



CIVIL AVIATION DIRECTIVE – 12



# SEARCH AND RESCUE

SAR

CIVIL AVIATION AUTHORITY OF MALAYSIA

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## Civil Aviation Directive Components and Editorial Practices

This Civil Aviation Directive is made up of the following components and are defined as follows:

**Standards:** Usually preceded by words such as “shall” or “must”, are any specification for physical characteristics, configuration, performance, personnel or procedure, where uniform application is necessary for the safety or regularity of air navigation and to which Operators must conform. In the event of impossibility of compliance, notification to the CAAM is compulsory.

**Recommended Practices:** Usually preceded by the words such as “should” or “may”, are any specification for physical characteristics, configuration, performance, personnel or procedure, where the uniform application is desirable in the interest of safety, regularity or efficiency of air navigation, and to which Operators will endeavour to conform.

**Appendices:** Material grouped separately for convenience but forms part of the Standards and Recommended Practices stipulated by the CAAM.

**Definitions:** Terms used in the Standards and Recommended Practices which are not self-explanatory in that they do not have accepted dictionary meanings. A definition does not have an independent status but is an essential part of each Standard and Recommended Practice in which the term is used, since a change in the meaning of the term would affect the specification.

**Tables and Figures:** These add to or illustrate a Standard or Recommended Practice and which are referred to therein, form part of the associated Standard or Recommended Practice and have the same status.

**Notes:** Included in the text, where appropriate, Notes give factual information or references bearing on the Standards or Recommended Practices in question but not constituting part of the Standards or Recommended Practices;

**Attachments:** Material supplementary to the Standards and Recommended Practices or included as a guide to their application.

It is to be noted that some Standards in this Civil Aviation Directive incorporates, by reference, other specifications having the status of Recommended Practices. In such cases, the text of the Recommended Practice becomes part of the Standard.

The units of measurement used in this CAD are in accordance with the International System of Units (SI) as specified in CAD 5. Where CAD 5 permits the use of non-SI alternative units, these are shown in parentheses following the basic units. Where two sets of units are quoted it must not be assumed that the pairs of values are equal and interchangeable. It may, however, be inferred that an equivalent level of safety is achieved when either set of units is used exclusively.

Any reference to a portion of this CAD, which is identified by a number and/or title, includes all subdivisions of that portion.

Throughout this Civil Aviation Directive, the use of the male gender should be understood to include male and female persons.





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# 1 General

## 1.1 Citation

- 1.1.1. These Directives are the Civil Aviation Directive 12 – Search and Rescue (CAD 12 – SAR), Issue 01/Revision 01, and comes into operation on 15 November 2022.
- 1.1.2. This CAD contains the standards, requirements and procedures pertaining to the provision of air traffic services. The standards and requirements in this CAD are based mainly on standards and recommended practices (SARPs) stipulated in International Civil Aviation Organisation (ICAO) Annex 12 to the Chicago Convention Search and Rescue (SAR), including related guidelines stipulated in the following documents:
- a) ICAO Annex 13 – Aircraft Accident and Incident Investigation;
  - b) IAMSAR Manual Volume I – Organisation and Management;
  - c) IAMSAR Manual Volume II – Mission Coordinator;
  - d) IAMSAR Manual Volume III – Mobile Facilities; and
  - e) ICAO Doc 7030 – Regional Supplementary Procedures for Alerting and SAR services applicable in the SEA Region.

## 1.2 Applicability

- 1.2.1. The standards specified in this CAD applies to all Search and Rescue organisations.
- 1.2.1.1. When the SAR organisation or is not able to comply with any standards specified or referenced in this CAD, the SAR organisation shall apply to the CEO for exemption or deviation from relevant standards. Application shall be submitted in writing supported with the reasons for such exemption or deviation including any safety assessment or other studies undertaken, and an indication of when compliance with the current standards can be expected.
- 1.2.1.2. When the SAR organisation is not able to comply with any recommended practices specified or referenced in this CAD, the SAR organisation shall notify the CEO of the non-compliance or deviation with supporting reasons including any safety assessment or other studies undertaken, and where appropriate an indication of when compliance with the current recommended practices can be expected.
- 1.2.1.3. Any exemption or deviation granted to the service provider shall be recorded in the SAR organisation operations manual. The SAR organisation operations manual shall also contain the details of the exemption or deviation including the reason that the exemption or deviation was requested and the limitations or conditions imposed.

### 1.3 Revocation

- 1.3.1. This CAD revokes Civil Aviation Directive 12 – Search and Rescue (CAD 12 – SAR), Issue 01/Revision 00, dated 1 May 2021.

