AMBIDJI

AUSSAR SEARCH AND RESCUE OPERATIONS

SYDNEY TO HOBART YACHT RACE 1998

REVIEW AND ANALYSIS

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AUSSAR SEARCH AND RESCUE OPERATIONS DURING 1998 SYDNEY TO HOBART YACHT RACE

1.0 FOREWORD

The Ambidji Group Pty Ltd was engaged by the Australian Maritime Safety Authority (AMSA) to review and analyse the search and rescue operations undertaken during the 1998 Sydney to Hobart Yacht Race. The Australian Search and Rescue Organisation (AusSAR), a division of AMSA, has the national responsibility for coordinating both maritime and aviation search and rescue. The terms of reference are at Attachment A.

This report was prepared following analysis of:

- the 3,466 inward/outward recorded AusSAR telephone communications that occurred during the Sydney to Hobart Yacht Race (Attachment B);
- associated MARSAR paper files;
- the AusSAR post event "hot" debrief including operational and media issues;
- the debrief and discussions with South Coast Police, Sydney Water Police and Gippsland Water Police, the Cruising Yacht Club of Australia (CYCA), State Emergency Services, Defence, Bureau of Air Safety Investigation (BASI), Airservices Australia (Melbourne Flight Service), Bureau of Meteorology, South Coast Hospitals, Airports and Ambulance Services, Civil SAR Units, Oil Companies, the Department of Community Services and Volunteer Rescue organisations;
- the debriefing of 12 air operators who undertook SAR operations (detailed questionnaire); and
- discussions with AusSAR operational staff and AMSA Public Relations Manager.

1.1 Abbreviations

A list of abbreviations used in this report and the meaning assigned to those abbreviations in the report is at Annex A.

1.2 Recommendations

Throughout the report, recommendations are included, as appropriate, in ***bold italic text*** immediately after the text to which they relate. A consolidated list of recommendations is included in Section 5.0 of the report.

2.0 BACKGROUND

2.1 Responsibility for SAR operations

The Commonwealth Government through AMSA, accepts responsibility for the provision of SAR services for civil aircraft and all classes of ships other than those for which the States and Defence Forces are responsible. These responsibilities are exercised through AusSAR, which provides SAR response through the aviation/marine Rescue Coordination Centre (RCC) established in Canberra (Australian RCC). The SAR service spans the nation and covers a further 47 million square kilometres of the Indian, Pacific and Southern Oceans, approximately one ninth of the world's surface.

The RCC is staffed continuously, on a shift basis, by 36 SAR specialists who have extensive navy, merchant marine, air force or civil aviation experience. On receiving a distress signal or being notified of a missing civil aircraft or sea-going vessel, the RCC will organise and coordinate a search with assistance from organisations such as the Defence Forces, State and Federal Police, aviation authorities, airlines, commercial shipping, State Emergency Services, volunteer marine rescue groups and fishing cooperatives. This SAR response illustrates the close cooperation and coordination that must exist between the agencies for provision of an efficient and effective service.

The RCC also manages the Australian ground segment of the Cospas-sarsat satellite beacon detection system, coordinates medical evacuations, broadcasts safety and navigation information to ships at sea, investigates unexplained flare sightings and operates a 24 hour commercial ship reporting system, AUSREP.

State and Federal Police are the SAR authority for arranging and coordinating, within the capability of locally available facilities, marine SAR services in respect of all persons and ships in waters within the limit of the ports of the State/Territory, and in respect of pleasure craft and fishing vessels.

The Commonwealth Government through the **Australian Defence Force** is responsible for the provision of SAR for all service ships and aircraft. This responsibility is exercised through the Navy, Army and Air Force depending upon the circumstances of the search.

The Bureau of Meteorology provides routine or special weather forecasts and a description of past and present weather reports from a network of observing stations.

Telstra provides ship-shore-ship communications from a network of Maritime Communications Stations under contract to AMSA. These stations are responsible for maintaining a continuous watch on the maritime distress frequencies.

Emergency Management Australia is responsible for coordination of Commonwealth Government assistance in natural disasters.

Coastwatch conducts coastal surveillance and can provide assistance in tracing vessels.

Australian Communications Authority may assist with direction finding services.

Volunteer Rescue organisations have been formed at numerous locations, usually to promote safety and effect local rescues. The State or Territory SAR Authority is responsible for the control of these operations.

Commercial and Private organisations such as commercial airlines, commercial shipping, general aviation operators, oil companies, fishing companies, aero clubs, mission stations, etc may assist in a SAR operation.

2.2 AusSAR involvement in Sydney to Hobart Yacht Races

By virtue of AusSAR's national responsibilities for coordinating search and rescue (SAR) resources and assets, AusSAR has prepared for the Sydney to Hobart Yacht Race as an event of international significance that may need to call upon AusSAR's services. Since 1994, AusSAR has provided a field liaison officer as part of the Race Management team in Hobart (in 1994 there were a record 371 starters in the 50th Sydney to Hobart Yacht Race compared with an average fleet of 110 starters in recent years and 115 starters in 1998).

The Race Management Team is appointed by the CYCA and has responsibility for the management of the race, communications with the Radio Relay Vessel and coordination of minor SAR incidents. These minor SAR incidents could typically involve alerting other yachts in the vicinity to provide assistance to the yacht in distress, or seeking assistance from the local State Police and/or Water Police.

The role of the AusSAR field liaison officer is to provide support and advice to the race controllers on SAR and communications matters, and to liaise with the Race Management team, AusSAR's Rescue Coordination Centre in Canberra and the State Police of New South Wales, Victoria and Tasmania.

A further role of the AusSAR field liaison officer is to attend the compulsory pre-race briefing for skippers and navigators in Sydney, and give a presentation on SAR techniques and communications. In 1998 a second AusSAR officer attended the Sydney pre-race briefing, and gave a presentation on the deployment of air droppable supplies from an aircraft to a vessel, in the event of such vessel being in distress.

2.3 SAR Resources and Assets

There is a range of resources and assets that are within the geographical region of the Sydney to Hobart Yacht Race, and can be used by AusSAR for assistance, in the event of a SAR incident.

