



Agenda Item: ATCM 9

Presented by: COMNAP

Original: English

Search and Rescue in the Antarctic

Search and Rescue in the Antarctic

Information Paper submitted by COMNAP to ATCM XXI
under agenda item 9 “Safety of Operations in Antarctica”

1. *What is the objective of this paper?*

- (1) **To explain what arrangements are in place for Search and Rescue (SAR) in the Antarctic, what is being improved and what has potential for further improvement.**

(2) This paper

- answers common questions about arrangements in place for Search and Rescue (SAR) in the Antarctic - most of them part of standard international agreements and procedures used worldwide;
- provides practical examples illustrating how current systems work;
- outlines the work done to continually improve systems and procedures; and
- outlines a possible vision for the future.

2. *What does “Search and Rescue” (SAR) cover here?*

- (3) **Emergency response in the Antarctic region to safeguard human life - in maritime, aviation and land-based emergencies.**

(4) The Antarctic region is here defined as the Antarctic Treaty area South of 60 degrees latitude South as well as peripheral ocean areas in which ships and aircraft transit between the Antarctic and South Africa, Australia, New Zealand or South America.

(5) The paper deals with Search and Rescue to safeguard human life. Safety of human life is paramount and remains the overriding principle governing any emergency response anywhere around the world.

(6) This paper does not cover pollution response per se. However, efforts in preventing the occurrence of emergencies and in responding to emergencies to safeguard human life are directly instrumental in reducing the occurrence of accidental pollution and in increasing the chances and possibilities of effective pollution response.

3. *What are “maritime”, “aeronautical” and “land” SAR?*

- (7) **The allocation of responsibility for Search and Rescue (SAR) depends on “who” is in distress, irrespective of what may be deployed in the operation.**

There is:

- **“maritime” SAR when a ship or person at sea is in distress;**
- **“aeronautical” SAR when an aircraft is in distress; and**
- **“land” SAR in all other cases.**

4. What makes Search and Rescue different in the Antarctic?

- (8) **The remoteness from emergency response assets and facilities.**

(9) The Antarctic region has difficult climate and geography - with for example low temperatures, often intense cyclonic storms, deep sea waters, floating ice, crevassed ice shelf's and ice caps and little exposed firm rock ground.

(10) But what makes Search and Rescue in the Antarctic notably different and difficult is that most of the region is remote from emergency response assets and facilities – ships, aircraft, land vehicles, stations, refuges, and communications. Additionally, ships and aircraft operating in the harsh Antarctic environment need special capabilities to deal with the cold and ice conditions.

5. Is prevention the first priority?

- (11) **YES - the first priority remains prevention: doing everything possible to minimise the risks of an emergency occurring.**

(12) Prevention remains the first priority for Antarctic operators. Prevention is not the subject of this paper, but it must be noted that it is directly instrumental in reducing the occurrence of emergencies requiring Search and Rescue.

(13) Prevention includes developing sound risk management practices, using the best available equipment and operating procedures and maintaining good safety margins. It includes:

- a range of ATCM recommendations on sea ice and weather information services, hydrography, air safety, shipping guidelines or contingency planning.
- a number of actions to support development and adoption of a number of guidelines and other instruments - an example is the work done by COMNAP and the ATCM on extending to the Antarctic the IMO guidelines for ships operating in Arctic ice-covered waters; and
- continual efforts to survey, chart and map the Antarctic region – an example is the ongoing work of the International Hydrographic Organisation (IHO) Hydrographic Committee on Antarctica (HCA) in hydrography and charting.

(14) Prevention also includes, whenever possible, having support available nearby to address any problem before it triggers an emergency, or having all elements of information necessary to call for support from 'partner' operators – as may be agreed bi-laterally or multi-laterally. Both COMNAP and IAATO facilitate and foster such cross-assistance amongst their members, and both organisations exchange information about the activities of their respective members and relevant contact details.

(15) These continual efforts on prevention have resulted in a low occurrence of emergencies in the region. However, it is obvious that

- these efforts on prevention should be maintained – and they are certainly being maintained; and
- emergency response systems cannot be neglected – and they are certainly not being neglected.

6. Do established, international Search and Rescue systems and procedures exist for the Antarctic?

- (16) **YES – established, international Search and Rescue systems and procedures do exist for the Antarctic. They are based, as in the rest of the globe, around the International Maritime Organisation (IMO) and International Civil Aviation Organisation (ICAO) global search and rescue plans which divide the globe into search and rescue regions (SRRs). Each SRR has a designated Rescue Coordination Centre (RCC) and can employ the satellite distress beacon detection system COSPAS-SARSAT. A range of navigation safety information is broadcast**

over a number of NAVAREAs established under the IMO in consultation with the International Hydrographic Organisation (IHO) and the World Meteorological Organisation (WMO).

