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	Date received	Current manual reference	Reason for amendment	Previous Wording	New Wording *For images or tables that cannot fit within this document are to be attached to email to Secretariat.	Name/agency
1.	2019 Jim review	All manual	To incorporate wording to describe the type of search for clarity		*Including the words, aviation, land, or maritime in titles to indicate the type of search the information relates to.*	
2.	2019 Jim review	Preliminaries - Acronyms and abbreviations	For clarity on meaning.	Rescue Coordination Centre	Rescue Coordination Centre (Local)	Jim Whitehead
3.	2019 Jim review	Preliminaries - Acronyms and abbreviations	Remove reference	AusSAR	*Remove reference noting the term has not been used for 10 years.*	Jim Whitehead
4.	2019 Jim review	Glossary	Add definition		SEND - Satellite Emergency Notification Device. Mobile, personal distress alerting device that functions outside the COSPAS-SARSAT System (for example SPOT, Thuraya SatSleeve). SENDs use different satellite communication constellations eg. Iridium, Global star or Thuraya. Distress alert messages are received by the IERCC in Houston and relayed to the RCC as required.	Jim Whitehead
5.	ARC review 2020	Preliminaries - Acronyms and abbreviations	Add acronym		SEND – Satellite Emergency Notification Device	ARC
6.	2019 Jim review	Vol 1 – 1.1.27	Incorporate suitable heading	n/a	State/Territory Police Responsibilities	Jim Whitehead
7.	2019 Jim review	Vol 1 – 3.2.1 a) – b)	Removal of references to SAR School	a) The Advanced Diploma of Public Safety (Search and Rescue Management) is delivered by AMSA to members of the JRCC. b) The Diploma of Public Safety (Search and Rescue Coordination) is delivered by AMSA to members of the JRCC.	a) Advanced Diploma: This level of qualification is designed for those personnel managing SAR incidents, whether at the JRCC, ADF or in the police jurisdictions. ~~The Advanced Diploma of Public Safety (Search and Rescue Management) is delivered by AMSA to members of the JRCC.~~ The Advanced Diploma of Public Safety (Police Search and Rescue Management) has recently been superseded by the new Advanced Diploma of Police Search and Rescue Management. It is available through SAR RTO's with it on scope. Personnel awarded this qualification are generally known as Senior Search and Rescue Officers (Snr SARO's) and perform a SAR management role within their organisation. b) Diploma: This level of qualification is designed for those personnel coordinating SAR incidents, whether at the JRCC, ADF or in the police jurisdictions. ~~The Diploma of Public Safety (Search and Rescue Coordination) is delivered by AMSA to members of the JRCC.~~ The Diploma of Public Safety (Police Search and Rescue Coordination) has recently been superseded by the new Diploma of Police Search and Rescue Coordination. It is available through SAR RTO's with it on scope. Personnel awarded this qualification are generally known as Search and Rescue Officers (SARO's) and perform a SAR coordination role within their organisation.	Jim Whitehead
8.	2019 Jim review	Vol 1 – 3.2.6 – 3.2.12	Updated details regarding NATSARMC	**AMSA RTO** 3.2.6 AMSA is a Registered Training Organisation (RTO) which provides training for search and rescue.). 3.2.7 AMSA provides specialist aviation and maritime search and rescue training to officers primarily in Australia's Joint Rescue Coordination Centre. Directing staff of the National Police Search and Rescue SAR Manager's Course	~~**AMSA RTO**~~ ~~3.2.6 AMSA is a Registered Training Organisation (RTO) which provides training for search and rescue.).~~ **AMSA Training** 3.2.7 AMSA provides specialist aviation and maritime search and rescue training to officers primarily in Australia's Joint Rescue Coordination Centre. ~~**Directing staff of**~~ **The National Search and Rescue ~~SAR~~ Manager's Course**	Jim Whitehead /Secretariat

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				3.2.8 The National Police SAR Manager's Course is the premier course for training SAR Managers to the national standards. The Course is held centrally in Canberra in August of each year, and has been in continually operation since 1989. (The course was postponed in 2000 for an academic restructure) 3.2.9 Students are invited from all Australian states/territories, New Zealand, AMSA and the ADF. 3.2.83.2.10 Directing staff of the Course, in addition to support provided by AMSA, are drawn from Australian police organisations. These officers are subject matter experts in land and marine search and rescue and are qualified in workplace training and assessment. 3.2.93.2.11 It is a necessity that all potential instructors on the above courses hold the appropriate Workplace Training and Assessment Certificate prior to undertaking any teaching or assessing. 3.2.12 The RTO component of this course is managed by the Queensland Police Service.	3.2.8 The National SAR Manager's Course is the premier course for training SAR Managers to the national standards. The Course is held centrally in Canberra each year, and has been in operation since 1989. (The course was postponed in 2000 for an academic restructure and again in 2020 due to COVID 19 implications). 3.2.9 Students are invited to participate from all Australian State/Territory Police Agencies, AMSA the ADF and New Zealand Police. 3.2.10 Directing staff of the Course, in addition to support provided by AMSA, are drawn from Australian Police organisations. These officers are subject matter experts in land and marine search and rescue and are qualified in workplace training and assessment. 3.2.11 It is a necessity that all potential instructors on the above courses hold the appropriate Workplace Training and Assessment Certificate, prior to undertaking any teaching or assessing. 3.2.12 The Queensland Police Service currently manages the Registered Training Organisation (RTO) component of this course.	
9.	2019 Jim review	Vol 1	Inclusion of index to improve navigation of manual.		*Suggest we include a combined index at the beginning of the manual, following the Table of contents*	Jim Whitehead
10.	2019 Jim review	Vol 2 - 1.2.5	Removed text	1.2.5 The distress signal "MAYDAY" is used to indicate that a craft or person is threatened by grave and imminent danger and requires immediate assistance. It has precedence over all other communications. The distress message is preceded by the word MAYDAY spoken three times.	*1.2.5* The distress signal "MAYDAY, MAYDAY, MAYDAY" is used to indicate that a ship, aircraft or other vehicle is threatened by grave or imminent danger and requires immediate assistance. Distress calls, distress messages and distress traffic have priority of communications over all other communications.	Jim Whitehead
11.	2019 Jim review	Vol 2 – 1.2.6	Removed text	1.2.6 The urgency signal "PAN PAN" is used to indicate that the calling station has a very urgent message to transmit covering the safety of a ship, aircraft or person. It has precedence over all other communications, except distress traffic. The urgency message is preceded by the words 'PAN PAN' spoken three times.	~~1.2.6~~ The urgency signal "PAN PAN, PAN PAN, PAN PAN" is used to indicate that the calling station has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle or a person. It has priority communications over all other communications, except distress calls, distress messages and distress traffic.	Jim Whitehead
12.	25/09/2020	Vol 2 – 1.2	Replace acronym	n/a	Replace acronym 'RTF' with 'radiotelephone'	Stuart Shepard
13.	2019 Jim review	Vol 2 – 1.2.14	Broaden title	156.8 MHz (Marine VHF Channel 16)	156.8 MHz (Marine VHF Channels ~~16~~)	Jim Whitehead
14.	2019 Jim review	Vol 2 – 1.4.6	Update title	Night-time Devices	Night-Vision Devices (NVDs) for aerial searching	Jim Whitehead