In anticipation of any SAR incident, in particular the Sydney/Hobart Yacht Race, the following assets were in readiness.

AVIATION

Location	Company	Aircraft Type	PADS *(2)	Availability
CSUs *(1)				
Brisbane	Great Western Aviation	PA31 X 2	Yes	
Bankstown	Crane Air	BE76/PA31/PA60		
Wollongong	Wollongong Aerial Patrol	PN68/C402		
Canberra	VH Aviation	C404/C404/C441/BE58	Yes	
Moorabbin	General Flying Service	PA31/C310	Yes	
Launceston	Tasmanian Aviation Centre	AC68/AC50/AC50		
Hobart	Tasair	AC50/AC50		
Adelaide	Polair	C402/C402		
Mount Gambier	O'Connor Airlines	P68/C441		
Helicopters				
Tugan	Careflight	B12		24 hours availability
Lismore	Westpac	2 X SA365		24 hours availability
Newcastle	Westpac	B12 + B06		24 hours availability
Williamtown	Lloyd	S76		3 hours callout
Westmead	Careflight	B12		24 hours availability
Prince Henry	Lifesaver	BK117		24 hours availability
Wollongong	Lifesaver	BK117		Daylight ONLY
Canberra	Southcare	B12		24 hours availability
Traralgon	Helimed1	B12		24 hours availability
East Sale	Lloyd	S76		3 hours callout
Essendon	Polair/Air Ambulance	2 X SA365 + AS50		24 hours availability
Sorrento	SPRS	B06		VFR ONLY
Cambridge	Polair	AS50 (+ 4 x AS50 1/1/99)		as required
Defence				
NAS Nowra	MHQAUST	SK61 & SK70		12 hours notice
Richmond/Edinburgh	AHQAUST	C130 or P3C		12 hours notice

MARITIME

Location	Organisation	Type	Availability
Defence			
Sydney	MHQAUST	Destroyer or Frigate	8 hours notice
Police			
NSW Coastal	Sydney Water Police	Police vessel	Following fleet to Eden
Victoria	Melbourne Water Police	Police vessel	Sorrento area of ops
Tasmania	Hobart Police	Police vessel	Opportunity basis
Customs			
Tasmania	Coastwatch	Customs vessel	Opportunity basis

Notes

*(1) Civil Search and Rescue Units (CSUs) are selected aircraft operators that have fixed wing aircraft with the capability and AusSAR training to deploy air droppable supplies to a vessel in distress.

*(2) Precision Aerial Delivery System (PADS), is an air droppable system in which a canister can be accurately deployed from an aircraft to mariners in distress. A canister usually contains a liferaft and survival supplies, however the system can be used to deliver a sea water pump. Other types of air droppable systems are used by CSUs, but are limited to a liferaft and survival supplies, and are generally not deployed as accurately. Some aircraft types are unable to deploy PADS due to the configuration of the aircraft.

3.0 CHRONOLOGY OF EVENTS

The following chronology of events was established from 3,466 recorded AusSAR telephone communications that occurred during the period 27 December 1998 (0320 hours UTC) and 29 December 1998 (0931 hours UTC), and facsimile and telex communications received at the RCC. There is a +11 hours time difference between Universal Time Constant (UTC) and the Eastern Standard Summer Time (ESST) for the Australian Time Zone. The times are based on receipt of the information and the event described may have occurred much earlier.

Attachment B presents a spreadsheet with details of all of the 3,466 recorded AusSAR telephone communications. These communications covered issues such as SAR response to EPIRBs and other forms of notification, liaison with other involved agencies, aircraft briefing, search planning, media involvement and next of kin inquiries. The spreadsheet also gives an indication of the intensity and range of communications managed by the AusSAR Search and Rescue Officers, while undertaking multiple SARs with competing priorities.

DATE (UTC)	TIME (UTC)	EVENT
27 Dec 1998	0436	Mayday call from **Stand Aside**.
27 Dec 1998	0449	Race Control reports that **Team Jaguar** has rope around propeller, flat batteries and needs tow. EPIRB activated with **Secret Men's Business** in vicinity to relay communications.
27 Dec 1998	0451	**Stand Aside** located by ABC helicopter.
27 Dec 1998	0512	Race Control contacted RCC to advise that yacht **Stand Aside** had been dismasted about 39 miles ESE of Gabo Island, taking water and 3 crew with serious injuries. Race Control provides sitrep on **Secret Men's Business** with 1 crew injury, heading to Eden. Also **Outlaw** damaged and going to Eden.
27 Dec 1998	0530	**Sienna** rendered assistance to **Stand Aside** before retiring due to injured crew member.
27 Dec 1998	0615	An aircraft intercepted mayday call from yacht **Winston Churchill**. Yacht was taking water and sinking and crew were abandoning to liferafts.
27 Dec 1998	0615	Race Control advised RCC that yacht **Solo Globe Challenger** has been dismasted but is heading to Eden and no further assistance is required.
27 Dec 1998	0622	Mayday relay has **Winston Churchill** position at 20 miles SE of Twofold Bay.
27 Dec 1998	0645	Eight crew winched from **Stand Aside** by SAR helicopter.
27 Dec 1998	0657	Fixed wing aircraft VH-SAR reported being in a position about 25 miles further south than the