(17) The Search and Rescue responsibilities of States are governed by the standards and recommended practices contained in:

- Annex 12 to the Convention on International Civil Aviation 1944 (also known as the Chicago Convention) - which established the International Civil Aviation Organisation (ICAO);
- the Annex to the International Convention on Maritime Search and Rescue 1979 (SAR);
- the International Convention for the Safety of Life at Sea 1974 (SOLAS); and
- Article 98 (“Duty to render assistance”) of the United Nations Convention on the Law of the Sea 1982 (UNCLOS).

(18) All these conventions apply worldwide and are generally accepted and applied.

7. What obligations and principles apply to the Antarctic?

- **(19) Exactly the same obligations and principles that apply in the rest of the world except that while maritime and aeronautical SAR are covered, land SAR is not - no nation has a responsibility under international agreements for coordinating land SAR in the Antarctic.**

(20) As noted earlier, safety of human life is paramount and remains the overriding principle governing any Search and Rescue (SAR) operation anywhere around the world.

(21) Maritime and aviation international SAR obligations and principles do all apply in the Antarctic. State-funded Rescue Coordination Centres (RCCs), operating in accordance with the Conventions, guidelines and procedures of IMO and ICAO, have the responsibility to coordinate SAR, if and when called for assistance. Ships and aircraft best placed to respond to a distress¹ situation have the obligation to respond without delay, and can be requested to do so by the relevant RCC.

(22) **It should be stressed however that anyone in distress is not obliged to call on the RCCs for help** – Vessels and aircraft in distress can always choose to organise their own SAR response. Obligations rest

- on the RCCs - to organise maritime and aviation SAR coordination if called upon; and
- on best placed assets/operators - to assist when a distress situation has been declared.

(23) It is also important to note that RCCs have the responsibility to coordinate SAR but NOT to maintain and deploy their own assets. It is however always important for them to have a clear picture of where assets are.

(24) While the governments of many RCCs may maintain SAR assets in non-remote parts of their SRRs, only Argentina and Chile maintain and deploy dedicated SAR assets in the Antarctic portion of the 2 SRRs they are responsible for – they are doing this collaboratively through their joint Antarctic Naval Patrol (Patrulla Antártica Naval Combinada) which operates every summer since 1998 in the Antarctic Peninsula region, where most of the traffic occurs, and provides dedicated rescue assets over a sea area of some five hundred thousand square kilometres.

(25) Responsibility for land SAR in the Antarctic has not been defined by any international agreements and no nation has responsibility for coordinating land SAR in the Antarctic.

8. What is a NAVAREA?

¹ distress= grave and imminent danger

➤ **(26) A defined “Navigation Area” in which a designated organisation is responsible for dissemination of navigation and meteorological warnings**

(27) The world oceans are divided in 16 well defined “NAVAREAs” established under the International Maritime Organisation (IMO) in consultation with the International Hydrographic Organisation (IHO) and the World Meteorological Organisation (WMO).

(28) A designated organisation is responsible for dissemination of navigation and meteorological warnings and other relevant Maritime Safety Information (MSI) over each area.

(29) Antarctic waters are covered by 5 of these NAVAREAs that extend all the way down to the Antarctic coast. The organisations responsible for these 5 NAVAREAS are the Hydrographic Offices of South Africa, New Zealand, Chile and Argentina and the Maritime Safety Authority of Australia. (see Appendix A)

(30) Each of the 5 countries concerned has an active National Antarctic Program that operates in the relevant NAVAREA.

9. What is COSPAS/SARSAT?

➤ **(31) The international satellite-based search and rescue distress alert detection and information distribution system**

(32) COSPAS/SARSAT is the international satellite-based search and rescue distress alert detection and information distribution system. Satellites detect and forward distress signals received by distress beacons.

(33) This system extends all the way to the poles and covers the Antarctic region. More information can be found at <http://www.cospas-sarsat.org>.

10. What are SRRs and RCCs?

➤ **(34) Maritime and aeronautical Search and Rescue Regions (SRRs) and corresponding Rescue Coordination Centres (RCCs)**

(35) A Search and Rescue Region (SRR) is an area of defined dimensions associated with a Rescue Coordination Centre (RCC) and within which Search and Rescue (SAR) services are provided. The purpose of having a SRR is to clearly define who has primary responsibility for coordinating responses to distress situations in every area of the world, which is especially important for automatic routing of distress alerts to responsible RCCs.

(36) The globe is divided in a number of aeronautical and maritime SRRs. Aeronautical SRRs are organised under the International Civil Aviation Organisation (ICAO) and maritime SRRs under the International Maritime Organisation (IMO). Their limits are usually similar, but not necessarily identical.

(37) The Antarctic is covered by 5 maritime SRRs and 5 aeronautical SRRs:

- 5 maritime SRRs that extend all the way South to the Antarctic coast and together cover all the region's navigable seas: and
- 5 aeronautical SRRs that extend all the way South to the geographic pole and together cover all of the region's airspace.

