INTERNATIONAL MARITIME ORGANIZATION

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MSC.1/Circ.1415
25 May 2012

AMENDMENTS TO THE INTERNATIONAL AERONAUTICAL AND MARITIME SEARCH AND RESCUE (IAMSAR) MANUAL

1 The Maritime Safety Committee (MSC), at its ninetieth session (16 to 25 May 2012), having been informed that the International Civil Aviation Organization (ICAO) had approved the amendments to the IAMSAR Manual prepared by the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue, and that they had been endorsed by the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) at its fifteenth and sixteenth sessions, approved the annexed amendments in accordance with the procedure laid down in resolution A.894(21).

2 The Committee decided that the amendments should become applicable on 1 July 2013.

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ANNEX

AMENDMENTS TO THE IAMSAR MANUAL

PROPOSED AMENDMENTS TO IAMSAR MANUAL – VOLUME I

Note: changes are given to the 2010 version of the Manual, taking into account the amendments laid down in MSC.1/Circ.1367

1 Abbreviations and Acronyms

- Add the following text on page vii:

  AIS-SART ... Automatic Identification System-Search and Rescue Transmitter

- **IBRD** ... International 406 MHz Beacon Registration Database

- Delete the following text on page vii:

  RTG ... radio telegraph

2 Glossary

- Amend the existing entry on page ix as follows:

  Cospas-Sarsat system A satellite system designed to detect distress beacons transmitting on the ~~frequencies of 121.5 MHz and~~ frequency of 406 MHz

- Add new entries:

  Locating The finding of ships, aircraft, units or persons in distress

  Place of safety A location where rescue operations are considered to terminate; where the survivors' safety of life is no longer threatened and where their basic human needs (such as food, shelter and medical needs) can be met; and, a place from which transportation arrangements can be made for the survivors' next or final destination. A place of safety may be on land, or it may be aboard a rescue unit or other suitable vessel or facility at sea that can serve as a place of safety until the survivors are disembarked to their next destination.

3 Chapter 2

- Add new paragraph 2.1.3:

  2.1.3 Establishment of the global aeronautical and maritime SAR systems under their respective international conventions provides the framework for a national system to handle SAR matters on land within the State and its SRR. Local government authorities and police would typically have the responsibility for land SAR and may not involve an RCC. However, the national SAR system should have arrangements in place for coordination with local authorities for land

SAR response, as appropriate. In some cases, the national SAR system may be designated as being responsible for conducting certain land SAR operations; or, it may have a supporting role because the RCC received the initial alert or the local authorities requested the support of nearby national SAR facilities.

4 Chapter 4

- Replace paragraphs 4.2.2 (e), 4.2.3 and 4.2.4 with the following text:

4.2.2 (e) *Common Language.* The need for RCC staff and SAR unit crews to be proficient in speaking, writing and comprehending a common language to ensure effective information transfer is vital to successful conduct of SAR operations. In the case of a SAR action involving cooperative input from a number of RCCs and SRUs within a region, the most convenient language may be a common regional language. In the case of a SAR action likely to extend beyond regional areas, the appropriate common language is English. English, in any case, serves as the default SAR operational language in all cross-boundary operations where there is no other common language. Defining and mandating specific levels of proficiency in languages for RCC staff and SRU crews is, however, impractical because the regulatory framework of SAR services is insufficiently robust to support its implementation and maintenance. SAR service providers should, nonetheless, appreciate that where there is dependence upon spoken communication, mistaken transfer of operational information has been shown to be the most common causal factor in the occurrence of accidents and incidents and that every effort should be made to mitigate its risks by requiring SAR staff to attain a high level of appropriate language proficiency. As supportive tools, in undertaking coordination across language barriers, SAR service providers may take advantage of commercial interpretation services that are now readily available. Confirmation of verbal conversations with facsimile or other written messages can reduce misunderstandings and expedite coordination processes.

4.2.3 Publications which can be used to alleviate language barriers between vessels, aircraft, survivors, and SAR personnel include: the International Code of Signals, the Standard Marine Communication Phrases (SMCP) and Appendix I – SITREPs and Codes, of IAMSAR Manual, volume II. These documents should be included in RCC libraries and be understood by the staff who should be able to recognize coded messages based on these references. Ships should carry these documents and SRUs should carry the Code.

4.2.4 While tools like the International Code of Signals and SMCP are readily available and can be genuinely useful, they should not be thought of as total solutions for the challenges of communicating effectively across language barriers. Because of the range of topics and behaviours requiring common understanding, effective transfer of information in situations of operational emergency is dependent upon a very comprehensive command of language. Thus, no form of standardized phraseology or code can address the extent of need. A high level of proficiency in common (or plain) language is necessary.

- Add in paragraph 4.4.4 (a), second line, the following new text:

  - required to carry the 406 MHz distress beacon called an emergency …

- Amend paragraph 4.4.4 (a), second sentence, as follows:

  - Designated SAR aircraft ~~shall~~ should be able to home on ELT 121.5 MHz and 406 MHz signals for locating a distress scene and survivors.

- Add in paragraph 4.4.4 (b) first line, the following new text:

  - Similarly, certain vessels must carry the 406 MHz distress beacon called an emergency position …

- Add new paragraph after paragraph 4.4.4 (c):

  4.4.4 (d) The 406 MHz personal locator beacon (PLB) is not a mandated international carriage requirement, but may be carried on a person and has similar characteristics to the ELT and EPIRB distress beacons. However, the PLB has different specifications.

- Amend paragraph 4.4.6, first line, as follows:

  - For operations, accurate position information received with the 406 MHz distress beacon ~~an ELT or EPIRB~~ alert …

- Add in paragraph 4.4.12, beginning of the second bullet, the following new text:

  - AIS to detect the AIS-search and rescue transmitter (SART) and/or …

- Amend paragraph 4.4.12, fourth bullet, as follows:

  - capability to activate ~~uate one of the radiotelephone alarms or~~ DSC alerts ~~radio~~ aboard vessels in the vicinity ~~to help establish communications with them more directly~~.

- Amend paragraph 4.5.8, last sentence, as follows:

  - However, 121.5 MHz alerts ~~via Cospas-Sarsat will always need to be routed to a SPOC (usually an ARCC or MRCC) and aircraft usually will alert~~ may normally be heard by aircraft in flight which would usually report the alert to an ATC on the frequency used for air traffic control and then continue on that frequency.

- Amend paragraph 4.5.15, beginning of the first sentence, as follows:

  - Registration of ~~ELTs, EPIRBs,~~ 406 MHz distress beacons and other …

- Amend in paragraph 4.5.17, in the first, second and third lines of text, the following:

  - change "ELT/EPIRB" to "406 MHz distress beacons"

- Add new paragraph after paragraph 4.5.17:

4.5.18 406 MHz distress beacons can be registered in the International 406 MHz Beacon Registration Database (IBRD), available online and free-of-charge. The IBRD provides access to beacon owners who wish to directly register their beacons in the IBRD, when no registration facility exists in their country or the responsible Administration has agreed to allow direct registration in the IBRD. Administrations can also opt to centrally control the registration of beacons identified with their country code, but wish to make registration data available to international SAR services via the IBRD.

All SAR services need to access beacon registration data held in the IBRD to efficiently process distress alerts. Administrations should designate a National Point of Contact to the Cospas-Sarsat Secretariat (contact details are contained in Appendix D). Cospas-Sarsat will accept designations from the Cospas-Sarsat Representative or, for non-participating countries, the representative of an IMO or ICAO Member State. Cospas-Sarsat will provide each National IBRD Point of Contact with user identifications and passwords to be used by:

- National Data Providers for registration of beacons with their country code(s);
- SAR services for IBRD queries; and
- authorized shore based service facilities and inspectors to verify proper coding and actual registration of the beacon.

These IBRD user identifications and passwords should be distributed within each country under the responsibility of the National IBRD Point of Contact.

Further guidance on the IBRD registration process, including a letter template to request password access to the IBRD for SAR services, is provided on the Cospas-Sarsat website.

- Amend in paragraphs 4.5.20, first and second lines, paragraph 4.5.21, first line, paragraph 4.5.22, first and second lines, and paragraph 4.5.22, fourth and sixth bullets, the following:

  - change "ELT/EPIRB" to "406 MHz distress beacons"

- Delete in paragraph 4.5.24, third bullet, the following word:

  - satellite

- Renumber 4.5.18 to 4.5.27 into 4.5.19 to 4.5.28

- Add in paragraph 4.5.28 (added as new paragraph 4.5.27 by MSC.1/Circ.1367) a new last sentence, as follows:

  - The SAR service of the Contracting Government requests LRIT information for SAR only via the LRIT Data Centre serving the Contracting Government.

5 Appendix D

- Replace existing text with table below

Information Sources The following contacts may be helpful in obtaining reference documents mentioned in this Manual. International documents are available in the official languages of the sponsoring organizations. The organization's website should have the most current contact information such as telephone, facsimile and e-mail.	
International Civil Aviation Organization (ICAO) 999 University Street Montreal, Quebec Canada H3C 5H7	Website: www.icao.int E-mail: icaohq@icao.int
International Maritime Organization (IMO) 4 Albert Embankment London SE1 7SR United Kingdom	Website: www.imo.org E-mail: info@imo.org
International Telecommunication Union (ITU) Bureau des radiocommunications (BR) Place des Nations CH-1211 Genève 20 Switzerland	Website: www.itu.int/ITU-R/ E-mail: brmail@itu.int
Inmarsat 99 City Road London EC1Y 1AX United Kingdom	Website: www.inmarsat.com E-mail: customer_care@inmarsat.com
International Cospas-Sarsat Programme 700 de la Gauchetière West, Suite 2450 Montreal, Quebec H3B 5M2 Canada	Website: www.cospas-sarsat.org E-mail: mail@cospas-sarsat.int
Centro Internazionale Radio-Medico (CIRM) Viale dell'Architettura, 41 00144 Rome Italy	Website: www.cirm.it Email: telesoccorso@cirm.it Telex: 612068 C.I.R.M. I
Amver Maritime Relations 1 South Street USCG Battery Park Building New York, NY 10004 United States	Website: www.amver.com
Global Positioning System (GPS) U.S. Coast Guard NAVCEN MS 7310 7323 Telegraph Road Alexandria, VA 20598-7310 United States	Website: www.navcen.uscg.gov
Global Navigation Satellite System (GLONASS)	Website: www.glonass-ianc.rsa.ru E-mail: glonass-ianc@mcc.rsa.ru

6 Appendix E

- Amend on page E-2, last bullet, the following:
  - change "satellite ELTs and EPIRBs" to "406 MHz distress beacons (ELTs, EPIRBs and PLBs)",
- Amend on page E-3, first bullet, the following:
  - change "ELT/EPIRB" to "406 MHz distress beacons"
- Delete on page E-3, second bullet, the following word:
  - satellite
- Amend on page E-3, sixth and eighth bullets, the following:
  - change "ELT/EPIRB" to "406 MHz distress beacons"

7 Appendix F

- Amend on page F-1, the following:
  - change "Primary SAR" to "Enhanced Capability SAR System"
- Amend on page F-1, the following:
  - change "Limited SAR" to "Basic (essential) Capability SAR System"
- Delete on page F-2, title line, the following words:
  - Commercial
  - (CMSS)

8 Appendix G

- Amend paragraph G.3.5, as follows**:**
  - The installation of automatic radiotelephone alarm signal devices <u>or carriage of DSC-capable radios</u> is a matter for determination by SAR authorities in light of use that may be made of such devices in the areas concerned, particularly with regard to the number of ships carrying this equipment.
- Add new paragraph after paragraph G.3.5:

  G.3.6 In accordance with the SOLAS Convention, every passenger ship shall be provided with means for two-way on-scene radiocommunications for SAR purposes using the aeronautical frequencies 121.5 MHz and 123.1 MHz from the position from which the ship is normally navigated.

- Add in paragraph G.4.3 a new last sentence, as follows:

  - HF radio can be useful in polar regions where geostationary satellite coverage may be limited. Also, HF email capability exists.

- Add in paragraph G.4.4 a new last sentence, as follows:

  - AIS transmission from ships provides vessel identity, location and other information which can be useful for SAR purposes.

- Amend paragraph G.5.1, opening phrase, as follows:

  - Delete "After February 1, 1999"

  - change lower case "s" to upper case "S"

- Amend paragraph G.5.7, as follows:

  - ~~Introduction of~~ GMDSS aboard only some vessels adds capabilities for those vessels, but also introduces incompatibility between those vessels and vessels not GMDSS-equipped. It also introduces need for SAR authorities to support two maritime mobile systems both ashore and afloat. IMO recognizes this incompatibility and has developed guidance on some matters common to SOLAS-convention vessels and non-regulated craft; and, decided that all GMDSS ships, while at sea, shall continue to maintain, when practicable, a continuous listening watch on VHF channel 16 since ~~When most ships discontinue watchkeeping on Channel 16,~~ most small vessels will still depend on channel 16 for distress, safety and calling.

- Rename section G.6, as follows:

  - **G.6 406 MHz Distress Beacons**

- Replace paragraphs G.6.1, G.6.2 and G.6.3 with the following paragraphs:

  G.6.1 There are three types of 406 MHz distress beacons: the maritime emergency position-indicating radio beacon (EPIRB) which is part of the GMDSS, the aeronautical emergency locator transmitter (ELT), and the personal locator beacon (PLB). All three types of this distress beacon have their signals relayed via Cospas-Sarsat satellites, local user terminals (LUTs) and mission control centres (MCCs) to SAR Points of Contact (SPOCs) which include RCCs.

  G.6.2 Many civil aircraft worldwide, especially operating on international flights and over ocean areas, are required to carry the 406 MHz distress beacon. However, some national regulations may allow for the 121.5 MHz ELT on domestic flights. This old style ELT depends on other aircraft or airport facilities to detect its aural signal.

- Amend paragraph G.6.4, as follows:

  - Most ~~ELTs and EPIRBs~~ 406 MHz Distress Beacons provide a homing ~~signals~~ capability on 121.5/243/406 MHz~~; some also on 243 MHz~~, and some may also integrate SARTs into their designs.

- Renumber paragraphs G.6.4 and G.6.5 to G.6.3 and G.6.4.

- Add new paragraph after paragraph G.6.4:

  G.6.5 The 406 MHz PLB is not a mandated international carriage requirement, but may be carried on a person and has similar characteristics to EPIRBs and ELTs. However, the PLB has different specifications.

- Add on Page G-4, new section, as follows:

  G.9 Mobile Telephone – Satellite and Cellular

  G.9.1 A mobile telephone can be a satellite or cellular telephone. The satellite telephone connects to orbiting satellites and can provide regional or global coverage. Cellular telephones connect to a local terrestrial network of radiocommunications base stations known as cell sites. The mobile telephone enables the caller to connect to and from the public telephone network including other mobile telephones, and fixed telephone lines. Portable satellite and cellular telephone systems were not developed as part of the international SAR system and have limitations for distress alerting. But, since any available means may be used for distress alerting, national administrations should make appropriate arrangements and establish procedures to handle distress alerts from mobile telephones.

  G.9.2 Due to the widespread use of cellular telephones, specific guidance has been provided in the IAMSAR Manual, volume II, chapter 2 Communications. Many aspects of the guidance in that section regarding cellular telephones can also apply to the satellite telephone.

9 Index

- Delete page Index-1, the following:

  - 500 kHz *4.4*

PROPOSED AMENDMENTS TO IAMSAR MANUAL – VOLUME II

1 Foreword

- Add the following text at the end of the second paragraph:

  "Depending on the duties assigned, it may be necessary to hold only one, or two or all three volumes."

- Add at the end of the penultimate paragraph:

  "by the eighty-fifth session in December 2008 (which entered into force on 1 January 2009) and by the eighty-sixth session in June 2009 (which became applicable on 1 June 2010)."

- Replace the last paragraph with the following:

  "A new edition is published every three years. The 2013 edition includes the 2010 amendments (adopted by ICAO and approved by IMO's Maritime Safety Committee at its eighty-seventh session in May 2010 that became applicable on 1 June 2011) and the 2011 and 2012 amendments (adopted by ICAO and approved by IMO's Maritime Safety Committee at its ninetieth session in May 2012 that became applicable on 1 June 2013). The amendments were prepared by the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue at its sixteenth session, in September 2009, seventeenth session, in September 2010, and eighteenth session, in October 2011, respectively, and were endorsed by the IMO Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) at its fourteenth session, in March 2010, fifteenth session, in March 2011, and sixteenth session, in March 2012, respectively.

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2 Abbreviation and acronyms

- Update the list with the following edited text:

AIP	aeronautical information publication
GMDSS	Global Maritime Distress and Safety System
SART	search and rescue (radar) transponder

- Add the following text:

AIS	automatic identification system
AIS-SART	automatic identification system-search and rescue transmitter
CS	coast station
GIS	geographic information system
IBRD	International 406 MHz Beacon Registration Database
LRIT	Long-range Identification and Tracking
MAREC	Maritime Search and Rescue Recognition Code
MOB	man overboard
SAC	short access code

SMCP	(IMO) Standard Marine Communication Phrases
SRS	ship reporting system
VMS	vessel monitoring system
VTS	vessel traffic services

- Delete the following text:

CIRM	Centra Internazionale Radio Medico
RTG	radio telegraphy

3 Glossary

- Update the glossary with the following text:

Cospas-Sarsat System	A satellite system designed to detect and locate activated distress beacons transmitting in the frequency band of 406.0-406.1 MHz.
Direction finding (DF)	Radiodetermination using the reception of radio waves for the purpose of determining the direction of a station or object.
Homing	The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.
MAYDAY	The international radio telephony distress signal.
METAREA	A geographical sea area[4] established for the purpose of coordinating the broadcast of marine meteorological information. The term METAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.
NAVAREA	A geographical sea area[1] established for the purpose of coordinating the broadcast of navigational warnings. The term NAVAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.
On-scene endurance	The amount of time a facility is capable of spending at the scene, engaged in search and rescue activities.
PAN-PAN	The international radio telephony urgency signal.
Personal Locator Beacon (PLB)	A portable device, manually activated, which transmits a distress signal on 406 MHz, and may have an additional homing signal on a separate frequency.

[1] Which may include inland seas, lakes and waterways navigable by seagoing ships.

- Add the following text:

Area Control Centre (ACC)	An air traffic control facility primarily responsible for providing ATC services to IFR aircraft in controlled areas under its jurisdiction.
Automatic Identification System (AIS)	A system used by ships and vessel traffic services (VTS), principally for identifying and locating vessels.
Aeronautical Information Services (AIS)	A service established within the defined area of coverage responsible for the provision of aeronautical information/data necessary for the safety, regularity and efficiency of air navigation.
Distress alert	The reporting of a distress incident to a unit which can provide or coordinate assistance.
Emergency Locator Transmitter (ELT)	A generic term (related to aircraft) describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated.
Emergency position-indicating radio beacon (EPIRB)	A device, usually carried aboard maritime craft, that transmits a signal that alerts search and rescue authorities and enables rescue units to locate the scene of the distress.
Flight information centre (FIC)	A unit established to provide information and alerting services.
Geographic information system (GIS)	A system which captures, stores, analyses, manages and presents data that is linked to a location.
Heave	The vertical rise and fall due to the entire ship being lifted by the force of the sea.
Long-range Identification and Tracking (LRIT)	A system which requires certain vessels to automatically transmit their identity, position and date/time at six-hour intervals in accordance with SOLAS regulation V/19-1.
Maritime Domain Awareness (MDA)	The effective understanding of any activity associated with the maritime environment that could impact upon the security, safety, economy or environment.
Place of safety	A location where rescue operations are considered to terminate; where the survivors' safety of life is no longer threatened and where their basic human needs (such as food, shelter and medical needs) can be met; and, a place from which transportation arrangements can be made for the survivors' next or final destination. A place of safety may be on land, or it may be aboard a rescue unit or other suitable vessel or facility at sea that can serve as a place of

	safety until the survivors are disembarked to their next destination.
Ship reporting system (SRS)	Reporting system which contributes to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment. They are established under SOLAS regulation V/11 or for SAR purposes under chapter 5 of the International Convention on Maritime Search and Rescue, 1979.
Vessel	A maritime craft.
Vessel Monitoring System (VMS)	A tracking system which provides for environmental and fisheries regulatory organizations to monitor the position, time at a position, course and speed of commercial fishing vessels.
Vessel tracking	A generic term applied to all forms of vessel track data derived from multiple sources such as ship reporting systems, AIS, LRIT, SAR aircraft, VMS and VTS.
Vessel Traffic Services (VTS)	A marine traffic monitoring system established by harbour port authorities to keep track of vessel movements and provide navigational safety in a limited geographical area.