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15.	2020 ARC review	Acronyms	Inclusions of acronym	n/a	NVDs - Night-Vision Devices	ARC
16.	2019 Jim review	Vol 2 – 2.5.4	Include extra example	e) Receipt through other alerting systems, e.g. ARGOS.	f) Receipt through other alerting systems, e.g. ARGOS, other SEND devices.	Jim Whitehead
17.	2019 Jim review	Vol 2 – 2.5.20	Add text		g) Registration number (if available)	Jim Whitehead
18.	2019 Jim review	Vol 2 – 2.8.8	Inclusion of example	2.8.8 Where initial checks fail to locate the target, communication checks are to be expanded to check a wider variety of possible sources of information on the missing target, including physically checking possible locations, such as harbours, marinas and airports.	2.8.8 Where initial checks fail to locate the target, communication checks are to be expanded to check a wider variety of possible sources of information on the missing target, including physically checking possible locations, such as car parks, harbours, marinas and airports.	Jim Whitehead
19.	2019 Jim review	Vol 2 – 2.8.15 d)	Text change		Therefore, it is desirable that an area reconnaissance be carried out as early as possible.	Jim Whitehead
20.	2019 Jim review	Vol 2 – 2.8.18 b)	Add text		b) About aircraft/vehicles/vessels/objects: Information sources may include the:	Jim Whitehead
21.	2019 Jim review	Vol 2 – 2.8.27	Removed text		2.8.27 All such information needs to be evaluated and passed to the RCC~~/FSH~~. ~~Field information.~~ Information acquired by this means may dictate the future course of the search. A sample Team Task Sheet is shown in Appendix E-14.	Jim Whitehead
22.	2019 Jim review	Vol 2 – 2.8.38	Add text		2.8.38 With respect to aircraft or vessels; To assist in the assessment of reports and to eliminate those that relate to other craft, every effort should be made to establish the movements of all craft that would have been operating in the same general area as the missing craft in the same time period. A general description of such other craft, including their colour schemes, is necessary to assist the process of evaluation.	Jim Whitehead
23.	2019 Jim review	Vol 2 – 2.8.66	Add text		2.8.66 Whenever practicable, pertinent data should be plotted on a map/chart to aid in evaluating related factors.	Jim Whitehead
24.	2019 Jim review	Vol 2 – 3.2.17	Inclusion of example		3.2.17 Both total drift and individual drifts may be given subscripts to indicate their specified time or time intervals e.g.: ‘ds 1500’ is sinking drift for 3.00pm.	Jim Whitehead