(38) Responsibility for these SRRs rests with 7 RCCs located in Cape Town and Johannesburg (South Africa), Canberra (Australia), Wellington (New Zealand), Punta Arenas (Chile), Ushuaia and Comodoro Rivadavia (Argentina).

(39) Details on the 10 Antarctic SRRs and 7 RCCs can be found in Appendix A.

(40) Each of the 5 countries concerned has an active National Antarctic Program that operates in the relevant Search and Rescue Regions.

11. Are NAVAREAS, SRRs and RCCs connected to sovereignty?

- **(41) NO - NAVAREAS, SRRs and RCCs are not connected to sovereignty or to the exercise of sovereignty**

(42) There can be some confusion, as in most of the world individual nations take responsibility for SAR over their sovereign territory. But NAVAREAS, SRRs and RCCs established under the auspices of international organisations (IMO, ICAO, IHO and/or WMO) are not connected to sovereignty or to the exercise of sovereignty.

(43) It is understood that in the past, some historic tendency to use SAR region boundaries to justify national borders has been a problem. IMO and ICAO have worked towards avoiding possible confusions.

12. Who has responsibility for land SAR?

- **(44) Responsibility for land SAR in the Antarctic has not been defined by any international agreements and no nation has responsibility for coordinating land SAR in the Antarctic.**

(45) Responsibility for land Search and Rescue in the Antarctic has not been defined but has traditionally been the job of the national expeditions deployed to continental stations.

(46) Expeditions render all assistance feasible in the event of an emergency request for help, in accordance with all common principles and in line with ATCM Recommendation I-X (1961)².

(47) National Antarctic Programs aim to be self-sufficient but also maintain links so that they can better assist each other if necessary. These Programs have both operational experience and response assets on the ground. They will usually be best placed to respond. They will also often be well placed to coordinate SAR, although RCCs can assist them or take over coordination as and when possible and appropriate – even if no RCC has formal responsibility over land-SAR in the region.

13. Put simply, who will usually coordinate SAR in the Antarctic?

- **(48) SAR for a vessel or an aircraft lost in the Antarctic will usually be coordinated by the relevant RCC, and SAR for an over-ice/overland expedition in distress will be coordinated by whoever is best placed to do it – usually a National Antarctic Program**

(49) Put simply;

- SAR for an aircraft lost in the Antarctic Treaty Area would usually be coordinated by an Aeronautical RCC (ARCC) under Annex 12 of the Chicago Convention; and
- SAR for a vessel lost in Antarctic Treaty Area waters would usually be coordinated by a Maritime RCC (MRCC) under the SAR / SOLAS Conventions; whereas
- SAR for an over-ice / overland expedition in distress would be coordinated by whoever is best placed to do it – usually a National Antarctic Program, possibly in liaison with a RCC.

² ATCM Recommendation I-X (Canberra, 1961), effective 30-04-1962, reads:
The representatives reaffirm the traditional Antarctic principle that expeditions render all assistance feasible in the event of an emergency request for help and recommend to their Governments that consideration should be given to arranging consultations among them, and to the matter being discussed at the appropriate time at any meeting of experts qualified to discuss it.

(50) Note that each situation could have the same vessels, aircraft and ground parties from some or many Antarctic programs participating in the SAR.

14. Who are the RCCs covering the Antarctic?

- **(51) The 5 maritime Search and Rescue Regions (SRRs) and 5 aeronautical SRRs of the Antarctic region are covered by a total of 7 Rescue Coordination Centres (RCCs) located in South Africa, Australia, New Zealand, Chile and Argentina**

(52) The Antarctic Search and Rescue Regions (SRRs) are covered by a total of 7 Rescue Coordination Centres (RCCs): 3 Maritime RCCs (MRCCs), 3 Aeronautical RCCs (ARCCs) and 2 Joint (aeronautical and maritime) RCCs.

(53) These are, from West to East:

- MRCC Cape Town (South Africa)
- ARCC Johannesburg (South Africa)
- RCC Australia (located in Canberra, Australia)
- RCC New Zealand (located in Wellington, New Zealand)
- MRCC and ARCC Punta Arenas (Chile)
- ARCC Comodoro Rivadavia (Argentina)
- MRCC Ushuaia (Argentina)

(54) More details about these RCCs and corresponding Regions are provided in Appendix A. This includes a map showing the boundaries of Maritime SRRs and contact details for RCCs and their national SAR agencies.

(55) Each of the 5 countries concerned has an active National Antarctic Program that operates in the Search and Rescue Regions covered by its RCCs.

15. What service do the RCCs provide?

- **(56) RCCs coordinate Search and Rescue but do not necessarily maintain and deploy response assets**

(57) A Rescue Coordination Centre (RCC) has responsibility for coordination of Search and Rescue (SAR) within its designated Search and Rescue Region (SRR). It has systems, staff and resources in place to perform such coordination when a distress call is made in the Region.

