



International Civil Aviation Organization

Search and Rescue (SAR) Meeting for the North American, Caribbean and South American Regions (SAR/NAM/CAR/SAM)

(Puntarenas, Costa Rica, 18 to 22 May 2009)

SAR/NAM/CAR/SAM WP/03

09/03/09

- Agenda Item 1: Global and Regional Overview of SAR Services**
1.2 ICAO Guidelines for SAR Service including COSPAS-SARSAT System

AMENDMENTS TO THE IAMSAR MANUAL

(Presented by the Secretariat)

SUMMARY

Appendices A to C of this working paper present the amendments to Volumes I, II and III to Doc 9731 – IAMSAR Manual, for review and analysis by the Meeting.

1. Background

1.1 The International Aeronautical and Maritime Search and Rescue Manual (IAMSAR) – Doc 9731 is jointly published by the International Civil Aviation Organization and the International Maritime Organization. The text of this manual has been updated with the inclusion of amendments adopted during the 74th sessions of the IMO Maritime Safety Committee in June 2001 (effective 1 July 2002), the amendments adopted during the 75th period of sessions in May 2002 (effective 1 July 2003), the amendments adopted during the 77th period of sessions in June 2003 (effective 1 July 2004), the 2004 amendments adopted during the 78th period of sessions in May 2004 (effective 1 July 2005), the 2005 amendments adopted during the 80th period of sessions in May 2005 (effective 1 June 2006), and the 2006 amendments adopted during the 81st period of sessions, (effective 1 June 2007).

2 Suggested action

3.1 The Meeting is invited to review, evaluate and discuss the actions to be taken at a regional and national level for its adoption.

APPENDIX A

Amendments made to Volume I – Organization and Management

Amendments: highlighted text applies as from 1 June 2007

Chapter 6 Improving Services

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Appendix K Model Agreement for the Division of Responsibility between the SAR Authority and the Air Traffic Services Provider in Providing Emergency Response Services for Aircraft

Appendix L Applying Risk Management Principles to Assess SAR Response and SAR System Performance

1.3 Legal Basis for Services

1.3.1 As Party to the International Convention for the Safety of Life at Sea (SOLAS), the International Convention on Maritime Search and Rescue, or the Convention on International Civil Aviation, a Party undertakes to provide certain aeronautical and/or maritime SAR co-ordination and services. The international community expects these commitments to be fulfilled.

1.3.2 These services can be provided by States individually establishing effective national SAR organizations, or by establishing a SAR organization jointly with one or more other States. The role of agreements and plans in establishing SAR services will be discussed throughout this Manual.

1.3.3 Every State should have in place statutes and related provisions that establish a legal foundation for establishing a SAR organization and its resources, policies, and procedures.

1.3.4 SAR managers should seek legal advice on how domestic and international laws pertain to SAR policies and procedures.

1.3.5 State legislative provisions should be aligned with accepted principles of international law, and may serve purposes such as:

- recognizing the SAR function as a State responsibility;
- implementing IMO and ICAO requirements and standards;
- designating SAR agencies and their general responsibilities; and
- defining the jurisdiction and legal authority of the RCC in accordance with relevant standards of ICAO and IMO.

1.3.6 Legislation may also be used to promote sound design, construction, maintenance and operation of aircraft, vessels and other craft.

1.3.7 International law addresses concerns for saving lives and concerns for sovereignty. Neighbouring States should seek practical means to balance these concerns for situations where entry of foreign SAR facilities into territorial waters or territory may be necessary or appropriate.

1.3.8 Sample legislation is provided in appendix A.

2.2.4 The ability of an RCC to act quickly and effectively when an emergency occurs depends largely on the information forwarded to it by alerting posts. If alerting posts are used, the RCC or RSC should ensure that the alerting post is well-qualified to carry out its responsibilities. It is essential that communications between an alerting post and the RCC, RSC or local SRU are by fast and reliable means. Such channels should be checked regularly and could be established by voice or data communications via direct or public telephone, radiotelephone, radiotelegraph or other means. Ideally, data alerts should be automatically routed to the responsible RCC or RSC over communication links which help preserve the distress priority.

2.2.8 Communications among SAR facilities will depend on local agreements and the organization of the SAR services in the SRR and on the equipment available. Communications with mobile facilities may be handled directly by the RCC or RSC or via capable associated alerting posts. Communications with alerting posts or other elements of the SAR system, including international communications among RCCs, should be reliable and, ideally, either be dedicated or preserve message priority or pre-emptive handling. RCCs normally assign a SAR Mission Co-ordinator (SMC) to handle a SAR incident. The SMC may specify pre-planned communications channels for co-ordination with the OSC and for communications among facilities on scene.

2.2.10 SAR personnel should have national authority for their RCCs and RSCs to directly respond to requests for assistance from craft in distress, or from other RCCs or RSCs. Except in rare cases, related communications for such requests should be routed directly to the RCC or RSC rather than via diplomatic channels.

Staffing

2.3.11 RCCs perform administrative and operational duties. Administrative duties, including planning, co-operation with providers of facilities, exercises and case studies, are concerned with maintaining the RCC in a continuous state of preparedness. In areas of low SAR activity the administrative duties are of high importance since they are the best way to keep the staff in readiness for SAR cases. The administrative duties should be shared so that more than one person is capable of performing these duties. Effective administrative actions help to ensure proficient SAR operations. SAR operations are the responsibility of the SMC and this responsibility may be met by the RCC chief or by other properly trained staff of the RCC. Personnel from services or organizations providing facilities can be used as part of the RCC team if they are duly trained and qualified. They will normally serve in support of expert functions such as firefighting, or air or marine safety. The RCC must be prepared to undertake and continue operational duties 24 hours per day. This level of readiness requires that multiple persons be trained and qualified to assume SMC duties.

- (a) RCC Chief. The RCC chief may be a person who also performs other functions. Whenever an RCC is established in conjunction with an ATS unit or similar operations centre, responsibilities for the RCC are often placed on the chief of that facility. In such instances, another person should be appointed to handle day-to-day management of the RCC. The RCC chief must make

appropriate preparations, plans, and arrangements as well as oversee, if not delegated, the daily operations of the RCC, to ensure that when an incident occurs the SAR operation can be promptly performed.

- (b) RCC Staff. The RCC staff consists of personnel who are trained and capable of planning and coordinating SAR operations. If the RCC staff has duties besides SAR, the additional functions should be considered when determining the staffing needs. The number of personnel required will vary with local requirements, traffic density, seasonal conditions, meteorological conditions and other SRR conditions. An RCC must be in a constant state of operational readiness. Where the RCC does not maintain continuous staffing, or only has one trained and capable RCC person on duty, provision must be made for stand-by RCC staff to be mobilized rapidly.
- (c) SAR Mission Co-ordinator. An SMC should be designated for each specific SAR operation, and adequate numbers of personnel qualified to perform the SMC function must be readily available on a 24 hour basis. This is a temporary function which may be performed by the RCC chief or a designated SAR duty officer, assisted by as many staff as may be required. A SAR operation may continue over a prolonged period of time. The SMC is in charge of a SAR operation until a rescue has been effected or until it has become apparent that further efforts would be of no avail. The RCC plan of operations should give the SMC the freedom to ...

5.2.13- A SAR plan may be supported by legislation or regulations if necessary, or may be a self-supporting memorandum of understanding (MOU) between appropriate agencies. Ratification of an MOU at the Ministry level recognizes the importance of SAR, while allowing for an easier revision process than higher level agreements would allow.

5.2.14 A primary duty of SAR authorities is co-operation with neighbouring States. A regional SAR plan is a way to provide a framework to guide national SAR authorities towards attaining this co-operation. Once a regional SAR plan is developed, high-level commitment between States can be reached by means of written agreement or through a multilateral MOU. A multilateral arrangement provides for consistent, harmonious and expedient response to distress incidents. Appendix I contains sample text and guidance for a national SAR plan.

5.2.15 Appendix K contains sample text to describe arrangements for the division of responsibilities between the Rescue Co-ordination Centre (RCC) and the Air Traffic Services (ATS) provider as component organizations contributing to the national emergency response system for aircraft.