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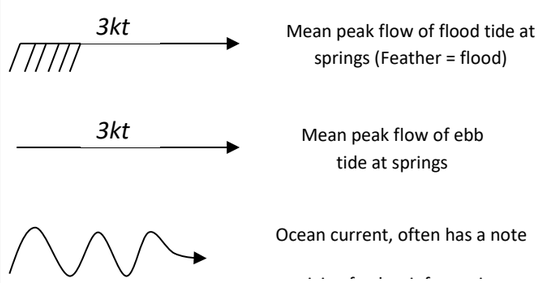
<table>
<tr><th></th><th>Date received</th><th>Current manual reference</th><th>Reason for amendment</th><th>Previous Wording</th><th>New Wording
*For images or tables that cannot fit within this document are to be attached to email to Secretariat.</th><th>Name/agency</th></tr>
<tr><td>25.</td><td>2019 Jim review</td><td>Vol 2 – 3.4.15</td><td>For clarity</td><td></td><td>3.4.15 There is no single sequence of search types, search patterns, etc. which can be suggested as standard procedures. The matrix in Table 3-1 shows one search sequence employing various factors and search parameters for an aircraft search. Such a sequence could be used where large areas must be searched initially and search assets are limited. Each incident will require its own specific sequence and parameters should be recalculated for each search.</td><td>Jim Whitehead</td></tr>
<tr><td>26.</td><td>2019 Jim review</td><td>Vol 2 – Table 3-1</td><td>For clarity</td><td></td><td><table><tr><th>Search No</th><th>Type</th><th>Time</th><th>Target</th><th>Speed (Kt)</th><th>Track Spacing (NM)</th><th>Altitude AGL/ AMSL (FT)</th></tr><tr><td>Initial</td><td>Track line</td><td>Day/ Night</td><td>Active target</td><td>100/200</td><td>5</td><td>Below 5000</td></tr><tr><td>1</td><td>Electronic Beacons</td><td>Day/ Night</td><td>Electronic</td><td>150/500</td><td>20</td><td>High as practicable</td></tr><tr><td>2</td><td>Visual (aids)</td><td>Night</td><td>Fires, flares, torch, etc.</td><td>100/150</td><td>10</td><td>1500-3000</td></tr><tr><td>3</td><td>Visual (aids)</td><td>Day</td><td>Mirrors, dye, smoke, etc.</td><td>100/150</td><td>10</td><td>1500-2000</td></tr><tr><td>4</td><td>Visual (rafts)</td><td>Day</td><td>Life rafts</td><td>100/150</td><td>1.5</td><td>300-1500</td></tr><tr><td>5</td><td>Visual (wreckage)</td><td>Day</td><td>Wreckage, survivors</td><td>75/130</td><td>0.5</td><td>200-2000</td></tr></table>Table 3-1: Search Sequence (Aircraft)</td><td>Jim Whitehead</td></tr>
<tr><td>27.</td><td></td><td>All manual</td><td>Updating wording for national consistency</td><td></td><td>~~Craft~~ > Target
~~Unit~~ > Asset
~~RCC~~ > JRCC
~~Subject~~ > Target
~~Field Search Controller~~ > SMC</td><td>Jim Whitehead</td></tr>
<tr><td>28.</td><td></td><td>Vol 2 – 3.5</td><td>Heading change to specify what type of search the section is referring to.</td><td></td><td>3.5 Aviation and Marine Determination of Search Areas
Aviation and Marine Planning</td><td>Jim Whitehead</td></tr>
<tr><td>29.</td><td></td><td>Vol 2 – 3.5.35</td><td>Updated image</td><td></td><td> 
</td><td>Jim Whitehead</td></tr>
</table>

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30.		Vol 2 – 3.5.51	Included extra sentence to elaborate further.	**Calculating Leeway** 3.5.49 A search object's leeway speed is measured as a percentage of the of the wind speed. The Multiplier value listed in the Taxonomy (Appendix D-5:1 & D-5:2) provides the leeway speed percentage. In some cases, it is necessary to add or subtract a Modifier to further refine the search object's leeway speed.	**Calculating Leeway** 3.5.51 A search object's leeway speed is measured as a percentage of the of the wind speed. The Multiplier value listed in the Taxonomy (Appendix D-5:1 & D-5:2) provides the leeway speed percentage. Because of drag factors, type of object and other environmental effects the wind does not push the target at its full power, and these tables have been calculated to determine at what strength the wind does move an object. In some cases, it is necessary to add or subtract a Modifier to further refine the search object's leeway speed.	Jim Whitehead
31.		Vol 2 – 3.5.61	Add text and diagram	n/a	3.5.61 When plotting on a chart there are a number of standard conventions to identify each of the vectors:  Current (Wind or sea) TWC -  Leeway (Lw) – Double arrow head or Green colour  Total Drift Line (TDL) – Triple arrow head or Red colour	Jim Whitehead
32.		Vol 2 – 3.6.12	Add text		**Position Uncertainty** 3.6.12 If the position of the craft in distress is in question, calculate a datum for each position (LKP 1 and LKP 2) and draw a six (6) NM circle around each and enclose the circles (Figure 3 19). The search Datum can be assumed as a point midway between the two individually calculated Data. If extreme distances separate the positions in doubt, (More than 12nm), consideration should be given to treating them as separate vessel adrift incidents (Figure 3 20).	Jim Whitehead
33.		Vol 2 – 3.6.22 – 3.6.23	Conversion of NM to km		**Good Search Conditions** 3.6.2 In conditions where the wind speed is less than 15 knots and/or visibility is greater than three (3) NM (5km), use a track spacing of up to three (3) NM by day or night but reduce the separation depending on the size of the search target. After dark, the effect of the search light should be considered. **Poor Search Conditions** 3.6.3 Where winds are greater than 15 knots and /or visibility is less than three (3) NM but greater than one (1) NM (2-5km), a track spacing of 1 NM should be considered by day or night but reduced depending on the size of the search target. After dark, the effect of the search light should be considered.	Jim Whitehead
34.		Vol 2 – 3.13.12	Add text to elaborate	c) Disrobing of clothing	c) Disrobing of clothing (Paradoxical undressing as a result of severe hypothermia)	Jim Whitehead
35.		Vol 2 – 3.13.41	Add text		3.12.66 Urban Search (Major Complex): In the case of a major complex, e.g. a large hospital, each of these stages would be included within the boundaries of the complex. If the lost person is not found, then a new search area surrounding the complex is determined.	Jim Whitehead