(58) RCCs have the responsibility to coordinate SAR but NOT to maintain and deploy their own assets. While the governments of many RCCs may maintain SAR assets in non-remote parts of their SRRs, only Argentina and Chile maintain and deploy dedicated Search and Rescue assets in the Antarctic portion of the 2 SRRs they are responsible for – they are doing this collaboratively through their joint Antarctic Naval Patrol which operates every summer since 1998 in the Antarctic Peninsula region.

(59) An RCC has the authority to request any ship or aircraft to divert and assist. Commercial vessels can normally recover costs by claiming against their insurance. RCCs will generally reimburse aircraft operators for the cost of hiring their aircraft for SAR use.

(60) The RCC can “broadcast” when there is a distress situation to advise ships and aircraft, ask them to signal themselves and ascertain who is best placed to help.

(61) Ships are reached through the same systems used for broadcasting Maritime Safety Information (MSI) over NAVAREAs: Inmarsat SafetyNET and HF radio. Aircraft are reached through the air traffic services of the area.

(62) The RCC maintains a control centre staffed round the clock. In compliance with the SAR Convention (Paragraph 2.3.3) a Maritime RCC is able to maintain communication in both the local language and in English, and the IMO has developed a set of standard maritime communication phrases in English to be used in these circumstances - Refer IMO Res A918(22). The same applies for aviation to Aeronautical RCCs, and ICAO promulgates standard phraseologies and sets out procedures in ICAO Annex 10.

(63) However, anyone in distress in the Region is not obliged to call on the RCC for help and can always choose to organise a separate SAR response.

(64) An RCC taking responsibility for a maritime or aviation SAR operation will often work in cooperation with other agencies within the region. In the Antarctic, this can include one or more National Antarctic Programs, and the RCC could assign responsibility for specific tasks/duties to an Antarctic Program.

16. Does it help to have a clear picture of who is in the region?

- **(65) CERTAINLY – it is easier and faster for RCCs to coordinate Search and Rescue when they have a good picture of who is in the region. It maximises the chances of a prompt, effective Search and Rescue response.**

(66) It is certainly powerful to have a clear picture of where expeditions, ships and aircraft are within the Region, and what their capabilities, plans and contact details are. It can speed and narrow down the search for a ship or aircraft in distress. It can also speed up the identification of, and communication with, the assets best placed to assist.

(67) A clear picture does maximise the chances of a prompt, effective Search and Rescue response.

17. What do RCCs have in place to develop a picture of who is in the region?

- **(68) RCCs have a range of instruments to try to develop a clear picture of who is in the region. However most are optional and gaps still exist.**

(69) Aircraft are normally tracked by air traffic services that should know where aircraft are at any time.

(70) A maritime RCC often operates a Ship Reporting System within its SRR. It remains a voluntary system in most cases. RCCs cannot oblige foreign vessels navigating in their SRR to report unless they transit through their ports or national waters.

(71) Under the International Convention for the Safety of Life at Sea (SOLAS), cargo vessels of more than 300 tons gross and all passenger ships must:

- broadcast Automatic Identification System (AIS) signal; and
- (starting 31 December 2008) transmit Long Range Identification and Tracking (LRIT) information.

(72) This does not apply to small, private vessels such as yachts.

(73) Reception of AIS signal is limited to VHF range, typically about 50 nautical miles, but maybe further depending upon aerial height. Some trials are under way to evaluate the feasibility of collecting this information globally by satellite.

(74) LRIT information, which must include at least the identity of the ship and its position (latitude, longitude and time), is reported up to a central IMO data exchange. Relevant authorities of IMO member states can then purchase position reports, but only those reports relating to:

- vessels operating under their flag;
- vessels seeking entry to a port within their territory; or
- vessels operating within 1000 nautical miles of their coastline.

(75) The 1000 nautical miles limit means that only one small region of the Antarctic Treaty Area can be effectively covered by the relevant RCCs, those in Ushuaia and Punta Arenas – but this corresponds to the most travelled waters of the Antarctic Peninsula.

(76) More could certainly be done to support the development of a clear picture so as to maximise the chances of a prompt, effective Search and Rescue response

18. What else can help develop a clear picture of who is in the region?

- **(77) The Antarctic Treaty System and operators collect and exchange a range of information that can and does help develop a clear picture of who is in the region. However this was not developed for this purpose.**

(78) COMNAP and IAATO collect advance information about their members' ship and aircraft schedules, and Antarctic Treaty parties do exchange before each season a range of information on activities planned by their governmental agencies and their nationals. But these systems are only advance exchange of information – they were not designed to, and cannot, provide up-to-date, dynamic information on actual schedules and voyages.