### 1.4 Definitions

When the following terms are used in the SARPs for SAR, they have the following meanings:

**Alerting post** means any facility intended to serve as an intermediary between a person reporting an emergency and a rescue coordination centre or rescue subcentre.

**Alert phase** means a situation wherein apprehension exists as to the safety of an aircraft and its occupants.

**Distress phase** means a situation wherein there is a reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger and require immediate assistance.

**Ditching** means the forced landing of an aircraft on water.

**Emergency phase** is generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase.

**Joint rescue coordination centre (JRCC)** is a rescue coordination centre responsible for both aeronautical and maritime search and rescue operations.

**Operator** means a person, organisation or enterprise engaged in or offering to engage in an aircraft operation.

**Pilot-in-command** means the pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

**Rescue** means an operation to retrieve persons in distress, provide for their initial medical or other needs, and deliver them to a place of safety.

**Rescue coordination centre (RCC)** is a unit responsible for promoting efficient organisation of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.

**Rescue subcentre (RSC)** is a unit subordinate to a rescue coordination centre, established to complement the latter according to particular provisions of the responsible authorities.

**Search** means an operation normally coordinated by a rescue coordination centre or rescue subcentre using available personnel and facilities to locate persons in distress.

**Search and rescue aircraft** means an aircraft provided with specialised equipment suitable for the efficient conduct of search and rescue missions.

**Search and rescue facility** means any mobile resource, including designated search and rescue units, used to conduct search and rescue operations.

**Search and rescue organisation** means the provider of search and rescue services within the Kuala Lumpur and Kota Kinabalu search and rescue regions.

**Search and rescue service** means the performance of distress monitoring, communication, coordination and search and rescue functions, initial medical assistance or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installations



**Search and rescue region (SRR)** means an area of defined dimensions, associated with a rescue coordination centre, within which search and rescue services are provided.

**Search and rescue unit** means a mobile resource composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations.

**State of Registry** means the State on whose register the aircraft is entered.

**Uncertainty phase** is a situation wherein uncertainty exists as to the safety of an aircraft and its occupants.



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## 2 Organisation

### 2.1 Search and Rescue (SAR) services

- 2.1.1. The SAR organisation shall, individually or in cooperation with other States, arrange for the establishment and prompt provision of SAR services within the Kuala Lumpur and Kota Kinabalu Search and Rescue Regions (SRRs) to ensure that assistance is rendered to aircraft or persons in distress. Such services shall be provided on a 24-hour basis.
- 2.1.1.1. In adherence to *Article 25 of the Chicago Convention*, Malaysia shall undertake to provide such measures of assistance to aircraft in distress in its territory as it may find practicable, and to permit, subject to control by the Malaysian authorities, the owners of the aircraft or relevant authorities of the State in which the aircraft is registered to provide such measures of assistance as may be necessitated by the circumstances. Malaysia SAR organisations when undertaking search for missing aircraft, will collaborate in coordinated measures which may be recommended from time to time pursuant to this Convention.
- 2.1.1.2. The SAR organisation shall provide such measures of assistance to aircraft in distress in its territory as it may find practicable, and to permit, subject to control by the Malaysian authorities, the owners of the aircraft or relevant authorities of the State in which the aircraft is registered to provide such measures of assistance as may be necessitated by the circumstances.
- 2.1.1.3. Those portions of the high seas or areas of undetermined sovereignty for which search and rescue services will be established shall be determined on the basis of regional air navigation agreements. The SAR organisation having accepted the responsibility to provide search and rescue services in such areas shall thereafter, individually or in cooperation with other States, arrange for the services to be established and provided in accordance with the provisions of this document.
- 2.1.1.4. Basic elements of search and rescue services shall include a legal framework, a responsible authority, organised available resources, communication facilities and a workforce skilled in coordination and operational functions.
- 2.1.1.5. Search and rescue services shall establish processes to improve service provision, including the aspects of planning, domestic and international cooperative arrangements and training.
- 2.1.2. In providing assistance to aircraft in distress and to survivors of aircraft accidents, the SAR organisation shall do so regardless of the nationality or status of such persons or the circumstances in which such persons are found.

- 2.1.3. The SAR organisation having accepted responsibility to provide search and rescue services shall use search and rescue units and other available facilities to assist any aircraft or its occupants that are or appear to be in a state of emergency.
- 2.1.4. Where separate aeronautical and maritime rescue coordination centres serve the same area, The SAR organisation shall ensure the closest practicable coordination between the centres.
- 2.1.5. The SAR organisation shall facilitate consistency and cooperation between their aeronautical and maritime search and rescue services.
- 2.1.6. The SAR organisation shall establish joint rescue coordination centres to coordinate aeronautical and maritime search and rescue operations, where practical.