5.2.16 Sometimes,

5.2.17 Once a regional ...

5.2.18 There are different ...

5.2.19 SAR manuals provide ...

5.3.6 SAR operations are normally carried out under the direction and supervision of an SMC who is usually the supervisor of the RCC or RSC watch team. In multiple incident situations this officer could be SMC for all incidents, or for some of those incidents, the SMC role could be delegated to another suitably qualified member of the watch team. The SMC should in all cases be supported by RCC watch team members to undertake functions in the co-ordinating process such as communications, plotting, logging and search planning. For complex cases or those of long duration the assisting team must be replaced at regular intervals as well as the SMC. The SMC must be able to competently gather information about

emergencies, transform emergency incident information into accurate and workable plans and dispatch and co-ordinate the facilities, which will carry out the SAR missions.

Chapter 6: Managing for Success

6.3 Applying Risk Management

6.3.1 A similar process to reducing system problems could be used to examine how risk management methodology can be applied to improve SAR response and SAR system performance. This process can be applied to any State regardless of its political system or organization structure.

6.3.2 Search and rescue (SAR) organizations have a lot to learn from the emergency management community where risk management principles are used so that the uncertainties that exist in potentially hazardous situations can be minimized and public safety maximized. Emergency managers commonly use three phases to describe their response to natural or technical disasters. They are preparedness (i.e., the pre-disaster phase), response (i.e., the immediate post-disaster phase), and recovery (i.e., return to a normal state). From a SAR perspective, we could call these phases pre-incident, incident response and post-incident with each phase requiring attention from SAR practitioners as they have a need to understand their particular role at that time, whether lead or support, and the interaction that is occurring within a broader government context.

6.3.3 The application of risk management can bring order to the uncertain environment in which SAR organizations exist. It is a very valuable tool to determine future work priorities and to improve the ability to meet the organizational objective of finding persons in distress and removing them to a place of safety.

6.3.4 Risk analysis is a valuable tool for managers of SAR organizations as it can set the resource priorities for an organization and its output can be used externally to promote SAR issues. SAR organizations are encouraged to undertake a risk analysis process and to use the information gained to advance the objective of saving lives.

6.3.5 An example of a Risk Management Process is at Appendix L.

6.4 Co-operating to Improve Services

6.4.1

6.5 Reducing Response Time

6.5.1

6.6 Mass Rescue Operations

6.6.1 ...

6.7 Research and Development

6.7.1 ...

6.8 Other Factors

6.8.1

Appendix K

Model Agreement for the Division of Responsibility between the SAR Authority and the Air Traffic Services Provider in Providing Emergency Response Services for Aircraft

1 Purpose

1.1 The purpose of this document is to outline the division of responsibilities between the SAR Authority and Air Traffic Services (ATS) provider as component organizations contributing to the national emergency response system for aircraft, and to propose a model arrangement for co-operation between the parties.

2 Background

2.1 The responsibility for the various aspects of the national emergency response system required under the Convention on International Civil Aviation may fall within two or more agencies of the national government. The SAR Authority has broad responsibilities under annex 12 for SAR response, (and ancillary functions are described in annexes 10 and 15) and the ATS provider has broad responsibilities under Annex 11 for aviation SAR alerting. ATS also provides in-flight emergency response services for aircraft and assists Rescue Coordination Centres (RCCs) with their SAR response task by providing access to its aeronautical expertise and resources.

3 Duration and amendment

3.1 A Memorandum of Understanding (MoU) may be in force for a period of five years from the date of commencement and be extended for a further period or periods as agreed by the parties in accordance with the following principles:

- 1) No variation is to be made to either the MoU or the agreed operational procedures dealing with inflight emergencies or SAR alerting procedures without the consent of both parties.
- 2) Where the parties agree to an alteration to this MoU, the alteration must be expressed in writing and be ratified by the signatories of both parties to this MoU, with sufficient notice to allow adoption of any agreed amended practice.

4 Scope

4.1 This MoU and associated operational information contained in the associated procedures is designed to facilitate a system for effective operational interface, and to positively manage the transfer of operational responsibility, between the ATS provider and the RCC during aircraft emergency phases.

4.2 This MoU does not alter the respective statutory, administrative or other obligations of the parties and any specific requirement under this MoU shall not involve any alteration to those obligations.

5 Management arrangements

5.1 There should be regular consultation between the agency managers to review the operational procedures to which this document applies.

5.2 Such consultation should occur whenever either of the parties considers changes to the procedures to be appropriate to meet operational commitments, and at least once every 12 months from the commencement of this MoU.

6 Operational principles

6.1 The overriding principle governing the relationship of the agencies and the performance of activities covered by this MoU is that the safety of life is paramount.

6.2 All services related to the MoU are to be provided in accordance with the agreed practices laid down in this MoU and the agreed operational procedures. Such services may include the provision of assistance to aircraft in distress in the State's Search and Rescue Region (SRR).

6.3 When handling an aircraft emergency or responding to a SAR incident, there is a need for the RCC and the ATS provider to work co-operatively and effectively together. It is important that there be no ambiguity with respect to the agency taking the lead and the agency providing support as an incident progresses. The lead agency role is determined by mutual agreement according to the division of responsibilities at paragraph 9.

7 Recorded operational information

7.1 RCCs may access information held by ATS units. For SAR purposes, ATS will provide the RCC, as soon as practicable, all information relevant to a state of emergency of an aircraft, including copies of journals, flight plans, audio tape records, recorded radar data plots and all other relevant documentation.

7.2 Both parties acknowledge that telephone conversations regarding operations or exercises between the two agencies may be recorded with or without prior warning.

8 Provision of information

8.1 Subject to their legal obligations relating to privacy and protection of commercial in-confidence information, each party agrees that the agencies will exchange information as necessary to successfully execute emergency response actions. Each agency shall use such information only for the purpose of properly meeting its legal obligations.

8.2 Each party agrees that, except as required to properly perform its statutory obligations, it will not release information received by it from the other party without prior agreement.

9 Division of responsibilities

(Note: Paragraphs 9.1 and 9.2 serve as an outline of ATS and RCC responsibilities that may be expanded upon by States to suit their individual circumstances.)

9.1 In relation to the emergency response system, ATS will provide the following types of services:

- a) In-flight emergency response to provide assistance to a pilot to operate in safe airspace and land the aircraft safely.
- b) SAR alerting and in the case of aerodrome emergency procedures, alerting the appropriate emergency agencies.

c) Assistance to the RCC with ATS expertise, information and resources.

9.2 In relation to the State aviation SAR and emergency response system, the RCC will provide the following types of services:

a) Co-ordination of appropriate SAR response.

b) Assistance to ATS with reference to relevant data.

c) Co-ordination with ATS, when ATS is managing an in-flight emergency and RCC is managing a parallel SAR response to the incident.

10 Costs

10.1 Each party will be responsible for all costs associated with its responsibilities under this MoU, unless otherwise agreed by the parties.

11 Signature

11.1 In signing this MoU, both parties agree to abide by its provisions.

Signature
Agency A

Signature
Agency B

Appendix L

Applying Risk Management Principles to Assess SAR Response and SAR System Performance

Risk Management Process

For the risk analysis to be effective it needs to take a broad view of the SAR system or response and, ideally, all stakeholders and interest groups should be involved. The process should be documented, noting that the value of the risk analysis is that it is an iterative process that when repeated provides valuable feedback on risk mitigation effectiveness. The steps in the risk management process are shown at figure 1, and provide a logical and systematic methodology for identifying, analysing, assessing, treating and monitoring risks.

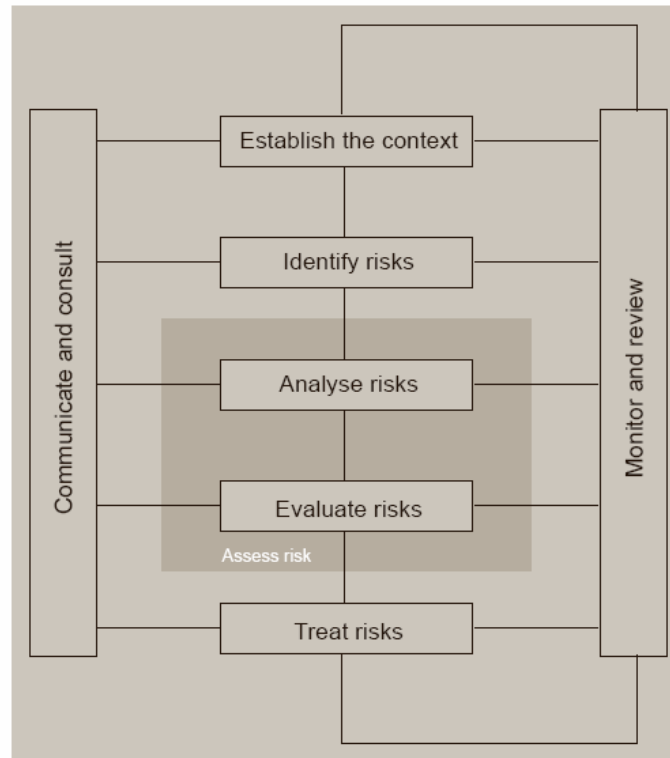


Figure 1 – The Risk Management Process

The determining of risk requires a well-structured approach with all risk factors being subjected to an iterative process. Although from a SAR perspective it should be used to assess the overall SAR system, the technique can equally be applied to the SAR response phase.

Establishing the Context

The first step in the process is establishing the context in which the SAR risks will be determined. Will the analysis include the parts that other organizations, their resources and response plans play in assisting the SAR function? Will it make judgements on the complex national arrangements and their effectiveness if a major SAR incident occurs?

If this is the context that is being examined, there is a need to gain wide support for the analysis by promoting stakeholder involvement from appropriate decision makers outside the SAR organization. If the context is internally focused, there may still be a need to make judgements about the external environment and the analysis may be able to determine priorities and the order in which they should be addressed. There is also a need to understand the government policy framework in which the SAR organization exists and its funding basis. However, the risk process should put the question of limited funds being available aside until after the analysis is complete so that the outcomes are not distorted by self imposed constraints before it has begun.

Identifying the Risks

The second step in the process is identifying the risks, which is ‘the process of determining what can happen, why and how’ as the basis for further analysis. People have different risk perceptions and this step requires taking an objective view of current or potential situations where the objective of finding persons in distress and removing them to a place of safety may be compromised.

Some approaches used to identify risk include whether the risk is easily managed, if exposure is voluntary, whether the risk is familiar, making an assessment that the situation may become catastrophic, the innate fear of the worst occurring, and personal or organizational win/loss assessments. The process can be based on formal analysis tools (e.g., quantitative analysis, Pareto analysis, systems engineering, etc), where appropriate. However, in most circumstances for SAR it can be more simply accomplished by people that work in the activity sitting down and coming to a collective view of the exposures facing the organization (e.g., experience, brainstorming, scenario analysis, lessons learned, etc.).

The subject matter could be discussed by using the divisions used in IAMSAR to break down the analysis. These are Organization and Management (Volume I), Mission Co-ordination (Volume II), and Mobile Facilities (Volume III). Analyse the Risks The third step in the process is to analyse the risks. This is done by establishing the cause of the risk, which is important when it comes to treating it, and determining its likelihood and consequences. Likelihood is a qualitative description of probability or frequency; and consequences are the outcome of an event, expressed qualitatively or quantitatively, expressed in terms of loss, injury, disadvantage or gain.

A common approach to document this interaction is to set values for likelihood and consequences of each risk. An example that may be useful in terms of determining likelihood for SAR is shown in table 1.

Level	Descriptor	General description
A	Almost certain	daily occurrence
B	Likely	weekly occurrence
C	Occasional	monthly occurrence
D	Possible	yearly occurrence
E	Unlikely	1 year > occurrence < 10 years
F	Rare	> 10 years

Table 1 – Qualitative Measures of Likelihood

The assignment of consequences is also done using general descriptions and an example is shown in table 2. Caution needs to be exercised in assigning consequences, as every incident is not necessarily a potential major catastrophe. The history of SAR incidents and their outcomes over the last ten years is a good starting point when approaching consequences.

Level	Descriptor	General description
1	Very low	● routine or business management task with no life-saving consequence ● non-critical support role to other agency leading incident response ● staff have good SAR support tools available ● robust communications systems available ● excellent level of response assets available
2	Low	● routine or business management task with potential life-saving consequence ● lead role in non-SAR/safety of life activity ● staff have adequate SAR support tools ● fair communications systems available ● adequate level of first response assets available
3	Medium	● routine or business management task with demonstrated life-saving consequence ● staff have inadequate SAR support tools ● poor communications systems available ● inadequate first response assets available ● a situation that may lead to an internal decision to make a major change to procedures, structure or staffing ● fatality (1–5 people) ● hull loss
4	High	● a situation that may lead to an external decision to make major changes to structure or staffing at the management level ● fatality (6–14 people) ● hull loss
5	Extreme	● a political review of the SAR organization and its effectiveness ● fatality (>14 people) ● hull loss

Table 2 – Qualitative Measures of Consequences or Impact

Once the likelihood and consequence elements are determined, a risk analysis matrix is developed and tested using sample scenarios. This is a most important step as it allows the risk analysis team to develop a common understanding of likelihood and consequence and their interrelationship. Also, there may be situations where there are multiple likelihood and consequence relationships, and each of these should be scored and the highest resultant value recorded in the next step of the risk analysis.

Evaluate the Risks

The fourth step in the process is to evaluate the risks. This is done by comparing likelihood against consequence as shown at table 3 and comparing the results with any previous risk analysis. The table 3 comparison matrix will result in an ordering of risks and assist to develop an effective risk mitigation plan. An extreme risk requires immediate remediation, a high risk requires urgent attention, a medium risk should be addressed as a priority, and a low level risk can be addressed through routine processes.

		Consequences				
		1	2	3	4	5
Likelihood	A	H	H	E	E	E
	B	M	H	H	E	E
	C	L	M	H	H	E
	D	L	L	M	H	H
	E	L	L	L	M	H
	F	L	L	L	L	M

Table 3 – Qualitative Risk Analysis Matrix
(Level of Risk E = Extreme, H = High, M = Medium, and L = Low)

Treat the Risks

The fifth step in the process is to treat the risks. In terms of SAR, it is important to minimize risk where it can be practically reduced on a cost benefit basis. It may be possible to reduce low level risk by introducing simple reduction measures such as additional staff training or SAR customer education. At the other end of the scale it may not be possible to treat extreme risks due to inadequate resources or Government policy decisions. However, the risk analysis process will prioritize these factors for the SAR Manager and it may be a powerful ally to assist in change management.

Monitor and Review

The sixth step in the process is to monitor and review the performance of the risk management system and the changes that may affect it. Regular reviews (e.g., six monthly) of the analysis should be conducted and the effectiveness of risk mitigation strategies re-examined. Some risks may be transitory (e.g., contract renewals, changes to procedures, etc.) and others may be inherent in operating a SAR system. The iterative approach of the analysis means that SAR organizations will have a good understanding of the challenges facing them and will have considered approaches to remediate them. It may only be possible to alleviate some risks rather than removing them entirely.

Communicate and Consult

The seventh and last step in the process is the most important being communicate and consult. It is important to have a communications plan for stakeholders and involve them in the process. Industry peak representative bodies, if they exist, can be important stakeholders as they have a vested interest in the outcomes and may have the ability to influence higher level Government decision making processes.

APPENDIX B

Amendments made to Volume II – Mission Coordination

Amendments: highlighted text applies as from 1 June 2006

Chapter 2 Communication

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Chapter 6 Rescue Planning and Operations

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6.15 Mass Rescue Operations 6-14
6.16 Care of Survivors 6-21
6.17 Debriefing of Survivors..... 6-22
6.18 Handling of Deceased Persons..... 6-22
6.19 Critical Incident Stress..... 6-23
6.20 Termination of Rescue 6-24

Appendices

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Appendix C Mass Rescue Operations: Exercises; Industry Roles and Incident Management

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Abbreviations and Acronyms

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MCW	modulated carrier wave	OPM
MRO	mass rescue operation	OSGE
NATO	North Atlantic Treaty Organization	OTAN
PIW	person in water	PAA

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.....

ATS air traffic services
 SUBSAR submarine search and rescue
 T search time available

STAS
 SUBSAR
 T

Glossary

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Search pattern A track line or procedure assigned to an SRU for searching a specified area.

Aircraft Co-ordinator (ACO) A person or team who co-ordinates the involvement of multiple aircraft SAR operations in support of the SAR mission co-ordinator and on-scene co-ordinator.

.....

Wave (or Chop) The condition of the surface caused by local wind and characterized by irregularity, short distance between crests, whitecaps, and breaking motion.