		original reported position of the **Winston Churchill**. The vessel was identified by the aircraft as the **Winston Churchill**. It was afloat but had no mast. Position was 37.46S 150.33E.
27 Dec 1998	0702	Young Endeavour advised that yacht **Business Post Naiad** has rolled, holed and taking water about 42 miles SE of Gabo Island. EPIRB activated with 9 crew on board. A distress broadcast was released. Shortly afterward an aircraft reported sighting 2 crew on **Business Post Naiad** which was underway and appeared OK. Yacht **Midnight Special** standing by.
27 Dec 1998	0704	Remaining four crew rescued from **Stand Aside** by second SAR helicopter.
27 Dec 1998	0734	Race Control advised RCC that yacht **Kingurra** reported a man overboard about 50 miles SE of Gabo Island. A rescue helicopter was despatched to the area.
27 Dec 1998	0806	EPIRB from yacht **B52** radiating about 60 miles SE of Gabo Island. Merchant vessel Iron Monarch responded to urgency broadcast and requested to proceed to last known position.
27 Dec 1998	0808	Polair helicopter locates and winches man overboard from **Kingurra**.
27 Dec 1998	0829	RCC was advised of a man overboard from the yacht **Sword of Orion** approximately 40 miles SE of Gabo Island. There were also several crew seriously injured. An aircraft on scene, VH-SAR, was forced to leave the area due to bad weather. A search area for the missing man for first light was calculated, and a helicopter was tasked to evacuate remaining crew.
27 Dec 1998	1003	Helicopter Helimed 1, searching for **Winston Churchill**, reports that the source of an EPIRB that he had been tracking was that of **Renegade**. **Renegade** was OK and heading west.
27 Dec 1998	1045	Sydney Radio/VIS advised RCC that **Team Jaguar** had fired flares. Yacht was dismasted and subsequently towed to Eden.
27 Dec 1998	1055	Aircraft reported sighting yacht **B52**. Communications not established.
27 Dec 1998	1134	Aircraft reported sighting yacht **B52**, 9 crew on deck, afloat and drifting.
27 Dec 1998	1140	Sydney Water Police advised that they had a report from Eden Police that a vessel with a name similar to **Miintinta** was sinking within sight of land.
27 Dec 1998	1236	Merchant vessel Union Rotoma reported

		standing by yacht **Miintinta**, which was sinking about 32 miles east of Merimbula. Union Rotoma reported FV Josephine Jean also standing by ready to take **Miintinta** under tow.
27 Dec 1998	1337	Yachts that are not in distress are requested to turn off their beacons by Race Control.
27 Dec 1998	1359	Race Control discussed **Winston Churchill's** position and previous reported positions. Based on discussions and the original Mayday call, distress broadcast cancelled and new distress broadcast issued based on initial intelligence. A number of merchant ships responded to the broadcast and were either released or requested to transit through the area of concern and to keep a good lookout for signs of distress. Aircraft and HMAS Newcastle tasked to search area.
27 Dec 1998	1519	Union Rotoma advised RCC that FV Josephine Jean had **Miintinta** under tow for Eden.
27 Dec 1998	1617	Iron Monarch reported sighting a light in the vicinity of yacht **B52** but due weather conditions and visibility unable to confirm. Iron Monarch released. Several aircraft tasked to search for **B52** around last known position.
27 Dec 1998	1621	Helicopter winches 3 crew from **Sword of Orion**.
27 Dec 1998	1846	Helicopter lifted 6 remaining crew from **Sword of Orion**, two with injuries, and transported them to Merimbula. Yacht abandoned.
27 Dec 1998	1931	Race Control advised that **Zeus 2** had been dismasted previous evening and was heading to Eden under jury rig. Nothing had been heard since.
27 Dec 1998	1939	RCC advised by Southcare helicopter that it was winching off 5 crew from yacht **Midnight Special** which was dismasted and half full of water. Four crew remain awaiting a winch.
27 Dec 1998	2019	Race control advised **Zeus 2** position and that was proceeding along the coast to Eden at slow speed.
27 Dec 1998	2043	Helicopter Polair 1 winches 4 remaining crew from **Midnight Special**.
27 Dec 1998	2051	FV Josephine Jean advised RCC that **Miintinta** was abandoned about 40 miles east of Eden after the tow parted. Crew taken aboard Josephine Jean.
27 Dec 1998	2131	Careflight helicopter lifts 7 crew from **Business Post Naiad** after rolling second time. Two deceased lashed on board. Aircraft and HMAS Newcastle assisted police launch Nemesis in

		locating **Business Post Naiad**, which was later towed to Eden.
27 Dec 1998	2244	Distress Mayday issued from **Atara**.
27 Dec 1998	2317	Helicopter reported sighting yacht **B52** 70 miles to the north of its original EPIRB position, dismasted and underway to Eden. All onboard reported to be OK. Broadcast cancelled and **B52** instructed to turn EPIRB off.
28 Dec 1998	0111	Three injured crew members winched from **Solo Globe Challenger**. Five crew remain on board, yacht disabled and drifting. HMAS Newcastle proceeding to assist.
28 Dec 1998	0316	Yacht **Atara** located and doesn't require assistance.
28 Dec 1998	0335	**Miintinta** sighted by aircraft and appeared to have taken a significant amount of water. RCC confirmed that vessel had been abandoned.
28 Dec 1998	0644	Helicopter Helimed 1 reported rescuing 4 crew from **Winston Churchill** liferaft and informed that there are 5 crew on another liferaft. Search efforts continued using 24 fixed wing aircraft and 6 helicopters.
28 Dec 1998	1050	Navy helicopter reports winching 2 crew from **Winston Churchill** second liferaft but that 3 crew were washed from the raft at approximately 5.00 am (ESST local time). The search continued and was centred about 60 miles ESE of Eden.
28 Dec 1998	1058	Search for man overboard from **Sword of Orion** was not successful and was suspended with the notification of the next of kin.
28 Dec 1998	1432	Race Control advised RCC that yacht **Veto** was unreported since 27 Dec at 0300 UTC and there was some concern that the vessel may have drifted to east if it had been dismasted. An urgency broadcast was issued requesting sighting reports.
28 Dec 1998	2019	Body from **Winston Churchill** liferaft recovered from sea.
28 Dec 1998	2130	Race Control advised that **Veto** was safe and under jury rig heading towards Sydney.
28 Dec 1998	2203	Second body from **Winston Churchill** liferaft recovered from sea.
28 Dec 1998	2229	HMAS Newcastle takes 2 injured crewmen on board from **Solo Globe Challenger**. Fishing vessel Rubicon to tow yacht to Eden with remaining 3 crew.
29 Dec 1998	0615	Search activity for third missing person from **Winston Churchill** suspended.

29 Dec 1998	0714	Urgency broadcast for man overboard from **Sword of Orion** cancelled.
29 Dec 1998	0717	Urgency broadcast for missing person from **Winston Churchill** cancelled.
29 Dec 1998	1840	Fishing vessel Rubicon arrives at Eden after towing **Solo Globe Challenger** and 3 crew.

4.0 KEY ISSUES

4.1 Adequacy of search planning and airspace management

4.1.1 Outcomes

The RCC coordinated the search and rescue of 55 yachtsmen. One was a man overboard (Kingurra), six were from liferafts (Winston Churchill) and 48 were winched from yachts in distress. There were six deaths, one from the Sword of Orion, two from the Business Post Naiad and three from the Winston Churchill.

The entire operation would not have achieved the degree of success it did, without the devotion and skills of the officers from all involved agencies. The bravery of the men and women on the rescue helicopters, while operating in atrocious weather conditions, was exceptional and has been recognised internationally.

About 45 civil and ADF aircraft, both fixed wing and helicopters, flew about 500 hours during the rescue. Four vessels were engaged by AusSAR, including the Navy frigate HMAS Newcastle, one merchant vessel and two commercial fishing vessels. The cost of the commercial civil resources was approximately $650,000.

The SAR effort represented a one in 10-15 year major effort and the RCC officers were extended to their limit. The operation was conducted under exacting conditions with the RCC being subjected to a deluge of operational, media and next of kin communications.

The initial incident quickly escalated into multiple SARs with competing priorities. The general priorities were man overboard, people in liferafts, people critically injured on board yachts and people on disabled yachts. The fleet of 115 competitors had 71 retirements, with 14 yachts assisted or monitored by AusSAR.

While being justifiably proud of their performance the AusSAR operational staff acknowledge there are opportunities for continuous improvement.

The following table outlines assistance provided to yachts by AusSAR.

Yacht	Position		Approx time (UTC)	Nature of incident and AusSAR response
	South	East		
Veto	36 57	150 57	270300	Unreported since 270300 – turned up later under jury rig; urgency broadcast issued by AusSAR requesting sighting reports.
Zeus II			270305	Dismasted "29 nm north of Gabo Is" and heading to Eden under jury rig; vessel monitored by AusSAR.
Miintinta	36 56	150 37	270335	Dismasted and sunk, 6 crew rescued by FV Josephine Jean; merchant vessel Union Rotoma sighted flares, diverted and stood by Miintinta, until yacht taken under tow by FV Josephine Jean. AusSAR communicated with Union Rotoma and monitored tow. After tow parted crew taken onboard Josephine Jean. Search aircraft later confirmed position of yacht and that it was sinking.
Stand Aside	37 43	150 44	270500	Rolled & dismasted – injuries, 12 crew airlifted; AusSAR initiated distress broadcast, and tasked helicopter to yacht to rescue crew.
Sienna	37 43	150 45	270530	Injury; Sienna stood by Stand Aside before taking injured crew member ashore. AusSAR monitored yacht.
Winston Churchill	37 14	150 19	270600	Sunk – 3 deaths, injuries 6 airlifted; AusSAR conducted search for yacht and two liferafts employing several aircraft and helicopters over 2 days, from time of initial mayday from yacht until six crew were rescued and two bodies were recovered (one remained missing).
Solo Globe Challenger	37 20	151 56	270615	Dismasted, 3 crew rescued; AusSAR arranged for a helicopter to winch 3 injured crew members and transfer mobile VHF radio to yacht. HMAS Newcastle tasked by AusSAR to assist yacht and takes 2 injured crew members on board. FV Rubicon tows yacht and remaining 3 crew to Eden.
Business Post Naiad	38 05	150 32	270700	Rolled & dismasted – 2 deaths, injuries and 7 airlifted; after yacht activated EPIRB and mayday, AusSAR issued distress broadcast. Aircraft reported yacht underway and broadcast cancelled. Several hours later the yacht rolled again and 2 crew members died. Flares were fired and a SAR aircraft responded and remained over the yacht until a helicopter arrived and winched the 7 crew members.
Kingurra	38 00	150 47	270730	Man overboard & rescued; following a report of a man overboard from the Kingurra, AusSAR diverted a helicopter to the scene, which found the MOB and winched him to safety.
B52	38 21	150 34	270800	Dismasted; B52 activated their EPIRB and AusSAR despatched an aircraft to conduct search. Also vessel Iron Monarch responded to urgency broadcast and diverted to assist. Aircraft located B52 but unable to establish communications, vessel adrift with 9 crew. AusSAR tasked several aircraft to search for B52 at first light and yacht located 70 nmiles

				from original reported position, under own power with crew safe. B52 requested to turn off EPIRB.
Sword of Orion	38 14	150 24	270800	Man overboard / injuries, 9 crew airlifted, yacht presumed sunk; AusSAR issued an urgency broadcast to shipping that there was a man overboard and despatched two Navy helicopters with strobe lights The 9 crew were rescued by the 2 helicopters, but the search for the man overboard was unsuccessful.
Team Jaguar Infinity 3	37 41	150 40	271045	Dismasted; yacht fired flares and was towed to Eden. AusSAR monitored incident.
Midnight Special	37 26	150 52	271945	Dismasted – event probably occurred much earlier, yacht presumed sunk, 9 crew airlifted; AusSAR arranged for 2 helicopters to winch off the 9 crew members from the stricken yacht.
Atara	40 06	150 08	272244	Temporary loss of control – recovered & completed race; Atara issued a mayday and AusSAR tasked an aircraft to search for yacht. Yacht was located but didn't require assistance.

4.1.2 Staffing

During the SAR operations, RCC staff worked effectively as an integrated team with their specialist aviation and maritime skills. However the staff resources available during the SAR operations were stretched with insufficient SAR qualified officers.

When AusSAR was created, the original staffing structure planned to have the four members of SAR Resources and the two members of the Training School, SAR qualified and a loading for shift work included in their salary, to enable their periodic inclusion in the roster. It appears that only three officers were SAR trained but none of them were contacted during the subject operation due to the operational workload and changing priorities.

Consequently, rostered staff worked protracted shifts. At one stage two aviation staff (instead of three, as one was sick), had to prepare next day tasking for 38 aircraft, which is inadequate, given the importance of the task.

R1 The remaining three officers from SAR Resources and the Training School should be trained to the required level and included in rostered shifts to enable currency of their SAR qualification (subject to training opportunities available; one is scheduled for Oct 99). The shift roster plan needs to reflect the availability of these additional staff who can be called in to assist during an emergency.

4.1.3 Public Relations and media

AMSA's Public Relations section had three personnel involved for up to 18 hours a day for four days during the SAR operations and for several weeks

following for press, television, RCC visits and interviews by local and international journalists.

The media activity was intense with live to air TV crosses, updates for radio news every half hour, camera crews wanting access to the RCC and the media wanting more detailed and extensive information. Public Relations staff need to be briefed as issues arise. Press releases should be cleared by the RCC staff to maintain constant information flow, with the facts right.

AMSA achieved favourable media coverage both during and after the SAR operations, and a strong working relationship between AMSA Public Relations and the RCC staff has developed.

There is always a difficult balance between the operational demands of the RCC staff and the need for Public Relations to present accurate timely releases cleared by AusSAR for the media. This balance was achieved although there was some feeling in the RCC that the media was intrusive and potentially disruptive to their concentrated efforts. However Public Relations needs to present material to the media in a dynamic manner and access to the RCC is appropriate.

R2 A discrete but inclusive area (perhaps RCC 2) should be provided for the media, management and VIPs, but there may be occasions when Public Relations need to use a mobile chart table to clarify operational aspects of a media release.

Both the RCC and Public Relations were inundated with media telephone calls. Many of the calls were on operational lines rather than being routed directly to Public Relations. This has the potential to congest the operational lines. A dedicated telephone line for the media needs to be displayed in the RCC as well as mobile numbers, and the media told not to ring operational lines.

Notification of deceased persons is a delicate issue with Police having responsibility. Relatives heard of news from media on two occasions.

R3 The SOPs should be reviewed for handling media enquiries on operational lines.

4.1.4 RCC Layout

The stateboards, containing information of aircraft search area and associated details, are poorly positioned to provide core incident management information. It would be of most advantage to both maritime and aviation disciplines if located in the centre of the room. This location would enable both aviation and maritime staff to view the stateboards from their workstations and would avoid duplication. The boards do not provide adequate space for a major incident.

R4 Additional stateboard space in the room centre should be included in documentation for new RCC layouts.

4.1.5 Procedures

Working procedures and routine filing were breaking down under the pressure of the workload (incident narratives were not completed or were inaccurate and written recordings of telephone messages were often illegible, incomplete or didn't include details of time, sender or recipient). This was partly due to the high intensity of the workload with stretched staff resources. Paperwork was not well managed but did not compromise the operation. There is a need for self discipline with the execution of procedures.

R5 A SAR training program of basic skills and exercises should be designed and conducted to reinforce standard operating procedures and to support a formal qualification check system.

4.1.6 Observer Program

AusSAR's SAR Resources section has responsibility for the CSU program, which includes the training of observers and maintenance of an observer register. Many SAR aircraft operated with untrained and/or insufficient observers, which has the potential to compromise the integrity of the search. The untrained volunteer observers were trained by pilots and briefed on how to conduct observer duties and safety in and around the aircraft

This situation frustrated pilots who wanted to maximise their time undertaking the search with trained observers.

R6 The RCC should be advised by SAR Resources of the status and location of trained observers.

Pilots undertaking single pilot SAR operations, suggested that the Observer Leader for the flight could be made responsible for the logging of the vast array of times that are required on the flight debrief forms. This would release the pilots to concentrate on the more practical and critical elements of the flight. This would also maintain accountability of claims and ensure an ongoing independent audit control.

R7 SAR Resources should investigate the proposal to have the Observer Leader assist with administrative requirements on single pilot SAR operations.

4.1.7 Communications

The aircraft operators advised that the use of top-cover aircraft was absolutely essential to the overall coordination of the search aircraft on scene. It also provided essential support in the event of SAR action being required for aircraft experiencing difficulty or ditching.

This aircraft would be suitably equipped with radio communications that are capable of liaising with maritime, aviation, AusSAR and FS/ATC resources, satellite communication and radar technology (probably only the RAAF could provide). The top-cover aircraft could make an all stations broadcast on skeds of 30-60 minutes to give an overall picture and provide motivation, during prolonged SAR actions, to all aircraft crews.

R8 ***Top-cover aircraft should be utilised where overall coordination of the incident would be greatly enhanced, where resources are available and whether communication in the area is satisfactory or not.***

There was significant difficulty experienced in communications between SAR aircraft and stricken yachts. This was due to yachts losing their communications and fixed wing aircraft (with aviation frequencies only) and yachts (with maritime frequencies) having incompatible communication. VHF portable radios were either in short supply or not available.

Pilots indicated that the allocation of the dedicated aviation SAR frequency (123.1 MHz) was essential to reduce clutter on Area Flight Information Services(FIS) and HF frequencies. It allowed top-cover aircraft to relay directly to FIS and would be vital in cases where search aircraft required urgent assistance and had to transmit on uncluttered frequencies. Top-cover aircraft relieved the pressures of single pilot operations in SAR actions to concentrate on the demands of SAR flight.

The specialist rescue helicopters advised that as they are the primary rescue arm of AusSAR they prefer to maintain direct communications with AusSAR at all times (this was the case during the SAR operations). This cuts down on misinformation being received and given in this type of operation, and the transfer of vital information is instant.

R9 ***Dedicated SAR frequency should be used for all searches where congestion on Area FIS is likely. Communication on dedicated SAR frequency to top-cover communication aircraft should enable liaison with relevant FS/ATC and onto AusSAR.***

4.1.8 Briefings and debriefings

Pilots advised that the faxed "Search Briefing" is an essential method to advise aircraft of possible conflict within the search area with adjacent aircraft operating in close proximity. Civilian aircraft crew advised that all taskings that were received from AusSAR were within the capabilities of the crew and aircraft, with reference to weather, duration of search and legislative adherence, and were considered appropriate.

The pilots indicated a preference for geographic waypoints to be provided in the briefing for direct entry to GPS, rather than latitudes and longitudes.

R10 Training of RCC staff should be conducted in the use of the GPS Coordinates program, to assist pilots enter GPS information directly.

4.1.9 SAR Techniques

Pilots advised that the crews on yachts in distress, who had to assist with the rescue operation, were generally ineffective in the areas of identification, communication and knowledge of safety procedures in emergency situations. Yacht's crews need to be adequately trained in SAR techniques.

The training should encompass aircraft capabilities and safety aspects of aviation, communication methods, positioning of vessel, exit from vessel and methods for attachment to lifting slings.

R11 The Australian Yachting Federation in consultation with SAR pilots, CYCA and AusSAR, coordinate a SAR techniques training program to educate mariners.

4.1.10 Airspace Management

On 28 December 1998, a RAAF P-3C Orion and a Cessna 402 operated by Australian Air Patrol were conducting a visual search for the yacht Winston Churchill. AusSAR had assigned the aircraft adjacent search areas.

Although the AusSAR search plan provided a degree of deconfliction between the aircraft the aircraft passed with approximately 1,000 m horizontal and 200 ft vertical separation.

The Bureau of Air Safety Investigation has conducted a joint investigation with the Directorate of Flying Safety - Australian Defence Force (DFS-ADF) and their report makes recommendations for adoption by AusSAR. The recommendations relate to capabilities and limitations of ADF resources that may be required to conduct SAR tasks, AusSAR procedures for in-flight retasking of SAR aircraft and the investigation of methods to improve communications links for SAR operations, in conjunction with ADF and Airservices Australia.

R12 AusSAR to implement the recommendations of the BASI incident report.

4.2 Coordination and communications with external agencies involved in providing SAR response

4.2.1 Far South Coast Police and Sydney Water Police

The police that were involved in the search and rescue of crews and recovery of deceased yachtsmen were the Far South Coast Police from Batemans Bay, Bega, Merimbula and Eden, and the Water Police from Sydney. On the morning of 28 December 1998, the Police organised an Operations Centre (Command Post) with communications at the Public Works Building, Main Wharf Eden to assist in their SAR response.

Due to the large volume of communications at AusSAR's RCC, communication to the police was sometimes second or third hand. AusSAR decided to send an officer to Merimbula airport to set up a Forward Field Base to liaise with aircraft operators and representatives from other agencies, and a police officer was located to Merimbula airport to act as a Police liaison. This considerably improved communications with the Police.

The police advised that once AusSAR responsibility ceases, there is a need for a formal handover from AusSAR to Police, of details from vessels or aircraft, to enable police to exercise their responsibility for conducting investigations relating to disaster victim recovery and registration/identification.

R13 AusSAR standard operating procedures need to ensure that a formal handover of responsibility to the Police is clearly identified following completion of AusSAR's involvement in a SAR operation.

The Police offered to provide a Police officer at the RCC, but the offer was declined, due to the pressing workload and not recognising the potential advantages. A subsequent (unrelated) aircraft search on 3-4 January 1999, with a police presence had improved coordination and communications.

R14 Consideration should be given during a major SAR or multiple SARs to request a Police liaison officer at the RCC.

The media was a problem at Merimbula airport, and following discussion between AusSAR and the Police, the following recommendation was agreed.

R15 Police will provide media liaison at Forward Field Bases in the event of future incidents/emergencies, and will specify a media area to minimise interference to operations. Liaison officers for all involved agencies should be provided at the Forward Field Base.

4.2.2 AusSAR Forward Field Base

The AusSAR Forward Field Base was established on 28 December 1998 and enabled an AusSAR officer to communicate directly with outgoing and incoming SAR aircraft pilots. This provided an efficient conduit to the RCC for operational information, and for forward planning purposes. AusSAR considers that the facilities, (provided by Air Sapphire at Merimbula airport with minimal notice and to the detriment of their business), were suited for the purpose of allocating aircraft and providing detailed briefings.

The manning of the Forward Field Base with one AusSAR officer proved to be inadequate, with the officer required to work extensive hours over two days to ensure successful operation (two officers may be desirable). There is a need for a field kit including at least two mobile (or preferably satellite) phones, a lap-top computer, printer, facsimile machine, plotting gear, charts and appropriate protective clothing.

Other involved agencies subsequently joined AusSAR at Merimbula Airport for liaison purposes and for direct operational reports from SAR aircraft pilots. The Forward Field Base would only be required for a major SAR or multiple SARs typically involving six or more SAR aircraft.

R16 There is a need for AusSAR Standard Operating Procedures to define the role of a Forward Field Base, including staffing and equipment arrangements and individual agency requirements and early advice to the air operators at the airport and other involved agencies.

Due to the large number of aircraft operating out of Merimbula airport, critical fuel shortages occurred and fuel had to be sourced from several external locations including Defence establishments.

R17 AusSAR is to be the agency to organise fuel supplies in the event of a major SAR emergency.

4.2.3 AusSAR/CYCA liaison

As outlined at Paragraph 2.2, since 1994 AusSAR has provided a dedicated AusSAR field liaison officer as part of the CYCA Race Management team. The role of the AusSAR field liaison officer is to provide support and advice to the race controllers on SAR and communications matters, and to liaise with the Race Management team, AusSAR's Rescue Coordination Centre (RCC) in Canberra and the State Police of New South Wales, Victoria and Tasmania.

A further role of the AusSAR field liaison officer is to attend the compulsory pre-race briefing for skippers and navigators in Sydney, and give a presentation on SAR techniques and communications. In 1998 a second

AusSAR officer attended the Sydney pre-race briefing, and gave a presentation on the deployment of air droppable supplies from an aircraft, in the event of a vessel being in distress.

The field liaison officer relocated to Hobart on the morning of 27 December 1998 and joined the Race Management team at the Royal Yacht Club of Tasmania (RYCT). He attended Race Control from 1000 hours on 27 December 1998 to 0400 hours on 28 December, and from 0800 hours on 28 December until 0100 hours on 29 December. Attendance after that was as required through to 3 January 1999.

There were initially some difficulties in obtaining information from the RCC on events at sea, which were needed for the Field Liaison Officer to pass on to Race Control. Following the initial crisis, Race Control had a reasonable picture of the situation at sea through information being passed from the RCC, the radio relay vessel Young Endeavour, and by monitoring the various communication channels.

Communications from Race Control were HF monitoring using RYCT facilities, HF monitoring using Telstra facilities (VIS, VIM, etc) and Inmarsat-C communications with Young Endeavour relaying data. Communication schedules were 0300 and 1400, local position sked, and 2200 local optional safety sked.

Participating yachts do not maintain continuous listening watch on frequencies but report as required during skeds. Yachts are required to maintain a listening watch on 4125 kHz or VHF channel 16 during the silence periods.

As identification from the air of a yacht is difficult, and as continuous watches are not undertaken, many yachts did not communicate until directly overflown by a low flying aircraft.

R18 AusSAR should request CYCA to instruct all yachts to provide a constant radio watch.

For some yachts CYCA was unable to provide information on vessel description, safety equipment or persons on board details.

R19 CYCA should maintain a register of competing yachts with complete details to facilitate SAR response.

RCC received many telephone calls during the race from the media, next of kin and competitors within the fleet, seeking information on various yachts. While AusSAR redirected many calls to Race Control or CYCA, the volume of these calls congested operational AusSAR lines.

R20 There is a need for CYCA to have a Sydney/Hobart Race contingency plan (including inter alia, protocol for media liaison and next of kin information), with an AusSAR contingency plan

complementing the CYCA plan. AusSAR needs to consult with CYCA in the preparation of the AusSAR contingency plan.

4.2.4 State Emergency Services (SES) and Emergency Management Australia (EMA)

Both the SES and EMA were only involved to a minor degree, but it is envisaged that their role will be more significant in a similar SAR emergency. SES advised that other incidents were also impacting on emergency services during this operation. SES advised that their personnel are available to assist in the Police operations centre for any future emergencies.

The Local Emergency Management Officer (LEMO) made suggestions for locations to establish an operations centre for the Police and requested extra telephone lines from Telstra. The District Emergency Management Officer and the Police indicated that the LEMO, initially had not appreciated the scope and magnitude of the incident and the need for timely flow of information. The Police have requested that the LEMO be located at the operations centre for any future emergencies.

4.2.5 Defence

As the incident developed into multiple SARs, it became clear that the assets required would be beyond the civilian capability. Consequently the Navy and the RAAF were requested to provide specialist assistance. Navy provided three Sea King helicopters with night flying capability and the RAAF provided two P3C Orions to assist in the searches.

As few local vessels were able to put to sea in the adverse conditions, HMAS Newcastle was requested to assist AusSAR in the SAR operations, in particular the search for the yacht Solo Globe Challenger, which had been knocked down and dismasted. HMAS Newcastle lifted 2 crew from the yacht and stood by until the fishing vessel Rubicon arrived to tow the yacht to Eden.

4.2.6 Civil SAR Units

Civil SAR Units at Wollongong (Wollongong Aerial Patrol), Canberra (VH Aviation) and Moorabbin (General Flying Service) were engaged to assist in the SAR operations. Their role was one of detection and homing of distress beacons and undertaking visual searches. The aircraft carried air droppable supplies, but as helicopter winching was used to rescue crew in the majority of the rescues, there was not a need for deployment of any air droppable supplies. (Two datum buoys were dropped from a Navajo (from Moorabbin), in the search area for the man overboard from Sword of Orion).

4.3 Coordination and communications with support agencies involved in providing SAR response

4.3.1 Melbourne Flight Service

The Melbourne Flight Service (Airservices Australia) manages communications to aircraft operating outside air traffic controlled airspace and provides a SARwatch for these aircraft. The Melbourne Flight Service acted as a communications relay station between AusSAR and the aircraft.

AusSAR operational staff praised the Melbourne Flight Service for their high level of service and without their assistance there would have been no communications link to the aircraft once airborne.

4.3.2 Oil Companies

Esso Longford operates a fleet of helicopters to ferry staff and supplies to their oil rig platforms, with aircrews skilled in winching exercises. There are occasions when there is an Esso helicopter on standby for SAR purposes.

Esso Longford was contacted regarding the availability of crews and helicopters with winching capability to join the SAR operations, but was unable to assist before nightfall on the first day.

4.3.3 Bureau of Meteorology

There were problems associated with receiving search area forecasts from the Bureau of Meteorology (BOM), with written requests needing to be followed up with verbal requests in order to receive repeated forecasts.

R21 BOM to be formally advised by AusSAR of AusSAR weather requirements for search area planning.

4.4 Adequacy of information exchange between the CYCA and AusSAR

AusSAR was initially advised by a media helicopter operating on channel 16, of four MAYDAY calls from yachts, The situation quickly escalated to 13 vessels in distress, however no information had been received from race control or CYCA at this stage.

Following this initial crisis, the information flow improved, however the RCC was frustrated by the lack of a register for the fleet. Communications from yachts were not always complete or accurate, and were sometimes relayed by a third party. There was confusion caused by long yacht names that had to be relayed over VHF and HF.

R22 CYCA should investigate the use of shorter yacht names (or call signs) so that they are more easily recognisable on the radio channels.

Crews from SAR aircraft and helicopters provided accurate and timely advice and assisted considerably with the management of SAR assets. SAR crews encountered difficulties in identifying yachts due to their white hulls, lack of markings and distinctive features and the difficulty in seeing crew in the water, particularly at night.

R23 Yachts should have identification letters/numbers on the deck that are also visible at night, extensive use of retro reflective tape and brightly coloured hulls. The crew should wear bright wet weather gear, personal strobe lights and carry personal marker dyes.

During the race, nine Emergency Position Indicating Radio Beacons (EPIRBs) were detected on 121.5 MHz (one was believed to be from the merchant vessel Thor Sky which reported losing an EPIRB overboard), and one EPIRB was detected on 406 MHz. The RCC is technically able to track at least ten 121.5/243 MHz beacons at any one time and ninety real-time 406 MHz beacons. The 121.5/243 MHz beacon has an average accuracy within 20 km (70% of the time), while the 406 MHz beacons have an average accuracy within 5 km (95% of the time).