## **2.2 Search and rescue regions (SRRs)**

- 2.2.1. The boundaries of Kuala Lumpur and Kota Kinabalu SRRs shall coincide with the Kuala Lumpur and Kota Kinabalu Flight Information Regions (FIRs).

## **2.3 Rescue coordination centres and rescue subcentres**

*Note 1. — The Kuala Lumpur and Kota Kinabalu rescue coordination centres (RCCs) have been established to provide SAR services for Kuala Lumpur and Kota Kinabalu SRRs respectively. Both RCCs are located adjacent to their associated air traffic control centres.*

*Note 2. — The Butterworth Rescue Subcentre (RSC) and Kuantan RSC have been established to support the Kuala Lumpur RCC while the Kuching RSC and Labuan RSC are for the Kota Kinabalu RCC.*

- 2.3.1. Each RCC and, as appropriate, RSC, shall be staffed 24 hours a day by trained personnel proficient in the use of the language used for radiotelephony communications.
- 2.3.2. RCC personnel involved in the conduct of radiotelephony communications shall be proficient in the use of the English language.
- 2.3.3. In areas where public telecommunications facilities would not permit persons observing an aircraft in emergency to notify the RCC concerned directly and promptly, the SAR organisation shall designate suitable units of public or private services as alerting posts.

## **2.4 SAR communications**

- 2.4.1. Each RCC shall have means of rapid and reliable two-way communication with:
- a) associated air traffic services units;
  - b) associated RSCs;
  - c) appropriate direction-finding and position-fixing stations;



- d) where appropriate, coastal radio stations capable of alerting and communicating with surface vessels in the region;
- e) the headquarters of search and rescue units in the region;
- f) all maritime RCCs in the region and aeronautical, maritime or joint RCCs in adjacent regions;
- g) a designated meteorological office or meteorological watch office;
- h) SAR units;
- i) alerting posts; and
- j) the Cospas-Sarsat Mission Control Centre servicing the search and rescue region.

*Note. — Maritime RCCs are identified in relevant documents of the International Maritime Organisation.*

2.4.2. Each RSC shall have means of rapid and reliable two-way communication with:

- a) adjacent RSC;
- b) a meteorological office or meteorological watch office;
- c) SAR units; and
- d) alerting posts.

## **2.5 SAR units**

2.5.1. The SAR organisation shall designate as SAR units elements of public or private services suitably located and equipped for SAR operations.

*Note. — The minimum units and facilities necessary for provision of SAR operations within a SRR are determined by regional air navigation agreements and are specified in the appropriate Air Navigation Plan and Facilities and Services Implementation Document publications.*

2.5.2. The SAR organisation shall designate as parts of the SAR plan of operation, elements of public or private services that do not qualify as search and rescue units but are nevertheless able to participate in SAR operations.

## **2.6 SAR equipment**

2.6.1. SAR units shall be provided with equipment for locating promptly, and for providing adequate assistance at, the scene of an accident.

2.6.2. Each SAR unit shall have means of rapid and reliable two-way communication with other SAR facilities engaged in the same operation.

2.6.3. Each SAR aircraft shall be equipped to be able to communicate on the aeronautical distress and on-scene frequencies and on such other frequencies as may be prescribed.

2.6.4. Each SAR aircraft shall be equipped with a device for homing on distress frequencies.

*Note 1. — Emergency locator transmitter (ELT) carriage requirements are given in CAD 6, Parts I, II and III.*

*Note 2. — Specifications for ELTs are given in CAD 10, Volume III.*

*Note 3. — The requirements for 406MHz Emergency Distress Beacon are available in CAD 10, Volume III, Part II*

2.6.5. Each SAR aircraft, when used for SAR over maritime areas, shall be equipped to be able to communicate with vessels.

*Note. — Many vessels can communicate with aircraft on 2182 kHz, 4125 kHz and 121.5 MHz. However, these frequencies, and in particular 121.5 MHz, may not be routinely monitored by vessels.*

2.6.6. Each SAR aircraft, when used for SAR over maritime areas shall carry a copy of the *International Code of Signals* to enable it to overcome language difficulties that may be experienced in communicating with ships.

*Note. — The International Code of Signals is published in English, French and Spanish by the International Maritime Organisation as documents I994E, I995F and I996S.*

2.6.7. Unless it is known that there is no need to provide supplies to survivors by air, at least one of the aircraft participating in a SAR operation shall carry droppable survival equipment.

2.6.8. Where applicable, SAR organisation shall locate, at appropriate aerodromes, survival equipment suitably packed for dropping by aircraft.