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36.		Vol 2 – 3.13.45	Ad text		3.12.68 Urban Environment - Reconnaissance Search: The reconnaissance stage requires small search teams to carry out a quick check of specific areas of high probability within the area of possibility. Areas which should be checked during the reconnaissance stage: a) Locations that are familiar to the lost person, e.g. current or previous residence, the home of friends and family, church, hotel, even if assurances are given that these areas have been checked. b) Hazardous areas e.g. construction sites, quarries, rooms/buildings that are rarely used (locked or unlocked).	Jim Whitehead
37.		Vol 2 – 3.14.11	Add text		3.13.16 General Categories of Lost Persons: The following are the commonly used categories of lost persons: a) Children 1 to 3 years b) Children 4 to 6 years c) Children 7 to 12 years d) Adolescent Youth 13 to 15 years e) Mental Development Problems. f) Despondent g) Psychological problems h) Bushwalkers i) Dementia/Alzheimer's j) Climbers k) Hunters l) Prospectors m) Children with ADD, ADHD, Asperger's and Autism 3.13.17 Appendix E-5 contains lost person behaviours in the above categories and provides statistical strategies, characteristics, locations and distances travelled by members of each group. This will be useful in creating the linear graph as outlined below.	Jim Whitehead
38.		Vol 2 – Figure 3-6 Decision Points	Add text with image			Jim Whitehead
39.		Vol 2 – 3.14.16 d)	Add text		d) Fear of animals: Although Australia has no known predatory animals that actively prey on humans there is an irrational fear of being in the bush alone. Most native animals are nocturnal, and their nightly activity can unnerve people and preclude a good night sleep, with the associated reduction in rational thinking and self-help ability.	Jim Whitehead
40.		Vol 2 – 3.14.17	Update text		c) Males have similar but less detectable cycles. Studies have shown that ~~married~~ males in long term relationships will generally mirror their female partner's cycles.	Jim Whitehead

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41.		Vol 2 – 3.14.19	Incorporate subheadings to each dot point		b) Discarding equipment: c) Discarding clothing: d) Sense of abandonment: e) Clothing: f) Navigation aids:	Jim Whitehead
42.		Vol 2 – 3.17.3	Broaden range	This will provide sufficient work for a four-hour period. If teams are working in open fields an area of approximately ½km² would be sufficient per four-hour period. An expanding square or circular search from the point of origin or centre of the disaster will ensure that all areas are covered.	This will provide sufficient work for a four-hour period. If teams are working in open fields an area of approximately ½-1km² would be sufficient per four-hour period. An expanding square or circular search from the point of origin or centre of the disaster will ensure that all areas are covered.	Jim Whitehead
43.		Vol 2 - 4.3.45	Conversion of nm to km		4.3.45 Person in Water. When searching for a person in the water it should be assumed that the person is not wearing a floatation device and will therefore be more difficult to detect. For good search conditions a track spacing of 25nm (0.45km) should be considered. For poor search conditions, the track spacing should be reduced as appropriate, taking into account the visibility and the navigational and operational capabilities of the search units.	Jim Whitehead
44.		Vol 2 – 4.3.58	Update figures in table		1st Search – Coverage Factor – 0.5 2nd Search – Coverage Factor – 0.7 3rd Search – Coverage Factor – 0.3 4th Search – Coverage Factor – 0.2 5th Search – Coverage Factor – 0.3 **Over 5 searches, the average coverage factor =** **(0.5+0.7+0.3+0.2+0.3/5)** **= 2.0/5 = C of 0.4 for five searches**	Jim Whitehead
45.		Vol 2 – 4.4.1	Add text		4.4.1 Significant errors will result from accumulated errors in turns and from wind forecast errors, especially for high-speed aircraft. Consideration must be given to selecting the type of pattern, which gives minimum turns and maximum search leg lengths in order to reduce turning errors and to make it easier for navigation, observations and corrective action. However, there may be a limit to the maximum search leg lengths when the search area covers water surfaces with strong currents or with high survivor drift rates. In these circumstances aircraft search legs are usually limited to 30 minutes or less of flying time if the legs are oriented across the drift direction. This is to avoid the possibility of the survivors drifting from one side of a track to beyond the next search track by the time the search aircraft returns to that same general area. A more satisfactory solution to this problem is to orientate the search legs with the drift direction. Marine searching would generally orient the search legs parallel to the drift unless a barrier type search is being undertaken.	Jim Whitehead
46.		Vol 2 – Figure 4.5.6	Add note		Figure 4-6 Track Line Search where aircraft is not returning back along track (Note: The first leg may be displaced 1/2 S into Search Area. Turns should be made outside Search Area Boundary.	Jim Whitehead
47.		Vol 2 – 4.5.2 Sector Search	Update text		**Sector Search** 4.5.2 This pattern may be employed when the ~~position of distress~~ Last Known Position, Splash Point or Datum is known within close limits and the area to be searched is not extensive. It is simple to execute, is likely to provide greater navigational accuracy than a square search and, because the track spacing is very	Jim Whitehead

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					small near the centre, it ensures a high probability of detection in the area where the target is most likely to be located, in the centre.	
48.		Vol 2 – 4.5.23	Add text for clarity		4.5.23 Should it not be practical to search the entire surface of a mountainous area, a SMC may initiate plans on the basis of certain assumptions, e.g., if limited to VMC, the target pilot in a missing aircraft would neither willingly enter cloud nor descend below the lowest height at which a valley or a gap could be safely traversed. There may, on the other hand, be intelligence information to hand indicating that the target pilot in a missing aircraft did enter cloud, in which case the aircraft may be found at an elevation within the extent of the then existing cloud layer. These possibilities should be examined carefully if it is known that a pilot was flying, or intended to fly, through a valley or gap in the proximity of cloud.	Jim Whitehead
49.		Vol 2 – 4.2.26	Add equation		4.8.26 By using the following formula: Maximum Range (in NM) = 1.2 x √h (Where: h = height/altitude of the receiving antenna in feet) Maximum Range (in km) = 3.57 x √h (Where: h = height/altitude of the receiving antenna in metres)	Jim Whitehead
50.		Vol 2 – 4.9.35	Update text		4.9.35 The speed of marine craft is usually their maximum speed possible under the prevailing sea conditions. Generally, small boats search at 10–20kt and larger vessels search at 10–30 kt. At these speeds, excellent coverage for small targets is possible. However, the area that can be searched is limited due to the low level of the vessel and the earth's curvature. Appendix D-5, Table D-5:3 & D-5:4 provide uncorrected visual sweep widths for visual search over water at eye heights of eight and fourteen feet and from the height of a merchantman's bridge.	Jim Whitehead
51.		Vol 2 - 4.10.74	Update Note		Note: If any ~~three~~ four are known then the ~~fourth~~ fifth can be calculated using the formula:	Jim Whitehead
52.		Vol 2 – 4.10.37	Add text		Top Cover Aircraft The provision of a top cover aircraft should be considered as a risk mitigation measure during operations that may expose SAR aircraft to undue increased risk.	Jim Whitehead
53.		Vol 2 – 4.14	Add text for clarity		Land Assets 4.14.1 Search by land facilities alone is usually impractical for large search areas but it can be conducted in most weather conditions and can provide complete coverage of a confined area that cannot be thoroughly searched from the air. Land parties are also critical in operations where the search is carried out from the air and the rescue is needed by land facilities.	Jim Whitehead
54.		Vol 2 – 4.14.52 – 4.15.54	Changed text	Strategies for Land SAR	4.15.6 (4.13.54) Therefore, in the initial ~~time~~ part of a search the SMC may employ a Fast / ~~Reconaissance~~ 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 Fast/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.	Jim Whitehead