(79) COMNAP and IAATO have put in place systems for their members to exchange information about their ship positions. COMNAP is redeveloping its 'SPRS' Ship Position Reporting System and IAATO has recently agreed the desirability for member vessels to be tracked on a single website where vessels can be viewed and tracked in near real time, working towards this in the next twelve months. These are private, optional systems designed primarily to support collaboration between members of each organisation.

(80) COMNAP maintains the Antarctic Flight Information Manual (AFIM) and the Antarctic Telecommunications Operators Manual (ATOM) which provide a range of contact details for national operators, ships, stations, airfields and other camps and refuges. IAATO maintains a list of contact details of their members' vessels in addition to detailed information on vessel attributes and assets available (e.g. oil spill response equipment, diving equipment, helicopter capability).

(81) The bulk of this information is or can be made available to RCCs. However, they were not developed for this purpose and hence are not necessarily well suited to the task.

19. Is the information collected by the RCCs circulated openly?

- **(82) NO – The RCCs use the information for the purpose of Search and Rescue only, and have appropriate confidentiality procedures in place.**

(83) The RCCs do not circulate position and other ship and aircraft information that they receive and use them solely for the purpose of Search and Rescue (SAR). Appropriate procedures are in place to protect information and ensure confidentiality. Ship reporting systems established to support SAR have to observe the relevant guidelines established by IMO.

(84) Usually, Maritime RCCs do NOT even monitor ship movement over areas of their SRR in which there are no active distress situations, except when and if they need to build a general picture of who is there so as to be better prepared. RCCs typically only start looking at the information when and where needed.

20. Do we have some recent examples of SAR operations in the region?

- **(85) YES – RCCs coordinate Search and Rescue operations in the Antarctic region relatively regularly. Most of these operations remain unknown outside the authorities and operators involved.**

(86) Three examples of Search and Rescue coordination involving RCCs to varying extents in the last (2007/2008) summer season are:

- In late November 2007, M/S Explorer with 154 persons on board was holed by ice in Bransfield Strait and had to be evacuated. Three other passenger vessels only about 40 NM away proceeded immediately to the site. All 154 persons were safely transferred to M/V Nordnorge which delivered them to Chilean and Uruguayan Antarctic Program stations at Frei and Artigas. They were then flown out by chartered aircraft to Punta Arenas over 2 days. Brazilian and Chilean Antarctic Program vessels that were in the wider area also had proceeded to the site ready to assist if necessary. The whole operation was formally praised the following week by the Secretary General of IMO as “a truly international effort deserving an expression of due tribute.” The overall rescue operation involved services from Argentina, Brazil, Chile, Norway, the United Kingdom, the United States and Uruguay and IAATO member vessels.
- In early January 2008, a crewmember was injured on a fishing vessel in the South of the Indian Ocean. A complex medical evacuation (MEDEVAC) was coordinated with the plan being to transfer the patient to another vessel present in the area, then for that vessel to rendezvous with an Australian Navy ship with civilian medical specialists onboard. Unfortunately the patient passed away before the first transfer took place;
- In late January 2008, a crewmember was injured on a fishing vessel in the Dumont d'Urville Sea. A MEDEVAC operation was initiated by RCC Australia following a request from the Madrid RCC. The fishing vessel proceeded to the French Antarctic Program station at Dumont d'Urville and the crewman transferred ashore. Subsequently, RCC New Zealand and the United States Coast Guard organised transfer to the US Antarctic Program station at McMurdo by an Italian Antarctic Program aircraft and then to New Zealand on a US Antarctic Program aircraft.

21. Is there duplication/conflict between RCCs and Antarctic operators, or complementarity?

- **(87) There is no conflict whatsoever, and little duplication, between Rescue Coordination Centres (RCCs) and Antarctic Operators. There is a high level of complementarity and obvious potential for cooperation.**

(88) As shown in previous sections of this document, there is no conflict whatsoever between RCCS and Antarctic operators as no one is forced to call on a RCC.

(89) RCCs have expertise in coordination with appropriate infrastructure and personnel in place. They may be able to bring any external capabilities and assets they have available to add to those that may be available locally. However, ice capable vessels and aircraft may not always be available to SAR services. They have access to a range of IMO/ICAO instruments to collect information but current limitations can leave them 'outside' with little knowledge of local operations in their SRR until there is a distress call to attend to.

(90) Operators have local assets, local knowledge and expertise in Antarctic operations. They have good knowledge of who else is there – in particular through information exchanged through the Antarctic Treaty, COMNAP and IAATO.

(91) There is little duplication, a high level of complementarity and obvious potential for collaboration.

22. Are the RCCs and Antarctic operators working together?

- **(92) YES - RCCs and operators have worked together for a long time, though links have often remained informal and on a mostly national level. The situation continues to evolve positively with stronger links being forged.**

(93) Each RCC has traditionally maintained informal links and lines of communications with their local National Antarctic Program, and in some cases with other National Antarctic Programs operating regularly in their Search and Rescue Region. For example, the French Antarctic Program vessel L'Astrolabe is fully integrated in the Australian Reporting system AUSREP.

(94) RCCs have through these links been able to maintain at least a partial view of activities undertaken in their Search and Rescue Region, and been able to maintain communication lines to contact the relevant National Programs and stations, directly or indirectly, as and when needed.

(95) The situation has continued to evolve positively in recent years. The Antarctic RCCs and the 5 corresponding National Programs have started developing stronger relationships. Some formal, organised protocols of collaboration have been signed or are in preparation, and several exercises have been organised. Work will continue on implementing more structured arrangements between RCCs and their respective National Antarctic Programs.

23. How could RCCs and Antarctic operators work even better together?

- **(96) In view of the current increase of activities in the Antarctic, the RCCs and COMNAP are reviewing the situation. The RCCs and the 5 corresponding National Antarctic Programs will be holding in August 2008 a workshop “towards better SAR coordination and response in the Antarctic region” and look at options for a more efficient, uniform and coordinated approach.**

(97) With the current increase of activities in the Antarctic has emerged a need and demand from both sides for more exchange of information and more organised, coordinated and uniform channels of communication.

(98) COMNAP resolved at COMNAP XIX (Washington, USA, July 2007) that the 5 National Programs of those countries with Antarctic RCCs would work together and with their respective RCCs to discuss how COMNAP could best collaborate in a uniform way with the 5 countries' RCCs.

(99) This action is progressing. In practice, this translates at the moment in 3 main actions:

- re-develop and expand the capabilities of the COMNAP Ship Position Reporting System (SPRS) – this includes incorporating vessel and operators contact details, ship schedules, etc and pushing this information out to RCCs, participating vessels and operators; - *significant improvements have already been commissioned and more are programmed ahead of the next summer season.*
- prepare a paper for ATCM XXXI explaining what systems are in place, and outline what is done and could be done to support them; - *this paper.*
- organise a workshop bringing together the RCCs, the 5 corresponding National Programs and a small number of relevant experts to discuss how all could work together “towards better SAR coordination and response in the Antarctic region”. - *the workshop is scheduled for Tuesday 12 to Thursday 14 August 2008 in Valparaiso, Chile. A draft agenda is provided at Appendix B.*

(100) Improved exchange of information between RCCs and operators, may include:

- the development of a library of relevant information, to ensure all can work from a common reference during a SAR incident;
- systems providing RCCs with up to date contact information of National Program control centres and up to date position, capabilities and contact details of assets and parties deployed in the field – ships, aircraft, airfields, stations, camps, refuges or traverse convoys; and
- systems letting ships, aircraft or field parties know in which Search and Rescue Region (SRR) they are located and how to contact the relevant RCC.

(101) Improved and expanded means of collecting live information on ship movements (in addition to any voluntary ship position reporting system) may include:

- developing in selected areas a network of VHF receiving stations collecting Automatic Identification System (AIS) information;
- working on options to collect AIS information by satellite, as currently being tested by Canadian company COM DEV; or
- the ATCM and IMO reaching an agreement whereby Long Range Identification and Tracking (LRIT) information originating from the entire Antarctic region could be made available to RCCs.

(102) It can be noted that AIS equipment is very portable, very reasonably priced, and does not have to be limited to ships. It can be easily fitted to various types of transport, from small rubber boats to tracked vehicles to quad bikes, and can also be fitted to mobile camps - tents or shelters. Satellite AIS could therefore extend positioning to about any field operation/party as necessary. Work on such extension of AIS beyond ships was initiated by the Uruguayan Antarctic Program - refer XXIX ATCM / WP006 "*Extending the use of the Automatic Identification System (AIS) to Antarctic operations safety*" (2006). This work is being followed up by COMNAP through its Safety Working Group.

(103) Help everyone understand the global Search and Rescue / Rescue Coordination Centre system is also crucial in supporting its capacity to support effective SAR coordination and response. This is something RCCs and Antarctic operators are well placed to assist with – and this paper was designed to contribute to this.

(104) The upcoming workshop will discuss these and possible improvements. It will focus on technical issues. While it will try to identify any regulatory or legal barriers to implementing desirable technical solutions, it will not take any position other than operational on possible solutions to their barriers. The report of the workshop will be made widely available.

24. Can the current increase in maritime traffic be of concern?

- **(105) YES - The current increase in maritime traffic can be of concern in relation both to the capability to respond and to the possible impact on National Programs. Of particular concern are very large passenger vessels – their rescue would require considerable assets and resources and could cause major disruptions to nearby stations and vessels and the research programmes they support.**

(106) An increase in maritime traffic does increase the risks of a distress situation occurring. But it does also increase the chances of another vessel nearby being able to respond timely and effectively.