- Remove the following text:

Locating	The finding of ships, aircraft, units or persons in distress.
SarNet	A broadcast system between RCCs within the footprint of an individual satellite.

4 Chapter 1

- Amend the following text in paragraph 1.1.1:

  Replace text "sail or fly" with "may be in danger, in the air or at sea".

- Amend the following text in paragraph 1.2.3:

  Move text "as well as the SMC" on seventh line to sixth between "the assisting team," and "must be replaced at regular intervals." in the third sentence.

  Add text "(visual and electronic)" after the word "lookout" in the fourth bullet of subparagraph (b).

  Add text "if necessary, rescue vessels and," after "fuelling of aircraft, and" in the eleventh bullet of subparagraph (b).
  Add text "notify police and other government authorities where relevant and necessary" as a new bullet after the seventeenth bullet of subparagraph (b).

  Add text "or vessel" after "registry of aircraft" in the second to the last bullet of subparagraph (b).

- Amend the following text in paragraph 1.2.4:

  Add text "action" between "rescue" and "plan" in the second to the last bullet.

- Move paragraph 1.2.5 after the paragraph on "Aircraft Coordinator" and renumber.

- Amend the following text in paragraph 1.2.5 (old paragraph 1.2.6):

  Add text "such as an ATS unit or RCC" at the end of second to last sentence.

  Replace text of second bullet by "assist in maintaining flight safety by issuing safety-related information".

- Rename the section called "Ship Reporting System" to read "Ship Reporting System and Vessel Tracking".

- Insert new paragraph 1.3.6 and include the following text (and renumber all paragraphs of section 1.3 accordingly):

  "As well as ship reporting systems (SRS), RCCs can use vessel position data from various vessel tracking systems to support SAR operations. These may include the Long-range Identification and Tracking (LRIT) system, the Automatic Identification System (AIS) system, fisheries and other Vessel Monitoring Systems (VMS) and Vessel Traffic Services (VTS) established to monitor port operations or to cover focal areas or sensitive areas. Data from each of these systems can be displayed by RCCs using geographic information systems (GIS) to produce a surface picture (SURPIC). SURPICs can be used to identify and locate potential rescue vessels as well as improve maritime domain awareness (MDA). In accordance with SOLAS regulation V/19-1, Contracting Governments should make provision to receive LRIT vessel position data for SAR. IMO guidance material advises that RCCs can request LRIT data for SAR operations within their own SRR and for SAR coordination requirements outside it as appropriate. Data on all vessels can be requested within a circular or rectangular area at no charge to the RCC."

- Amend the following text in paragraph 1.3.7 (old paragraph 1.3.6):

  Delete text "From 31 January 1999".

- Amend the following text in paragraph 1.3.8 (old paragraph 1.3.7):

  Replace text "though this can still be done" with "though this is still done".

  Replace text "where SAR professionals can help arrange assistance" with "so that SAR professionals are rapidly alerted and can help arrange assistance".

- Amend the following text in paragraph 1.3.9 (old paragraph 1.3.8):

  Delete last sentence and replace with "An initial goal of GMDSS was to eliminate the need for a continuous listening watch on VHF-FM Channel 16. However, since most other vessels depend on Channel 16 for distress, safety, and calling, IMO has decided that all GMDSS ships, while at sea, shall continue to maintain, when practicable, continuous listening watch on VHF-FM Channel 16".

- Amend the following text in paragraph 1.3.10 (old paragraph 1.3.9):

  Delete text "Commercial aircraft on domestic routes and general aviation" from the fourth sentence.

- Amend the following text in paragraph 1.3.12 (old paragraph 1.3.11):

  Add text "and operate on 406 MHz and 121.5 MHz for final homing" at the end of the last sentence.

- Amend the following text in paragraph 1.4.4:

  Add text "If the medical personnel consulted do not fully understand the risks, the SMC should explain the risks and ask for an opinion on the urgency of the medical situation and the necessity of and priority for evacuation." after the second sentence.

- Delete paragraph 1.5.3.

- Amend the following text in paragraph 1.6.2:

  Replace text "or other craft" with "other craft or person(s)".

- Amend the following text in paragraph 1.6.3:

  Add text "or witnesses seeing an aircraft in difficulty or crash" after "overdue".

- Amend the following text in paragraph 1.6.4:

  Replace text "A coast radio station (CRS)" with "In some areas, a coast radio station (CRS) provides the main link for ship-to-shore and shore-to-ship communications and, in this situation, it may be that the CRS".

  Add text "Some RCCs may have radio or satellite communications capability that enables them to be alerted directly." at the end of the paragraph.

- Amend the following text in paragraph 1.6.10:

  Replace text "survivors move due to wind and water currents" with "survivors may move, for example, due to wind and water currents or by attempting to walk out of a remote land area".

  Replace text "watchstanders" with "personnel".

- Amend the following text in paragraph 1.6.11:

  Replace text "removing them to a safe place" with "delivering them to a place of safety".

  Insert a new sentence before the last sentence and include the following text:

  "They may also continue to gather or receive more information and assess this to see if it affects or changes any of the plans previously made. The RCC may also be the focal point for communications with other organizations."

- Amend the following text in paragraph 1.6.12:

  Add text "other craft" after "ship" and add "or" at the end of the first bullet.

  Replace text of last bullet with "during the distress phase, the SMC determines that further search would be to no avail because additional effort cannot appreciably increase the probability of successfully finding any remaining survivors or because there is no longer any reasonable probability that the persons in distress have survived".

- Amend the following text in paragraph 1.7.1:

  Replace text "at some later date" with "taken" at the end of the paragraph.

- Amend the following text in paragraph 1.7.2:

  Delete sentence "Appendix C contains a sample format of this record".

- Insert new paragraph 1.7.6 and include the following text (and renumber all paragraphs of section 1.7 accordingly):

  "Electronic charting systems/Geographic Information System (GIS) make it possible to create separate records of incident information plots regardless of the number of incidents being handled. The records are stored electronically and may also be printed for portable use, briefings, etc."

- Amend the following text in paragraph 1.7.7 (old paragraph 1.7.6):

  Replace text "overlays" with "records".

- Amend the following text in paragraph 1.8.2:

  Add text "and practice skills" after "individual procedures".

- Amend the following text in paragraph 1.8.4:

  Replace the text of subparagraph (b) with "A Coordination Exercise involves simulated response to an emergency based on a series of scenarios. All levels of the SAR service are involved but do not deploy. This type of exercise can require considerable planning, especially where a number of other units or organizations are involved and usually takes one to three days to execute. However, simulation exercises can be carried out more simply, for example, RCC personnel can conduct "internal" coordination exercises to simulate response to a scenario and practise their skills, techniques, procedures and processes. This may be as part of a programme of personnel competency maintenance training."

- Amend the following text in paragraph 1.8.6:

  Add text "and opportunities for testing and evaluating." to the end of the first sentence.

  Replace text "EXERCISE ONLY" with "a prefix such as "EXERCISE" or "SAREX" in subparagraph (a).

- Amend the following text in paragraph 1.8.12:

  Replace text "These watchstanders" with "Their personnel" in second sentence.

  Replace text "watchstanders" by "personnel" in fourth sentence.

- Amend the following text in paragraph 1.8.15:

  Replace text of first paragraph with "RCC and RSC SAR training should also include many other topics. If search planning skills, knowledge and expertise gained from formal training is not used on a regular basis for operations or exercises, then periodic recurrent training must be implemented to ensure reliable and effective delivery of SAR services. Subject matter should include:".

  Add "GDMSS, Weather and Vessel tracking (AIS, LRIT, VMS and VTS) to the list of topics and remove "Inmarsat".

- Amend the following text in paragraph 1.10.3:

  Replace text of first two sentences of subparagraph (a) with "In order to ensure the formulation of a consistent and controlled message to the public, designated media relations personnel should be notified as the focal point for the release of information relating to SAR operations. In the conduct of major operations, the RCC should not normally be the contact point for the media because of the potential for negative impact on SAR operations if media interest becomes too extensive".

  Add text "behaviour" after text "experience" and replace text "captain" with "master" in first bullet of subparagraph (c).

- Amend the following text in paragraph 1.10.5:

  Replace text "man" with "staff" in first bullet.

- Amend the following text in paragraph 1.10.6:

  Add text "public relations and management of" after text "considerations for".

  Add text "public relations staff" after text "RCC" in subparagraph (a).

- Amend the following text in paragraph 1.11.6:

  Replace text of subparagraph (b) with the following:

  "*Search planning.* The RCC may develop its own databases as well as make use of existing database programs on a variety of information valuable to search planning. Examples include:

  - An index to previous SAR incidents by distressed craft name or other identifier could lead to valuable information about that craft if it is involved in a later incident.
  - A database of known debris locations from previous aircraft crashes or forced landings over land, or vessels recently sunk may avoid wasting valuable search time investigating old SAR incident sites.

- In the maritime area, a database of past drift trajectories could improve estimates of survivor location in future incidents.

- An environmental database, including sea currents, water temperatures, winds currents, etc."

Add new subparagraph (c) as follows:

"Facilities and agencies

- A database of SAR and medical facilities, such as hyperbaric chambers and hospitals, and their capabilities could aid rescue planners in determining the best place to take injured survivors.

- Lists of frequently called agencies and telephone numbers can be kept in a database and rapidly accessed when needed."

- Amend the following text in paragraph 1.11.7:

  Add text "computer" at the beginning of paragraph.

- Amend the following text in paragraph 1.11.8:

  Add text "The Internet often provides a means to access this data as well as business and individual web sites which might provide pertinent information on the craft or persons in distress." at the end of subparagraph (a).

- Insert new paragraph 1.11.10 and include the following text:

  "*Display of Vessel Tracking Data*. A computer system with geographic information system (GIS) display capability is important for displaying vessel tracking data sourced from AIS, LRIT, VMS, VTS and other sources. The location of SAR units can also be tracked and displayed, as can search areas and other information."

5 Chapter 2

- Amend the following text in paragraph 2.1.4:

  Insert text ", Commercially available emergency notification device service providers," between "units" and "public".

- Amend the following text in paragraph 2.2.9:

  Replace text "ELT or EPIRB" with "ELT, EPIRB or PLB" in second sentence.

- Amend the following text in paragraph 2.3.1:

  Delete text "from 1999" in second sentence.

- Amend the following text in paragraph 2.3.3:

  Replace text "voice distress safety, and calling frequency" with "voice distress and safety frequency".

- Amend the following text in paragraph 2.3.4:

  Add text "HF radio can be useful in polar regions where geostationary satellite coverage may be limited. Also, HF email capability exists." at the end of the paragraph.

- Amend the following text in paragraph 2.3.5:

  Add text "AIS transmission from ships provides vessel identity, location and other information which can be useful for SAR purposes." at the end of the paragraph.

- Amend the following text in paragraph 2.5.1:

  Delete text "After 1 Feb 1999" at the beginning of the paragraph.

- Amend the following text in paragraph 2.5.5:

  Delete text "After 1 Feb 1999" at beginning of paragraph.

  Add text "(radar) and/or AIS-SART" at the end of the third bullet.

  Replace text "VHF DSC of Satellite" with "EPIRB, as appropriate" in last bullet.

  Insert new paragraph 2.5.11 and include the following text (and renumber all paragraphs of section 2.5 accordingly):

  "AIS-Search and Rescue Transmitter (AIS-SART) is a portable manual deployment survivor locating device intended for use on life rafts or survival craft and is an alternative to a radar SART. The device sends updated position reports using a standard AIS class A position report. It has a built in GNSS receiver."

- Amend the following text in paragraph 2.5.14 (old paragraph 2.5.13):

  Replace text "when" with "if" in last sentence.

- Amend the following text in section 2.6 title:

  Replace text "EPIRBs and ELTs" with "406 MHz distress beacons, EPIRBs and PLBs".

- Amend the following text in paragraph 2.6.1:

  Delete text "Satellite" in first sentence.

  Replace text "MH" with "MHz" in second sentence.

- Amend the following text in paragraph 2.6.3:

  Replace text of paragraph with the following:

  "Cospas–Sarsat also relays alerts from aviation 406 MHz emergency locator transmitters (ELTs), and from 406 MHz Personal Locator Beacons (PLBs). Signals from 121.5 MHz and 243.0 MHz ELTs and EPIRBs may also be relayed by aircraft in flight via an ATS unit, but signals from these beacons are not processed by satellites and are not part of GMDSS. Some national regulations may allow for the 121.5 MHz ELT on domestic flights. This old style ELT depends on other aircraft or airport facilities to detect its aural signal. All 406 MHz distress beacons are

electronically similar, the main differences being construction, activating mechanisms and slight differences in coding protocols. While ELTs, EPIRBs, and PLBs each have intended user communities, unintended users may activate the devices in an emergency."

- Amend the following text in paragraph 2.6.4:

  Replace text of paragraph with the following:

  "Most 406 MHz distress beacons provide a homing capability on 121.5/243/406 MHz; some EPIRBs may also integrate AIS-SARTs into their designs."

- Amend the following text in paragraph 2.6.5:

  Replace text "EPIRBs and ELTs" with "406 MHz distress beacons".

- Amend the following text in paragraph 2.6.6:

  Replace text "ELT and EPIRB" with "406 MHz distress beacon".

  Replace text "Global Positioning System (GPS)" with "Global Navigation Satellite System (GNSS)".

- Amend the following text in paragraph 2.6.7:

  Replace text "ELTs and EPIRBs properly registered" with "distress beacons properly register".
  Replace text "beacon" with "ELT".

- Amend the following text in paragraph 2.6.8:

  Replace text "ELTs and EPIRBs" with "distress beacons".

- Amend the following text in paragraph 2.6.9:

  Replace text "ELTs and EPIRBs" with "406 MHz distress beacons".

- Amend the following text in paragraph 2.7.6:

  Add text "and fleet 77" between "Inmarsat B" and "SES".

  Add text "(Inmarsat B only)" after "telex calls".

  Add text "Fleet 55 and 33" at the end of the paragraph.

  Add text "In addition to its GMDSS-compliant services, Inmarsat provides a distress and urgency voice calling service via its series of Fleet Broadband terminals. These ship earth stations can connect a mobile user direct with a designated RCC depending on the vessel's geographic position. These terminals also provide Urgency communication for Medical Advice, Medical Assistance and Maritime assistance through the use of 2-digit SACs." at the end of the paragraph.

- Insert new paragraph 2.7.8 and include the following text:

  "Portable satellite handsets are available which provide voice and text messaging capabilities. Some of these handsets use GNSS to provide position information, which may be made available to the RCC. These handsets are not normally designed for use in the maritime environment, for example they may not be waterproof. They are also not GMDSS-compliant."

- Amend the following text in paragraph 2.8.3:

  Replace text "radiotelephone" with "MF DSC." in subparagraph (a).

  Add text "Passenger ships must be able to communicate for SAR purposes on this frequency." before last sentence of subparagraph (d).

  Add text "Passenger ships must be able to communicate for SAR purposes on this frequency." at the end of subparagraph (e).

- Amend the following text in paragraph 2.9.2:

  Delete text "some".

- Amend the following text in paragraph 2.9.4:

  Replace text "Many civil aircraft world-wide, especially operating over ocean areas, carry a 121,5 MHz ELT for alerting and homing. SAR aircraft should be able to home on this frequency to help locate survivors. Many ELTs also alert and provide homing signals on …" with "Many civil aircraft world-wide, especially operating on international flights and over ocean areas, carry an ELT which operates on 406 MHz for alerting and 121.5 MHz for final homing. SAR aircraft should be able to home on this frequency to help locate survivors. Many ELTs also provide homing signals on …".

- Amend the following text in paragraph 2.9.5:

  Add text "Ships may carry either a radar transponder(s) and/ or an AIS-SART." at the end of paragraph.

- Amend the following text in section 2.10 title:

  Replace text "Cellular Telephones" with "Mobile Telephones – Satellite and Cellular".

- Amend the following text in paragraph 2.10.1:

  Add text "A mobile telephone can be a satellite or cellular telephone. The satellite telephone connects to orbiting satellites and can provide regional or global coverage. Cellular telephones connect to a local terrestrial network of radiocommunications base stations known as cell sites. Many aspects of the guidance below regarding cellular telephones can also apply to the satellite telephone." at the beginning of the paragraph.
  Replace text "boats" with "vessels" in the first bullet.

- Amend the following text in paragraph 2.12.2:

  Replace text "and 2182 kHz after 1 February 1999" with "when practicable".

- Amend the following text in paragraph 2.13.1:

  Delete text "and EPIRBs" in the first sentence.

- Amend the following text in paragraph 2.13.2:

  Add text "MMSIs are also used in the AIS for vessels, base stations, aids to navigation, SAR aircraft and AIS SARTs. The various platforms can be differentiated by reference to the MMSI format and from databases." at the end of the paragraph.

- Amend the following text in paragraph 2.15.4:

  Replace text "satellite EPIRB and ELT" with "distress beacon".

  Add text "Cospas-Sarsat provides its International 406 MHz Beacon Registration Database (IBRD) online and free-of-charge. Each SAR service has access to the IBRD to obtain beacon registration data by means of arrangements made by its Administration's National Point of Contact with Cospas-Sarsat. Volume I, chapter 4 has more details." at the end of the paragraph.

- Insert new paragraph 2.15.7 and include the following text:

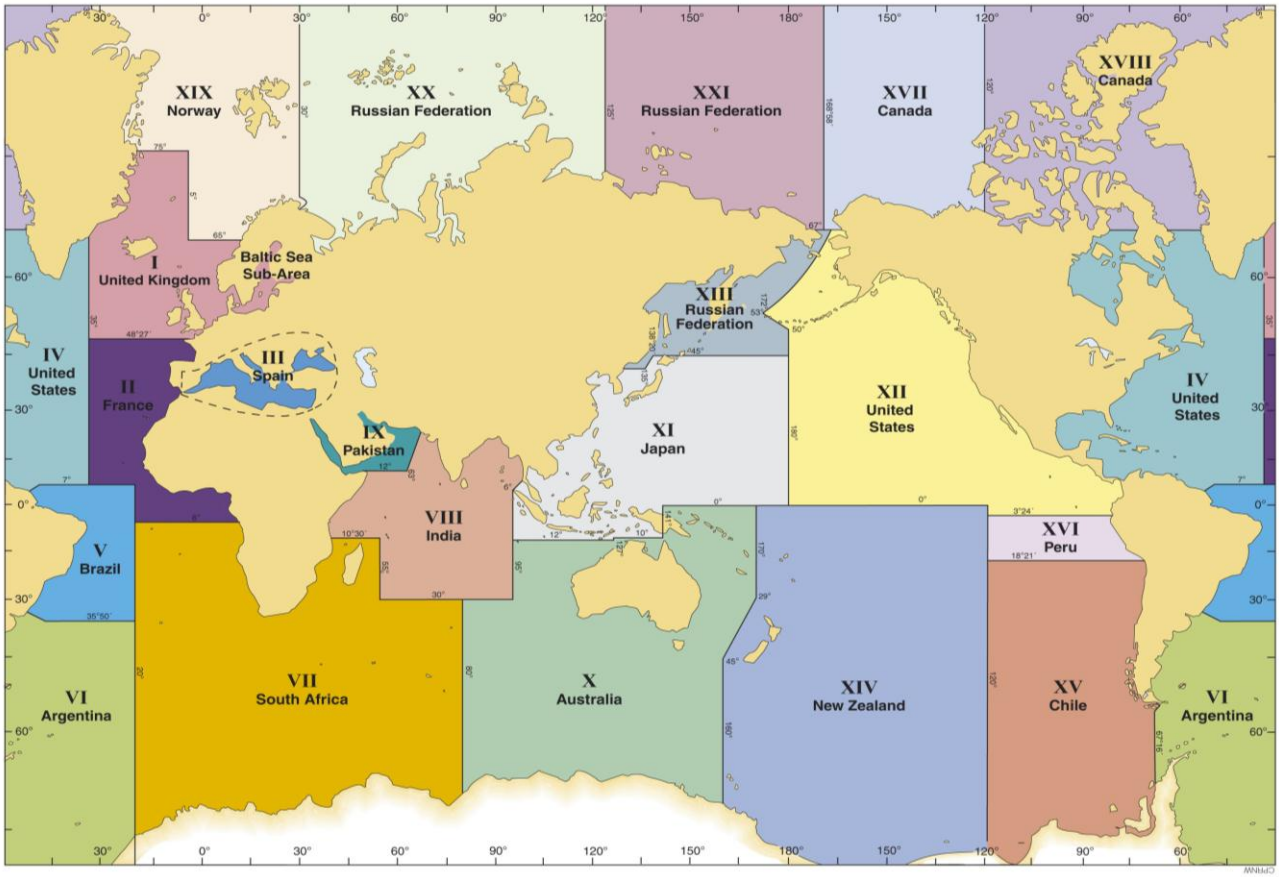
  "Users subject to IMO/ICAO regulation carry as a minimum a 406 MHz distress beacon that is compatible with established international Cospas-Sarsat system and compliant with ICAO and IMO. Non-regulated users may, as a matter of choice, carry other commercially available emergency notification devices."

- Delete paragraphs 2.16.4, 2.16.5, 2.16.6 and 2.16.7.

- Amend the following text in paragraph 2.17.5:

  Replace text "16" with "21".

  Replace figure 2.1 with updated version.



- Amend the following text in paragraph 2.19.1:

  Delete text "provided for distress and safety on the frequencies 500 kHz and 8364 kHz".

- Amend the following text in paragraph 2.19.2:

  Delete text "after 1 February 1999".

- Delete paragraphs 2.19.3 and 2.19.4.

- Amend the following text in paragraph 2.21.1:

  Delete text "(pronounced M'AIDER)" in subparagraph (a).

  Replace text "person" with "man" in subparagraph (a).

  Replace text "messages are sent" with "the distress signal precedes the distress message" in subparagraph (a).

  Delete text "(pronounced PAHN-PAHN)" in subparagraph (a).

  Replace text "SECURITY" with "SÉCURITÉ" and text "SECURITAY" with "SE-CURE-E-TAY" in subparagraph (c).

- Amend the following text in paragraph 2.22.1:

  Add text "AIS to detect the AIS-search and rescue transmitter (SART) and/or" in first bullet.

  Replace text "actuate radiotelephone alarms" with "activate DSC alerts".

- Amend the following text in paragraph 2.24.1:

  Delete text "The Code of Standard Phrases for Use between (Maritime) RCCs and RSCs is provided in Appendix I".

- Amend the following text in paragraph 2.24.3:

  Replace text 'Vocabulary" with "IMO SMCP".

- Amend the following text in paragraph 2.24.5:

  Replace text "Vocabulary" with "IMO SMCP".

- Amend the following text in paragraph 2.24.6:

  Delete text "Standard Marine Communication Phrases".

- Amend the following text in paragraph 2.24.7:

  Replace text "Vocabulary" with "IMO SMCP".

- Amend the following text in paragraph 2.24.8:

  Add text "or even by text translation on the Internet" at the end of second sentence.

- Amend the following text in paragraph 2.26.2:

  Add text "ACO" after "OSC" in first sentence.

  Replace the second sentence with the following text:

  "If multiple assets are assigned, the OSC should maintain communications with all maritime SAR facilities and the ACO with all aeronautical SAR facilities and the SMC; the OSC and ACO would communicate with each other as specified by the SMC."

- Amend the following text in paragraph 2.26.3:

  Add text "and/or ACO" after "OSC".

- Amend the following text in paragraph 2.27.2:

  Delete text "Inmarsat-E".

- Amend the following text in paragraph 2.27.3:

  Add text "All Cospas-Sarsat message samples are also available in Cospas-Sarsat document G.007 *Handbook on distress alert messages for RCCs*." at the end of the paragraph.

- Amend the following text in paragraph 2.27.5:

  Add text "and/or ACO" after "OSC".

- Amend the following text in paragraph 2.27.8:

  Delete text "along with standard codes as necessary".

- Amend the following text in paragraph 2.27.9(a):

  Add text "and/or ACO" after "OSC" two times in last sentence.

- Amend the following text in paragraph 2.27.11:

  Add text "and/or ACO" after "OSC".

- Amend the following text in paragraph 2.27.16:

  Add text "and ACO" after "OSC" in subparagraph (d).

- Amend the following text in paragraph 2.27.17:

  Add text "and ACO" after "OSC" in first paragraph and in subparagraph (d).

  Replace text of subparagraph (f) with following text:

  "*Reports:* discusses required OSC reports to the SMC and parent activity reports."

- Insert new italic/bold text "***Commercial Device Notification (non Cospas-Sarsat) messages***" and paragraph 2.27.31 which includes the following text:

  "When a commercial locating, tracking and emergency notification service provider (non Cospas-Sarsat) must pass distress alert information to an RCC, there is need for consistency of formats and styles, for all essential information to be provided, and for the information to be easily and clearly understandable. Model formats provided in Appendix B have been developed for relay of alerts between commercial providers and RCCs."

- Amend the following text in paragraph 2.31.1:

  Replace the text of the paragraph with following text:

  "Inmarsat sometimes finds it necessary to bar a vessel's SES from transmitting and receiving communications. In such cases, the SES can still be used by vessels to send distress alerts or make distress calls. In the case of an emergency an RCC will initially attempt to contact the vessel, to ascertain whether the distress alert is real or inadvertent. If the RCC is unable to communicate with the vessel, they will then check its status in the "MRCC Database". Mandatory or discretionary barring will prevent communications with the vessel. The RCC may then call its associated

LES, to confirm the barring status of the terminal. The LES will verify the status by referring to the appropriate tables (barring/authorization, etc.). If the terminal status is confirmed as barred, the RCC will then request the LES to unbar the terminal so that communications with the vessel can be established. If the RCC is unable to communicate with the LES, or requires the terminal to be unbarred by more than one LES, it should contact Inmarsat Customer Services or Inmarsat Network Operations Centre (NOC), or both."

- Amend the following text in paragraph 2.31.2:

  Replace the text of the paragraph with the following text:

  "Any RCC that is not associated with an Inmarsat LES may not know through which LES it is attempting to communicate with a vessel. There can be a number of reasons why a non-associated RCC is unable to communicate with the vessel, including barring of the vessel or local/national telecommunication issues. If local/national telecommunication issues are not relevant and barring is suspected, the RCC should first try to contact the vessel via an Inmarsat-associated RCC, who will be able to arrange for the barring to be lifted. Alternatively, the non-associated RCC may contact either Inmarsat Customer Services or Inmarsat NOC (or both) which operate on a 24-hour basis. Inmarsat will check its Electronic Service Activation System (ESAS) for the correct status of the terminal, i.e. active, barred, etc. If the terminal is found to be active and not barred, Inmarsat will assist the RCC by providing any other information or advice as requested."

- Amend the following text in paragraph 2.31.3:

  Replace the text of the paragraph with the following text:

  "Additionally, vessels equipped with Voice Distress enabled Fleet Broadband terminals may be similarly barred. However, LESs will be unable to assist in these cases and the RCC should contact either the Inmarsat Customer Services which operates on a 24-hour basis, or the Network Operations Centre (NOC) which also operates on a 24-hour basis who will be able to arrange the necessary unbarring."

- Insert new paragraph 2.31.4 and include the following text:

  "When the distress situation is resolved, the RCC should inform the LES(s) and either the Inmarsat Customer Services or the NOC, at the earliest opportunity to reinstate the barring on the terminal."

- Insert new section 2.33 and include the following text:

  "Vessel Tracking Communications

  Various forms of communication can be used for vessel tracking. Ship reporting systems can use voice reporting over VHF and HF, DSC and Inmarsat. Many ship reporting systems use Inmarsat-C polling or Inmarsat automated position reporting (APR). AIS uses a time-division multiple access (TDMA) scheme to share the VHF frequency, also known as the VHF Data Link (VDL). There are two dedicated frequencies used for AIS – AIS 1 (161.975 MHz) and AIS 2 (162.025 MHz). LRIT can employ any form of communication which meets the required functional specification, but most vessels use Inmarsat equipment to report every six hours to their data centre via a communications service provider and application service provider. A vessel monitoring system (VMS) can use various systems for tracking, including Inmarsat, Iridium and Argos."

6 Chapter 3

- Amend the following text in paragraph 3.4.4:

  Replace sub-bullets with the following text:

  Agency and person calling;

  Nature of the emergency;

  Significant information from the flight plan:
  - A/C call sign and type;
  - point of departure and departure time;
  - route of flight;
  - destination and ETA;
  - number of persons on board;
  - endurance;
  - colour and distinctive markings;
  - survival equipment carried;
  - dangerous goods;
  - telephone number of pilot in command;

  Unit which made last contact, time, and frequency used;

  Last position report and how the position was determined (course, speed, altitude);

  Any action taken by the reporting office;

  Any direction finder equipment available; and

  Other information.

- Amend the following text in paragraph 3.4.7:

  Delete text "(see sample in Appendix C)" from first sentence in subparagraph (b).

- Amend the following text in paragraph 3.5.3:

  Replace text "radio on all frequencies" with "all available means" in subparagraph (b).

  Add text "and vessel tracking systems" after "ship reporting systems" in subparagraph (b).

- Amend the following text in paragraph 3.5.9:

  Add text "Check vessel tracking systems (e.g. AIS, LRIT, VMS, and VTS) for vessels which may be able to assist" at the end of subparagraph (c).

- Amend the following text in paragraph 3.8.6:

  Replace text "Environmental" with "Environment-related" at the beginning of the first sentence.

  Add text "the use of life jackets, immersion suits" after "varies with" in the second sentence.

Add text "and psychological" between "physical" and "condition" in second sentence.

Delete text "psychological stress" in the second sentence.

Replace text of third sentence with the following text:

"Individuals can exceed common life expectancies or tolerance times. (Regarding survival in cold water, the IMO provides more information in its *Pocket Guide to Cold Water Survival*.)"

Delete last sentence in subparagraph (a).

Insert new subparagraph (b) and include the following text (and renumber all subparagraphs of paragraph 3.8.6 accordingly):

"The term "cold" can be applied to water as warm as 25°C (77°F): long periods of immersion in water as high as this temperature can result in a fall in deep body temperature. It follows that most of the planet is covered in "cold" water".
Delete text "to avoid frostbite. In temperature below 18º Celsius (0º F, survivors become easily fatigued." in subparagraph (c) (old subparagraph (b)).

Replace text of subparagraph (d) (old subparagraph (c)) with the following text:

"The warmest ocean water that can be expected at any time of year is 29°C (84°F). About one third of the earth's ocean surface has water temperatures above 19°C (66°F). Figure N-14 in appendix N shows the realistic upper limit of survival time for people wearing normal clothing in water at various temperatures. The graph is based on the analysis of known survival cases and laboratory experimentation, and shows a reasonable upper limit for search duration. But the search planner must remember that this graph can only be indicative and that a number of uncertainty factors can improve or reduce survival time."

Insert new subparagraph (e) and include the following text:

"Guidelines based on analysis of accidents, together with laboratory-based experimental evidence, show a clear correlation between water temperature, body cooling and survival times. However, it is also apparent that, because of the vast array of personal factors that can influence survival time in cold water, this time can vary from seconds to days. Factors that slow the loss of body heat are:

- high body fat;
- heavy clothing;
- survival clothing; and
- the use of a protective behaviour.

Factors that make a person lose body heat faster are:

- gender (females are more prone to hypothermia);
- age (children and the elderly are more prone to hypothermia);
- low body fat;
- light clothing;
- exercising (such as situations where persons without lifejackets have to swim); and
- seasickness.

Thus, in water at 5°C (41°F), the 50 per cent survival time for a normally clothed individual is estimated to be about one hour, with a recommended search time of six hours. The corresponding times for 10°C (50°F) are two hours and 12 hours. While in water at 15°C (59°F) the 50 per cent survival time is about six hours, with the recommended search time of 18 hours. Between 20°C (68°F) and 30°C (86°F) search times exceeding 24 hours should be considered, and searching for several days should be considered for water temperatures at the upper end of this temperature scale.

As there are many factors to consider, this model cannot be used for all situations. SOLAS survival suits are meant to keep a person alive for 24 hours in extremely cold water; and, a person may be able to keep himself out of the water by climbing onto wreckage, for example. It should be kept in mind that factors working positively on survival times are often unknown to the SMC. Some of these factors include, but are not limited to the following:

- Near-naked swimmers would be at the lower ranges of these times. In calm water there may be an exceptional individual (someone who is very fat and fit) who will exceed expectations. If it is known that the victim is such an individual, consideration should, exceptionally, be given to extending the search times from 3-6 to 10 times the predicted 50 per cent survival time.

- For inshore incidents, survival times may be less because of breaking water and adverse currents. However, consideration must be given to the possibility that the inshore survivor managed to get ashore. Consequently, the limiting effects of cold water cooling will no longer be the only consideration, and the search must be continued until the shore has been thoroughly searched.

- For offshore incidents, it is reasonable to expect that individuals may be better equipped to survive and have access to appropriate protective clothing, lifejackets and possibly liferafts. Consequently, search times for them should be at the upper limits of those expected (10 times predicted 50 per cent survival time), unless obviously adverse conditions prevail – and should exceed them if it is possible that survivors may have been able to get out of the water.

- Survival time is shortened by physical activity (such as swimming) and increased by wearing heavy clothing and, if wearing a lifejacket, adopting protective behaviour (such as huddling with other survivors or adopting a foetal position in the water). Specialized insulated protective clothing (such as immersion suits or wet suits) is capable of increasing survival time from 2 to 10 times. The SMC should bear in mind that ingress of as little as half a litre of water into an immersion/survival suit can reduce its insulation value by 30 per cent, and that wave height of one metre can reduce it by an additional 15 per cent.

Predicting survival times for immersion victims is not a precise science; there is no formula to determine exactly how long someone will survive, or how long a search should continue. The SMC must make some difficult decisions based on the best information available and a number of assumptions, and should extend the search time beyond that which they can reasonably expect anyone to survive."

Move subparagraph (e) (old subparagraph (d)) after subparagraph (f) (old subparagraph (e)).

7 Chapter 4

- Add new paragraph 4.1.4 and include the following text:

  "The methods given in this chapter and in chapter 5 have been simplified for manual use. A computer program can be developed based on this manual solution which could save time and reduce the chance of mathematical errors, but the search plans would not be any better than the results produced by hand. Computers, including typical personal computers and laptops, have large computing and data storage capability and can be programmed to use advanced simulation techniques. Search plans produced by simulation techniques can be significantly better than those produced by the correct application of the manual methods contained within this Manual. Appendix P describes some of the functions a computer-based search planning aid should provide."

- Amend the following text in paragraph 4.3.3:

  Add text "then" between "probable" and "distress" in subparagraph (a).

  Add text "(bell curve)" after "normal distribution" in subparagraph (b).

- Amend the following text in paragraph 4.6.2:

  Add the following text at the end of paragraph:

  "Scenario analysis and development, along with related investigative efforts to obtain more information, often determine a successful outcome to the distress incident. The search planner must think like a detective who is trying to solve an important case or a scientist who is trying to answer an important question. Lines of evidence must be followed to see where they lead. The available facts must be viewed from different perspectives. Missing information must be filled in with different, but plausible, assumptions to create plausible scenarios. At times, several scenarios can be developed that are consistent with all or most of the known facts. These scenarios must be carefully evaluated and weighted according to the search planner's judgement about which scenarios are more likely and which are less likely to represent the actual situation. These efforts can be difficult, demanding tasks and require dedication by the search planner to attain the best chance for success."

- Amend the following text in subparagraph 4.6.13(d):

  Replace text "300/5" with "3/5".

8 Chapter 5

- Amend the following text in paragraph 5.3.2:

  Replace text "electronic" with "radar" in subparagraph (a).

  Delete text "Sweep widths for electro optical searches using infra red image intensifying cameras will be limited by the maximum detection range and maximum field of view of the lens" in subparagraph (a).

  Add text "In poor visibility" at the beginning of the second sentence of the first bullet of subparagraph (b).

Replace text "the air, although a" with "an aircraft" in second sentence of the first bullet of subparagraph (b).

Add text "except where a thick overcast layer reduces light levels at the surface" at the end of third bullet of subparagraph (b).

Add text "and use of searchlights and electro-optical systems limited or" between text "stations" and "ineffective" in the third bullet of subparagraph (b).

Replace text of last sentence in subparagraph (e) with the following text:

"However, where it is safe for search units to continue and active aids, such as searchlights, radar, infrared devices, low-light television, or night vision devices are available and usable, then searches could continue."

- Insert section title "Search Area Coverage Records" before paragraph 5.4.7.

- Amend the following text in paragraph 5.4.7:

  Add text "It is important that the SMC also receives information on how effective the search facilities considered their search to have been, given the search conditions at the time." at the end of the paragraph.

- Amend the following text in paragraph 5.5.1:

  Replace text of second sentence with the following text:

  "Examples of this situation include a crew member seeing another crew member fall overboard from a ship or a reported distress from a craft which provides a very accurate position."

  Add text "Instead" at the beginning of the last sentence.

- Amend the following text in paragraph 5.5.2:

  Replace text "automatic" with "easier" at the end of the third sentence.

  Replace text of fourth sentence with the following text:

  "The first leg should usually be down-drift."

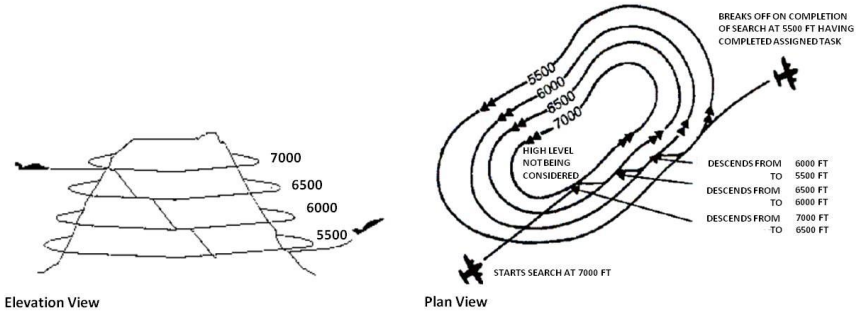
- Amend the following text in paragraph 5.5.4:

  Replace text "within relatively close limits" with "with relatively good accuracy" at the end of the first sentence.