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					4.15.8 (4.15.56) With each of the ~~four~~ three strategies there are associated search patterns that utilise the resources available to the best effect. Further details are provided in the search pattern section. 4.15.9 (4.15.57) Approximately 70-80% of missing persons are located using the fast ~~and reconnaissance strategies~~/reconnaissance strategy, therefore ~~these two strategies~~ this strategy should be the first consideration of the SMC when planning for a SAR.	
55.		Vol 2 – 4.15.27	New section		4.15.27 Spacing of the line is maintained from whichever flank is following the boundary or otherwise defined track. The other flank indicates their progress by using markers. It can be an advantage to use different coloured markers on each day of the search. At the end of each sweep, the markers become a guide for the next sweep. Markers should be placed in such a manner that they can be seen easily when returning in the opposite direction. Consideration should be given to using biodegradable marker material, such as toilet or tissue paper so that it will disintegrate shortly after a search if it is not retrieved.	Jim Whitehead
56.		Vol 2 – 4.14.76	Add text		4.15.34 The contact search line must be kept straight. This is very difficult because different sections of the line will encounter varying obstacles, e.g. thick scrub. Some control must operate to ensure that faster searchers in clearer areas slow down and wait for those encountering difficulties. The best method is for the Team leader to be positioned in the centre of the search line, preferably to the rear and call instructions to the flanks. An area can be covered more effectively by a series of short sweeps, rather than a single long sweep. (This is both physically and psychologically beneficial to searchers).	Jim Whitehead
57.		Vol 2 - 4.17.6	Add categories		4.18.6 Categories of Clues: The categories of clues that searchers should seek are as follows: a) Physical (e.g., footprints, clothing, equipment or food wrappers). b) Recorded Information (e.g., a trip plan or trail register). c) Witnesses—People who knew of the intent or destination, or people who have seen the subject, or other persons in the search area. d) Events (e.g., beacons, distress calls, flares, flashing lights, smoke, fire, or noise such as a whistle).	Jim Whitehead
58.		Vol 2 - 4.18.8 b) ii)	Update phrase		ii) A ~~model figure~~ mannequin similar in stature and dress to the missing person may be useful in some circumstances.	Jim Whitehead
59.		Vol 2 – 4.18.13	Update heading		4.19.13 **Land SAR SMEAC Layout of Orders**: Orders need to follow a logical sequence to ensure all aspects of the plan are covered. To achieve this, orders are divided into five main headings of:	Jim Whitehead
60.		Vol 2 – 7.7.6	Moved text		*Moved text to 7.3.7 "Survivor Stress Factors" from "Wind Hypothermia"* 7.3.7 Persons assessing a time frame for survival must recognise the limitations of such an assessment and not regard it as an arbitrary period for survival. The following subsections may assist in providing a guide to assist in search planning.	Jim Whitehead
61.		Vol 2 - 7.16.3	Updated text		7.16.3 The survival time on the ~~right~~ left side is measured in days, while the curved lines represent the amount of water, in litres, available.	Jim Whitehead
62.		Appendix B	Add text to table of responsibility		Aircraft not included in the CASA and RA-Aus registers including ultralights, para-gliders, hang-gliders, and gyrocopters (unregistered aircraft).	Jim Whitehead
63.		Appendix D-5	Add new category		Multi-hulled vessels; these vessels differ from monohulls in that they have either two similar sized parallel hulls or a larger centre hull with two smaller ones on either beam. These vessels range in size from small hobby vessels of 4-5m in length to ferries and tourist vessels. All but the smallest have living quarters in the hulls and possible on the deck that joins them. They can be sail or motor driven, or a combination of both. There is no current separate category in the leeway tables for vessels of this style. Figure D-5:9 has images of these vessels.	Jim Whitehead