## **2.7 SAR manual**

2.7.1. The SAR organisation shall develop and maintain a SAR operation manual. The operations manual shall serve to demonstrate how the SAR organisation will comply with the requirements set out in these Directives.

2.7.2. The contents of the operations manual shall include but not limited to the following:

a) the information required of the SAR organisation as mentioned in this document; and

b) a description of the SAR organisation that shows the role, responsibilities and job functions of the search and rescue personnel who are responsible for ensuring the compliance of the organisation with the requirements in subparagraph a).

- 2.7.3. The SAR organisations shall:
- a) keep the operations manual in a readily accessible form;
  - b) ensure that SAR personnel have ready access to the operations manual; and
  - c) amend the operations manual whenever necessary to keep its content up to date.
- 2.7.4. The SAR organisations shall submit a copy of the most current operations manual to the SAR regulator.

## **2.8 SAR personnel**

- 2.8.1. With respect to the qualification and training of SAR personnel, the SAR organisations shall establish procedures to ensure that all its personnel including the SAR unit staff, possess the skills and competencies required in the provision of its SAR services.
- 2.8.2. The SAR organisations shall ensure that training policy and programme for the SAR organisations and SAR unit technical personnel including, when applicable, initial, recurrent and specialised training are established.
- 2.8.3. The SAR organisations shall ensure that the SAR organisations and SAR unit technical personnel undergo a suitable period of supervised on-the-job training before being tasked for duties.
- 2.8.4. A job description shall be developed for the technical staff. Initial and periodic assessment shall be established to demonstrate the required competencies.

## **2.9 Guidance Materials**

- 2.9.1. The SAR organisations shall ensure that relevant ICAO documents and other technical and regulatory publications are readily available to all SAR technical staff at the RCCs and RSCs at a minimum:
- a) ICAO Annex 12;
  - b) IAMSAR Manual Volumes I, II and III;
  - c) SOLAS;
  - d) National SAR Plan Manual/Handbook for Malaysia; and
  - e) Asia/Pacific SAR Plan.
- 2.9.2. A technical library shall be available, to include any method to ensure receipt, control and distribution of the necessary technical documentation. The library shall be kept and maintained to ensure the currency of the documentation.

## **2.10 Records**

- 2.10.1. The SAR organisations shall maintain documents and records of operation and maintenance of the training, service and operations. These documents shall include, but not limited to:
- a) record of malfunction or fault of critical safety facilities and equipment;
  - b) record of SAR exercises and operations;
  - c) record of training programme and plan for each SAR technical staff;
  - d) record and copy of certificates of all related trainings for each staff including where applicable, initial, OJT, recurrent and specialised training; and
  - e) record of initial and periodic assessment for each SAR technical staff.

## **3 Cooperation**

### **3.1 Cooperation between States**

- 3.1.1. The SAR organisations shall coordinate their search and rescue organisations with those of neighbouring States.
- 3.1.2. The SAR organisation shall, whenever necessary, coordinate their search and rescue operations with those of neighbouring States especially when these operations are proximate to adjacent SRRs.
- 3.1.2.1. The SAR organisation shall, in so far as practicable, develop common search and rescue plans and procedures to facilitate coordination of search and rescue operations with those of neighbouring States.
- 3.1.3. Subject to such conditions as may be prescribed by the Malaysian Government, the Kuala Lumpur and Kota Kinabalu RCCs shall permit immediate entry of the first sortie for a SAR mission into its SRR of SAR units of other States. The subsequent sorties shall be made via the established channel that has been agreed and formalised with the designated authorities.
- 3.1.4. The authorities of a Contracting State who wish their SAR units to enter the territory of another Contracting State for SAR purposes shall transmit a request, giving full details of the projected mission and the need for it, to the rescue coordination centre of the State concerned or to such other authority as has been designated by that State.
- 3.1.4.1. The designated authorities shall:
- a) immediately acknowledge the receipt of such a request, and
  - b) as soon as possible, indicate the conditions, if any, under which the projected mission may be undertaken.
- 3.1.5. The SAR organisation shall enter into agreements with neighbouring States to strengthen SAR cooperation and coordination, setting forth the conditions for entry of each other's search and rescue units into their respective territories. These agreements should also provide for expediting entry of such units with the least possible formalities.
- 3.1.6. Each SAR organisation shall:
- a) request from other RCCs such assistance, including aircraft, vessels, persons or equipment, as may be needed;
  - b) grant any necessary permission for the entry of such aircraft, vessels, persons or equipment into its territory; and
  - c) make the necessary arrangements with the appropriate customs, immigration or other authorities with a view to expediting such entry.

