft with electronic sensors, including search RADAR, NVDs or EO/IR. These aircraft may be used over land or water. Electronic searching can be conducted by day and/or night in VMC and/or instrument meteorological conditions (IMC).

- **Deployment of emergency supplies** - by rescue helicopters. This will be conducted only during day VMC, unless the operator is approved to deploy supplies at night.
- **Homing to distress beacons** - (both fixed wing and rotary wing) is conducted by aircraft equipped with an electronic homer (direction finder), or using aural homing techniques, either over land or water. Homing to beacons can be conducted either by day or night in both VMC and IMC.
- **Communications relay** - is conducted by fixed wing aircraft when communications with other search assets are poor or where there is a need to relieve congestion on ATS frequencies. Aircraft are required to be able to maintain communication with SAR or other assets or a ground station.

Air Search Observer Programme

AMSA maintains a partnership with State/Territory Emergency Service organisations to provide the SAR system with a large and dispersed pool of trained and readily mobilised air search observers. State and Territory Emergency Service volunteers undertake several days of initial training and regular refresher training, addressing safety on and around aircraft, emergency procedures (including pool drills with life rafts and lifejackets) and air search operations.

Air Search Equipment

AMSA maintains stocks of air search equipment (aircraft safety and role equipment) at strategic sites which can be transported to locations where search operations are being conducted.

Locations of Assets

The following charts show the distribution of assets as at August 2018.

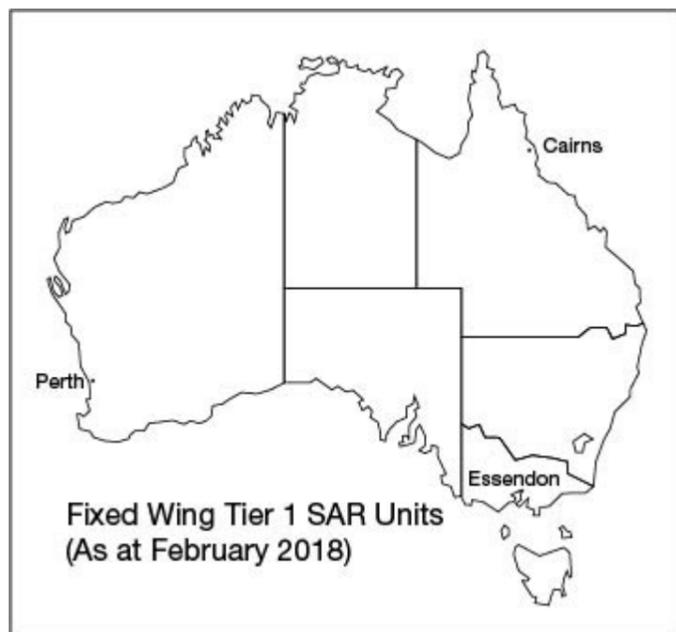


Figure D-9:1 Base Locations of AMSA Dedicated Tier 1 Aircraft SRUs

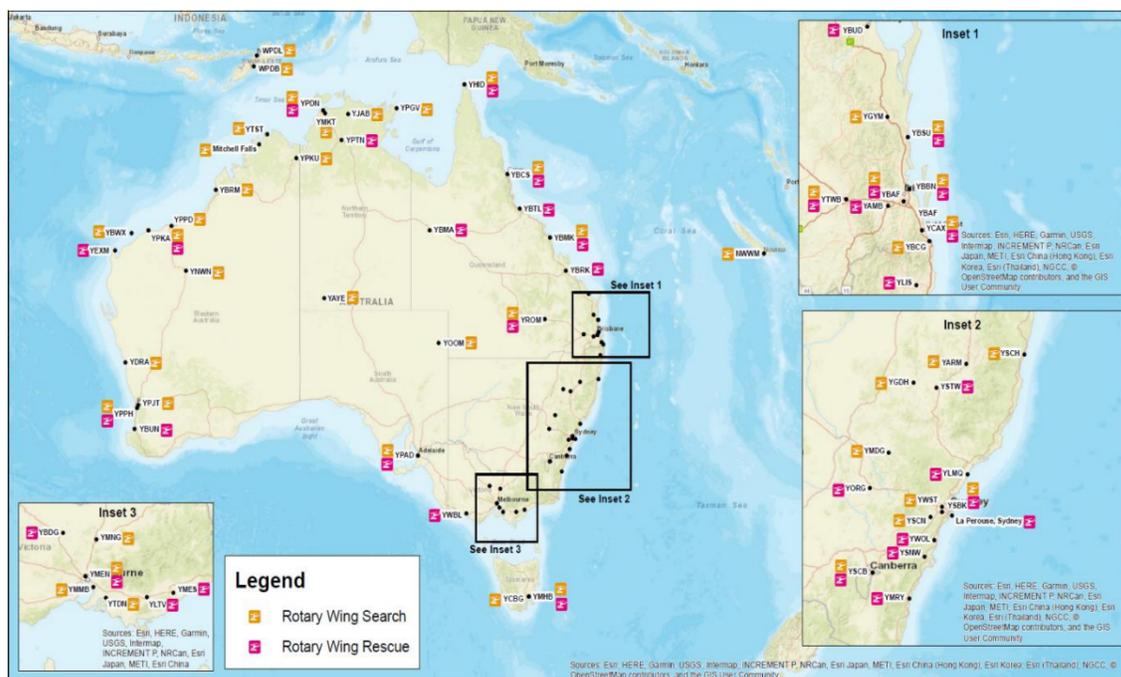


Figure D-9:2 Base Locations of Rotary Wing Search and Rotary Wing Rescue SRUs