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	Date received	Current manual reference	Reason for amendment	Previous Wording	New Wording *For images or tables that cannot fit within this document are to be attached to email to Secretariat.	Name/agency
64.		Appendix D-5 Figure D-5:9	Inclusion of images for new category		  Figure D-5:9 Multi-hulled vessels	Jim Whitehead
65.		Appendix D-5 Table D-5:6(1)	Updated numbering and content	Refer to attachment 1.	Refer to attachment 1.	Jim Whitehead
66.		Appendix E-1	Update numbering reference	9 -17 Emergency Response	11-17 Emergency Response 18-27 Measured response 28-40 Evaluate & Investigate	Jim Whitehead
67.	25/02/2020	Glossary/whole manual references	Consistent language	SRU - Search and Rescue Unit (Aircraft, vessel, search team)	Acronyms - Search and Rescue Asset - (Aircraft, vessel, search team) 1.1.50 Assets considered suitable for the provision of SAR services are described as Search and Rescue Units (SRUs). The crews of these units are trained in search and rescue techniques.	Secretariat
68.	8/07/2020	Appendix E-5	Resulted from the LPB biannual review	Refer to attachment 2	Refer to attachment 2	Jim Whitehead
69.	8/07/2020	Appendix E	Incorporate new section of land SAR appendix about body flotation information	Refer to attachment 3	Refer to attachment 3	Jim Whitehead
70.	11/06/20	Vol. 2 - 4.8.29	Update to RAAF SAR standby aircraft types	RAAF AP-3C, C-130J and KA350 aircraft maintain SAR standby with notice to move at no longer than 12 hours. The response aircraft and location is dependent on effects requested and operational or maintenance requirements. The Joint Operations Room (JOR) will act as the POC for information regarding the RAAF standby aircraft through the AOC.	RAAF P-8A and C-130J aircraft maintain SAR standby with notice to move at no longer than 12 hours. The response aircraft and location is dependent on effects requested and operational or maintenance requirements. The Joint Operations Room (JOR) will act as the POC for information regarding the RAAF standby aircraft through the AOC.	ADF SAR (JPR) – Alistair Hedderwick
71.	8/09/2020	Vol. 1 – 1.1.32	Update to correct term	Airservices Australia 1.1.32 All Air Traffic Services (ATS) assets, as a function of their alerting service responsibilities, have a responsibility for the	Airservices Australia 1.1.32 All Air Traffic Services (ATS) assets, as a function of their alerting service responsibilities, have a responsibility for the declaration of ~~SAR~~ Emergency Phases for aircraft, to classify the severity of emergencies and alert JRCC Australia.	Scott Constable

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				declaration of SAR phases for aircraft, to classify the severity of emergencies and alert JRCC Australia.		
72.	9/09/2020	5.6.12 – 5.6.15	Duplicated text	Use of Top Cover Aircraft with Rescue and MEDEVAC Helicopters 5.6.12 The provision of a top cover aircraft should be considered during operations that may expose the helicopter to undue risk. 5.6.13 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. 5.6.14 Circumstances that may require the provision of a top cover aircraft may include: a) Helicopters operating over water. This will vary with the type of helicopter involved. If in doubt, consult with the crew; b) Helicopters operating at or near the limit of their endurance; c) Helicopters operating in poor or marginal weather conditions; and d) Helicopters operating at a rescue scene presenting special dangers, e.g. night. 5.6.15 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: a) Provide navigation assistance to the helicopter to locate the target; b) Provide communications assistance to the helicopter; and c) Provide immediate assistance by way of supply drop should the helicopter ditch.	**Use of Top Cover Aircraft with Rescue and MEDEVAC Helicopters** 5.6.12 ***Refer to 'Top Cover Aircraft'.***	Scott Constable
73.	19/06/2020	5.4.14	Duplicated wording at 5.3.3	5.4.15 Pending assumption of the responsibility by ATSB or relevant ADF authority, the SMC, through local police, 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 and Territory 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	**5.4.15 Refer to 5.3.3**	Scott Constable
74.	26/08/2020	Appendices d5 POD Table	Updated image for clarity		**See attachment 4**	Jim Whitehead

Attachment 1:

Uncorrected Sweep Widths for Fixed-Wing Aircraft (NM) at 500 ft and 1000 ft

Search Object	Altitude 500ft						Altitude 1000ft					
	Visibility km/NM						Visibility km/NM					
	2/ 1.1	5/ 2.7	10/ 5.4	20/ 10.8	30/ 16.2	>40/ 21.6	2/ 1.1	5/ 2.7	10/ 5.4	20/ 10.8	30/ 16.2	>40/ 21.6
Person in water	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Raft 1 person	0.3	0.7	0.9	1.2	1.4	1.4	0.3	0.7	0.9	1.2	1.4	1.4
Raft 4 Person	0.4	1.0	1.3	1.8	2.0	2.2	0.3	1.0	1.3	1.8	2.1	2.3
Raft 6 Person	0.4	1.1	1.5	2.2	2.5	2.8	0.4	1.1	1.6	2.2	2.6	2.8
Raft 8 Person	0.4	1.2	1.6	2.3	2.7	2.9	0.4	1.2	1.7	2.4	2.8	3.0
Raft 10 Person	0.4	1.2	1.7	2.5	2.9	3.2	0.4	1.3	1.8	2.6	3.0	3.3
Raft 15 Person	0.5	1.3	1.9	2.7	3.3	3.6	0.4	1.4	2.0	2.8	3.4	3.7
Raft 20 Person	0.5	1.5	2.1	3.2	3.8	4.2	0.4	1.5	2.2	3.2	3.9	4.3
Raft 25 Person	0.5	1.6	2.3	3.4	4.1	4.6	0.4	1.6	2.3	3.5	4.2	4.7
Power Boat <5m (15ft)	0.4	0.9	1.2	1.5	1.7	1.8	0.4	1.0	1.3	1.7	1.8	2.0
Power Boat 5-8m (15-25ft)	0.5	1.7	2.4	3.6	4.3	4.8	0.5	1.7	2.5	3.7	4.4	5.0
Power Boat 8-12m (25-40ft)	0.6	2.1	3.3	5.3	6.7	7.7	0.5	2.2	3.4	5.4	6.8	7.8
Power Boat 12-20m (40-65ft)	0.6	2.7	4.5	8.1	10.9	13.1	0.6	2.7	4.5	8.2	10.9	13.1
Power Boat 20-27m (65-90ft)	0.6	2.8	5.0	9.8	13.5	16.7	0.6	2.8	5.1	9.8	13.6	16.7
Sail Boat 5m (15ft)	0.5	1.6	2.2	3.2	3.9	4.3	0.5	1.6	2.3	3.3	4.0	4.4
Sail Boat 8m (25ft)	0.6	2.0	3.1	4.9	6.1	7.0	0.5	2.1	3.2	5.0	6.2	7.1
Sail Boat 12m (40ft)	0.6	2.6	4.3	7.6	10.0	11.9	0.6	2.6	4.3	7.6	10.9	12.0
Sail Boat 15m (50ft)	0.8	2.7	4.6	8.4	11.3	13.7	0.6	2.7	4.6	8.5	11.4	13.7
Sail Boat 20-23m (65-75ft)	0.6	2.8	4.9	9.3	12.7	15.5	0.6	2.8	4.9	9.3	12.8	15.6
Sail Boat 23-27m (75-90ft)	0.6	2.8	5.1	9.9	13.7	17.0	0.6	2.8	5.1	9.9	13.6	17.0
Ship 27-46m (90-150ft)	0.6	2.9	5.4	11.1	15.9	20.1	0.6	2.9	5.4	11.1	15.9	20.1
Ship 46-91m (150-300ft)	0.6	3.0	5.7	12.5	18.9	24.7	0.6	3.0	5.7	12.5	18.9	24.7
Ship >91m (>300ft)	0.7	3.0	5.8	13.2	20.6	27.9	0.6	3.0	5.8	13.2	20.6	27.9