- 3.1.7. Each SAR organisation shall when requested, provide assistance to other RCCs, including assistance in the form of aircraft, vessels, persons or equipment.
- 3.1.8. The SAR organisation shall make arrangements for joint training exercises involving their SAR units, those of other States and operators, in order to promote SAR efficiency.
- 3.1.9. The SAR organisation shall make arrangements for periodic liaison visits by personnel of their RCCs and RSCs to the centres of neighbouring States.

### **3.2 Cooperation with other services**

- 3.2.1. The SAR organisation shall arrange for all aircraft, vessels and local services and facilities which do not form part of the SAR organisation to cooperate fully with the latter in SAR and to extend any possible assistance to the survivors of aircraft accidents.
- 3.2.2. The SAR organisation shall ensure the closest practicable coordination with the maritime authorities to provide for the most effective and efficient SAR services.
- 3.2.3. The SAR organisation shall ensure that their SAR services cooperate with those responsible for investigating accidents and with those responsible for the care of those who suffered from the accident.
- 3.2.4. To facilitate accident investigation, rescue units shall, when practicable, be accompanied by persons qualified in the conduct of aircraft accident and investigations.
- 3.2.5. The Kuala Lumpur RCC has been designated as a SAR point of contact for the receipt of Cospas-Sarsat distress data.

### **3.3 Dissemination of information**

- 3.3.1. The SAR organisation shall publish and disseminate all information necessary for the entry of SAR units of other States into its territory or, alternatively, include this information in SAR service arrangements.
- 3.3.2. When such information could benefit the provision of SAR services, the SAR organisation shall make available, through the RCCs or other agencies, information regarding their SAR plans of operation.
- 3.3.3. The SAR organisation shall, to the extent desirable and practicable, disseminate information to the general public and emergency response authorities regarding actions to be taken when there is reason to believe that an aircraft's emergency situation may become cause for public concern or require a general emergency response.

## 4 Preparatory Measures

### 4.1 Preparatory information

- 4.1.1. Each RCC shall have readily available at all times up-to-date information concerning the following in respect of its SRR:
- a) SAR units, RSC and alerting posts;
  - b) air traffic services units;
  - c) means of communication that may be used in search and rescue operations;
  - d) addresses and telephone numbers of all operators, or their designated representatives, engaged in operations in the region; and
  - e) any other public and private resources including medical and transportation facilities that are likely to be useful in search and rescue.

- 4.1.2. Each RCC shall have readily available all other information of interest to SAR, including information regarding:
- a) the locations, call signs, hours of watch, and frequencies of all radio stations likely to be employed in support of SAR operations;
  - b) the locations and hours of watch of services keeping radio watch, and the frequencies guarded;
  - c) locations where supplies of droppable emergency and survival equipment are stored; and
  - d) objects which it is known might be mistaken for unlocated or unreported wreckage, particularly if viewed from the air.

- 4.1.3. Each RCC whose SRR includes maritime areas shall have ready access to information regarding the position, course and speed of ships within such areas that may be able to provide assistance to aircraft in distress and information on how to contact them.

*Note. — This information may either be kept in the RCCs or be readily accessible*

- 4.1.4. The SAR organisation shall, individually or in cooperation with other States, either establish ship reporting systems in cooperation with maritime authorities or arrange communication links with Amver or regional ship reporting systems to facilitate SAR at sea.

*Note. — Amver is a cooperative international ship reporting system with worldwide coverage that is available for interrogation by all RCCs. A number of Contracting States also operate regional ship reporting systems.*

## 4.2 Plans of operation

- 4.2.1. Each RCC shall prepare detailed plans of operation for the conduct of SAR operations within its SRR.
- 4.2.2. SAR plans of operations shall be developed jointly with representatives of the operators and other public or private services that may assist in providing SAR services or benefit from them, taking into account that the number of survivors could be large.
- 4.2.3. The plans of operation shall specify arrangements for the servicing and refuelling, to the extent possible, of aircraft, vessels and vehicles employed in search and rescue operations, including those made available by other States.
- 4.2.4. The SAR plans of operation shall contain details regarding actions to be taken by those persons engaged in SAR, including:
- a) the manner in which SAR operations are to be conducted in the SRR;
  - b) the use of available communication systems and facilities;
  - c) the actions to be taken jointly with other RCCs;
  - d) the methods of alerting en-route aircraft and ships at sea;
  - e) the duties and prerogatives of persons assigned to search and rescue;
  - f) the possible redeployment of equipment that may be necessitated by meteorological or other conditions;
  - g) the methods for obtaining essential information relevant to SAR operations, such as weather reports and forecasts, appropriate NOTAM, etc.;
  - h) the methods for obtaining, from other RCCs, such assistance, including aircraft, vessels, persons or equipment, as may be needed;
  - i) the methods for assisting distressed aircraft being compelled to ditch to rendezvous with surface craft;
  - j) the methods for assisting SAR or other aircraft to proceed to aircraft in distress; and
  - k) cooperative actions to be taken in conjunction with air traffic services units and other authorities concerned to assist aircraft known or believed to be subject to unlawful interference.
- 4.2.5. SAR plans of operation shall be integrated with airport emergency plans to provide for rescue services in the vicinity of aerodromes including, for coastal aerodromes, areas of water.