Mass Rescue Operation (MRO) Search and rescue services characterized by the need for immediate response to large numbers of persons in distress, such that the capabilities normally available to search and rescue authorities are inadequate.

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Chapter 2

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2.32 Radio call signs for aircraft involved in a search and rescue operation

2.32.1 A prefix call sign makes the task/function of a specific aircraft easier to be understood by other aircraft and participating units in the same area.

2.32.2 The prefix call sign can also give the aircraft priority in some situations.

2.32.3 State authority responsible for air regulation shall arrange that use of prefix call sign will coincide with other national air regulations.

2.32.4 During search and rescue missions and exercises it is recommended that the following prefix call signs be used before the ordinary radio call sign or as a specific mission call sign.

“RESCUE”	for all airborne units involved in a rescue mission
“AIR CO-ORDINATOR”	for the aircraft co-ordinator (ACO)
“SAREX”	for all airborne units involved in international/ national exercises

6.14 Underwater Search and Rescue

6.14.1 Many different underwater operations occur within SRRs, such as diving operations or the operation of military or civilian submarines. When accidents occur, survivors may be either on the surface or entrapped in a submarine resting on the sea-bed. Military submarines trapped under the surface may use international distress signals or specific military pyrotechnics, dye markers or beacons. In addition, submarines may pump out fuel, lubricating oil or release air bubbles to indicate their position.

6.14.2 Submarine SAR, (SUBSAR), is a highly specialized and time-critical activity reliant on specific capabilities and training. Medical care requirements for survivors of a submarine accident may also be specialized.

6.14.3 Military submarine-operating States have developed standard SUBSAR procedures, capabilities and training, generally under sponsorship of the North Atlantic Treaty Organization (NATO) for the recovery and care of submarine accidents. RCCs may request support of these resources should the need arise. Relevant information may be obtained from the NATO International Submarine Escape and Rescue Liaison Office.

6.14.4 RCCs should be aware if specialized navy or commercial recovery or treatment facilities (such as the ones with decompression chambers) exist within or near their SRRs and arrange in advance for their use at any time on a 24-hour basis. Similarly, RCCs should liaise with the military to determine mutual assistance that could be provided in the event of military submarine accidents.

6.14.5 Most SAR personnel are poorly prepared to understand or handle medical problems peculiar to underwater activities, such as decompression sickness, air embolism, and nitrogen narcosis. However, they should be trained to recognize the symptoms and know how to obtain competent medical advice. They should also be trained in handling and transporting victims of such problems without worsening their situations. If possible to aid in the treatment of the victim, SAR personnel should obtain information such as time underwater, depth, time at the surface, time of the onset of symptoms, and the symptoms currently being experienced.

6.14.6 Medical advice should be sought before air transport of submarine accident victims.

6.15 Mass Rescue Operations MRO Overview

6.15.1 A mass rescue operation (MRO) is one that involves a need for immediate assistance to large numbers of persons in distress such that capabilities normally available to SAR authorities are inadequate.

6.15.2 MROs are relatively rare low-probability high-consequence events compared to normal SAR operations, but major incidents leading to the need for MROs have not been infrequent on a world-wide basis, and can occur anywhere at any time. The nature of such operations may be poorly understood due to limited chances to gain experience with major incidents involving MROs.

6.15.3 Flooding, earthquakes, terrorism, casualties in the offshore oil industry and accidents involving releases of hazardous materials are examples which, because of their magnitude, may require the application of the same resources as required for mass maritime or aeronautical rescue operations.

6.15.4 The sequence of priority in major multi-mission incidents must be lifesaving first, generally followed by environmental protection, and then protection of property. Moral and legal obligations and public and political expectations require preparedness to carry out MROs safely and effectively should they become necessary. Since the need for MROs is relatively rare, it is difficult to gain practical experience to help deal with them. Types of potential MRO scenarios vary, but there are certain general principles that can be followed based on lessons of history.

6.15.5 Effective response to such major incidents requires immediate, well-planned and closely co-ordinated large-scale actions and use of resources from multiple organizations. The following are typical MRO demands:

- intense and sustained high priority lifesaving efforts may need to be carried out at the same time and place as major efforts to save the environment and property;
- huge amounts of information need to be readily available at the right times and places to support the response efforts and meet the needs of the media, public and families of the persons in distress, which may number in the hundreds or thousands;
- many means of communications need to be available and interlinked amongst organizations at various levels to handle huge amounts of information reliably for the duration of the response;
- a surge in the numbers of competent staffing in all key organizations must be made available immediately and be sustainable for up to weeks at a time;

6.15.6 All involved in the overall multi-agency, multi-jurisdiction, multi-mission and possibly international response to major incidents must clearly understand who is in charge, the respective roles of all involved, and how to interact with each other. SAR authorities may be responsible for all or part of the MRO functions, and must be able to co-ordinate their efforts seamlessly with other responders under the overall direction of another authority within or outside their agency.

6.15.7 The broader response environment may involve activities such as:

- hazards mitigation;
- damage control and salvage operations;
- pollution control;
- complex traffic management;
- large-scale logistics efforts;
- medical and coroner functions;
- accident-incident investigation; and
- intense public and political attention.

6.15.8 MRO plans need to be part of and compatible with overall response plans for major incidents. Plans must typically allow for command, control and communications structures that can accommodate simultaneous air, sea and land operations.

6.15.9 The consequences of poor preparations for MROs in terms of loss of life and other adverse results may be disastrous. Major incidents may involve hundreds or thousands of persons in distress in remote and hostile environments. A large passenger ship collision, a downed aircraft, or a terrorist incident could, for example, call for the immediate rescue of large numbers of passengers and crew in poor environmental conditions, with many of the survivors having little ability to help themselves.

6.15.10 Preparedness to mount an extraordinarily large and rapid response is critical to preventing large-scale loss of lives. Such preparedness often depends on strong and visionary leadership and unusual levels of cooperation to achieve.

6.15.11 There will often be resistance to paying the high price in terms of time, effort and funding that preparedness for major incidents entails, particularly as they are rare events. The required levels of cooperation, co-ordination, planning, resources and exercises required for preparedness are challenging and do not happen without the requisite commitment of SAR authorities, regulatory authorities, transportation companies, sources of military and commercial assistance and others.

6.15.12 MRO planning, preparations and exercises are essential since opportunities to handle actual incidents involving mass rescues are rare. Therefore the exercising of MRO plans is particularly important.

6.15.13 Appendix C provides guidance on MRO exercise planning.

General guidance for MROs

6.15.14 For a situation involving large numbers or persons in distress, on-scene responsibilities for the safety of passengers and crew will be shared by the OSC and the craft's pilot-in-command or master, with the pilot or master assuming as much of this responsibility as possible before or after the aircraft or ship is abandoned.

6.15.15 Pilots and masters are responsible for manoeuvring the aircraft or ship as feasible and appropriate and also have overall responsibility for safety, medical care, communications, fire and damage control, maintaining order and providing general direction.

6.15.16 Unless a ship appears to be in imminent danger of sinking, it is usually advisable for passengers and crew to remain on board as long as it is safe to do so.

6.15.17 In the case of a downed aircraft, whether passengers would be safer on board should be assessed for each situation. Usually they should promptly evacuate the aircraft at sea. On land, this decision must take into account the conditions of the aircraft and the environment, expected time to rescue survivors or repair the aircraft, and whether required passenger care can be best provided inside the aircraft.

6.15.18 The OSC will normally be designated by an SMC. An OSC may be able to handle certain communications on scene and with appropriate remote authorities to help free the pilot or master to retain the integrity of his or her craft. However, these persons are themselves in need of assistance, and anything the OSC can do to help them should be considered, bearing in mind that the OSC's main duty is co-ordinating SAR facilities and rescue efforts under the SMC's general direction.

6.15.19 Unnecessary communications with the master of a ship or pilot in command of an aircraft in distress must be minimized, and this should be taken into account in advance planning.

6.15.20 Exchanges of information during joint planning by use of SAR Plans of Co-operation for passenger ships and other means will reduce the need to ask the pilot or master for this information one or more times during a crisis. Persons or organizations that want this information should be directed to a source ashore or on the ground that is prepared to handle many potential requests.