Attachment 2:

Lost Person Behaviour Alzheimer's/Dementia

Characteristics:

a. Poor short term memory but may remember things that happened many years ago, such as address while a child.
b. Impaired ability to rationalise surroundings.
c. Often last seen in their home or a nursing home.
d. May have a previous history of wandering
e. Other physical problems may exist (Limited mobility, poor sight or hearing)
f. May already be dehydrated and undernourished
g. Have limited or no peripheral vision, hence being stopped by fences, hedges etc.
h. May be seeking a secluded location
i. Will not attract attention or respond to calls.
j. Possible not concept of being lost
k. Will not often leave any clues apart from paradoxical undressing.
l. Often succumbs to the environment (Hypothermia etc)
m. 25% fatality rate if not located within first 24hrs
n. May not recognise tap for water, limited ability to self survive.
o. Two types, walkers and non-walkers (The walkers can move surprisingly fast)

Tendencies:

a. Often located a short distance from a road or path.
b. Will often attempt to travel to a place previously known to them.
c. Will be stopped by fences, hedges etc.
d. Will tend to walk on the path of least resistance, downhill, and not often uphill. (Be aware: more physically capable, MP's may walk uphill or in a direct line regardless of terrain).
e. Can be found in drains or streams due to the low levels.
f. May remove items of clothing

Strategies:

a. High urgency
b. Early containment is essential
c. Use dogs or trackers
d. Check all drains and low lying areas.
e. Check all fences, hedges and private yards in vicinity
f. Thorough search of the house, nursing home etc, and repeat every few hours.
g. Search heavy bush
h. Search previous home locations.

Where located statistically:

a. Habitation/ structure 35%
b. Road 35%
c. Water/water edge 10%
d. Open ground 6%
e. No trace 5%
f. Forest 4%
g. Clearing 3%

% of category	25	50	75	80	95
Elderly/non-walker Distance from LKP (KM)	0.19	0.81	1.89	1.91	3.9
Younger/walker Distance from LKP (KM)	0.49	1.28	2.76	3.2	14.00

Lost Person Behaviour Despondent

Characteristics:

a. Don't often travel far, but intent to be alone
b. Often located a border of two types of terrain and/or vegetation boundary
c. May head for a scenic location or well-known beauty spot (Lookout, waterfall etc).
d. Locations are often well known or have some significance to MP, check with family
e. Rarely located in dense underbrush or trees, a small number will make a significant effort not to be found.
f. Rarely respond to call and whistles and may actively hide.
g. Very high fatality rate, the time taken from the initial disappearance to suicide is relatively short (A few are found alive, most arrive at the location and commit the act quickly)
h. Drugs and/or alcohol often involved.

Tendencies:

a. Go to high points or scenic locations (Not far from vehicles)
b. Well known or favourite places (Not far from vehicles).
c. Terrain interfaces
d. Group 1- merely seeking to get out of sight.
e. Group 2-will seek out a specific location, significant to their life.
f. May travel further.

Strategies:

a. Investigation important
b. Obtain a good subject profile from family and friends.
c. Urgent response
d. Thorough search of a small area
e. Confinement is a low priority
f. Passive techniques not successful

Where located statistically:

a. Habitation 26%
b. Water/water's edge 24%
c. Forest/woods 16%
d. No trace 13%
e. Road/Short distance from a road 11%
f. Forest edge/clearing 9%

% of category	25	50	75	80	95
Distance from LKP (KM)	0.41	1.18	2.76	3.02	18.14

Attachment 3:

Body Floatation Information

While as accurate as possible the data contained below is based on historical incidents throughout Australia. There has been no systematic study of human body flotation after immersion in water.