(107) Trends that could be of concern include the use of very large passenger vessels; an increased use of vessels not designed for ice navigation; and navigation earlier and later in the summer season.

(108) Of particular concern are very large passenger vessels – their rescue would require considerable assets and resources and could cause major disruptions to nearby stations and vessels and the research programmes they support.

25. How can the ATCM support RCCs and Antarctic operators in their efforts?

- **(109) Many possible improvements may require, or be facilitated by, guidance and support from the ATCM. This may in particular include any dealings with the IMO regarding access to LRIT information from the Antarctic area. Conclusions and recommendations from the workshop will be forwarded to the ATCM and other relevant organisations for consideration.**

26. What possible vision for the future?

- **(110) A uniform, coordinated approach to Search and Rescue coordination and response throughout the Antarctic region, founded on established international agreements and existing infrastructure – with:**
 - **Better developed land SAR arrangements;**
 - **Comprehensive vessel and aircraft tracking; and**
 - **Improved SAR response capabilities through better communications and procedures.**

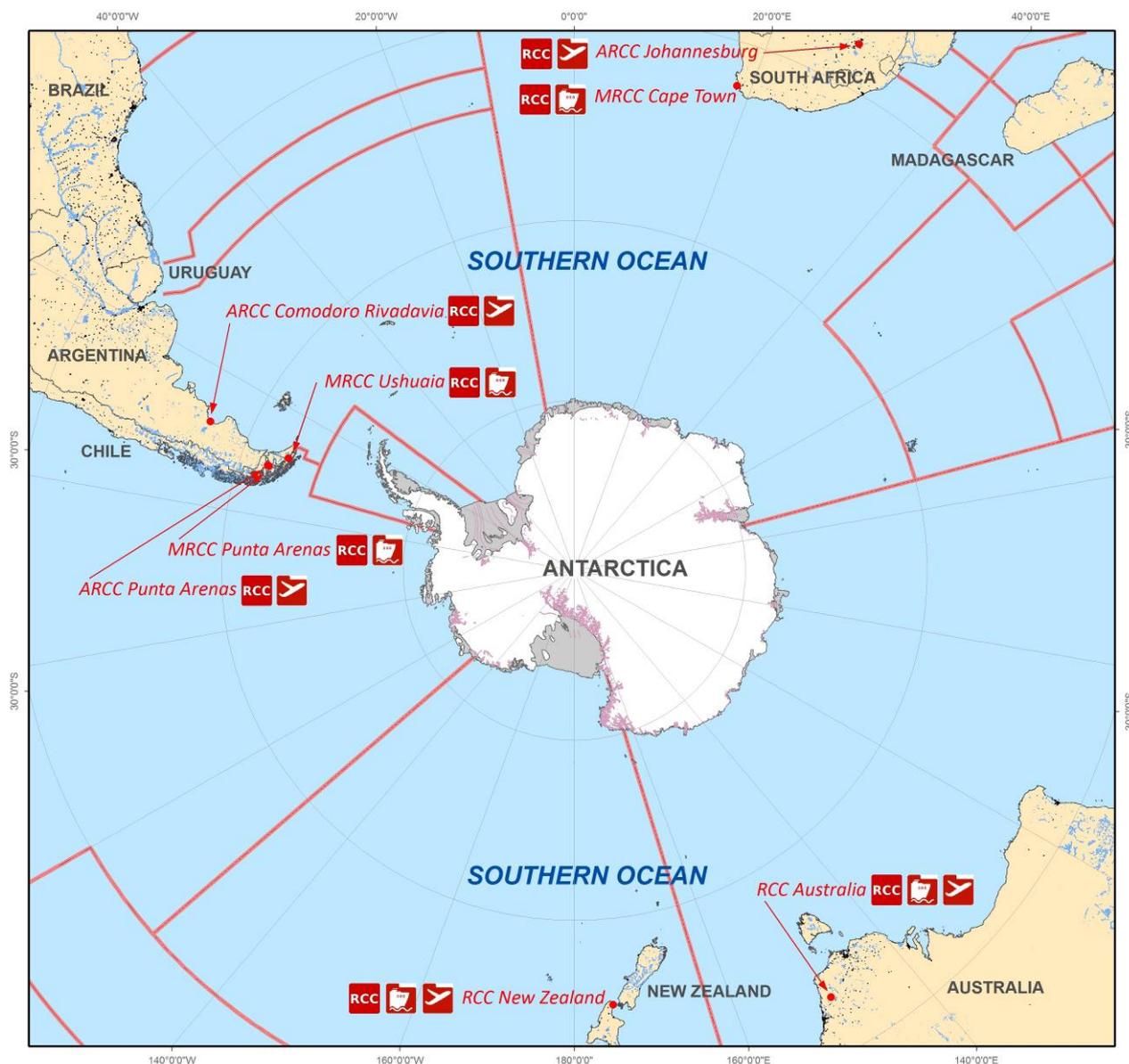
Appendices:

Appendix A: Antarctic Search and Rescue Regions (SRRs), Rescue Coordination Centres (RCCs), Search and Rescue (SAR) Agencies and Navigational Areas (NAVAREAs).