### **4.3 SAR units**

4.3.1. Each SAR unit shall:

- a) be cognizant of all parts of the plans of operation prescribed in 4.2 that are necessary for the effective conduct of its duties; and
- b) keep the RCC informed of its preparedness.

4.3.2. The SAR organisation shall:

- a) maintain in readiness the required number of SAR facilities; and
- b) maintain adequate supplies of rations, medical stores, signalling devices and other survival and rescue equipment. To achieve and maintain maximum efficiency in SAR, the SAR organisation shall provide for regular training of their SAR personnel and arrange appropriate search and rescue exercises (SAREXES).

### **4.4 Training and exercises**

4.4.1. To achieve and maintain maximum efficiency in SAR, the SAR organisations shall provide for regular training of their SAR personnel and arrange appropriate SAREXES.

### **4.5 Wreckage**

4.5.1. Each SAR organisation shall ensure that wreckage resulting from aircraft accidents within its territory or, in the case of accidents on the high seas or in areas of undetermined sovereignty, within the SRRs for which it is responsible, is removed, obliterated or charted following completion of the accident investigation, if its presence might constitute a hazard or confuse subsequent SAR operations.



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## **5 Operating Procedures**

### **5.1 Information concerning emergencies**

- 5.1.1. Any authority or any element of the SAR organisation having reason to believe that an aircraft is in an emergency shall give immediately all available information to the RCC concerned.
- 5.1.2. RCCs shall, immediately upon receipt of information concerning aircraft in emergency, evaluate such information and assess the extent of the operation required.
- 5.1.3. When information concerning aircraft in emergency is received from other sources than air traffic services units, the RCC shall determine to which emergency phase the situation corresponds and shall apply the procedures applicable to that phase.

### **5.2 Procedures for RCCs during emergency phases**

#### **5.2.1. Uncertainty phase**

- 5.2.1.1. Upon the occurrence of an uncertainty phase, the RCC shall cooperate to the utmost with air traffic services units and other appropriate agencies and services in order that incoming reports may be speedily evaluated.

#### **5.2.2. Alert phase**

- 5.2.2.1. Upon the occurrence of an alert phase the RCC shall immediately alert SAR units and initiate any necessary action.

#### **5.2.3. Distress phase**

- 5.2.3.1. Upon the occurrence of a distress phase, the RCC shall:
  - a) immediately initiate action by SAR units in accordance with the appropriate plan of operation;
  - b) ascertain the position of the aircraft, estimate the degree of uncertainty of this position, and, on the basis of this information and the circumstances, determine the extent of the area to be searched;
  - c) notify the operator, where possible, and keep the operator informed of developments;
  - d) notify other RCCs, the help of which seems likely to be required, or which may be concerned in the operation;
  - e) notify the associated air traffic services unit, when the information on the emergency has been received from another source;

- f) request at an early stage such aircraft, vessels, coastal stations and other services not specifically included in the appropriate plan of operation and able to assist to:
    - 1) maintain a listening watch for transmissions from the aircraft in distress, survival radio equipment or an ELT;
- Note. — The frequencies contained in the specifications for ELTs given in CAD 10, Volume III, are 121.5 MHz and 406 MHz*
- 2) assist the aircraft in distress as far as practicable; and
  - 3) inform the RCC of any developments;
- g) from the information available, draw up a detailed plan of action for the conduct of the search and/or rescue operation required and communicate such plan for the guidance of the authorities immediately directing the conduct of such an operation;
  - h) amend as necessary, in the light of evolving circumstances, the detailed plan of action;
  - i) notify the appropriate accident investigation authorities; and
  - j) notify the State of Registry of the aircraft.

The order in which these actions are described shall be followed unless circumstances dictate otherwise.

5.2.4. Initiation of SAR action in respect of an aircraft whose position is unknown In the event that an emergency phase is declared in respect of an aircraft whose position is unknown and may be in one of two or more search and rescue regions, the following shall apply:

- a) When a RCC is notified of the existence of an emergency phase and is unaware of other centres taking appropriate action, it shall assume responsibility for initiating suitable action in accordance with 5.2 and confer with neighbouring RCCs with the objective of designating one RCC to assume responsibility forthwith.
- b) Unless otherwise decided by common agreement of the RCCs concerned, the RCC to coordinate SAR action shall be the centre responsible for:
  - 1) the region in which the aircraft last reported its position; or
  - 2) the region to which the aircraft was proceeding when its last reported position was on the line separating two SRRs; or
  - 3) the region to which the aircraft was destined when it was not equipped with suitable two-way radio communication or not under obligation to maintain radio communication; or
  - 4) the region in which the distress site is located as identified by the Cospas-Sarsat system.