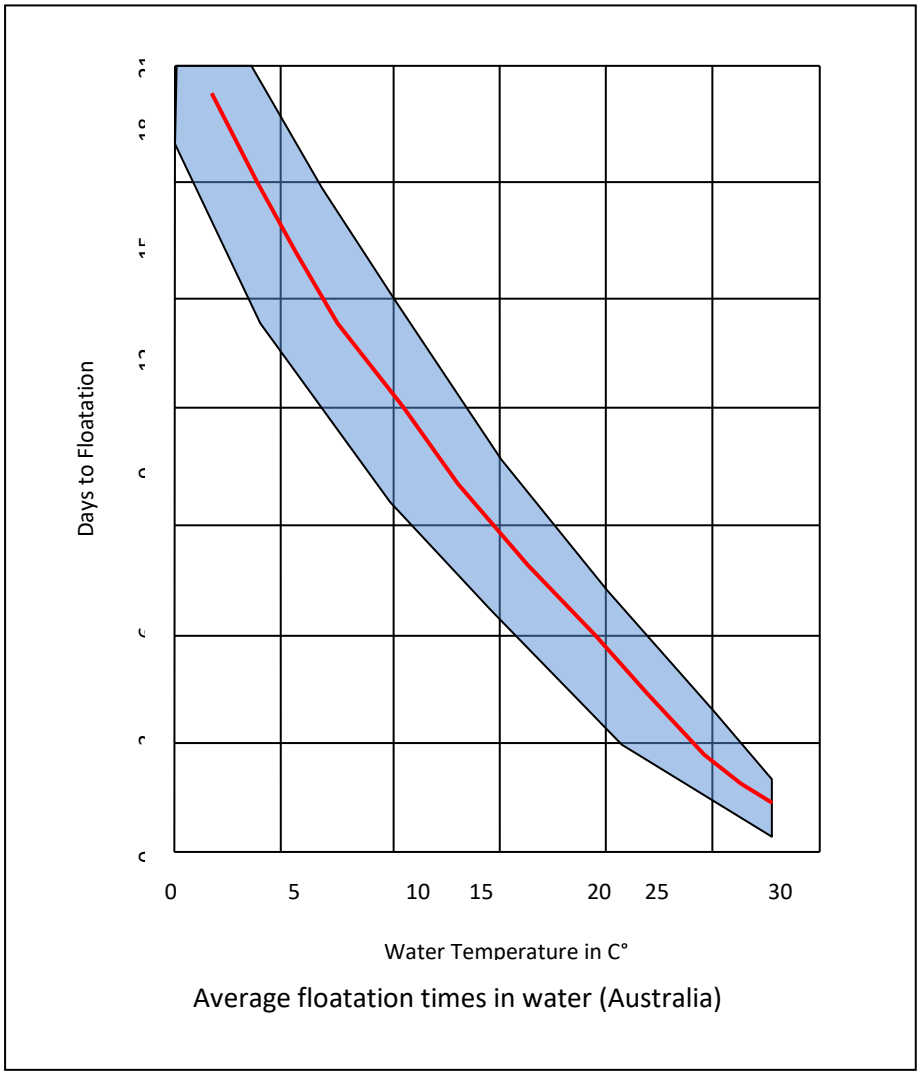
Humans have large numbers of bacteria within the body cavities such as the gut and chest. These bacteria don't immediately die when a body does, but continue to metabolise and produce gas. It is this accumulation of body gasses that can raise a deceased body to the surface.

The actions of the surface, waves, and movement, combined with bird and animal activities quickly causes the built up gas to dissipate into the atmosphere. Without this buoyancy a body will then sink back down, more than likely to never re-emerge.

Issues that will affect floatation times:

- For every 10m of depth the pressure increases by one (1) atmosphere. This means that for depths of 30-40m or more the increased pressure and lower temperatures with generally retard any flotation of a body.
- Temperatures of below 5°C may not allow sufficient gas build up for a body to float. In these instances it may take until the water warms for any floatation to occur.
- Food ingestion is a factor that should be considered. A last meal high in carbohydrates will facilitate gas production, whereas a meal high in proteins will produce gas at a slower rate.
- Water temperature is an important factor for consideration. The below graph represents likely floatation times based on water temperature. This graph is based on reported floatation times for deceased bodies in inland waterways, rivers and dams. There is considerable leeway involved and is only to be used as a guide.
- Some medications and all alcohol will assist in gas production.
- Body composition is an important factor, a large obese person has more opportunity to float than a lighter muscled person. Fat or adipose is lighter than muscle mass.
- Children, although lighter, also have proportionally less gut. This can have the effect of slowing their floatation, and contrary to this, their higher proportion of body fat can aid in floatation.
- Clothing will impact the ability to float. It has been found that fishing waders and the like can inhibit floatation, whereas heavy clothing can require a significantly larger amount of gas generation for floatation. Layered clothing has been found to aid floatation in the short term, possibly through the retention of air between the layers, while in the long term is becomes an extra weight to be overcome. Light clothing and swimmers will generally have no effect.
- Any significant injuries to the body have been found to slow floatation. Open wounds, particularly in the chest and abdomen area can allow body gasses to escape, limiting floatation. The gasses produced by the body, hydrogen, hydrogen sulfide, carbon dioxide and methane, are all water soluble, meaning that they will dissolve if water is able to enter the body. Dissolved gasses have no lifting power. These gasses are also compressible, meaning that as depth increases their lifting power decreases.
- Because humans are not hydrodynamic in shape it takes very little in the way of snags to trap a body. The composition of the bottom in shallower areas can have an effect on floatation, things such as flood debris, rocks, car bodies etc. Mud and silt can have a strong vacuum suction effect on a body.
- People who are already deceased when they enter the water may not immediately sink. Without active respiration water entry into the lungs and gut may not immediately occur.
- Floatation of suicidal drowning victims can be problematic. Most of these people are weighted down by either an object such as a large concrete brick or layered clothing. Floatation does happen on occasion but it is often more likely that they are located by a diver.

- Almost all bodies will surface face down, the arms and legs hanging down will cause this. Bodies thrown into the water during the early stages of rigor mortis may float face up, but this is rare.



Average floatation times in water (Australia)

Attachment 4: