

UK Helicopter Search and Rescue (SAR) National Approval Guidance

CAP 999



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Foreword

Introduction

This CAP has been published to assist organisations in determining procedures and Operations Manual guidance to operate civil search and rescue helicopters in the UK.

Gender

References to the masculine gender used for convenience in this document apply equally to the feminine gender, where appropriate.

Abbreviations and definitions

Abbreviations

| | |
|-----------------|---|
| AED | Automated External Defibrillator |
| AMC | Acceptable Means of Compliance |
| AME | Aero Medical Examiner |
| ANO | Air Navigation Order |
| AOC | Air Operator's Certificate |
| ARCC | Aeronautical Rescue Coordination Centre |
| ATPL | Airline Transport Pilot's Licence |
| ATS | Air Traffic Services |
| CAA | Civil Aviation Authority |
| CAP | Civil Aviation Publication |
| CAT | Commercial Air Transport |
| CPL | Commercial Pilot's Licence |
| CRM | Crew Resource Management |
| DfT | Department for Transport |
| EASA | European Aviation Safety Agency |
| EASA Ops | EASA Air Operations Regulation |
| EU | European Union |
| FC | Flight Crew |
| FTL | Flight Time Limitations |
| HEMS | Helicopter Emergency Medical Services |
| HHO | Helicopter Hoist Operations |
| IAMSAR | International Aeronautical and Maritime Search and Rescue |
| IDE | Instruments, data, equipment |
| JRCC | Joint Rescue Coordination Centre |
| LIMSAR | Limited Search and Rescue |
| LVO | Low Visibility Operations |
| MCA | Maritime and Coastguard Agency |
| Medevac | Medical Evacuation |
| MEL | Minimum Equipment List |

| | |
|-----------------|---|
| MLR | Manual, Logs and Records |
| MRCC | Maritime Rescue Coordination Centre |
| MRT | Mountain Rescue Team |
| NAA | National Aviation Authority |
| NVIS | Night Vision Imaging Systems |
| Part-CAT | EASA Ops Annex IV - Commercial Air Transport Operations |
| Part-FCL | EASA Aircrew Regulation Annex I - Flight Crew Licensing |
| Part-ORO | EASA Ops Annex III - Organisation Requirements for Air Operations |
| Part-SPA | EASA Ops Annex V - Specific Approvals |
| Part-SPO | EASA Ops Annex VIII - Specialised Operations |
| PT | Public Transport |
| RNLI | Royal National Lifeboat Institution |
| SAR | Search and Rescue |
| SOLAS | Safety of Life at Sea |
| TC | Technical Crew |
| UKSRR | UK SAR Region |
| UNCLOS | United Nations Convention on the Law of the Sea |
| VFR | Visual Flight Rules |
| VMC | Visual Meteorological Conditions |

Definitions for use in CAP 999

For the purpose of this CAP the following definitions apply:

Ground/Maritime Emergency Service Personnel Any ground emergency service personnel (such as HM Coastguard, Royal National Lifeboat Institution (RNLI), police, fire, ambulance, Mountain Rescue Team (MRT), Armed Forces personnel, etc.) involved with SAR and whose tasks are to any extent pertinent to helicopter SAR operations.

Limited Search and Rescue (LIMSAR) A temporary degradation of an all-weather SAR asset due to unserviceable SAR related equipment that reduces the capability of the asset which is controlled through an approved minimum equipment list (MEL); or a temporary reduction of crew qualification or currency (as described in the operations manual).

Medical evacuation (Medevac) Evacuation of a person for medical reasons.

Place of Safety A place where a survivor or SAR passenger may be delivered after rescue or recovery at which there are additional services or where the prevailing circumstances are not perceived to be life-threatening.

Search and Rescue The all-weather activity of responding to tasking related to locating and recovering persons in distress, potential distress or missing, delivering them to a place of safety and recovering to an operational base.

- **Search** – An operation normally managed by the Aeronautical Rescue Coordination Centre (ARCC), Maritime Rescue Coordination Centre (MRCC) or Joint Rescue Coordination Centre (JRCC) using available personnel, facilities and equipment to locate persons in distress.
- **Rescue** – An operation to retrieve persons in distress, provide for their initial medical or other needs and deliver them to a place of safety.

SAR Crew The members of crew required to operate a helicopter on a SAR flight, i.e. flight crew – commander/co-pilot, SAR technical crew members – winch operator/winchman; or that combination stated in the company operations manual.

SAR Flight Generic term for a flight conducted under a SAR approval i.e. SAR operational flight or SAR training flight.

SAR Operating Base An aerodrome at which the SAR crew and the SAR helicopter are normally on stand-by for SAR operations.

SAR Operating Site (on scene) The position of the survivor(s) or a site selected by the commander for the purpose of conducting a rescue.