- Amend the following text in Note after paragraph 5.5.5:

  Add text "*or helicopters, but not necessarily fixed-wings assets*" after "*small boats*" in first sentence.

- Replace figure 5.12 with updated version.



- Amend the following text in paragraph 5.5.15:

  Replace text of subparagraph (a) with the following text:

  "The crew must be very experienced, well briefed and have accurate large scale maps (1:100000 scale maps are recommended)."

  Add subparagraph (h) and include the following text:

  "Only one aircraft should be assigned to each contour search area to avoid possible collision with other search aircraft."

- Amend the following text in paragraph 5.6.1:

  Add text "and PLBs" between "EPIRBs" and "operated" at the beginning of second sentence.

- Amend the following text in paragraph 5.6.4:

  Insert new subparagraph (b) and include the following text (and renumber all subparagraphs of paragraph 5.6.4 accordingly):

  "When reports are received of detections of 121.5 MHz or 243 MHz signal from over flying aircraft (these signals are not processed by the Cospas-Sarsat system), a search area will need to be established so that an electronic search can be conducted for the beacon. Appendix [S] can be used for guidance on determining a search area and how that area should be searched."

  Add text "(The procedures could be used by vessels but the lack of equipment for detecting the signal as well as the low height of the vessel make this a less practical search technique.)" at the end of subparagraph (c) (old subparagraph (b)).

- Add text "for Land Search Parties" in title before paragraph 5.8.2.

- Amend the following text in paragraph 5.10.4:

  Delete last sentence of paragraph.

- Amend the following text in paragraph 5.10.11:

  Add text "An Aircraft Coordinator (ACO) should be assigned whenever multiple aircraft are operating in close proximity." at the end of the paragraph.

- Amend paragraph cite "5.11.9" in the first line of paragraph to "5.11.8".

- Amend the following text in paragraph 5.12.3:

  Add text "The SMC, or if that is not practicable, the OSC, may designate an Aircraft Coordinator (ACO) to assist in maintaining flight safety as discussed in chapter 1. Considerations as to whether an ACO is designated may include, but are not limited to, multiple aircraft in the search area, aircraft from different countries, weather conditions, communications problems and logistic problems." at the end of the paragraph.
- Amend the following text in paragraph 5.12.4:

  Replace text of first two sentences with the following text:

  "For large-scale searches and searches in controlled airspaces, the SMC should obtain a temporary airspace reservation or flight restrictions to limit aircraft not involved in the search from the appropriate authority. It may then be the responsibility of the SMC, OSC or ACO to make arrangements for separation among the search aircraft if they are unable to provide their own separation."

  Add paragraph number 5.12.6 before sentence beginning with "The primary advantage".

- Amend the following text in paragraph 5.13.2:

  Replace text "present" with "presented" in subparagraphs (b) and (c).

  Add text "and ACO" in all subparagraphs where "OSC" is mentioned.

- Amend the following text in paragraph 5.15.2:

  Add text "and ACO" at the end of the last bullet.

- Amend the following text in paragraph 5.18.1:

  Replace text of paragraph with the following text:

  "The same basic theory of search applies on land as well as in the marine environment. In both cases, the goal is to increase the cumulative POS as quickly as the available resources will allow. However, the planning methods and search techniques used on land are often different from those used in the marine environment. If the initial search object is a forced landing site, then search object motion is likely not an issue. If the search object is a lost or missing person, whether from a forced landing site or some other circumstance such as a lost hiker, hunter or child, search object motion may be an issue. However, in these cases, the influences of lost person's behaviour, weather, terrain, and vegetation take the place of winds, currents, and drift. Aerial search effectiveness is reduced over areas that are mountainous or covered with significant amounts of vegetation. Searching with land facilities may be the only alternative. Land facility search procedures are covered in the *International Aeronautical and Maritime SAR Manual* for *Mobile Facilities.*"

- Add new paragraph 5.18.2 and insert the following text:

  "Searching for lost persons with ground parties may involve large numbers of searchers. Logistics (keeping track of searchers and providing food and shelter for them) can become quite complex, especially in remote areas. Search environments, and hence sweep width values, can vary dramatically over short distances, such as when pasture lands and dense forests are adjacent to one another. Search assignments normally involve small teams of persons. Search areas are based on terrain, vegetation, a corresponding estimated search speed, sweep width, etc. Decisions about which areas to search when there are insufficient search facilities should be determined by where the cumulative POS can be increased at the greatest rate. Search area boundaries are normally defined by physical features such as ridgelines, water boundaries, roads, trails, fences, visible power lines and pipelines, etc. These search areas may have irregular shapes. Decisions about the best balance between team size (number of persons) and assigned area size must be made. Additional "search" techniques include searching for signs of the lost person's passage (footprints, discarded items, disturbed vegetation, etc.), the use of trackers, both human and animal, and establishing a perimeter around the overall search area, then patrolling it for signs that the lost person crossed the perimeter and left the original search area."

- Insert new paragraph 5.18.3 and include the following text:

  "Search effectiveness can be improved by combining air assets with ground parties."

- Insert new section 5.21 called "Geographic Referencing" and include the following text in new paragraph 5.21.1:

  "If position information is communicated in Latitude and Longitude format in the planning and conduct of a SAR operation, it is recommended that the Degrees, Minutes, Decimal Minutes (DD° MM.mm') format be used."

- Insert new paragraph 5.21.2 and include the following text:

  "Geographic referencing refers to the ability to locate a point on the Earth's surface, either physically or on a chart or map. A system of coordinates is used to define a location in physical space. Mariners and aviators typically use latitude and longitude to define their position but these coordinates can be displayed in different ways and people on land may use a different coordinate system, such as a grid system. On land after a major disaster or in undeveloped areas, landmarks and navigational aids, such as roads, may not be recognizable so the use of a coordinate system may be the only way to find specific locations. Search facilities must have a good geographic reference system to conduct an effective search as well as to safely operate near each other, especially to avoid airspace traffic conflicts."

- Insert new paragraph 5.21.3 and include the following text:

  "Charts and maps have two primary difficulties in providing a location: (1) showing the Earth's spherical shape as a flat surface, and (2) the Earth is not a perfect sphere. Another complication is States using a different basis, or *datum*, for developing charts. Also, land maps may use a local reference point to show positions on the basis of grid distances (usually east and north, in metres) from the reference point. These concerns usually do not interfere with routine, local SAR operations but they can become significant concerns when assisting other States or coordinating with local authorities during disasters. Search planners and SAR facilities need to be aware of these differences, and when feasible, should be using the same charts and maps as well. If it is not possible for all personnel and facilities to use the same coordinate system and maps or charts, the SMC should be prepared to convert position data from one system to another and ensure positions are provided in the appropriate form for use. SAR facilities and personnel using electronic navigation systems (e.g. GNSS) must ensure their navigation devices are set to the appropriate datum and coordinate system."

- Insert new paragraph 5.21.4 and include the following text:

  "For routine SAR operations, Mass Rescue Operations or large scale disasters, SAR agencies must be able to understand how geographic information is communicated among the SMC, OSC, ACO and various SAR facilities. This becomes an even greater challenge when SAR facilities transition between maritime and land-based SAR operations, or in large-scale disaster operations that involve many different SAR facilities that may have different ways to communicate position information. In the development of State and regional SAR plans, States should consider concerns such as:

  How does the SMC effectively use position information from external sources (e.g. general public, other agencies (non-emergency and emergency), etc.) and communicate that position information accurately and efficiently to various aeronautical, marine or land-based SAR facilities in forms they can use?

  Do States have unique, national coordinate systems that may not be familiar to other international SAR facilities requested to assist in a SAR, MRO or disaster response operation?

  What is the "right" reference system that should be used for a specific SAR, MRO or disaster response operation?

  Is there only one reference system that satisfies the requirements of all SAR facilities? If there is more than one reference system, how is the data translated and sent to the various SAR facilities?

  How and when is position information in one reference system converted to another?

  How is position information received in non-standard formats (street addresses, landmark names, etc.) converted to a standard reference format?

  In large scale MRO and disaster operations, how do SAR facilities navigate when landmarks such as street signs and homes are destroyed?

How do multiple SAR facilities safely and efficiently operate in the same area, particularly for mass rescue operations? For aeronautical SAR facilities, avoiding airspace traffic conflicts is a major safety issue to prevent mid-air collisions. The safe operation of multiple aviation SAR facilities in the same area may be highly dependent on all units having a common and accurate sense of their location in relation to other aviation units."

- Insert new paragraph 5.21.5 and include the following text:

  "Latitude and longitude are angular measurements in degrees (the symbol, " ° "), minutes (the apostrophe symbol, " ′ "), and seconds (the quotation symbol, " ″ "). However, Latitude and Longitude can be read and written in different formats such as:

  - Degrees, Minutes, Decimal Minutes (DD° MM.mm′);
  - Degrees, Minutes, Seconds (DDº MM′ SS″); and
  - Degrees, Decimal Degrees (DD.DDDDº)."

  The SC should standardize how position information is communicated by the SMC, OSC, ACO and SAR facilities to limit confusion in assignments (search areas, survivor locations, etc.) and SAR planning."

9 Chapter 6

- Amend the following text in paragraph 6.8.1:

  Delete last sentence in paragraph 6.8.1.

  Add text "Survivors might need to be advised to focus on keeping themselves alive rather than trying to assist in their rescue since this could improve their chances of survival." at the end of paragraph.

- Insert new paragraph 6.8.2 and include the following text (and renumber all paragraphs of section 6.8 accordingly):

  "When hoisting a person who may be suffering from hypothermia, especially after long-term immersion in water, and especially when lifting them some distance, such as to the deck of a high-sided vessel or into a helicopter, they should be lifted horizontally or near-horizontally. Hoisting such persons in a vertical position may cause loss of consciousness, severe shock or cardiac arrest. A rescue lifting system, rescue basket or stretcher should be used, or two strops or loops with one under the arms and the other under the knees."

- Amend the following text in paragraph 6.13.20:

  Delete subparagraph (c).

- Amend the following text in paragraph 6.15.5:

  Add text "(MRO communications are discussed in more detail later in this chapter)" at the end of third bullet.

- Insert new section "**Communications planning for MROs**" after paragraph 6.15.35 (add two new paragraphs and renumber all paragraphs following the new 6.15.37).

- Insert new paragraph 6.15.36 and include the following text:

  "Efficient MRO responses depend upon efficient communication – and efficient communication requires planning, understanding of the plan by those who will have to put it into effect and its rapid implementation at the time of the incident. The following are some of the factors MRO communications planners are recommended to consider:

  - Who is likely to be involved in the response to a MRO, including supporting organizations and others with legitimate interest (for example, officials, family members of victims, and the news media)?
  - What are their information needs likely to be?
  - Where do they fit in the overall command, control and coordination (and therefore *communications*) structure?
  - What are the information priorities?
  - What communications facilities do the responders have?
  - Are there enough people to operate the communications systems, potentially over a long period? The planning should include provision for relief personnel.
  - How should these facilities best be used to avoid overload? How should large amount of data (such as search plans or passenger lists) be communicated?
  - Do people know what to say and who to talk to? Do they understand their unit's place in the communications network, other units' roles, and the overall information priorities? Are they aware of the importance of clear procedures and communications discipline?
  - Are there likely to be language difficulties, including potential misunderstanding of technical language?
  - Who will "control and keep order" on the various parts of the communications network, and do they understand this particularly important role?
  - To what extent are different responders' communications systems and procedures interoperable? Can communications hubs be established or liaison officers exchanged, to help explain priorities, procedures and technical language?
  - How long might the incident last? Distress frequencies may be used for their initial response, but the plan should ensure that these frequencies are cleared as soon as practicable."

- Insert new paragraph 6.15.37 and include the following text:

  "Appendix C outlines a basic MRO communications plan structure."

10 Chapter 7

- Amend the following text in paragraph 7.3.1:

  Add text "VHF" between "and" and "HF" in second sentence.

- Replace the text of paragraph 7.4.2 with the following text:

  "In situations such as piracy or armed robbery against ships where the ship or crew is in grave and imminent danger, the master may authorize the broadcasting of a distress message, preceded by the appropriate distress alerts (MAYDAY, DSC, etc.), using all available radiocommunications systems. Also, ships subject to the SOLAS Convention are required to carry equipment called the Ship Security Alert System (SSAS) for sending covert alerts to shore for vessel security incidents

involving acts of violence against ships (that is, piracy, armed robbery against ships or any other security incident directed against a ship). The system is intended to allow a covert activation to be made which alerts the competent authority ashore and denies knowledge of its activation to perpetrators of the acts of violence. Under the SSAS concept, national governments should establish a security forces authority to be in charge of providing the response to such security incidents. The RCC, due to it being available on a 24-hour basis, is often the first point of contact between the ship and coastal authorities concerned. Two common systems for transmitting SSAS alerts are Inmarsat and Cospas-Sarsat. (A sample SSAS alert message is found in appendix B, under RCC-Cospas-Sarsat Message Formats.) National procedures can vary but the role of the RCC, if involved, is usually to receive the SSAS alert and inform the security forces authority that will be in charge of the response. Actions taken by the RCC upon receiving a covert SSAS alert include:

- do not acknowledge receipt of the alert;
- do not attempt to contact the ship originating the alert;
- do not send any communications to other ships in the vicinity of the ship under threat unless directed by the security forces authority;
- if the position of the incident is within its SRR, the RCC should immediately inform its national security forces authority;
- if the position of the incident is outside of its SRR, the RCC should relay the alert to the appropriate RCC using the normal methods of communications; and
- place SAR resources on standby, if appropriate, since it may become a SAR case."

- Amend the following text in paragraph 7.6.1:

  Add text ", or vessels, craft or life-saving appliances left adrift at sea that may cause an unnecessary SAR alert in the future." at the end of fourth sentence.

  Add text "or recovery" between "repairs" and "by" and delete text "more complicated" in fifth sentence.

- Amend the following text in paragraph 7.7.1:

  Add text "As recommended in annex 14, the plan should provide for cooperation and coordination with the rescue coordination centre, as necessary." after first sentence.

  Add text "The plan is to include the ready availability of, and coordination with, appropriate specialist rescue services to be able to respond to emergencies where an aerodrome is located close to water and/or swampy areas or difficult terrain and where a significant portion of approach or departure operations takes place over these areas." at the end of the paragraph.

- Replace text of paragraph 7.7.2 with the following text:

  "Aerodromes should make provisions with local SAR service providers for water rescue and mass casualties near aerodromes as appropriate. The aerodrome emergency plan is required to contain procedures for periodic testing of the adequacy of the plan and for reviewing the results in order to improve its effectiveness. Testing may be by joint exercises conducted so that:"

11 Chapter 8

- Amend the following text in paragraph 8.1.1:

  Replace text of last bullet with the following text:

  "during the distress phase, the SMC or other proper authority determines that further search would be to no avail because additional effort cannot appreciably increase the probability of successfully finding any remaining survivors or because there is no longer any reasonable probability that the distressed persons have survived."

- Amend the following text in paragraph 8.2:

  Add text "and rescue personnel and facilities are returning to normal duties" at the end of first sentence.

12 Appendix list

- Under appendix B "Message Formats", insert new entry at end named "Suggested format for alert information from a commercial locating, tracking and emergency notification service provider to an RCC"

- Under appendix C " Mass Rescue Operations", insert new entry at end named "MRO Communications in a Maritime Incident"

- Under appendix D "Uncertainty Phase Data", amend page D-4 entry to: "Man Overboard (MOB) Checklist"

- Under appendix I "SITREPs and Codes":

  Replace title with "SITREPs and MAREC Code".

  Delete "Code of Standard Phrases for Use Between RCCs and RSCs".

- Under appendix M "Preparing Initial Probability Maps": amend the spelling to "Single" in first and second entries.

- Under appendix N "Tables and Graphs":

  Amend "Chill and Hypothermia Curves (Figures N-13 and N-14)" to: "Wind Chill and Frostbite Curves (Figure N-13)".

  Insert new entry for Figure N-14: "Realistic Upper Limit of survival time Graph (Figure N-14)".

- Insert new last appendix S "Search Planning for 121.5 MHz Distress Beacon Alerts.

13 Appendix A

- Amend the following text in Distress Signals section:

  Add text "Persons in distress may use any means at their disposal to attract attention, make known their position and obtain help (SOLAS chapter IV).

  The use of an international distress signal, except for the purpose of indicating that a person or persons are in distress, and the use of any signal which may be confused with an international distress signal are prohibited. (SOLAS chapter V)." at the end of the section.

14 Appendix B

Insert the following text:

Suggested format for alert information from a commercial locating, tracking and emergency notification service provider to an RCC
(Format based upon Cospas-Sarsat standard format)

Field No.	Field Name	Field Content	Field Format
1	Satellite emergency notification device alert	Satellite emergency notification device distress alert	Header
2	Reporting Centre	Call Centre Identity	Agreed alphabetical abbreviation for Call Centre (e.g. "GEOS")
3	Message Number	Unique Message Number	Call Centre Abbreviation followed by unique message number assigned by call centre (e.g. GEOS/12345)
4	Message Date	Year-Month-Day in the Gregorian calendar	**YYYY-MM-DD** where YYYY is the year, MM is the month of the year between 01 (January) and 12 (December), and DD is the day of the month between 01 and 31
5	Message Transmit Time	Hours:Minutes:Seconds in Coordinated Universal Time (UTC)	**hh:mm:ssZ** where hh is the number of complete hours that have passed since midnight (00-24), mm is the number of complete minutes that have passed since the start of the hour (00-59), ss is the number of complete seconds since the start of the minute (00-60) and Z indicates the use of UTC time.

Field No.	Field Name	Field Content	Field Format
6	Local Time (optional)	Hour:Minutes:Seconds in local time of where device is located	**hh:mm:ss(Local)** where hh is the number of complete hours that have passed since midnight (00-24), mm is the number of complete minutes that have passed since the start of the hour (00-59), ss is the number of complete seconds since the start of the minute (00-60) and Local is replaced with EST, CST, MST, PST or other local time zone abbreviation. Abbreviation shall include Daylight saving time if applicable.
7	Message Type	New Alert or Update (if later include original Message No)	"New" or "Update" as appropriate plus for updates the original message number as per Field #3
8	Destination Responsible SAR Authority	Message Destination	Identity of the SAR Authority that the message is intended for in English
9	Message Source ID	Message Identifier	If alerting device message identifier is different to the message number in Field #3 then insert it here otherwise leave this field blank
10	Device ID	IMEI Number (the 15 digit International Mobile Equipment Identity (IMEI) number of the device)	**AA-BBBBBB-CCCCCC-D** where AA-BBBBBB are the Type Allocation Code (TAC) for the device, CCCCCC is the manufacturer assigned serial number of the device and D is the Luhn check digit
11	Device Manufacturer and Model Number	Identity of the device sending the distress alert	Device Manufacturer and Model Number (e.g. SPOT Satellite GPS Messenger)
12	Satellite System	Identity of the carrier of the distress alert	Identity of satellite system used (e.g. Globalstar, Inmarsat, Iridium)
13	Message	Complete Message	The complete text of the message as transmitted by the device

Field No.	Field Name	Field Content	Field Format
14	Latitude	Latitude in Degrees and Decimal Minutes in WGS84 format	**sDD° MM.mm**' where s indicates if the latitude is North "N" or South "S" of the equator, DD indicates the number of degrees and MM.MMM indicates the number of minutes and decimal parts of minutes of latitude (to an accuracy of approximately 2 m (6 ft))
15	Longitude	Longitude in Degrees and Decimal Minutes in WGS84 format	**sDDD° MM.mm**' where s indicates if the longitude is East "E" or West "W" of the prime meridian, DDD indicates the number of degrees and MM.mm indicates the number of minutes and decimal parts of minutes of longitude (to an accuracy of approximately 2 m (6 ft))
16	Position Source and Accuracy	Location provided by GPS, GLONASS, Doppler, etc. and estimated accuracy of location	Location source (e.g. GPS, GLONASS, Doppler) and estimated location accuracy in Meters (e.g. GPS:10 m)
17	Optional Position Movement and Height	If available speed and course over ground (SOG and COG) and height above sea level	**SSS:CCC:HHHHH** where SSS is the speed over ground (SOG) in Knots (from 1 to 999), CCC is the track made good (Course over Ground (COG)) in degrees (from 1 to 360) relative to True North and HHHHH is the elevation above ground (Height from 1 to 99999) in metres. If any field is not available leave blank
18	Device Database Source	Identity of Where Database Containing User Contact Details Held	Full address and phone numbers (including country, postal/zip code and international telephone dialling codes)

Field No.	Field Name	Field Content	Field Format
19	Registered Name	Name of device Owner	Full name of registered device owner
20	Registered Address	Owner's Address	Full address of device owner including country and postal/ zip code
21	Registered Phone Numbers	Owner's Phone Numbers	Phone numbers including full dialling codes for all phones registered by the Owner including land line and mobile/ cell phone
22	Emergency Contact Details 1	Full Name, Address and Telephone Numbers for first emergency contact	Full name, address and phone numbers (including country, postal/zip code and international telephone dialling codes)
23	Emergency Contact Details 2	Full Name, Address and Telephone Numbers for second emergency contact	Full name, address and phone numbers (including country, postal/zip code and international telephone dialling codes)
24	Supporting Information	Medical, Vehicle, Trip Plan, Numbers in party, etc.	Free text field, in which to provide any additional data that may be of use to SAR
25	Call Centre Contact Details	Full Address and Telephone Numbers for Call Centre	Full address and phone numbers (including country, postal/zip code and international telephone dialling codes)
26	Call Centre Operative	Name of the person handling the alert at the call centre and their direct telephone number	Full name and phone number (including extension if applicable)
27	Remarks	Any additional information that the Call Centre has on the situation	Free text field
28	End Message	End of Message	Message Ends

Sample of alert from a commercial locating, tracking and emergency notification service provider to an RCC

***Alert from a commercial locating, tracking and emergency notification service provider to an RCC ***

Reporting Centre	: GEOS
Message Number	: GEOS/12345
Message Date	: 2011-12-31
Message Transmit Time	: 21:13:39Z
Local Time (optional)	: 15:13:39(EST)
Message Type	: Update to GEOS/12344
SAR Authority	: Jackson County, OR. Sherriff's Department
Message Source ID	:
Device ID	: 49-015420-323751-8
Device Manufacture/Model No.	: SPOT Satellite GPS Messenger
Satellite System	: Globalstar
Message	: "as sent by an emergency notification device"
Latitude	: N42^{o} 06.935'
Longitude	: W122^{o} 42.340'
Position Source and Accuracy	: GPS:10m
Speed:Course:Height (optional)	: 010:034:00500
Device Database Source	: GEOS 1234 Sends Road Springfield, TX. 60092 USA +1 908 145 8389
Registered Name	: John Smith
Registered Address	: 3450 Twin Cedar Drive Ashland, OR 97563 USA
Registered Phone Number	: (541) 772 5899
Emergency Contact Details (1)	: Jane Smith 3450 Twin Cedar Drive Ashland, OR 97563 USA Home (541) 772 5899 Cell (541) 458 9273
Emergency Contact Details (2)	: Jack Smith 8800 Mountain View Drive Phoenix, OR 97543 USA Home (541) 544 5637 Cell (541) 634 9545
Supporting Information	: "Free text field in which to provide any additional data that may be of use to SAR forces"
Call Center Contact Details	: GEOS 1234 Sends Road Springfield, TX. 60092 USA +1 908 145 8389
Call Center Operative	: Max Jones +1 908 145 8389 ext 342
Remarks	: "Any additional information on the situation"

********** END MESSAGE **********

15 Appendix C

- Add section C-5 on MRO communications in a maritime incident.

- Amend the following text in the MRO exercises section:

Add text "and operations" at the end of the last bullet of section.

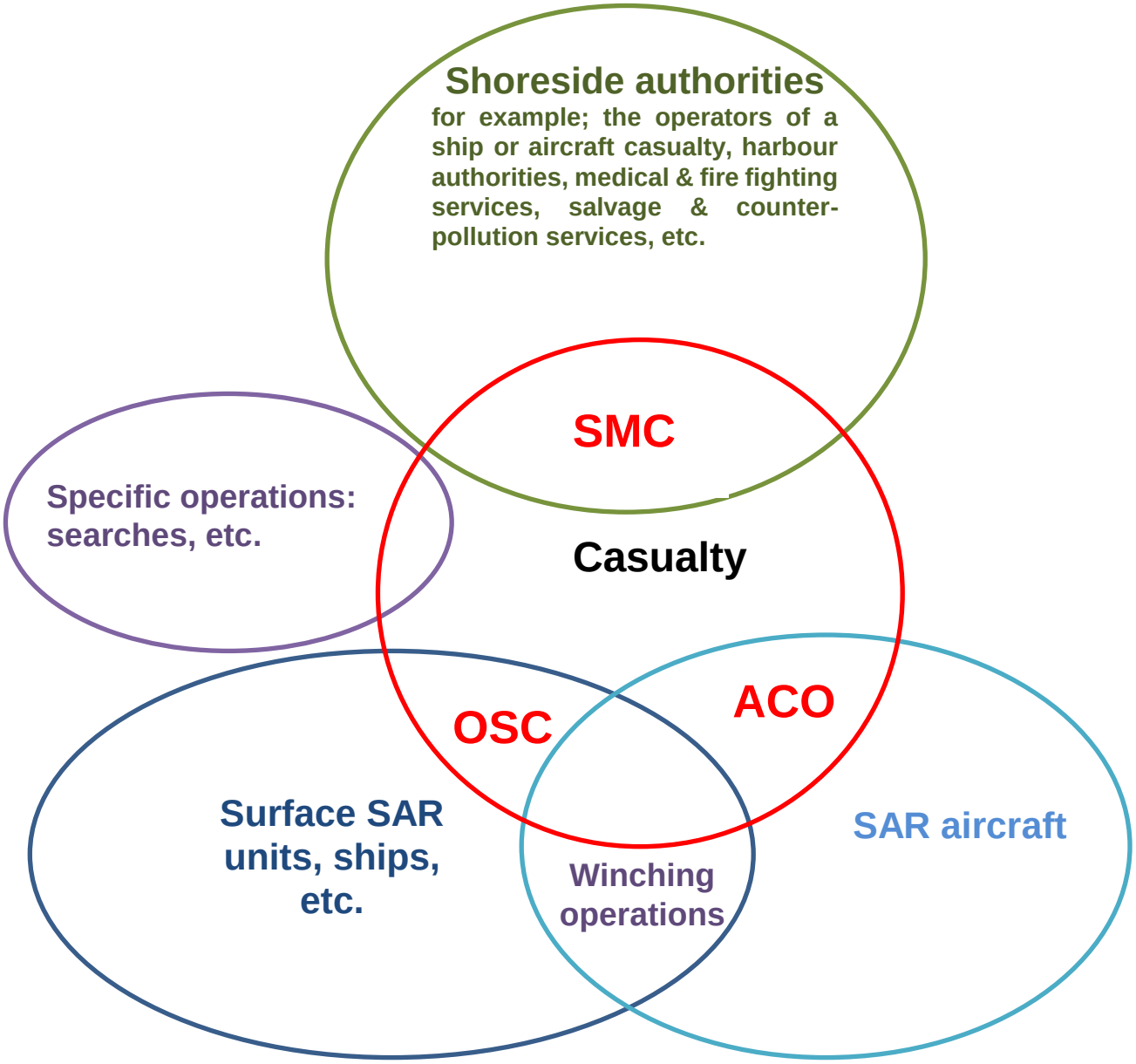
- Amend the following text in the MRO incident management section:

  Replace text "and" with "a" after text "and demands of" in sub-bullet **Incident Command System**.

- Insert section C-5 MRO Communications in a maritime incident and add the following text:

  "**MRO communications in a maritime incident**

  Efficient communications in major maritime response incidents are best arranged by dividing communications between several different frequencies. The number of frequencies used may vary, depending on the circumstances, but is unlikely to exceed five. The diagram below shows a major incident with numerous surface and air units responding and several different activities taking place on scene and, in support, ashore. But the communications plan set up to deal with this incident is relatively simple so that all those responding may readily understand it. And, it needs to be established from the outset which could include relations to the media (see also chapter [volume III, section 2]).



Concept of a communications plan for a major incident

1 The primary coordinating frequency – initially VHF FM Channel 16 but a common working frequency may be assigned to ensure Channel 16 is available for other distress alerts – is used by the casualty, the OSC, the ACO (if designated) and, if possible, the SMC. If the incident is out of the SMC's VHF range, the SMC will communicate primarily with the OSC by satellite or MF or HF radio communications. Other units on scene should *monitor* the primary coordinating frequency if possible, to be kept up to date by SITREPs, etc., but will not usually transmit on it.

2 Surface SAR units and other surface units such as ships responding to the distress alert will use a second frequency – usually VHF FM channel 6 – controlled by the OSC.

3 Aircraft may also use this second frequency under the OSC's control, if suitably equipped. If responding aircraft are *not* equipped with marine VHF or in cases where it would be more efficient to control them separately (such as multiple aircraft on scene) an ACO should be designated. The aircraft will then use a third frequency – usually VHF AM 123.1MHz – controlled by the ACO.

4 If other activities are taking place on scene, additional frequencies may be used for the necessary communications. If a helicopter, for example, needs to winch to or from a ship, these two units should switch to a mutually compatible frequency not already in use, returning to the main working frequencies after the winching operation is complete. Another example would be a search being conducted as part of the overall SAR operation. In this case the units assigned to the search will switch to a mutually compatible frequency controlled by a search coordinator. This coordinating unit reports to OSC or RCC as appropriate.

5 In a major incident, such as an MRO, there will need to be significant exchange of information with authorities ashore – the operators of a ship or aircraft casualty, harbour and other receiving authorities, shoreside emergency services providing support, authorities and agencies concerned with counter-pollution and salvage operations, and so on. These many organizations should communicate via the RCC, not directly with units on scene. This enables the SMC to maintain a clear overall picture of the response. Efficient procedures for this aspect of the communications plan can and should be pre-planned. The exchange of liaison officers is recommended."

16 Appendix D

- Page D-i, amend "Person Overboard Checklist" to: "Man Overboard (MOB) Checklist.
- Amend "Uncertainty Phase Checklist", page D-1, delete text "(appendix C)" at end of paragraph 10.
- Amend "Person Overboard Checklist" title, page D-4, to: "Man Overboard (MOB) Checklist".

17 Appendix I

- Replace title text with "SITREPs and MAREC Codes" and delete sections on Code of Standard Phrases.
- Amend the following text in the Situation Report Formats and Examples section:

  Add text "or as a briefing tool where a RCC is requesting assistance or action(s) from another RCC or organization." at the end of second sentence.

  Delete text "the" before "casualty" in second paragraph.

  Add text "attach photography if available" at the end of sub-bullet (G).

  Add text "AIS and/or LRIT data available on ships in the vicinity" at the end of sub-bullet (L).

  Add text "As appropriate, pictures, maps or links to websites where further information is available" at the beginning of sub-bullet (N).

  Replace text "is" with "should" in Note (6).

Replace text "96" with "13" in both example SITREPs (in three instances).

Replace text "TLX/RTG" with "TLX" everywhere in the MAREC section.

18 Appendix N

- On page N-i, replace "Chill and Hypothermia Curves (Figures N-13 and N-14) with two new entries:

  "Wind Chill and Frostbite Curves (Figure N-13)"

  "Realistic Upper Limit of Search Duration Graph (Figure N-14)". N-20

  Replace "search duration" with "survival time"

- Amend the following text in the Tables and Graphs section:

  Replace text "chill and hypothermia" with "Environmental".

- Amend the following text in the probable Errors of position section:

  Replace text "GPS" with "GNSS" in second row of table.

- Delete section title "Chill and Hypothermia Curves" on page N-20.

  Replace text "hypothermia" with "frostbite" for Figure N-13.

  Replace Figure and text of "Figure N-14 – Water chill and hypothermia" with new figure and text "Realistic upper limit of survival time for people in the water wearing normal clothing, from time of entry into the water (see volume II, chapter 3 for details)." shown below:

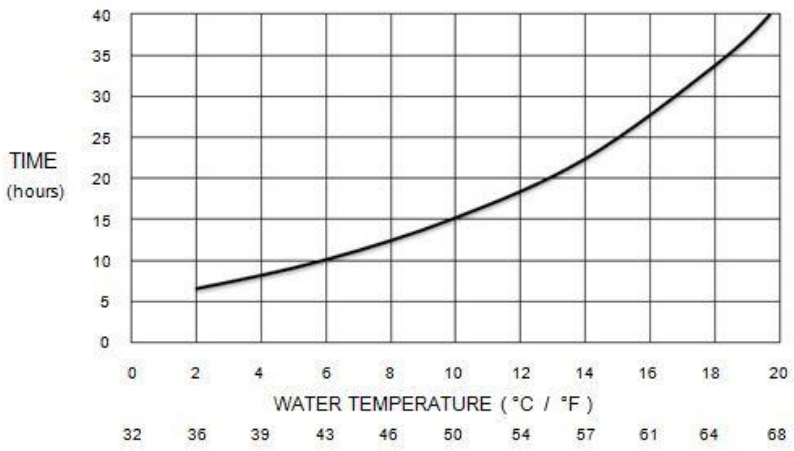


Figure N-14[2] – *Realistic upper limit of survival time for people in the water* wearing normal clothing, from time of entry into the water (See volume II, chapter 3 for details)

[2] Based on expert medical opinion and latest scientific data.

PROPOSED AMENDMENTS TO IAMSAR MANUAL – VOLUME III

1 Foreword

- Replace the original text with the following text:

"The primary purpose of this volume, the "Mobile Facilities (volume III)" is to assist vessels and aircraft in the performance of a search, rescue, or on-scene coordinator function and with aspects of SAR that pertain to their own emergencies. It is intended to be carried aboard rescue units, aircraft and vessels.

A new edition is published every three years. The 2013 edition includes the 2010 amendments (adopted by ICAO and approved by IMO's Maritime Safety Committee at its eighty-seventh session in May 2010 that became applicable on 1 June 2011) and the 2011 and 2012 amendments (adopted by ICAO and approved by IMO's Maritime Safety Committee at its ninetieth session in May 2012 that became applicable on 1 June 2013). The amendments were prepared by the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue at its sixteenth session, in September 2009, seventeenth session, in September 2010, and eighteenth session, in October 2011, respectively, and were endorsed by the IMO Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) at its fourteenth session, in March 2010, fifteenth session, in March 2011, and sixteenth session, in March 2012, respectively.

The Manual is published jointly by the International Civil Aviation Organization and the International Maritime Organization.

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Each IAMSAR Manual volume is written with specific SAR system duties in mind, and can be used as a stand-alone document, or, in conjunction with the other two volumes, as a means to attain a full view of the SAR system. Depending on the duties assigned, it may be necessary to hold only one, or two or all three volumes.

- The *Organization and Management* volume (volume I) discusses the global SAR system concept, establishment and improvement of national and regional SAR systems, and cooperation with neighbouring States to provide effective and economical SAR services;

- The *Mission Coordination* volume (volume II) assists personnel who plan and coordinate SAR operations and exercises;

The primary purpose of the three volumes of the *International Aeronautical and Maritime Search and Rescue Manual* is to assist States in meeting their own search and rescue (SAR) needs and the obligations they accepted under the Convention on International Civil Aviation, the International Convention on Maritime Search and Rescue, and the International Convention for the Safety of Life at Sea (SOLAS). These volumes provide guidelines for a common aviation and maritime approach to organizing and providing SAR services. States are encouraged to develop and improve their SAR services, to cooperate with neighbouring States and to consider their SAR services to be part of a global SAR system."

2 Abbreviation and acronyms

- Add the following text:

AFTN	aeronautical fixed telecommunication network
AIP	aeronautical Information publication
AIS	automatic identification system (radio navigation)
AIS	aeronautical Information services
AIS-SART	automatic identification system – search and rescue transmitter
ARCC	aeronautical rescue coordination centre
CS	coast station
GNSS	Global Navigation Satellite System
IBRD	International 406 MHz Beacon Registration Database
LRIT	Long-range Identification and Tracking
MMSI	maritime mobile service identity
MOB	man overboard
MRCC	maritime rescue coordination centre
POC	probability of containment
POD	probability of detection
POS	probability of success
SMCP	(IMO) Standard Marine Communication Phrases
SPOC	search and rescue point of contact
SURPIC	surface picture

- Delete the following text:

CIRM	Centra Internazionale Radio Medico
RSC	rescue sub-centre
RTG	radio telegraphy

3 Glossary

- Update the glossary with the following text:

Cospas-Sarsat System	A satellite system designed to detect and locate activated distress beacons transmitting in the frequency band of 406.0-406.1 MHz.
Direction finding (DF)	Radiodetermination using the reception of radio waves for the purpose of determining the direction of a station or object.
Homing	The procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously towards the other station.

MAYDAY	The international radio telephony distress signal.
METAREA	A geographical sea area[3] established for the purpose of coordinating the broadcast of marine meteorological information. The term METAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.
NAVAREA	A geographical sea area[3] established for the purpose of coordinating the broadcast of navigational warnings. The term NAVAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States.
On-scene endurance	The amount of time a facility is capable of spending at the scene, engaged in search and rescue activities.
PAN-PAN	The international radio telephony urgency signal.
Personal Locator Beacon (PLB)	A portable device, manually activated, which transmits a distress signal on 406 MHz, and may have an additional homing signal on a separate frequency.

- Add the following text:

Area Control Centre (ACC)	An air traffic control facility primarily responsible for providing ATC services to IFR aircraft in controlled areas under its jurisdiction.
Automatic Identification System (AIS)	A system used by ships and vessel traffic services (VTS), principally for identifying and locating vessels.
Automatic identification System –SAR transmitter (AIS-SART)	A survival craft transmitter that sends out an AIS position report based on a built-in GNSS receiver.
Aeronautical Information Services (AIS)	A service established within the defined area of coverage responsible for the provision of aeronautical information/data necessary for the safety, regularity and efficiency of air navigation.
Coast Station (CS)	A land station in the maritime mobile service.
Distress alert	The reporting of a distress incident to a unit which can provide or coordinate assistance.

[3] Which may include inland seas, lakes and waterways navigable by seagoing ships

Emergency Locator Transmitter (ELT)	A generic term (related to aircraft) describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated.
Emergency position-indicating radio beacon (EPIRB)	A device, usually carried aboard maritime craft, that transmits a distress signal that alerts search and rescue authorities and enables rescue units to locate the scene of the distress.
Flight information centre (FIC)	A unit established to provide information and alerting services.
Geographic information system (GIS)	A system which captures, stores, analyses, manages and presents data that is linked to a location.
Heave	The vertical rise and fall due to the entire ship being lifted by the force of the sea.
Long-range Identification and Tracking (LRIT)	A system which requires certain vessels to automatically transmit their identity, position and date/time at six-hour intervals in accordance with SOLAS regulation V/19-1.
Maritime Domain Awareness (MDA)	The effective understanding of any activity associated with the maritime environment that could impact upon the security, safety, economy or environment.
Personal Locator Beacon (PLB)	A portable device, manually activated, which transmits a distress signal on 406 MHz, and may have an additional homing signal on a separate frequency.
Place of safety	A location where rescue operations are considered to terminate; where the survivors' safety of life is no longer threatened and where their basic human needs (such as food, shelter and medical needs) can be met; and, a place from which transportation arrangements can be made for the survivors' next or final destination. A place of safety may be on land, or it may be aboard a rescue unit or other suitable vessel or facility at sea that can serve as a place of safety until the survivors are disembarked to their next destination.
Ship reporting system (SRS)	Reporting system which contributes to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment. They are established under SOLAS regulation V/11 or for SAR purposes under chapter 5 of the International Convention on Maritime Search and Rescue, 1979.

Vessel	A maritime craft.
Vessel Monitoring System (VMS)	A tracking system which provides for safety and environmental regulatory organizations to monitor the position, time at a position, course and speed of vessels.
Vessel tracking	A generic term applied to all forms of vessel track data derived from multiple sources such as ship reporting systems, AIS, LRIT, SAR aircraft, VMS and VTS.
Vessel Traffic Services (VTS)	A marine traffic monitoring system established by harbour port authorities to keep track of vessel movements and provide navigational safety in a limited geographical area.

- Delete the following text:

Locating	The finding of ships, aircraft, units or persons in distress.
SarNet	A broadcast system between RCCs within the footprint of an individual satellite.

4 Section 1

- Replace the **Contents** segment text with the following text:

"Purpose……..1-1
Responsibilities and Obligations to Assist…….1-1
SAR Coordination
On-Scene Coordinator……
SAR Mission Coordinator…….……
SAR Coordinators……..
National and Regional SAR System Organization……
Ship Reporting Systems and vessel tracking
Amver…….
Aircraft Reporting System…….
Underwater search and rescue"……..

- Move segment on **National and Regional SAR System Organization** to before segment on **Ship Reporting System and Vessel Tracking**.

- Replace the **SAR Coordination** segment text with the following text:

"The SAR system has three general levels of coordination:

- On-scene coordinators (OSCs).
- SAR mission coordinators (SMCs) (Rescue coordination centre)
- SAR coordinators (SCs) (National level)

▪ **On-Scene Coordinator**

- When two or more SAR facilities are working together on the same mission, one person on-scene may be needed to coordinate the activities of all participating facilities.

- The SMC designates an OSC, who may be the person in charge of a:
  - search and rescue unit (SRU), ship, or aircraft participating in a search, or
  - nearby facility in a position to handle OSC duties.
- The person in charge of the first facility to arrive at the scene will normally assume the OSC function until the SMC arranges for that person to be relieved.

▪ **SAR Mission Coordinator**

- Each SAR operation is carried out under the guidance of an SMC. This function exists only for the duration of a specific SAR incident and is normally performed by the RCC chief or a designee. The SMC may have assisting staff.
- The SMC guides a SAR operation until a rescue has been achieved or it becomes apparent that further efforts would be of no avail.
- The SMC should be well trained in all SAR processes, be thoroughly familiar with the applicable SAR plans, and:
  - ☐ gather information about distress situations
  - ☐ develop accurate and workable SAR action plans
  - ☐ dispatch and coordinate the resources to carry out SAR missions.
- SMC duties include:
  - ☐ obtain and evaluate all data on the emergency
  - ☐ ascertain the type of emergency equipment carried by the missing or distressed craft
  - ☐ remain informed of prevailing environmental conditions
  - ☐ if necessary, ascertain movements and locations of vessels and alert shipping in likely search areas for rescue, lookout and/or radio watch
  - ☐ plot the areas to search and decide on methods and facilities to be used
  - ☐ develop the search action plan and rescue action plan as appropriate
  - ☐ coordinate the operation with adjacent RCCs when appropriate
  - ☐ arrange briefing and debriefing of SAR personnel
  - ☐ evaluate all reports and modify search action plan as necessary
  - ☐ arrange for refuelling of aircraft and, for prolonged search, make arrangements for the accommodation of SAR personnel
  - ☐ arrange for delivery of supplies to sustain survivors
  - ☐ maintain in chronological order an accurate and up-to-date record
  - ☐ issue progress reports
  - ☐ determine when to suspend or terminate the search
  - ☐ release SAR facilities when assistance is no longer required
  - ☐ notify accident investigation authorities
  - ☐ if applicable, notify the State of registry of the aircraft
  - ☐ prepare a final report.

▪ **SAR Coordinators**

- SCs are the top level SAR managers; each State normally will have one or more persons or agencies for whom this designation may be appropriate.

- SCs have the overall responsibility for:

  - ☐ establishing, staffing, equipping and managing the SAR system
  - ☐ establishing RCCs and rescue sub-centres (RSCs)
  - ☐ providing or arranging for SAR facilities
  - ☐ coordinating SAR training
  - ☐ developing SAR policies.

- Add text "and Vessel Tracking" to the **Ship Reporting Systems** segment.

- Amend the following text in the **Ship Reporting Systems and Vessel Tracking** segment on page 1-4:

  Insert new last bullet before segment on **Amver** and include the following text:

  "Automatic Identification System (AIS) and Long-range Identification and Tracking (LRIT) transmissions are also important for providing shore authorities with real or near real time vessel tracking data to support search and rescue."

5 Section 2

- Amend the following text in **Contents** segment:

  Replace text "rescue litter" with "rescue stretcher".

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Vessels Assisting**, sub-segment on ***Methods of Distress Notification***, page 2-1:

  Replace text of first three bullets with the following text:

  - A distress call or other emergency information from another vessel at sea, either directly or by relay.

  - A distress call or message from aircraft. This will normally occur by relay from an aircraft, RCC or CRS.

  - Alert from a vessel.

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Vessels Assisting**, sub-segment on ***Immediate Action***, page 2-1:

  Add text "(for DSC acknowledgement see flow charts)" at the end of first sub-bullet under bullet starting with "The following immediate …".

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Vessels Assisting**, sub-segment on ***Immediate Action***, page 2-2:

  Delete text "500 kHz (radiotelegraphy)" under sub-bullet starting with "maintain a continuous …".

  Add text "or beacon distress signals" at the end of text "121.5 MHz AM (radiotelephony) for aircraft distress" under sub-bullet starting with "maintain a continuous …".

Delete text "after 1 February 1999 at beginning of sub-bullet.

Add text "AIS-search and rescue transmitters (AIS-SARTs)" at the end of text of sub-bullet starting with "SOLAS communications equipment …".

Replace text "Global Positioning System (GPS)" with "Automatic Identification System (AIS) and Global Navigation Satellite System (GNSS)" in sub-bullet starting with "Use all available …".

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Vessels Assisting**, sub-segment on ***Proceeding to the Area of Distress***, page 2-5:

  Insert text "if possible AIS data and" between "Maintain" and "active" in second bullet.

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Vessels Assisting**, sub-segment on ***On-Board Preparation***, page 2-5:

  Insert two new bullets at the beginning of sub-segment and include the following text:

  - A vessel *en route* to assist a distressed craft should prepare for possible SAR action on scene, including the possible need to recover people from survival craft or from the water. See "Recovery of survivors by assisting vessels" later in this section.

  - Masters of vessels proceeding to assist should assess the risks they may encounter on scene, including the risks such as those associated with leaking cargo, etc. Information should be sought as necessary from the distressed craft and/or from the RCC.

  Replace text "litter" with "stretcher" in ***Life-saving and rescue equipment*** list.

  Replace text "SMC" with "RCC" in ***Life-saving and rescue equipment*** list.

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Aircraft Assisting**, sub-segment on ***Distress Call and Message Received***, page 2-7:

  Replace text "an alarm signal or a distress call" with "a distress call or other emergency information" in first sentence of second bullet.

  Replace text "EPIRB or ELT" with "EPIRB, ELT or PLB" in second sentence of third bullet.

- Amend the following text in sub-section **Initial Action by Assisting Craft,** segment on **Aircraft Assisting**, sub-segment on ***Proceeding to Area of Distress***, page 2-8:

  Replace text under ***Navigation Equipment*** header with the following text:

  □ aircraft designated for SAR operations should be equipped to receive and home in on:

- radio transmissions
- 406/121,5 MHz distress beacons (ELTs, EPIRBs and PLBs)
- SARTs
- AIS transmitters

□ precise navigation equipment such as GNSS can be helpful in covering a search area carefully or locating a datum.

Replace text under ***Communications Equipment*** header with the following text:

□ all aircraft should be equipped to maintain good communications with the RCC and involved aeronautical SAR facilities.
□ designated SAR aircraft engaged in SAR operations at sea should be equipped to communicate with vessels and survival craft.
□ designated SAR aircraft should be able to communicate with survivors on VHF-FM on Channel 16 (156.8 MHz) and VHF-AM on 121.5 MHz as a minimum.
□ carriage of droppable radios operating on 123.1 MHz and/or ch.16 can be used for communications with survivors.
□ carriage of portable radios may be appropriate for aircraft SAR units to communicate with maritime or land SAR facilities and OSCs.

- Amend the following text in sub-section **Search Function,** sub-segment on ***search Action Plan and Message***, page 2-9:

  Insert text "(if designated)" between "OSC" and "and" in second bullet.

  Add text "and efforts achieved in previous searches" at the end of bullet starting with "The OSC may …".

- Delete text "Developing" from sub-segment ***Developing Own Search Planning*** in sub-section **Search Function,** page 2-10:

- Amend the following text in sub-section **Search Function,** sub-segment on ***Own Search Planning***, page 2-10:

  Insert bullet at beginning of sub-segment, and include the following text:

  - Normally the SMC will determine the search area by use of search planning tools at the RCC and in cooperation with the OSC.

- Amend the following text in sub-section **Search Function,** sub-segment on ***on-Scene Radiocommunications***, page 2-11:

  Replace text "shift" with "change" in second sub-bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Rescue Action Plan and Message**, page 2-16:

  Add text "(if designated)" between "OSC" and "and" in the first bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Assistance by SAR Aircraft**, sub-segment on ***Assistance by Helicopters***, page 2-19:

  Replace text "litter" with "stretcher" in the sixth bullet.

  Move last bullet of sub-segment to ***Rescue Sling***.
  Add text "if possible together with a helicopter crew member" at the end of first bullet of ***Rescue Sling***.

  Replace text "Some" with "Most" at the beginning of first bullet of ***Double Lift Method***.

  Replace text "litter" with "stretcher" in second bullet of ***Double Lift Method***.

  Replace text "litter" with "stretcher" in title ***Recue Litter*** and in following bullets and diagram.

- Amend the following text in sub-section **Rescue Function,** segment on **Helicopter Operations**, sub-segment on ***General***, page 2-23:

  Insert new bullet after first bullet and include the following text:

  "Follow the instructions of the rescue facility and inform when unable to do so. In principle only act after instructions of the rescue facility."

  Add text "The distressed vessel's captain is responsible for the safety of his vessel and personnel and may decide against the winching." at the end second-to-last bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Helicopter Operations**, sub-segment on ***Communications between Ship and Helicopter for Winching Operations***, page 2-24:

  Insert text "heave" between "roll" and "sea" in seventh bullet of ***Helicopter to Ship***.

- Amend the following text in sub-section **Rescue Function,** segment on **Helicopter Operations**, sub-segment on ***Sample Briefing to Vessel Prior to Winching***, page 2-26:

- Insert text "and instruct you about the winching procedures" at the end of sentence starting with "the helicopter will…".

- Add text "If a helicopter crewman is lowered down, follow his instructions. If this is not the case, act as follows:" at the end of paragraph and move text from paragraph into the following bullets:

  - "***Do not attach the loose hook or the trail line to your vessel!***

  - ***If you have to move the rescue device from the pick-up area to load the patient, unhook the cable and trail line from the rescue device and lay the loose hook on the deck so it can be retrieved by the helicopter.***
  - ***The helicopter may move to the side while the patient is being loaded.***

- ***Have the patient wear a lifejacket, and attach any important records, along with a record of medications that have been administered.***

- ***When the patient is securely loaded, signal the helicopter to move into position and lower the hook.***

- ***After allowing the hook to ground on the vessel, re-attach the hook and the trail line to the rescue device.***

- ***Signal the winch operator with a "thumbs up" when you are ready for the winching to begin.***

- ***As the rescue device is being retrieved, tend the trail line to prevent the device from swinging.***

- ***When you reach the end of the trail line, gently toss it over the side.***"

- Amend the following text in sub-section **Rescue Function,** segment on **Helicopter Operations**, sub-segment on ***Positioning of Landing or Pick-up Areas***, page 2-29:

  Add text "radar antenna" at the end last sub-bullet.

  Replace text of second-to-last bullet with the following text:

  "Loose objects should be cleared away or secured due to downwash from the helicopter."

  Replace text "air-current" with "downwash" at the end of last bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Helicopter Operations**, sub-segment on ***Safety Precautions***, page 2-30:

  Add text "or the trail line" between "device" and "on" and replace text "rigging of fixtures" with "rigging or fixtures" in sixth bullet.
  Insert new bullet after sixth bullet and include the following text:

  "Never fix a trail line to a person".

  Add text "relative" before "Wind direction" in diagram on page 2-31.

  Add text "or stop operations" at the end of first sentence of **FINISHING OPERATIONS** diagram.

- Amend the following text in sub-section **Rescue Function,** segment on **Rescue by Maritime Facilities**, sub-segment on ***General Maritime Considerations***, page 2-33:

  Delete text "For survivors in the water" from first bullet

  Replace text "rig scramble nets" with "use recovery equipment" in first sub-bullet of first bullet.

  Replace text "lifeboats" with "rescue boats" in second sub-bullet of first bullet.

Add text "or other survival aid" at the end of third sub-bullet of first bullet.

Delete text "to enter the water" from fourth sub-bullet of first bullet.

Delete text "be prepared to" from fifth sub-bullet of first bullet.
Replace text "the use of oil for reducing the effect of the sea should be considered" with "an area of sea may significantly calmed by a large vessel circling at reduced speed" in third bullet.

Delete text "Experience has shown that" and replace text "are most suitable" with "may also be useful" in first sub-bullet of third bullet.

Delete second sub-bullet of third bullet.

Delete text "in heavy weather" in last sub-bullet of third bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Rescue by Maritime Facilities**, sub-segment on ***Recovery of Survivors by Assisting Vessels***, page 2-37:

  Add text "or loops" after "strops" and add text "However, especially for short lifts, do not delay if the survivor's airway (mouth/nose) is threatened by, for example, backwash from the rescuing vessel, but lift by the quickest method. If a rescue craft has been deployed to recover the survivor, he should, if possible, remain in the craft during its recovery on board the ship." at the end of third bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Rescue by Land Facilities**, page 2-38:

  Insert two new sub-bullets immediately under first bullet and add the following text:

  □ Movement in the vicinity of crash sites can be extremely hazardous for ground parties on account of toxic fumes, dangerous substances (including radioactive substances) and explosives. Extreme care should be taken when approaching such a crash site and advice sought from RCC or expert authorities wherever possible before approaching crash site.

  □ Personnel should wear Personal Protective Equipment and all work should be carried out upwind of the wreckage wherever possible.

  Add text "ordnance, leaking fuel tanks, pyrotechnics" between "material" and "or" in third sub-bullet (previously first sub-bullet).

  Add text "expert advice should be sought before approaching the crash site wherever possible" at the end of third sub bullet (previously first sub-bullet).

  Insert new sub-bullet after third sub-bullet and include the following text:

  □ Some civil light aircraft are fitted with ballistic recovery parachute systems which eject a powerful rocket which pulls a parachute from a container attached to or in the airframe. Activation handles are normally coloured red and should not be touched or moved. The ejection hatch of the parachute rocket should be identified and personnel warned to keep clear.

Replace text "except to assist in" with "except to the minimum necessary to assist in the" in the second-to-last sub-bullet.

Delete text "from the SMC" in the last sub-bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Handling of Deceased Persons**, page 2-40:

  Delete text "from the SMC" in the second bullet.

- Amend the following text in sub-section **Rescue Function,** segment on **Contact with the media**, page 2-42:

  Replace text "land or marine search" with "search at sea or on land" in eight sub-bullet of fourth bullet.

- Amend the following text in sub-section **Other Assistance,** page 2-43:

  Add text "or to prevent future, unnecessary reports or reactions" at the end of fourth sub-bullet of first bullet.

- Amend the following text in sub-section **Other Assistance,** segment on **Aircraft Ditching**, sub-segment on ***Communication***, page 2-52:

  Delete third bullet of topic ***Radio***.
  Replace text "advise" with "seek advice" in bullet starting with "If not able …" in fourth bullet (previously fifth bullet).

  Replace text "and ask them to establish a voice watch on 4125 kHz to assist in ditching and rescue" with "The appropriate RCC can assist the ATS unit." in fourth bullet (previously fifth bullet).

  Delete text "500 kHz" in fifth bullet (previously sixth bullet).

- Amend the following text in sub-section **other Assistance,** segment on **Aircraft Ditching**, sub-segment on ***Communications,*** page 2-53:

  Delete all text under topic ***Prefix call sign***.

- Amend the following text in sub-section **Training,** segment on **Maritime Search and Rescue Facilities**, sub-segment on ***First Aid,*** page 2-60:

  Add text "Regular" at the beginning of the first bullet.

  Replace second bullet, and associated sub-bullets, with the following text:

  - Appropriate training aids should be used and copies of a first aid manual should be issued. The syllabus should include, as appropriate, depending on equipment available:

    - □ Use of rescue lifting systems and other devices for removing survivors from water
    - □ fundamental first aid, with emphasis on revival of the partially drowned and treatment for shock, prolonged immersion, hypothermia, and burns

- ☐ cardiopulmonary resuscitation (CPR)
- ☐ use of automated external defibrillators (AEDs)
- ☐ administration of oxygen.

Attention is also drawn to the guidance on first aid given in the IMO *Pocket Guide to Cold Water Survival.*

- Amend the following text in sub-section **Training,** segment on **Land Search and Rescue Facilities**, page 2-61:

  Insert a new sub-bullet after seventh sub-bullet of third bullet and include the following text:

  - ☐ knowledge of safety requirements for working around and within aircraft wreck sites.

  Delete last sub-bullet of fourth bullet.

6 Section 3

- Amend the following text in **Contents** segment:

  Delete text "RSC".

  Move text "Joining Entry Report" after "On-Scene Communications".
  Delete text "Maritime Radio Telex".

  Replace text "Radio Communication Frequencies for Distress Purposes" with "Radio Frequencies Available for Maritime Safety and SAR Communications".

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***Requirements for Coordination***, page 3-1:

  Delete text "or RSC" everywhere it is mentioned in sub-segment.

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***Coordination by Land-Based Authorities***, page 3-2:

  Add text "Rescue Sub Centres" before "RSC" in second bullet.