6.15.21 High priority should be given to tracking and accounting for all persons on board and all lifeboats and rafts, and efforts to keep them together will help in this regard. Availability of accurate manifests and accounting is critical.

6.15.22 The need to relocate survival craft and check for persons in them can waste valuable resources. One option is to sink survival craft once the persons in them have been rescued; however, the potential that other survivors may find and need the craft should be considered.

6.15.23 Navy ships and large passenger ships are often better equipped than other vessels for retrieving people who have abandoned a ship or aircraft; use of any such ships should be considered. Ship reporting systems for SAR may help identify commercial ships available to assist.

6.15.24 Helicopter capabilities should be used if available, especially for retrieval of weak or immobile survivors. Lifeboat crews should be trained in helicopter hoist operations. Lowering a rescue person from the helicopter to assist survivors may be viable.

6.15.25 Ship companies should be encouraged to equip large passenger ships and possibly other types of vessels with helicopter landing areas, clearly marked hoist-winch areas, and onboard helicopters to facilitate more direct transfers of numerous persons.

6.15.26 If a ship with a large freeboard cannot safely retrieve survivors from the water or survival craft, it may be possible to first retrieve them onto small vessels, and then transfer them to progressively larger ones.

6.15.27 Depending on the circumstances, it may be safer to tow survival craft to shore without removing the occupants at sea. Lifeboats could be designed to support passengers for longer periods of time, and to be able to reach shore on their own from longer distances offshore.

6.15.28 To the extent practicable, MROs should be co-ordinated by an SMC in an RCC. However, depending on the magnitude, nature and complexity of an incident, the rescue efforts may be better co-ordinated by an appropriate operations centre higher within the SAR agency or another Government agency. Considerations in this decision might include, among others:

- extensive rescue support by organizations other than those commonly used for SAR;
- need for heavy international diplomatic support; and
- serious problems in addition to potential loss of lives, such as environmental threats, terrorist actions, or national security issues.

6.15.29 The following factors should be considered in MRO planning:

- use of the Incident Command System (ICS) discussed below, or other effective means of handling multiagency, multi-jurisdiction, multi-mission scenarios;
- identification of situations within the SRR that could potentially lead to the need for MROs, including scenarios that might involve cascading casualties or outages;
- mobilization and co-ordination of necessary SAR facilities, including those not normally available for SAR services;

- ability to activate plans immediately;
- call up procedures for needed personnel;
- need for supplemental communications capabilities, possibly including the need for interpreters;
- dispatching of liaison officers;
- activation of additional staff to augment, replace or sustain needed staffing levels;
- recovery and transport of large numbers of survivors (including those unfit, injured or incapable, recovery of bodies, if necessary), accounting for survivors with suspected injuries, guarding against and caring for person with hypothermia, etc.;
- a means of reliably accounting for everyone involved, including responders, survivors, crew, etc.;
- care, assistance and further transfer of survivors once delivered to a place of safety and further transfer of bodies beyond their initial delivery point;
- activation of plans for notifying, managing and assisting the media and families in large numbers;
- control of access to the RCC and other sensitive facilities and locations;
- RCC backup and relocation plans, as appropriate; and
- ready availability to all potential users of plans, checklists and flowcharts.

6.15.30 The ability of an RCC to continue to effectively co-ordinate the MRO and still handle its other SAR responsibilities may become overwhelmed, and another RCC or a higher authority may need to assume responsibility for their other responsibilities.

6.15.31 With these possibilities in mind, MRO plans should provide for various degrees of response, along with criteria for determining which degree of response will be implemented. For example, as local SAR resources are exhausted (or from the outset), SAR resources may need to be obtained from distant national or international sources.

6.15.32 Experiences in responding to major incidents have resulted in the following practical guidance. Authorities should:

- plan how any agency receiving notification of an actual or potential mass rescue event can immediately alert and conference call other authorities that will potentially be involved, brief them, and enable immediate actions to be taken by all concerned (this will require identification of entities in each agency that can be contacted on a 24-hour basis, and that have authority to immediately initiate actions and commit resources);
- exercise the above plans;
- co-ordinate all rescue operations effectively from the very beginning;
- begin quickly with a high level of effort stand down as appropriate rather than begin too late with too little effort;
- use capable resources like cruise ships for taking large numbers of survivors on board;
- ensure that MRO emergency plans address communications interoperability or interlinking;
- retrieve and protect debris as evidence for follow on investigation;
- put security plans in place to limit access to the RCC;
- arrange in advance to involve the Red Cross, chaplains, critical incident stress experts and other such support for human needs;
- identify senior agency spokespersons to protect the time of workers directly involved in the response and designate a senior official to provide information to families;
- clearly identify the point at which the SAR response (lifesaving) has ended and the focus shifts to investigation and recovery;

- be prepared to use an Incident Command System (ICS) when appropriate;
- ensure that air traffic and air space can be and is controlled on scene;
- a– – assign additional liaison personnel on-scene, as required;
- anticipate development and needs and act early;
- ensure that the scope of SAR plans and other emergency or disaster response plans are co-ordinated to reduce gaps, overlaps and confusion about the person in charge and the procedures to be followed at various times and places;
- control access to the scene, including access by the media;
- determine in advance how private resources can be appropriately used to supplement other SAR resources;
- ensure that SAR plans provide for logistics support for large numbers of rescuers and survivors including pre-arranged accommodations, if possible, and availability of food, medical care and transportation;
- consider requesting assistance from airlines and shipping companies other than the one whose aircraft or ship is involved in the incident, and know the types of assistance that such organizations might provide;
- consider use of bar coded bracelets as an effective means of identifying children before, during and after the emergency;
- attempt to reduce the burden on a pilot or master and crews; if safe and appropriate to do so, place a marine casualty officer on board to assist the master and SAR personnel; and
- share capabilities, expertise and assets among Government and industry to take maximum advantage of the strengths of each.

Communications for mass rescue operations

6.15.33 Communication plans must provide for a heavy volume of communication use as a major incident will normally involve many responding organizations that need to communicate effectively with each other from the beginning.

6.15.34 As necessary, advance arrangements should be made to link means of interagency communications that are not inherently interoperable.

6.15.35 Interagency communications must be based on terminology understood by all involved.

Major incident co-ordination

6.15.36 Regardless of the magnitude and priority of the life-saving efforts involved in responding to a major incident, if any other functions are being carried out concurrently on scene by other than SAR personnel, the overall response involving SAR and the other functions, e.g., fire fighting, should be well co-ordinated.

6.15.37 If certain basic concepts and terms are recognized and understood by all emergency responders, they will be much better prepared to co-ordinate joint efforts.

6.15.38 Standard SAR procedures should typically be followed for the SAR part of the response, but these procedures will be largely independent of other efforts. Companies or authorities handling other aspects of the response will follow command, control and communication procedures developed for their respective organizations and duties.

6.15.39 The SAR system can function in its normal manner or use modified SAR procedures established to account for special demands of mass rescues, but it should be appropriately linked and subjected to a scheme for management of the overall incident response.

6.15.40 For major incidents, crisis management for the overall response may also be needed. The Incident Command System (ICS) is one simple and effective means of meeting this need. ICS can be used where no equivalent means of overall incident management is in place. SAR and transportation authorities are likely to encounter use of the ICS within emergency response communities.

6.15.41 The ICS works best with some advance familiarization and exercising.

6.15.42 Appendix C provides general information about ICS.

Industry planning and response

6.15.43 SAR authorities should co-ordinate MRO plans with companies that operate ships and aircraft designed to carry large numbers of persons. Such companies should share in preparations to minimize the chances that MROs will be needed, and to ensure success if they become necessary.

6.15.44 Appendix C provides guidance on industry roles and discusses how companies could arrange for use of field teams and emergency response centres as possible means of carrying out their MRO responsibilities.

6.15.45 For passenger ships, SAR Plans of Co-operation required by the Safety of Life at Sea Convention and developed by SAR authorities and shipping companies are part of MRO plans.

Public and media relations for MROs

6.15.46 Good public and media relations become very demanding and quite important during MROs.

6.15.47 What the media reports may matter more than what SAR services do for shaping public opinion about MROs. The role of the media may be critical in shaping the actions of the public and of those directly involved in the distress situation in a way that contributes to safety, success and panic control. There should be no unwarranted delays in providing information to the media.

6.15.48 Information should be readily available, clear, accurate, consistent and freely exchanged among emergency responders and others concerned, such as the public and families of persons on board.