SAR Operational Flight A flight by a helicopter operating under a SAR Approval when tasked by the SAR Tasking Agency, the purpose of which is to locate and deliver to a place of safety persons in distress and recover to base. Procedures for the control and management of the tasking process are to be established and maintained with the SAR tasking agency.

SAR Passenger A person other than SAR crew carried during a SAR flight whose function is relevant to the task/flight, who is one of the following:

- specialist rescue or life-saving personnel;
- medical personnel;
- ill or injured persons and other persons directly involved;
- survivors;
- ground/maritime emergency service personnel; and
- other persons as approved by the CAA.

SAR Service The performance of distress monitoring, communication, coordination and search and rescue functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installations.

SAR Tasking Agency A place where the launch and co-ordination or control of the SAR service takes place, e.g. Aeronautical Rescue Co-ordination Centre.

SAR Technical Crew A member of the SAR crew (e.g. winch operator, winchman) other than flight crew who is assigned to a helicopter SAR flight for the purpose of operating specific aircraft and role equipment, assisting the flight crew during the mission and attending to any person in need of medical assistance.

SAR Training Flight A flight conducted for the purpose of training a SAR crew. This includes initial, recurrent and advanced SAR training as defined by the operator and approved by the CAA.

Survivor Person in potential or actual distress, to whom the SAR operational flight is intended to render assistance.

Chapter 1

General information

Introduction

- 1.1 The organisation for civil maritime and civil aviation Search and Rescue (SAR) in the UK is derived from the UK Government's adherence to the United Nations Convention on the Law of the Sea (UNCLOS); the Convention on Safety of Life at Sea (SOLAS), 1974; the Maritime Search and Rescue Convention (1979) and the Convention on International Civil Aviation (Chicago 1944, Annex 12).
- 1.2 The UK SAR responsibility for ships, aircraft and persons, whether civilian or military, covers the UK SAR Region (UKSRR). Responsibility for civil aeronautical and maritime SAR policy rests with the Department for Transport (DfT). As such, the DfT is responsible, through the UK SAR Strategic Committee, for assessing the adequacy of UK civil aeronautical and maritime SAR resources, response and co-ordination.
- 1.3 The UK SAR organisation is a combination of separate government departments, the emergency services and other organisations. Voluntary and commercial ventures that are not nationally declared assets but may be called upon by national authorities also play a significant role.
- 1.4 The functions of declared SAR units are:
 - to provide assistance to persons, vessels and aircraft in distress; and
 - to deliver survivors to a place of safety or where further assistance can be rendered.
- 1.5 The terminology in this Civil Aviation Publication (CAP) follows that established in Regulation (EU) No. 965/2012 Air Operations Regulation (EASA Ops).
- 1.6 SAR operators should refer to the requirements established in EASA Ops for all aspects of helicopter operations not covered by this CAP.

Chapter 2

Legal requirements

Helicopter SAR operations

- 2.1 Search and Rescue is a State activity and therefore not regulated under EU law; it is consequently regulated by National Aviation Authorities (NAAs). In the UK, operation of civil helicopters for SAR is considered to be for the purposes of Public Transport (PT) and therefore subject to Article 12 of the Air Navigation Order (ANO) 2009 requiring a national Air Operator's Certificate (AOC).
- 2.2 An operator holding an AOC granted under EASA Ops (EASA AOC) is deemed to meet all of the requirements to hold a national AOC.
- 2.3 In addition to an AOC, a SAR operator will have a national SAR approval. A SAR approval will be granted based on the requirements contained in the ANO, the relevant European and National operating requirements and the guidance in this CAP.
- 2.4 Flights not operated under a SAR approval are to be operated to CAT/PT standards in accordance with EASA/ANO regulations.
- 2.5 The operator remains fully responsible for the control and oversight of its operations under any SAR tasking.

Specific approvals

National Search and Rescue approval

- 2.6 Helicopters may only conduct SAR flights if the operator has been approved by the Civil Aviation Authority (CAA).
- 2.7 To obtain a national SAR approval the operator will:
1. hold a PT AOC or an EASA AOC;
 2. demonstrate to the CAA compliance with the guidance detailed in this CAP; and
 3. hold a Helicopter Hoist Operations (HHO) Approval in accordance with Part-SPA Subpart I.

Additional approvals

Night Vision Imaging Systems (NVIS) approval

- 2.8 Helicopters may only be operated under VFR at night with the aid of NVIS if the operator has been approved by the CAA.

- 2.9 To obtain a NVIS approval the operator will:
1. hold a PT AOC in accordance with Article 12 of the ANO or a Commercial Air Transport (CAT) AOC in accordance with Part-ORO; and
 2. demonstrate to the CAA compliance with Part-SPA Subpart H.

LVO approval

- 2.10 Helicopters may only conduct low visibility operations if the operator has been approved by the CAA.
- 2.11 To obtain a LVO approval the operator will demonstrate to the CAA compliance with Part-SPA Subpart E.