- c) After declaration of the distress phase, the RCC with overall coordination responsibility shall inform all RCCs that may become involved in the operation of all the circumstances of the emergency and subsequent developments.

Likewise, all RCCs becoming aware of any information pertaining to the emergency shall inform the RCC that has overall responsibility.

- 5.2.5. Passing of information to aircraft in respect of which an emergency phase has been declared. Whenever applicable, the RCC responsible for SAR action shall forward to the air traffic services unit serving the FIR in which the aircraft is operating, information of the SAR action initiated, in order that such information can be passed to the aircraft.

### **5.3 Procedures where responsibility for operations extends to two or more Contracting States**

- 5.3.1. Where the conduct of operations over the entire SRR is the responsibility of more than one Contracting State, each involved State shall take action in accordance with the relevant plan of operations when so requested by the RCC of the region.

### **5.4 Procedures for authorities in the field**

- 5.4.1. The authorities immediately directing the conduct of operations or any part thereof shall:
  - a) give instructions to the units under their direction and inform the RCC of such instructions; and
  - b) keep the RCC informed of developments.

### **5.5 Procedures for RCCs — termination and suspension of operations**

- 5.5.1. SAR operations shall continue, when practicable, until all survivors are delivered to a place of safety or until all reasonable hope of rescuing survivors has passed.
- 5.5.2. The responsible RCC shall normally be responsible for determining when to discontinue SAR operations.
- 5.5.3. When a SAR operation has been successful or when a RCC considers, or is informed, that an emergency no longer exists, the emergency phase shall be cancelled, the SAR operation shall be terminated and any authority, facility or service that has been activated or notified shall be promptly informed.
- 5.5.4. If a SAR operation becomes impracticable and the RCC concludes that there might still be survivors, the centre shall temporarily suspend on-scene activities pending further developments and shall promptly inform any authority, facility or service which has been activated or notified. Relevant information subsequently received shall be evaluated and SAR operations resumed when justified and practicable.

## 5.6 Procedures at the scene of an accident

- 5.6.1. When multiple facilities are engaged in SAR operations on-scene, the RCC or RSC shall designate one or more units on-scene to coordinate all actions to help ensure the safety and effectiveness of air and surface operations, taking into account facility capabilities and operational requirements.
- 5.6.2. When a pilot-in-command observes that either another aircraft or a surface craft is in distress, the pilot shall, if possible and unless considered unreasonable or unnecessary:
- a) keep the craft in distress in sight until compelled to leave the scene or advised by the RCC that it is no longer necessary;
  - b) determine the position of the craft in distress;
  - c) as appropriate, report to the RCC or air traffic services unit as much of the following information as possible:
    - 1) type of craft in distress, its identification and condition;
    - 2) its position, expressed in geographical or grid coordinates or in distance and true bearing from a distinctive landmark or from a radio navigation aid;
    - 3) time of observation expressed in hours and minutes Coordinated Universal Time (UTC);
    - 4) number of persons observed;
    - 5) whether persons have been seen to abandon the craft in distress;
    - 6) on-scene weather conditions;
    - 7) apparent physical condition of survivors;
    - 8) apparent best ground access route to the distress site; and
  - d) act as instructed by the RCC or the air traffic services unit.
- 5.6.2.1. If the first aircraft to reach the scene of an accident is not a search and rescue aircraft, it shall take charge of on-scene activities of all other aircraft subsequently arriving until the first SAR aircraft reaches the scene of the accident. If, in the meantime, such aircraft is unable to establish communication with the appropriate RCC or air traffic services unit, it shall, by mutual agreement, hand over to an aircraft capable of establishing and maintaining such communications until the arrival of the first SAR aircraft.
- 5.6.3. When it is necessary for an aircraft to convey information to survivors or surface rescue units, and two-way communication is not available, it shall, if practicable, drop communication equipment that would enable direct contact to be established, or convey the information by dropping a hard copy message.
- 5.6.4. When a ground signal has been displayed, the aircraft shall indicate whether the signal has been understood or not by the means described in 5.6.3 or, if this is not practicable, by making the appropriate visual signal.