It is difficult for an aircraft to quickly and accurately locate a particular EPIRB. This is exacerbated when there are multiple beacons activated within a relatively close proximity providing mutual interference. This problem can be reduced by adopting the 406 MHz EPIRB (with 121.5 MHz homing capability) with its identification features and superior accuracy.

In addition some yachts activated their EPIRB and then motored/towed to the coast with their EPIRB still switched on. There were other EPIRBs washed overboard from vessels, which were adding to the confusion in identifying a particular EPIRB.

R24 CYCA should strongly recommend carriage of 406 MHz EPIRBs for all yachts, and encourage the use of personal 406 MHz EPIRBs.

4.5 Need for establishment of contingency arrangements for future blue water races

A contingency plan needs to be developed to capture all of the lessons learned from this operation. In particular issues such as staff resources, establishment of a Forward Field Base, liaison arrangements with other involved agencies, communications and emergency provisioning of fuel need to be included.

R25 AusSAR should continue the development of a contingency plan for major incidents and multiple SARs.

5.0 RECOMMENDATIONS

As noted earlier the SAR effort resulting from the 1998 Sydney/Hobart Yacht Race was extraordinary. The occurrence would be considered to be a one in 10–15 year event and the following recommendations must be viewed in that context.

R1 *The remaining three officers from SAR Resources and the Training School should be trained to the required level and included in rostered shifts to enable currency of their SAR qualification (subject to training opportunities available; one is scheduled for Oct 99). The shift roster plan needs to reflect the availability of these staff who can be called in to assist during an emergency.*

R2 *A discrete but inclusive area (perhaps RCC 2) should be provided for the media, management and VIPs, but there may be occasions when Public Relations need to use a mobile chart table to clarify operational aspects of a media release.*

R3 *The SOPs should be reviewed for handling media enquiries on operational lines.*

R4 *Additional stateboard space in the room centre should be included in documentation for new RCC layouts.*

R5 *A SAR training program of basic skills and exercises should be designed and conducted to reinforce standard operating procedures and to support a formal qualification check system.*

R6 *The RCC should be advised by SAR Resources of the status and location of trained observers.*

R7 *SAR Resources should investigate the proposal to have the Observer Leader assist with administrative requirements on single pilot SAR operations.*

R8 *Top-cover aircraft should be utilised where overall coordination of the incident would be greatly enhanced, where resources are available and whether communication in the area is satisfactory or not.*

R9 *Dedicated SAR frequency should be used for all searches where congestion on Area FIS is likely. Communication on dedicated SAR frequency to top-cover communication aircraft should enable liaision with relevant FS/ATC and onto AusSAR.*

R10 *Training of RCC staff should be conducted in the use of the GPS Coordinates program to assist pilots enter GPS information directly.*

R11 The Australian Yachting Federation in consultation with SAR pilots, CYCA and AusSAR, coordinate a SAR techniques training program to educate mariners.

R12 AusSAR to implement the recommendations of the BASI incident report.

R13 AusSAR standard operating procedures need to ensure that a formal handover of responsibility to the Police is clearly identified following completion of AusSAR's involvement in a SAR operation.

R14 Consideration should be given during a major SAR or multiple SARs to request a Police liaison officer at the RCC.

R15 Police will provide media liaison at Forward Field Bases in the event of future incidents/emergencies, and will specify a media area to minimise interference to operations. Liaison officers for all involved agencies should be provided at the Forward Field Base.

R16 There is a need for AusSAR Standard Operating Procedures to define the role of a Forward Field Base, including staffing and equipment arrangements and individual agency requirements and early advice to the air operators at the airport and other involved agencies.

R17 AusSAR is to be the agency to organise fuel supplies in the event of a SAR emergency.

R18 AusSAR should request CYCA to instruct all yachts to provide a constant radio watch.

R19 CYCA should maintain a register of competing yachts with complete details to facilitate SAR response.

R20 There is a need for CYCA to have a Sydney/Hobart Race contingency plan (including protocol for media liaison and next of kin information), with an AusSAR contingency plan complementing the CYCA plan. AusSAR needs to consult with CYCA in the preparation of the AusSAR contingency plan.

R21 BOM to be formally advised by AusSAR of AusSAR weather requirements for search area planning.

R22 CYCA should investigate the use of shorter yacht names (or call signs) so that they are more easily recognisable on the radio channels.

R23 Yachts should have identification letters/numbers on the deck that are also visible at night, extensive use of retro reflective tape and

brightly coloured hulls. The crew should wear bright wet weather gear, personal strobe lights and carry personal marker dyes.

R24 CYCA should strongly recommend carriage of 406 MHz EPIRBs for all yachts, and encourage the use of personal 406 MHz EPIRBs.

R25 AusSAR should continue the development of a contingency plan for major incidents and multiple SARs.

ANNEX A

ABBREVIATIONS

ABBREVIATION	*MEANING ASSIGNED*
ADF	Australian Defence Force
AHQAUST	Air Headquarters Australia
AMSA	Australian Maritime Safety Authority
ATC	Air Traffic Control
AUSREP	Australian Ship Reporting System
AusSAR	Australian Search and Rescue Organisation
BASI	Bureau of Air Safety Investigation
BOM	Bureau of Meteorology
CSU	Civil Search and Rescue Unit
CYCA	Cruising Yacht Club of Australia
DFS	Directorate of Flight Safety
E	East
EMA	Emergency Management Australia
EPIRB	Emergency Position Indicating Beacon
ESE	East South East
ESST	Eastern Standard Summer Time
FS	Flight Service
HF	High Frequency
LEMO	Local Emergency Management Officer
MARSAR	Maritime Search and Rescue
MHQAUST	Maritime Headquarters Australia
MOB	Man Overboard
PADS	Precision Aerial Delivery System
RAAF	Royal Australian Air Force
RCC	Rescue Co-ordination Centre
RYCT	Royal Yacht Club of Tasmania
S	South
SAR	Search and Rescue
SE	South East
SES	State Emergency Service
sked	Schedule of radio reports
SOP	Standard Operating Procedure
UTC	Universal Tine Constant
VHF	Very High Frequency

Attachment A