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***On-Scene Coordination***, page 3-2:

  Delete text "in the response" and add text "may" between "incident" and "effect" in first bullet.

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***Designation of On-Scene Coordinator (OSC)***, page 3-2:

  Replace text "should" with "may" in first two bullets.

  Add text "if necessary" between "should" and "be" in the third bullet.

Replace text "within the search area" with "of facilities on scene" at the end of the third bullet.

Add text "endurance," between "the" and "communications" in the fifth bullet.
Add text "on scene with the RCC" after "communications" in sub-bullet of fifth bullet.

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***OSC Duties***, page 3-3:

  Replace text "Receive the" with "Carry out the received" at the beginning of the second bullet.

  Insert new bullet after the fourth bullet and add the following text:

  □ Provide relevant information to the other SAR facilities.

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***Designation of Aircraft Coordinator (ACO)***, page 3-4:

  Add text "Duties of" at the beginning of the sixth bullet.

  Add text "carried out from" between "be" and "a" in the sixth bullet.

  Add text "such as ATS unit or RCC" at the end of the sixth bullet.

- Amend the following text in sub-section **Coordination of Search and Rescue Operations**, sub-segment on ***ACO Duties***, page 3-4:

  Replace text "maintain" with "Assist in maintaining" in first bullet and first sub-bullet.

  Move the sub-segment on ***Joining Entry Report***, page 3-5 after sub-segment on ***On-Scene Communications***.

- Amend the following text in sub-section **Communications**, sub-segment on ***On-Scene Communications***, page 3-7:

  Insert bullets after the first bullet and add the following text:

  - If there are several aircraft involved in the SAR operation and the OSC does not have specific aircraft coordination capability, an Aircraft Coordinator (ACO) should be appointed to assist in maintaining flight safety.

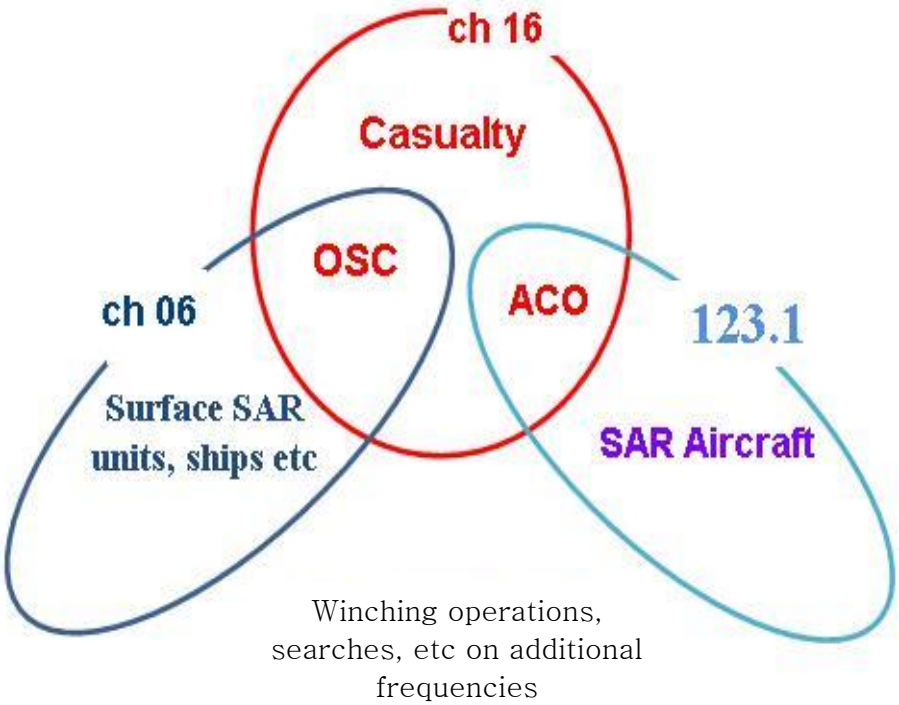
  - If there are relatively few units responding communications may be kept on one coordinating frequency.

  - In more complex cases communications should be divided for the sake of efficiency and avoidance of frequency congestion.

    □ A ship casualty, the OSC and the ACO should work VHF Channel 16.
    □ Other units on scene should use working frequencies for their own part of the operation. Surface units usually use VHF Channel 6, coordinated by the OSC. Aircraft coordinated by an ACO should use 123.1MHz.

- These units should also *monitor* the main coordination frequency if possible so as to maintain an overall understanding of the situation. SITREPs may be used by the OSC to keep all units fully informed.
- Other frequencies may be used, as directed by the OSC, for specific operations – for example a winching operation between helicopter and ship, or a surface search being conducted by some units as part of a wider operation.

A basic communications plan structure is shown below.



Add text "and/or ACO" after "OSC" in last bullet.

Replace text "shift" with "change" in first sub-bullet of last bullet.

- Amend the following text in sub-section **Communications**, sub-segment on ***OSC Communications with RCC or RSC,*** page 3-7:

  Delete text "or RSC" in the sub-segment title.

  Delete text "and RSCs" in first sub-bullet of first bullet.

  Replace text "one or two word" with "short" in fourth sub-bullet under *Identification* of fourth bullet.

- Amend the following text in sub-section **Communications**, sub-segment on ***RCC and RSC Communications,*** page 3-9:

  Delete text "and RSC" in the sub-segment title.

  Delete header and related text under ***Maritime Radio Telex***.

Insert new bullet at the beginning of the sub-segment and include the following text:

- RCC are normally contacted by:

  - ☐ dedicated phone number;
  - ☐ e-mail;
  - ☐ fax;
  - ☐ coastal radio station;
  - ☐ satellite Land Earth Station;
  - ☐ direct satellite communication; or
  - ☐ HF, MF or VHF radio.

For information on contact details for RCCs, refer to the Admiralty List of Radio Signals (ALRS) Volume V or the appropriate Aeronautical Information Publication.

Add text "initial distress and urgency alerts and" after "promulgate" in first bullet under header ***Maritime Safety Information***.

Delete text "and may be used by SAR personnel for SAR-related broadcasts" at the end of the first bullet under header ***Maritime Safety Information****.*

Replace text "with" with "through" in first sub-bullet of second bullet under header ***Maritime Safety Information****.*

Replace text "personnel" with "authority" in second sub-bullet of second bullet under header ***Maritime Safety Information****.*

Delete last bullet under header ***Maritime Safety Information***.

Delete text "For" at the beginning of second bullet under header ***Phonetic Alphabet and Figure Code***.

Replace text "obtain a copy of" with "is found in" in the second bullet under header ***Phonetic Alphabet and Figure Code***.

Add text "(INTERCO)" at the end of second bullet under header ***Phonetic Alphabet and Figure Code***.

- Amend the following text in sub-section **Communications**, sub-segment on ***Radio Communication Frequencies for Distress Purposes,*** page 3-10:

  Replace sub-segment title with "Radio Frequencies available for distress, maritime safety and SAR Communications.

Replace table on pages 3-11 and 3-12 with the following:

Function	**System**	**Frequency**
Alerting	406 MHz Distress beacon	406–406.1 MHz (earth-to-space)
	Inmarsat SES	1544–1545 MHz (space-to-earth) 1626.5–1646.5 MHz (earth-to-space) 1645.6–1645.8 MHz (earth-to-space)
	VHF DSC (Channel 70)	156.525 MHz[1]
	MF/HF DSC[2]	2187.5 kHz[3] 4207.5 kHz 6312 kHz 8414.5 kHz 12577 kHz 16804.5 kHz
	VHF AM	121.5 MHz
	VHFFM (Channel 16)	156.8 MHz
On-scene communication	VHF Channel 16 VHF Channel 06 VHF AM MF Radiotelephony MF NBDP	156.8 MHz 156.3 MHz 123.1 MHz 2182 kHz 2174.5 kHz
Communications involving aircraft	On-scene, including SAR radiotelephony	156.8 MHz[4] 121.5 MHz[5] 123.1 MHz 156.3 MHz 2182 kHz 3023 kHz 4125 kHz 5680 kHz[6]
Homing signals	406 MHz Distress beacons	121.5 MHz and the 406 MHz signal
	9 GHz radar transponders (SART)	9200–9500 MHz
Maritime safety information (MSI)	NAVTEX Warnings	518 kHz[7]
	NBDP	490 kHz[8] 4209.5 kHz[9] [8] 4210 kHz 6314 kHz 8416.5 kHz 12579 kHz 16806.5 kHz 19680.5 kHz 22376 kHz 26100.5 kHz
	Satellite Safety NET	1530–1545 MHz (space-to-earth)
Safety of navigation	VHF Channel 13	156.650 MHz
Distress and safety traffic	Satellite	1530–1544 MHz (space-to-earth) & 1626.5–1646.5 MHz (earth-to-space)
	Radiotelephony	2182 kHz 4125 kHz 6215 kHz 8291 kHz 12290 kHz 16420 kHz 156.8 MHz
	NBDP	2174.5 kHz 4177.5 kHz 6268 kHz 8376.5 kHz 12520 kHz 16695 kHz
Survival craft	VHF Radiotelephony	156.8 MHz & one other frequency in the 156-174 MHz band
	9 GHz radar transponders (SART)	9200-9500 MHz
	AIS-SART	161.975 MHz/162.025 MHz

Delete note 8 under table page 3-12 and re-number note 9.

Delete text "Cospas-Sarsat satellite location & aircraft" in table **Frequencies for use in the GMDSS**.

Replace text "406.025" with "406.0-406.1" at the end of table **Frequencies for use in the GMDSS**.

Delete text "*For use after full implementation of GMDSS (1 February 1999)" under **Frequencies for use in the GMDSS**.

Replace text "alarm signals before transmitting the message until contact has been established" with "procedures" in first bullet under header **Maritime**.

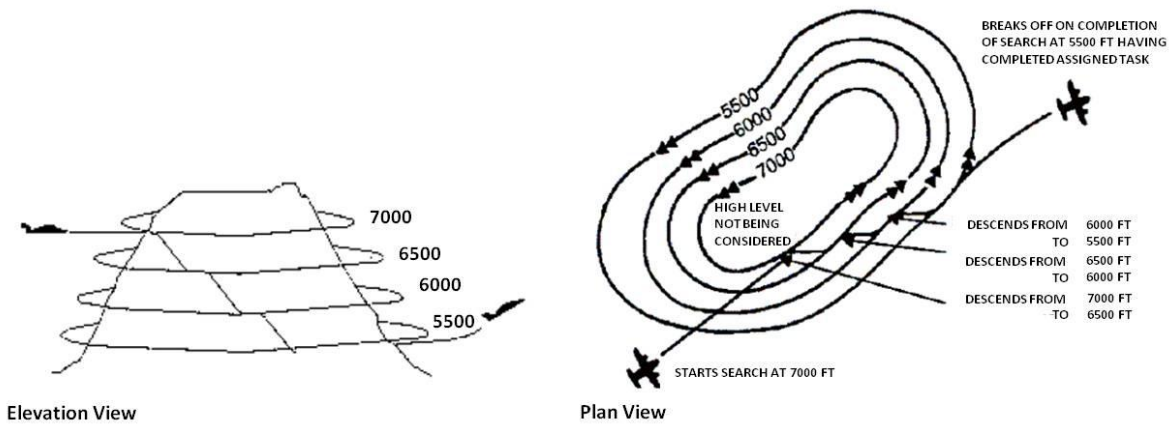
Add text "/RCCs" after "CRSs" in first bullet under **Aeronautical**.

Replace text "are not" with "may not be" in first bullet under "**Aeronautical**".

- Amend the following text in sub-section **Planning and Conducting the Search**, sub-segment on ***Responsibilities of OSC,*** page 3-14:

  Delete text "or RSC" after "RCC" in first bullet.

  Replace "Contour search (OS)" figure with the following one:



- Amend the following text in sub-section **Planning and Conducting the Search**, sub-segment on ***Survival and Emergency Radio Equipment,*** page 3-38:

  Delete text "alerting" in first bullet.

  Delete bullet starting with "L-Band is …".

  Delete text "500 kHz" in bullet starting with "The following frequencies".

Replace text of bullet starting with "Many civil aircraft …" and the corresponding sub-bullets with the following:

- Many civil aircraft worldwide, especially operating on international flights and over ocean areas, carry the 406 MHz distress beacon for alerting and homing. Some national regulations may allow for 121.5 MHz distress beacons on domestic flights.

  - SAR aircraft should be able to home on the 121.5 MHz homing frequency on the 406 MHz distress beacon, and the capability exists to home on the 406 MHz signal itself.

Insert new bullet after bullet starting with "Many civil aircraft …" and include the following text:

- EPIRBs and ELTs operate on the 406 MHz frequency and are required to be carried on board certain vessels and aircraft, respectively. The 406 MHz PLB is not required internationally but can be carried on a person.

Replace text "406 MHz ELTs and 406 MHz and Inmarsat-E satellite EPIRBs" with "406 MHz distress beacons (ELTs, EPIRBs and PLBs)" inn bullet starting with "406 MHz ELTs …".

Delete bullet "After January 1999:" and change following sub-bullets to bullets.

Insert bullet after bullet starting with "SOLAS ships should …" and include the following text:

- AIS-SART (AIS Search and Rescue transmitter) is an alternative to survival craft radar transponders. AIS-SART is a transmitter which sends a signal to the AIS system. It is programmed with a unique ID code and receives its position via an internal GNSS. The AIS-SART is detected on both AIS Class A and B and AIS Receivers. The AIS target will be shown on ECDIS or chart plotters as a RED circle with a cross inside.

Replace text "500" with "300" in bullet starting with "Ships of 500 …".

Replace text "will no longer be" with "are not" in bullet starting with "Ships of 500 …".

Delete text "500 kHz (telegraphy)" in bullet starting with "Ships of 500 …".

Replace text "these frequencies" with "this frequency" in bullet starting with "Ships of 500 …".

Replace text "EPIRB" with "Distress beacon (ELT and EPIRB)" in bullet starting with "EPIRB signals indicate …".

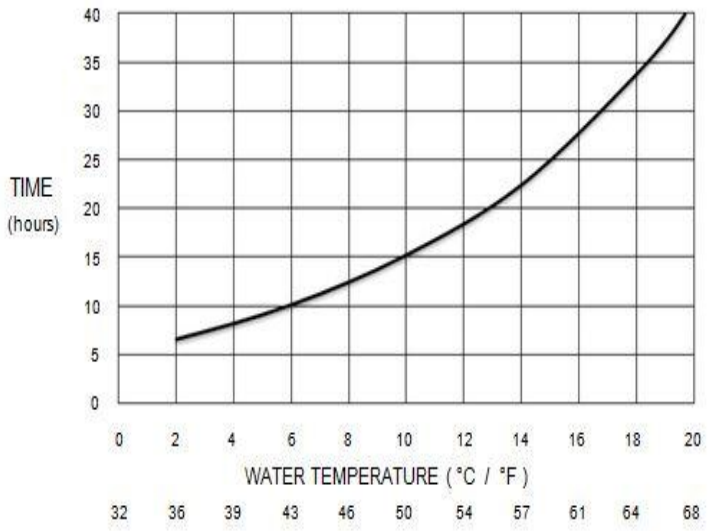
- Amend the following text in sub-section **Conclusion of Search**, sub-segment on ***Search Unsuccessful,*** page 3-40:

Insert two new bullets and a diagram after bullet starting with "The OSC may…" and include the following text:

- The following diagram shows realistic survival times for people believed to be in water at various temperatures. If there is a possibility that survivors may have survival equipment or have been able to get out of the water, search times should be extended.

- Remember that the graph can only be indicative. Predicting survival times in immersion victims is not a precise science; there is no formula to determine exactly how long someone will survive, or how long a search should continue. In water temperatures above 20°C (68°F) search times exceeding 24 hours should be considered.

Graph on Realistic upper limit of survival time for people in the water wearing normal clothing, from time of entry into the water[4]



Delete the bullet starting with text "The following diagrams …" and the corresponding diagrams.

Delete text starting with "Guide to survival …" and associated diagram.

Add text "/RCC" after "authorities in the bullet starting with "The OSC, after …".

7 Section 4

- Amend the following text in **Contents** segment:

Replace text "Person Overboard" with "Man Overboard".

Add item "Collision" under "Ship Emergencies at Sea".

- Amend the following text in sub-section **Distress Alert Notification**, sub-segment on ***Distress Signals***, page 4-1:

  Delete text "(pronounced M'AIDER)" in first sub-bullet of first bullet.

  Replace text "person overboard" with "man overboard situation" in first sub-bullet of "Distress signal".

  Delete text "(pronounced PAHN-PAHN)" in second sub-bullet of "Distress signal".

  Replace text "SECURITY" with "SÉCURITÉ" and replace text "SECURITAY" with "SE-CURE-E-TAY" in third sub-bullet of "Distress signal".

- Amend the following text in sub-section **Distress Alert Notification**, sub-segment on ***Methods of alert***, page 4-3:

  Replace first bullet, and associated sub-bullets, of ***Distress Alert from a Vessel*** with the following text:

  - Use any of the Global Maritime Distress and Safety System (GMDSS) equipment to transmit a distress alert:

    □ Inmarsat distress call
    □ VHF channel 16 (156.8 MHz FM)
    □ DSC on (VHF/MF or HF)
    □ EPIRB

    - any distress transmissions on the frequency VHF channel 16, 2182 kHz could be preceded by a digital selective call.

    - in remote oceans areas, the distress call should also be transmitted on a ship-to-shore HF circuit to a CRS, especially when distress calls on 2182 kHz, or channel 16 are not replied to by other stations.

    - [If non-GMDSS satellite communication is available this could be also used …]

  Add text "/243.0" after "121.5" and add text "and no data link communication is available" at the end of second bullet under ***Distress Alert from an Aircraft***.

  Insert sub-bullet after sub-bullet starting with "set transponder to …" and include the following text:

  □ set data link equipment to the appropriate emergency code, if so equipped.

  Replace title "***EPIRBs and ELTs***" with "***EPIRBs, ELTs and Personal Locator Beacons (PLBs) Distress Beacons***".

  Delete the first bullet point under "EPIRBs and ELTs": "EPIRBs and ELTs are another […] of alerting are inadequate."

  Add text "**EPIRB:**" at the beginning of the bullet starting with "An EPIRB transmits …".

Add text "It is activated automatically upon exposure to the sea, or manually. 406 MHz EPIRBs use Cospas-Sarsat satellites and are required on board certain vessels." at the end of bullet starting with "An EPIRB transmits …".

Delete all sub-bullets under bullet starting with "An EPIRB transmits …".

Add text "**ELT:**" at the beginning of bullet starting with "Most civil aircraft …".

Replace text of two sub-bullets of bullet starting with "Most civil aircraft …" with the following:

- 406 MHz ELT for use with Cospas-Sarsat satellites, required on aircraft on international flights.

- 121.5 MHz ELT might be allowed/required on domestic flights and is intended to be heard by other aircraft.

Insert new bullet after bullet starting with "Most civil aircraft …" and include the following text:

PLB: The 406MHz PLB is not mandated by any international carriage requirement, but may be carried by a person and has similar characteristics to EPIRBs and ELTs.

Replace text "EPIRBs and ELTs" with "the 406 MHz distress beacons" in bullet starting with "Cospas-Sarsat calculates …".

Add text "fixed" between "all" and "ELTs" in bullet starting with "Most EPIRBS and …".

Delete bullets starting with "Inmarsat-E EPIRBs transmit …", "Position information from…" and "Inmarsat-E EPIRB operates …".

Replace text "EPIRB" with "distress beacon" in bullet starting with "It is recommended …".

Add text "radar" between "The" and "SART" in second sub-bullet of bullet starting with "SOLAS ship requirements …".

Insert sub-bullet and replace two sub-bullets of bullet starting with "SOLAS ship requirements …" with the following text:

- two-way VHF radio-telephone apparatus and survival craft radar transponders to be placed on each side of the vessel, in a position ready to be taken on board a survival craft, and one of the following:

- a radar SART, which after being switched on manually, and triggered by radar(s) in its vicinity, automatically sends out a series of pulses which are displayed on a radar screen as a series of elongated pips, similar to a radar responder beacon (racon) pip; or

- an AIS-Search and Rescue Transmitter (AIS-SART), which after being switched on manually, automatically sends updated position reports using a standard AIS class A/B position report. An AIS-SART has a built in GNSS receiver.

Add text "(total/POB)" at the end of sixth sub-bullet under bullet starting with "Important components of …".

Delete text "(POB)" at the end of seventh sub-bullet under bullet starting with "Important components of …".

- Amend the following text in sub-section **Medical Assistance to Vessel**, sub-segment on ***Satellite Communications***, page 4-8:

  Replace text "two" with "three" in bullet starting with "Inmarsat systems offer …".

  Delete numbering of sub-bullets and add a sub-bullet at the end, under bullet starting with "Inmarsat systems offer …". Add the following text:

  □ SAC 39 Maritime assistance. This code allows the call to be routed to the associated RCC.

- Amend the following text in sub-section **MEDICO**, page 4-8:

  Delete bullet starting with "the messages should …".

  Delete two sub-bullets under bullet starting with "In addition to …".

- Amend the following text in sub-section **Medical Evacuation (MEDEVAC)**, page 4-9:

  Add text "The vessel's master is responsible for the safety of his vessel and personnel and may decide against the evacuation." at the end of bullet starting with "The final decision …".

- Amend the following text in sub-section **Medical Evacuation (MEDEVAC)**, sub-segment on ***Evacuation by Helicopter***, page 4-10:

  Delete text "as close" and "area as the patient's condition permits" and add "if so required" at the end of first item of second bullet under bullet starting with "When arranging for …".

- Amend the following text in sub-section **Medical Evacuation (MEDEVAC)**, sub-segment on ***Vessel Preparation***, page 4-11:

  Insert sub-bullet after sub-bullet starting with "how to identify…" under bullet starting with "The following information …" and add the following text:

  □ Type and any special activity of the ship

- Amend the following text in sub-section **Medical Evacuation (MEDEVAC)**, sub-segment on ***Shipboard Safety Checklist***, page 4-11:

  Delete text "person overboard' in bullet starting with "Is a person …".
  Add item "Passenger Vessels: Additional Items" after "Gas Carriers: Additional Items" and include the following bullet:

  • Portable radio communication 123,1 MHz /121,5 MHz

- Change title of sub-section "**Person Overboard**" to "**Man Overboard**".

- Amend the following text in sub-section **Person overboard**, sub-segment on ***Initial Action***, page 4-14:

  Insert new first bullet and include the following text:

  - Mark and note position and time from GNSS.

  Replace text "person" with "man" in bullet starting with "Sound three prolonged …".

  Delete text "position" and "time" in bullet starting with "Note position, time …".

- Amend the following text in sub-section **Ship Emergencies at Sea**, page 4-16:

  Add new sub-segment **Collision** and include the following text:

  Collision

  ☐ Establish communication with the other vessel
  ☐ Evaluate the situation (including, but not limited to, hull damage, injured persons)
  ☐ If assistance is required, transmit distress or urgency message
  ☐ POB control (vessels involved)
  ☐ Inform RCC
  ☐ abandon vessel as a last resort

  Replace the sub-bullets of sub-segment "***Abandoning Ship***" with the following text:

  ☐ abandon ship only as last resort
  ☐ transmit distress call and message
  ☐ wear adequate clothing and, if available, immersion suits
  ☐ wear lifejackets, tightly fastened
  ☐ take anti-seasickness medication
  ☐ have crew members stand by lifeboat or liferaft and prepare to launch
  ☐ make sure sea painter is attached to vessel
  ☐ take SART, AIS-SART and/or EPIRB with you if possible
  ☐ load crew and launch
  ☐ keep lifeboat or liferaft tethered to vessel as long as possible

- Amend the following text in sub-section **Aircraft Emergencies**, sub-segment on ***Vessel-Aircraft Communications***, page 4-21:

  Replace text "the radiotelephone alarm system" with "MF DSC alert" in paragraph starting with "Aircraft may have …" under **2182 kHz**.

  Replace text "designated SAR aircraft and most" with "most designated SAR aircraft and some" in item starting with "designated SAR aircraft …" under **3023 and 5680 kHz**.

- Amend the following text in sub-section **Aircraft Emergencies**, page 4-28:

  Insert new sub-segment ***121.5 MHz Distress Beacon Alerts*** at the end of sub-section (after "Emergency Equipment" sub-segment) and include the following text:

  - ***121.5 MHz Distress Beacon Alerts***

    - 121.5 MHz distress beacons are still in use and send out distress alerts heard on the radio as a WOW WOW sound of two alternating tones.
    - Aircraft in flight are the primary means of detecting these alerts. Pilots-in-command should advise ATS units when this distress alert is heard.
    - When in flight and reporting an alert from a 121.5 MHz distress beacon, the pilot-in-command should expect the ATS unit to request the following information:

      - Your aircraft altitude above sea level, where and when the signal was first heard
      - Your aircraft altitude above sea level, where and when maximum signal was heard
      - Your aircraft altitude above sea level, where and when signal faded or was lost.

8 Appendices

- Insert a new appendix F "***Own Emergency***" and appendix G "***Rendering Assistance***" and add the following cards:

IAMSAR Manual, volume III, appendix F – Examples of Action Cards – Own emergency

Man overboard

MOB – Man overboard

Man overboard (MOB)

Additional info in IAMSAR Vol III, Section 4.

- Light and smoke signal

1. ON BOARD ACTION

- Mark the position (GNSS)
- Drop MOB buoy
- Sound general alarm
- Start Williamson turn (or similar)
- Post lookouts
  - Forward on both sides
  - Bridge wings (with binoculars)
  - If long lasting search, rotate and motivate.

2. ON BOARD PREPARATION

- Lifebuoys, with light and smoke.
- Rescue-boat and equipment for pick up.
- ~~Prepare hospital for receiving injured and or hypothermal persons.~~
- ~~Hospital location and p~~Phone number to be obtained from RCC ~~TMAS~~

3. TRANSMIT DISTRESS, VHF, MF/HF, INMARSAT.

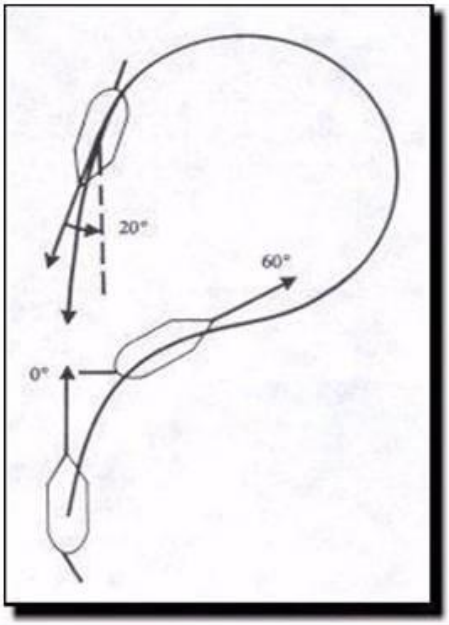
- Switch to voice.
- Transmit distress message
- 3*Mayday, 3* name of ship
- DTG (Date and time group)
- Type of distress, Position
- Assistance required and any additional information

Williamson turn

1 Rudder hard over (in an "immediate action" situation, only to the side of the casualty).

2 After deviation from the original course by 60°, rudder hard over to the opposite side.

3 When heading 20° short of opposite course, rudder to midship position and ship to be turned to opposite course.



IAMSAR **** Edition

IAMSAR Manual, volume III, appendix F – Example of Action Cards – Own emergency

MEDEVAC by Helicopter

MEDEVAC by Helicopter

MEDEVAC by Helicopter

Additional information in IAMSAR Vol III, section 4-

- **REQUESTING HELICOPTER ASSISTANCE**
  - Contact RCC, give vessel details, name, callsign, and contact numbers
  - Vessel position, speed and course.
  - Local weather conditions
  - Give as much medical information as possible, particularly about the patient's mobility.
  - Indicate landing or winching area.

- **PREPARATION OF PATIENT BEFORE THE HELICOPTER ARRIVES**
  - Move the patient, in accordance to medical advice, as close to the helicopter pick-up area as the patient's condition permits.
  - Update the information on medication given
  - Have the patient wear a lifejacket, and attach all medical information and other important records, and passport along with a record of medications that have been administered (No luggage)

- **VESSEL PREPARATION**
  - Update position to RCC and/or helicopter.
  - Course and speed to the rendezvous position.
  - Frequencies for communication with helicopter.
  - Secure or remove all loose objects in pick-up area. If necessary, remove antennas, (whip / wire).
  - Switch radars off during pick up/landing.
  - Take wind 30 deg. on port bow, and keep steering speed, during helicopter operation.
  - Have a portable radio ready for communication from deck to bridge and helicopter.
  - Direct available lighting to illuminate the pick-up area. Do not direct lights towards the helicopter as it will adversely affect the pilot's vision
  - If a helicopter crewman is lowered, follow his instructions.
  - If this is not the case act as follows. If you have to move the rescue device from the pick-up area to load the patient, unhook the cable and trail line from the rescue device and lay the loose hook on the deck so it can be retrieved by the helicopter. *Do not attach the loose hook or the cable trail line to your vessel.*
  - When the patient is securely loaded, signal the helicopter to move into position and lower the hook. After allowing the hook to ground on the vessel, re-attach the hook and the trail line to the rescue device. Signal the winch operator with a "thumbs up" when you are ready for the winching to begin. As the rescue device is being retrieved, tend the trail line to prevent the device from swinging. When you reach the end of the trail line, gently toss it over the side.
  - Prepare for high-line operation

IAMSAR Manual, volume III, appendix F – Example of Action Cards – Own emergency

MEDICO-MEDEVAC

MEDICO / MEDEVAC

MEDICO-MEDEVAC

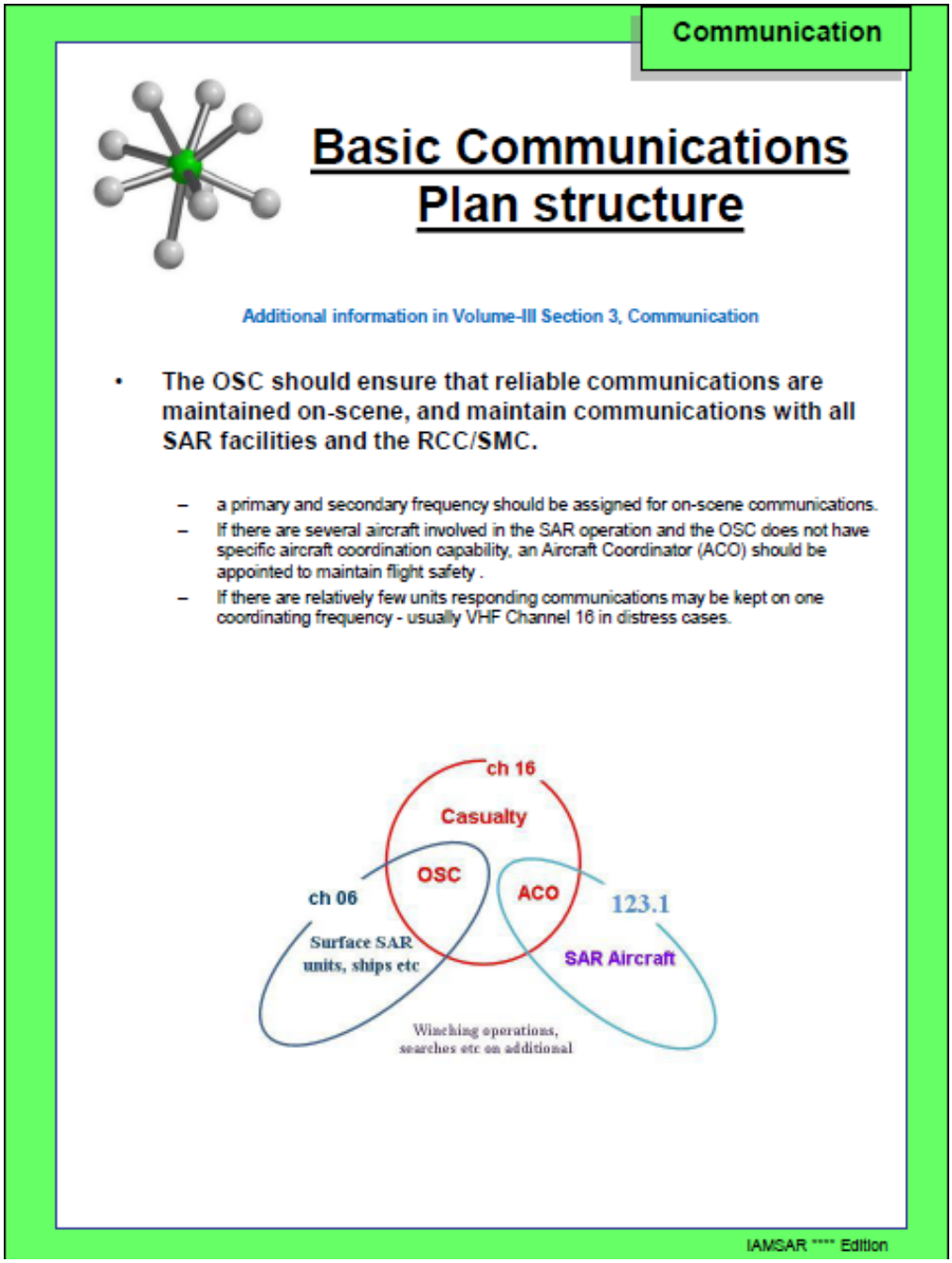
Medical assistance- or evacuation

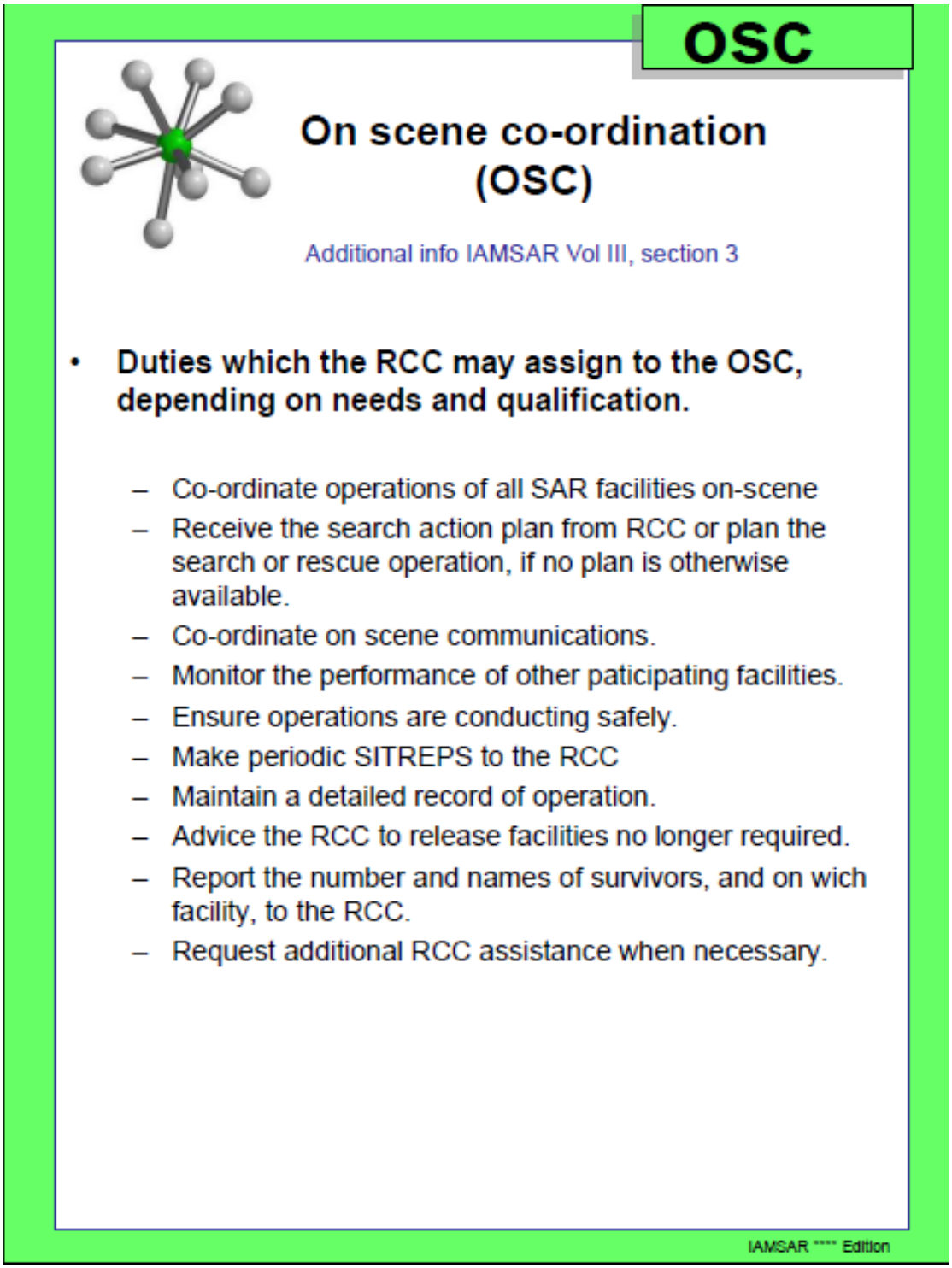
Additional information in IAMSAR Vol III, section 4

- **Medical assistance is available using telemedical assistance services (TMASs).**
- **Inmarsat systems offer two Special Access Codes (SACs) which can be used for medical advice or medical assistance at sea**
  - **SAC32** is used to obtain medical advice.
  - **SAC38** is used when the condition of an injured or sick person onboard a ship justifies medical assistance (evacuation to shore or services of a doctor onboard)
- **SAR services may also provide medical advice either from their own doctors or via arrangements with TMAS**
- **If medical evacuation is considered, benefits must be weighted against the inherent dangers of such operations, to both the person needing assistance and to the rescue personnel. Medical evacuation by boat may be challenging.**
- **When medical assistance is required, information as indicated below should be sent to the RCC.**
  - Vessels position, name, flag, IMO number, radio call sign and telephone number(s)
  - shipowner/operator and contact details
  - patient's name, age, gender, nationality, and language
  - patient's respiration, pulse rate, temperature, and blood pressure
  - location of pain
  - nature of illness or injury, including apparent cause and related history
  - symptoms
  - type, time, form, and amounts of all medications given
  - time of last food consumption
  - ability of patient to eat, drink, walk, or be moved
  - with accident cases, how the accident occurred
  - whether the vessel has a medicine chest, and whether a physician or other medically trained person is aboard
  - **Local weather conditions.**

IAMSAR Manual, volume III, appendix G – Example of Action Cards – Rendering assistance

Basic Communication Plan structure



IAMSAR Manual, volume III, appendix G – Example of Action Cards – Rendering assistance

On scene coordination (OSC)