6.15.49 Designate the person who will speak to the public and the media and develop press releases, and outline what they will say, staying factual. If SAR services do not provide a public spokesperson and information for a major incident, the media likely will, thus denying the Authorities the opportunity to manage the information and emphasize the appropriate points.

6.15.50 A single spokesperson not directly involved in the incident can be valuable in relieving the Incident Commander and SMC of this duty.

6.15.51 Spokespersons should be cautious about speculating on causes of accidents and ensure that the media understands that the main focus of current operations is on saving lives.

6.15.52 Ensure that the media knows who is in charge of co-ordinating rescue operations.

6.15.53 Interviews should be live if possible.

6.15.54 Many entities are involved in a response to a major incident, including ships, aircraft, companies and SAR services. Co-ordination is required to ensure that there is one message with many messengers.

6.15.55 Prompt establishment of a joint information centre at a location distant from the SMC will help to achieve this goal. (A joint information centre is a component of an ICS and is discussed in Appendix C). The centre can establish proper procedures for establishing what messages will be released to the public and how those messages will be released. Since the messages may be sensitive, it is critical that everyone communicates the same information. The centre can be responsible for co-ordinating information made available via the internet and perhaps establishing and maintaining a public website.

6.15.56 The media is a 24-hour global market, and its news is broadcast world-wide. The media will find a way to get to the scene for first hand information, pictures and video. By providing transportation to the scene and controlling media access, safety and the information the media reports can be better managed.

6.15.57 Media outlets often have more resources to mobilize on scene than do SAR authorities, and RCC operating plans should account for how to deal with such situations.

6.15.58 Information should be provided to the public on the SAR facilities being used and, if possible, a web address or list of contact phone numbers should be provided for families, media and others to contact for more information.

6.15.59 Preparations should be made so that large numbers of callers can be accommodated without saturating the phone system or crashing the computer server.

6.15.60 Advance preparation of standby web pages by transportation companies and SAR authorities can help in responding to floods of requests for information. These pages can be quickly posted to provide general information for media use. Web information should be timely and accurate.

6.15.61 Once posted, these pages can be easily updated with the status of the incident and could also include:

- contact information;
- basic Government or industry facts;
- industry and SAR definitions;
- photographs and statistics of aircraft, ships and SAR facilities;
- answers to frequently asked questions;
- links to other key sites;
- information on passenger capacity, crew size, vessel plans and fire-fighting capabilities;
- and
- library footage of a vessel inspection or of the crew performing lifesaving drills.

6.15.62 Besides the media, families and other organizations will also want this information.

MRO follow-up actions

6.15.63 It is very important to develop and share lessons learned from actual MRO operations and exercises. However, concerns about legal liability (often excessive), may discourage staff from highlighting matters that could have been improved.

6.15.64 Since lessons learned can help prevent recurring serious mistakes, agreement should be reached among principal participants on how lessons learned can be depersonalized and made widely available. Lessons learned from MROs should be shared not just locally, but internationally.

6.15.65 Careful accounting for survivors after they have been delivered to a place of safety remains important. They need to be kept informed about plans for them and about the ongoing response operations. With large numbers of persons often staying in different places, keeping track of and working with them can be difficult.

6.15.66 Transportation companies are often best suited to handle and assist survivors during this time.

6.15.67 Crew members may be placed at various locations to record passenger names and locations. Another possibility is for airlines or passenger ships to attach plastic cards to life vests to give passengers phone numbers for contacting the company. Some companies use bar coded bracelets to track children who are passengers.

6.15.68 Communicating with passengers is more difficult in remote areas where phone service may be inadequate or lacking. If phones do exist, calling the airline or shipping company may be the best way to check in and find out information. In more populated areas, local agencies may have an emergency evacuation plan or other useful plan that can be implemented.

6.15.69 To protect passengers from harassment by interviewers and cameras, survivors may be placed in hotels or other places of refuge. However, triage and landing locations must be established and publicized to all rescue personnel and good Samaritans.

6.16 Care of Survivors

6.16.1 After rescue ...

6.16.2 SAR personnel ...

6.16.3 When selecting

6.16.4 When medical ...

6.16.5 Victims of diving ...

6.16.6 Divers with decompression

6.17 Debriefing of Survivors

6.17.1 A survivor ...

6.17.2 Information which ..

6.17.3 The debriefing ...

6.18 Handling of Deceased ...

6.18.1 Searching for and recovering ...

6.18.2 SAR authorities ...

6.18.3 Human remains ...

6.18.4 Without exposing ...

6.18.5 When human remains ...

6.18.6 Considerations ...

6.18.7 SAR operations are conducted only for assisting persons who may be living. However, it is wise to consider the capabilities of existing Disaster Victim Identification (DVI) methods and procedures in the instance of a mass casualty accident.

The DVI operation is a criminal police and forensic science operation carried out according to national policies and legislation in accordance with standards established by INTERPOL. As it is not legally a part of the SAR operation, it is not co-ordinated or supervised by the RCCs.

DVI may be of significant assistance to SAR personnel in those instances where unidentified human remains are recovered in the course of a SAR case, particularly in those instances of multiple casualties. This will assist SAR personnel in accounting for the persons who are the subject of the SAR case, and to verify whether or not additional persons remain missing. This will facilitate closing the SAR case as expeditiously as possible.

SAR and DVI authorities should co-operate in dealing with the families of missing persons. DVI systems can usually be accessed through liaison with local or national police agencies. SAR personnel are encouraged to assist DVI authorities if that is possible based on other operational commitments and organization policies.

- 6.19 Critical Incident Stress
- 6.19.1 Exposure to traumatic ...
- 6.19.2 Aircraft accidents ...
- 6.19.3 Recovery time for ...
- 6.19.4 Situations involving ...
- 6.19.5 When SAR authorities ...

6.20 Termination of Rescue

- 6.20.1 As soon as the rescue ...

Appendix C

Mass Rescue Operations: Exercises, Industry Roles and Incident Management

MRO exercises	C-1
MRO industry roles	C-3
MRO incident management	C-4

Mass Rescue Operations: Exercises, Industry Roles and Incident Management

MRO exercises

Since opportunities to handle actual incidents involving mass rescues are rare and challenging, exercising MRO plans are particularly important. Mass evacuation and rescue operations are difficult and costly, leading to a tendency to use simulation excessively during exercises rather than physically exercising on-scene efforts. MRO exercise objectives need not be addressed in a single large exercise, but may be satisfied in part by routine incorporation into multiple drills, some intended mainly to test other systems. However, realistic drills are necessary and costly, and over 1,000 volunteer ship passengers or hundreds of volunteer aircraft passengers will likely be needed to conduct a realistic exercise. Separate rooms can be used to simulate command posts that would normally be in separate locations.

MRO exercises should ideally achieve the following objectives:

- Account for:
 - Crew and passenger lists,
 - Rescued passengers and crew until they can return to their homes. All persons associated with the rescue and aftermath operations,
 - Lifeboats, including empty boats or rafts, and
 - Exercises should take account of high freeboard issues for likely rescue facilities;
- Identify and task available resources:
 - Amver or other ship reporting systems,
 - Potential resources ashore and afloat,
 - Resources from local agencies (medical personnel, hospital facilities, fire department, general community, transportation resources), and
 - National and regional military and other resources;
- Evaluate notification processes, resource availability, timeliness of initial response, real-time elements, conference capabilities and overall co-ordination;
- Ensure all agency roles are specified, understood and properly followed;
- Test capabilities of potential OSCs and ability to transfer OSC duties;
- Evaluate span of control;
- Evacuate a ship or aircraft;
- Co-ordinate activities and achieve information exchanges:
 - Communications (RCC-RCC, Government-industry, RCC-OSC, on scene, shore-ship, ground-air, ship-air, SAR facility-survival craft, etc.),
 - Information for all concerned (identify, merge, purge, retrieve and transfer to the right place in the right form at the right time),
 - New communication and information management technologies, and
 - Media and next of kin;
- Safely transfer and care for passengers (evacuation, in survival craft, rescue, medical, protection from environment, post-rescue transfers, etc.);
- Test all communication links that may be needed for notification, co-ordination and support;

- Conduct medical triage and provide first aid;
- Assess ship's safety management system effectiveness;
- Exercise co-ordination with local response agencies;
- Provide food, water, lifejackets and other protective clothing to survivors;
- Test mass rescue plans of:
 - SAR services,
 - Operating company (including aircraft and ship plans),
 - Any relevant emergency response organizations, e.g., disaster response, military, fire fighting and medical, and
 - Transportation and accommodation companies;
- Assess how effectively earlier lessons learned have been accounted for in updated plans and how well these lessons were disseminated;
- Exercise salvage and pollution abatement capabilities;
- Carry out emergency relocation of the disabled craft; and
- Exercise external affairs, such as international and public relations taking into account:
 - Necessary participants involved,
 - Joint information centres established quickly and properly staffed,
 - Press briefings handled effectively, e.g., consistent information from different sources,
 - Notification of the next of kin and family briefings,
 - Staff and equipment capacity to handle incoming requests for information, and
 - Rescued persons tracked, kept informed and needs monitored, and reunited with belongings.