Appendix B: Draft agenda of upcoming operational workshop “*towards better SAR Coordination in the Antarctic region*”

Appendix A: Antarctic Search and Rescue Regions (SRRs), Rescue Coordination Centres (RCCs), Search and Rescue (SAR) Agencies and Navigational Areas (NAVAREAs).

Map: Maritime and Aeronautical RCCs and Maritime SRR boundaries



Extract from COMNAP map “Antarctica - Maritime and Aeronautical Rescue Coordination Centres (RCCs) and Maritime Search and Rescue Region (SRR) boundaries”. 13-May-2008

List of Antarctic RCCs and SAR agencies**ARGENTINA****MRCC Ushuaia**

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National SAR agency

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ARCC Punta Arenas

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Aeronautical subcentre Teniente Rodolfo Marsh Martin

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NEW ZEALAND

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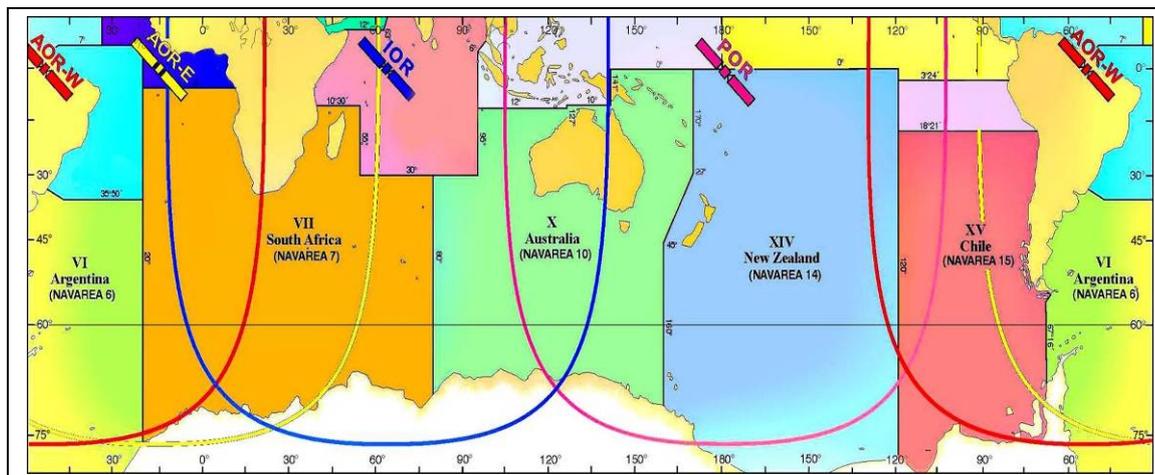
SOUTH AFRICA

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National maritime SAR agency
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Navigational Areas (NAVAREAs)



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**Appendix B: Draft agenda of upcoming operational workshop
“towards better SAR Coordination in the Antarctic region”.**

Workshop Hosted by the Chilean Navy's Directorate General of the Maritime Territory and Merchant Marine (DIRECTEMAR) in collaboration with COMNAP, the Council of Managers of National Antarctic Programs.

Valparaiso, Chile, Tuesday 12 to Thursday 14 August 2008

Audience: Search and Rescue operations managers

(Day 1)

- Welcome, opening remarks, administrative matters
- Current SAR arrangements and resources
 - Presentations of National arrangements for SAR coordination and response in the Antarctic region (RCCs and National Programs) – including relationships between SAR authorities and National Programs and stations, and relevant agreements and protocols in place, Argentina; Australia; Chile; New Zealand and South Africa
 - Discussion: common themes, different approaches, observations
- Identifying common routes and traffic (National Programs and IAATO)
- Identifying SAR Resources (SAR authorities, National Programs and IAATO)

(Day 2)

- Enabling information
 - Communication systems
 - Ship reporting systems: AMVER, AUSREP, CHILREP, COMNAP and IAATO SPRSs, LRIT, AIS
 - Other methods of identifying assets
 - Library of relevant information
 - Exchange of information between RCCs, National Programs and other operators
- Land SAR

(Day 3)

- Hypothetical SAR scenarios
 - Scenario 1 – in Antarctic Peninsula region (Argentina & Chile)
 - Scenario 2 – in Ross Sea region (New Zealand)
 - Scenario 3 – in East Antarctic region (Australia and South Africa)
 - Discussion: issues and challenges
- How to Progress
 - Objectives
 - Tasks and Actions
 - Recommendations
- Conclusions, closing remarks