- 5.6.5. When it is necessary for an aircraft to direct a surface craft to the place where an aircraft or surface craft is in distress, the aircraft shall do so by transmitting precise instructions by any means at its disposal. If no radio communication can be established, the aircraft shall make the appropriate visual signal.

*Note.* — *Air-to-surface and surface-to-air visual signals are published in Volume III of Doc 9731.*

## **5.7 Procedures for a pilot-in-command intercepting a distress transmission**

- 5.7.1. Whenever a distress transmission is intercepted by a pilot-in-command of an aircraft, the pilot shall, if feasible:
- a) acknowledge the distress transmission;
  - b) record the position of the craft in distress if given;
  - c) take a bearing on the transmission;
  - d) inform the appropriate RCC or air traffic services unit of the distress transmission, giving all available information; and
  - e) at the pilot's discretion, while awaiting instructions, proceed to the position given in the transmission.

## **5.8 SAR signals**

- 5.8.1. The air-to-surface and surface-to-air visual signals in Appendix 1 shall, when used, have the meaning indicated therein. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.
- 5.8.2. Upon observing any of the signals in Appendix 1, aircraft shall take such action as may be required by the interpretation of the signal given in Appendix 1.

## **5.9 Maintenance of records**

- 5.9.1. Each RCC shall keep a record of the operational efficiency of the SAR organisation in its region.
- 5.9.2. Each RCC shall prepare appraisals of actual SAR operations in its region. These appraisals shall comprise any pertinent remarks on the procedures used and on the emergency and survival equipment, and any suggestions for improvement of those procedures and equipment. Those appraisals which are likely to be of interest to other States shall be submitted to the regulator for information and dissemination as appropriate.



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## 6 Appendices

### 6.1 Appendix 1 – Search and Rescue Signals

(Note. — See Chapter 5, 5.8)

#### 1 Signals with surface craft

1.1 The following manoeuvres performed in sequence by an aircraft mean that the aircraft wishes to direct a surface craft towards an aircraft or a surface craft in distress:

- a) circling the surface craft at least once;
- b) crossing the projected course of the surface craft close ahead at low altitude and:
  - 1) rocking the wings; or
  - 2) opening and closing the throttle; or
  - 3) changing the propeller pitch.

*Note. — Due to high noise level on board surface craft, the sound signals in 2) and 3) may be less effective than the visual signal in 1) and are regarded as alternative means of attracting attention.*

- c) heading in the direction in which the surface craft is to be directed.

Repetition of such manoeuvres has the same meaning.

1.2 The following manoeuvres by an aircraft means that the assistance of the surface craft to which the signal is directed is no longer required:

- a) crossing the wake of the surface craft close astern at a low altitude and:
  - 1) rocking the wings; or
  - 2) opening and closing the throttle; or
  - 3) changing the propeller pitch.

*Note. — The following replies may be made by surface craft to the signal in 1.1:*

*— for acknowledging receipt of signals:*

- 1) *the hoisting of the “code pennant” (vertical red and white stripes) close up (meaning understood);*
- 2) *the flashing of a succession of “T’s” by signal lamp in the Morse code;*
- 3) *the changing of heading to follow the aircraft.*

*— for indicating inability to comply:*

- 1) *the hoisting of the international flag “N” (a blue and white checkered square);*
- 2) *the flashing of a succession of “N’s” in the Morse code.*


*Note. — See Note following 1.1 b), 3).*

## 2 Ground-air visual signal code

### 2.1 Ground-air visual signal code for use by survivors

No.	Message	Code symbol
1	Require assistance	V
2	Require medical assistance	X
3	No or Negative	N
4	Yes or Affirmative	Y
5	Proceeding in this direction	↑

### 2.2 Ground-air visual signal code for use by rescue units

No.	Message	Code symbol
1	Operation completed	LLL
2	We have found all personnel	<u>LL</u>
3	We have found only some personnel	++
4	We are not able to continue. Returning to base	XX
5	Have divided into two groups. Each proceeding in direction indicated	
6	Information received that aircraft is in this direction	→→
7	Nothing found. Will continue to search	NN

2.3 Symbols shall be at least 2.5 metres (8 feet) long and shall be made as conspicuous as possible.

*Note 1. — Symbols may be formed by any means such as: strips of fabric, parachute material, pieces of wood, stones or such like material; marking the surface by tramping, or staining with oil.*

*Note 2. — Attention to the above signals may be attracted by other means such as radio, flares, smoke and reflected light.*



**3 Air-to-ground signals**

- 3.1 The following signals by aircraft mean that the ground signals have been understood:
- a) during the hours of daylight:
    - 1) by rocking the aircraft's wings;
  - b) during the hours of darkness:
    - 1) flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.
- 3.2 Lack of the above signal indicates that the ground signal is not understood.



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