The following steps are normally carried out during exercise planning:

- Agree on the exercise scenario, goals and extent;
- Assemble a multi-disciplinary planning team and agree on objectives for each aspect of the exercise;
- Develop the main events and associated timetables;
- Confirm availability of agencies to be involved, including any media representatives or volunteers;
- Confirm availability of transportation, buildings, equipment, aircraft, ships or other needed resources;
- Test all communications that will be used, including tests of radio and mobile phones at or near the locations where they will be used;

- Identify and brief all participants and people who will facilitate the exercise, and ensure that facilitators have good independent communications with person who will be controlling the exercise;
- Ensure that everyone involved knows what to do if an actual emergency should arise during the exercise;
- If observers are invited, arrange for their safety, and to keep them informed about the exercise progress;
- For longer exercises, arrange for food and toilet facilities;
- Use “exercise in progress”, signs, advance notifications and other means to help ensure that person not involved in the exercise do not become alarmed;
- Schedule times and places for debriefs;
- Agree and prepare conclusions and recommendations with the entity responsible for handling each recommendation along with the due date for any actions;
- Prepare a clear and concise report and distribute it as appropriate to the participating organizations; and
- Consider the outcome of this exercise in planning future exercises.

MRO industry roles

SAR authorities should co-ordinate MRO plans with companies that operate aircraft and ships designed to carry large numbers of persons. Such companies should share in preparations to minimize the chances that MROs will be needed, and to ensure success if they are. This section provides guidance on industry role, and discusses how companies could arrange for use of company field teams and emergency response centres as possible means of carrying out their MRO responsibilities.

Early notification of potential or developing MROs is critical, due to the level of effort required to mount a very large scale response. It is much better to begin the response process and abort it should it become unnecessary, than to begin it later than necessary should the actual need exist. Pilots and masters should be advised and trained to notify SAR services at the earliest indication of a potential distress situation.

Company response organizations should be able to help SAR services by organizing support, equipment, advice and liaison with any of their ships or aircraft.

Companies should be prepared to provide information to preclude the need for multiple sources attempting communications with the aircraft pilot-in-command or ship captain for information that is unavailable or available from another source. Receiving and handling requests for information aboard the distressed craft can interfere with the pilot's or master's ability to handle the emergency and manage critical on-scene leadership needs.

Companies operating large aircraft or ships should be advised to prepare a co-ordinated team that can handle emergency response functions around the clock should the need arise. Such a team might include staff as indicated in the following table.

Typical company field team

Team Leader	Maintains overview, directs operations and keeps management informed
Communicator	Maintains open (and possibly sole) line of communications to craft in distress
Co-ordinating Representative	Usually a pilot or master mariner, who co-ordinates with SAR and other emergency response authorities, organizes tugs, looks at itineraries, arranges to position ships or ground facilities that may be able to assist and organizes security and suitable delivery points for passengers and crew when they are delivered to safety
Technical Representative	Maintains contact with regulatory authorities, classification societies, insurers and investigators and provides liaison and advice for fire fighting, damage control, repairs and other specialized or technical matters
Environmental Representative	Involved with environmental impact and spill response
Medical Representative	Gives medical advice, tracks casualties and arranges medical and identification services for survivors
Passenger and Crew Representatives	Provides information and support to whoever is designated to care for next of kin and keep them informed, identifies transportation needs, and may need to deal with various countries, languages and cultures
Media Representative	Gathers information, co-ordinates public affairs matters with counterparts in other organizations, prepares press releases, briefs spokespersons and arranges availability of information by phone and web sites
Specialists	From within or outside the company who may facilitate some special aspect of the response or follow up

The company may operate an Emergency Response Centre (ERC) to maintain communications with the craft in distress, remotely monitor onboard sensors if feasible, and keep emergency information readily available. Such information might include passenger and crew data, aircraft or ship details, incident details, number of survival craft and status of the current situation. Transportation companies should have readily available contacts with tour companies, shore excursion companies, airlines and cruise lines, hotels, etc., since such resources can be used to address many problems experienced with landing large numbers of survivors into a community. Contingency plans for co-operation should be developed between SAR authorities and transportation companies, and these plans should be sufficiently exercised to ensure they would be effective should an actual mass rescue situation arise. Such plans should identify contacts, co-ordination procedures, responsibilities, and information sources that will be applicable for MROs. These plans should be kept up to date and readily available to all concerned.

Respective functions of the ERC and RCC should be covered in co-ordinated pre-established plans, and refined as appropriate for an actual incident. These centres must maintain close contact throughout the SAR event, coordinating and keeping each other apprised of significant plans and developments.

There are other steps the transportation industry could be urged to undertake to improve preparedness for MROs. The following are some examples:

- Carry SAR plans on board aircraft or ships;
- Provide water and thermal protection for evacuees appropriate for the operating area;

- Provide a means of rescue to bring people from the water to the deck of ships;
- Use preparation checklists provided by SAR authorities;
- Conduct an actual physical exercise in addition to simulations;
- Provide the capability to retrieve fully loaded lifeboats and rafts;
- Enhance lifeboat lifesaving capabilities;
- Provide ways to assist persons in lifeboats who are seasick, injured or weak;
- Provide on board helicopter landing areas and helicopters;
- Prepare to assist survivors once they have been delivered to a place of safety;
- Have aircraft or ship status and specifications readily available, such as inspection records, design plans, communication capabilities, stability calculations, lifesaving appliances, classification society contacts, passenger and cargo manifests, etc., so that such information will not need to be obtained directly from a pilot or master; and
- Work with SAR authorities to develop and be able to rapidly deploy air droppable equipment or supplies for survivors, maintain strategically located caches for this purpose.

Acceptance of certain responsibilities by industry demonstrates commitment to passenger safety and can free SAR services to handle critical arrangements relating to SAR resources, co-ordination and communication.

MRO incident management

For major incidents, crisis management for the overall response may also be needed. The Incident Command System (ICS), one widely used means of meeting this need, works best with some advance familiarization and exercising within and among the transportation and emergency response communities. Since SAR and transportation authorities are likely to encounter use of the ICS within emergency response communities, this Appendix provides general information for familiarization with ICS. The following terms are relevant to the ICS:

Incident Commander (IC): the primary person functioning as a part of the incident command system, usually at or near the scene, responsible for decisions, objectives, strategies and priorities relating to emergency response;

Incident Command Post (ICP): the location at which primary functions are carried out for the Incident Command System;

Incident Command System (ICS): and on-scene emergency management concept that provides an integrated organizational structure adaptable to the complexity and demands of an major incident involving multiple missions, response organizations or jurisdiction;

Unified Command (UC): the incident commander role of the incident command system expanded to include a team of representatives that manages a major incident by establishing common objectives and strategies and co-operatively directing their implementation.

The ICS is designed for use when multiple organizations and jurisdictions need to be jointly involved in a coordinated emergency response activity.

While organizations have their respective systems of command and control or co-ordination, these should be compatible with systems in use by others so that organizations can function jointly and effectively when necessary. Commonality and similarities among crisis management systems locally, regionally and internationally foster effective joint efforts.

The ICS does not take control, responsibility or authority away from SAR services; SAR services remain focused on lifesaving, while the ICS focuses on promoting an effective overall incident response.

The ICS training, advance co-ordination and liaison will be rewarded by better performance and success when a crisis situation arises.

As a tool for managing major incidents, the ICS:

- Accommodates all risks and hazards;
- Is simple, powerful and flexible;
- Can easily expand or contract as the incident warrants;
- Relieves the SAR system of co-ordinating non-SAR missions;
- Enables SMCs to use the ICS contacts to draw on additional resources; and
- Ensures better communication and co-operation between agencies.

The ICS organization can grow or shrink as the situation dictates, and provides a logical process and progression to achieve results. Its organization should be allowed to grow with increased demand and shrink when operations decline, both of which require anticipation.

Advantages of the ICS can be lost when organizations develop their own unique and relatively complex versions of the ICS; it works best when it remains simple, flexible and standardized so everyone on scene from all organizations understands it.

In its basic form a person is designated as the IC to handle overall co-ordination, including setting objectives and priorities.

Support functions (sections supported by one or more persons) can be established as needed and on the scale needed to keep the IC informed and assist in certain areas. The four support sections in the ICS organization are as follows:

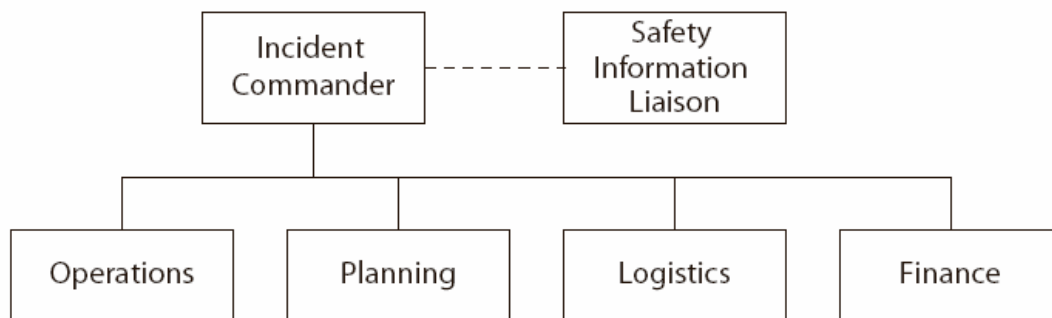
- **Operations Section** – helps manage resources to carry out the operations;
- **Planning Section** – helps develop action plans, collect and evaluate information, maintain resource status and arrange to scale up or scale down activities;
- **Logistics Section** – helps provide resources and services needed to support the incident response, including personnel, transportation, supplies, facilities and equipment; and
- **Finance-Administration Section** – assists with monitoring costs, providing accounting and procurements, keeping time records, doing cost analysis and other administrative matters.

Other additions to directly assist the IC might include:

- An Information Officer – assists the media and others seeking incident information, ensures the IC has appropriate information available, and helps to provide information to the public and families of persons in distress;
- A Safety Officer – monitors safety conditions and develops measures to ensure safety and reduce risks; and Liaison Officers – serve as primary contacts for on-scene representatives of their respective organizations.

The following figure illustrates the basic ICS organization:

Incident Command System Organization



The IC usually establishes an Incident Command Post (ICP) as a base for ICS activities. For particularly demanding incidents, the ICS organization can be expanded. For example, for operations that are particularly large-scale, sustained or complex, the IC can be augmented by establishment of an actual or virtual (i.e. without everyone collocated) Unified Command (UC) populated by operational managers representing the primary response organizations involved. If the UC is made up of linked independent command posts, a Government post and an industry post for example, ideally there should still be a person from each command post assigned to work at the other post(s) involved.

For a situation like a major passenger aircraft or ship disaster, a Joint Information Centre (JIC) should be established, perhaps in association with the Information Officer position, to facilitate and co-ordinate the vast amount of information that will need to be managed internally and shared with the public.

Whether the ICS should be used depends on the duration and complexity of the incident. If it is used, co-ordination of SAR functions with other functions is usually achieved by assigning a representative of the SAR agency or of the SMC to the Operations Section of the ICS organization.

This allows SAR services to be plugged into the ICS and overall operations while still being able to function with relative independence in accordance with normal SAR procedures. The ICS has an overall incident focus, while SAR services must remain focused on lifesaving.

A determination should be made as early as possible regarding the person responsible for overall co-ordination, and how the overall response will be organized and managed. Procedures should be understood by all and overall response managed to ensure mutual support, effort prioritization, and optimal use of available resources, and to enhance on-scene safety and effectiveness.

Inter-agency contingency planning should identify who the IC should be for various scenarios. Typically, the IC will be assigned from the Government organization with primary responsibility for the type of function most prominent in the response to the particular incident. However, with appropriate access to experts and information from all agencies concerned, a key consideration in selecting the IC should be familiarity and experience with the IC function, i.e., the IC should be a person who can best handle the responsibility.

The IC should be someone skilled at managing on-scene operations and should usually be located at or near the scene. Everyone involved, regardless of rank or status, will normally be in a support role for the IC, similar to the SMC support structure within an RCC. The IC function can be transferred as the situation warrants, although such transfers should be minimized as is the case for transfers of SMC functions during a mission. It is important to designate an IC early, in contingency plans if possible, and to make a transfer later, as appropriate, as delay in designating an IC can be quite detrimental.

Except when functions other than SAR are relatively insignificant to the incident response, the IC should normally be someone other than the SMC. The priority mission will always be lifesaving, and the SMC should normally remain unencumbered by additional non-SAR duties.

Similarly, the IC's command post should normally be at a location other than in the RCC, because the RCC needs to remain focused on, and be vigilant and responsive to, its normal SAR responsibilities in addition to handling SAR aspects of the major incident.

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APPENDIX C

Amendments made to Volume III – Mobile Facilities

Amendments: highlighted text applies as from 1 June 2007

Section 1 – Overview

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- SMC duties include:

- issue progress reports
- determine when to suspend or terminate the search
- release SAR facilities when assistance is no longer required

Section 3 – On-Scene Co-ordination

Amendments: highlighted text applies as from 1 June 2007

Co-ordination of Search and Rescue Operations

- Requirements for Co-ordination

When a SAR incident occurs, an SMC will normally be designated, within an RCC or RSC. The SMC will obtain SAR facilities, plan SAR operations, and provide overall co-ordination. The SMC may also designate an OSC to provide co-ordinate ...

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- o any RCC or RSC which can be reached; or
- o any communications facility (e.g., alerting post).
- o The first facility to arrive

.....

o Co-ordination by Land-Based Authorities

- SAR operations are normally co-ordinated from specially equipped operational centres or RCCs, staffed 24 hours a day with trained personnel. The working language for these centres should be English.
- Each RCC has an associated SRR. The SRR might be divided into subregions with associated RSCs

o Land-based communication facilities include:

- land earth stations (LESs)
- COSPAS-SARSAT Mission Control Centres with Local User
- Terminals (LUTs)
- independent CRSs or CRSs associated with the RCCs
- ATS units
- mobile phone networks
- Internet
- public telephone alerting systems.

o LESs may also be referred to as aeronautical ground earth stations(GESs) or maritime coast earth stations (CESs).

o On-Scene Co-ordination

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Appendix D – Standard Format for Search and Rescue Situation Report (SITREP)

Amendments: highlighted text applies as from 1 June 2007

Situation reports (SITREPs) should be compiled as follows:

Short Form

To pass urgent essential details when requesting assistance, or to provide the earliest notice of a casualty.

Transmission priority (distress/urgency, etc.): _____

Date and time (UTC or local date time group): _____

From (originating RCC): _____

To: _____

SAR SITREP (number) (to indicate nature of message and completeness of sequence of SITREPs concerning the casualty): _____

Identity of casualty (name, call sign, flag State): _____

Position (latitude/longitude): _____

Situation (type of message, distress or urgency; date/time; nature of distress/urgency, for example, fire, collision, medical): _____

Number of persons at risk: _____

Assistance required: _____

Co-ordinating (RCC): _____

Full Form

To pass amplifying or updating information during SAR operations, the following additional sections should be used as required:

Description of casualty (physical description, owner/charterer, cargo carried, passage from/to, life-saving appliances carried, etc.): _____

Weather on-scene (wind, sea/swell state, air/sea temperature, visibility, cloud cover/ceiling, barometric pressure): _____

Initial actions taken (by distressed craft and RCC): _____

Search area (as planned by RCC): _____

Co-ordinating instructions (OSC designated, units participating, communications, etc.): _____

Future plans: _____

Additional information/conclusion (include time SAR operation terminated): _____

Note 1. Each SITREP concerning ...