HEMS approval

- 2.12 Helicopters may only be operated for the purpose of HEMS operations if the operator has been approved by the CAA.
- 2.13 To obtain a HEMS approval the operator will:
1. hold an EASA AOC in accordance with Part-ORO; and
 2. demonstrate to the CAA compliance with Part-SPA Subpart J.

Flight Time Limitations

- 2.14 The operator is to establish and maintain a Flight Time Limitation (FTL) scheme adapted for SAR as approved by the CAA.

Permissions and exemptions

- 2.15 Each SAR operator should request relevant permissions and exemptions from the regulations as appropriate to their SAR operational or training requirements. These will constitute the substance of the SAR approval.

Chapter 3

Operating requirements

Operations manual

- 3.1 The Operations Manual is to contain all instructions and information necessary for operational personnel to perform their SAR duties.
- 3.2 The structure of the manual is to be in accordance with EASA Ops AMC3 ORO.MLR.100.
- 3.3 The manual will describe the management and supervision of SAR flights and the procedures used for the initiation, continuation, termination and diversion of a SAR operational flight.
- 3.4 The operator is to establish a method of recording which flights are conducted under the SAR approval, public transport/commercial air transportation, non-commercial or Part-SPO regulations.

Performance requirements

- 3.5 SAR operational flights should operate to the highest possible performance standard.
- Helicopters conducting operations to/from a heliport at a hospital that is located in a hostile congested environment are to be operated in accordance with Performance Class 1.
 - Helicopters conducting operations to/from a SAR operating site located in a hostile environment are, as far as possible, to be operated in accordance with Performance Class 2. The commander is to make every reasonable effort to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of failure of a power unit.
 - The SAR operating site must be large enough to provide adequate clearance from all obstructions. For night operations, the site must be illuminated (from the ground or from the helicopter) to enable the site and any obstructions to be identified. Equivalent procedures are to be laid down for NVIS operations if applicable.
- 3.6 Guidance on take-off and landing procedures at previously unsurveyed SAR operating sites are to be contained in the Operations Manual.
- 3.7 Operations in accordance with defined Performance Classes are applicable to all other phases of flight.

The SAR crew

3.8 In addition to the requirements of Part-ORO, Subpart FC, the following apply to SAR operations:

1. **Selection**

The Operations Manual is to contain specific criteria for the selection of SAR crew.

2. **Crew qualifications and experience**

a) **Qualification**

Each member of the flight crew should have an applicable and valid licence (Commercial Pilot's Licence (CPL) or Airline Transport Pilot's Licence (ATPL) as appropriate to national requirement(s) and instrument rating.

b) **Experience**

- i) The minimum experience level for commanders conducting SAR flights is not to be less than 1,000 hours as pilot-in-command of aircraft of which 500 hours is as pilot-in-command on helicopters.
- ii) Minimum winching experience should be based on HHO experience in accordance with Part- SPA Subpart I (HHO).
- iii) Commanders engaged in night operations should have 20 hours' VFR at night as pilot-in-command.
- iv) The crew should have successfully completed the operator's approved training and checking programme.
- v) Operators are to establish in the Operations Manual minimum experience and recency levels for all SAR crew.

c) **Crew composition**

The operator will ensure that the composition of the SAR crew is in compliance with the Helicopter Flight Manual and that the Operations Manual reflects the requirements for SAR as agreed by the CAA.

SAR operating minima

3.9 The operator is to specify the minima appropriate to SAR operational flights, SAR training flights and any other categories of flight (e.g. air tests, positioning, demonstration flights).

3.10 Operating minima for the dispatch and continuation of a SAR operational flight are at the discretion of the aircraft commander. However, he is to consider the

urgency of the task, crew and aircraft capability and the requirement to recover the aircraft safely.

Fuel policy

3.11 The operator is to establish a fuel policy acceptable to the CAA.

Refuelling with passengers on board

3.12 Procedures are to be established for refuelling and de-fuelling (if applicable) with SAR passengers on board.

Helicopter SAR role and medical equipment

3.13 The installation of all helicopter dedicated SAR role and medical equipment and, where appropriate, its operation and any subsequent modifications are to be subject to airworthiness approval.

3.14 The operator is to ensure that procedures are established for the use of portable equipment on board.

Helicopter communication equipment

3.15 Helicopters conducting SAR operational flights are to be provided with communications equipment (in addition to that required by the ANO Schedule 5 and Part-CAT Subpart D Section 2 (IDE.H) capable of conducting two-way communication with the organisation for which SAR is being provided and communicating with ground/maritime emergency service personnel. Any such additional equipment will require airworthiness approval.

SAR operating base facilities

3.16 If crew members are required to be on stand-by with a reaction time of 45 minutes or less, dedicated suitable accommodation is to be provided close to each operating base.

3.17 The operator is to use a monitored flight following system for SAR operations from the time the helicopter departs until it arrives at its final destination. A flight following system may consist of any of the following or similar items:

- satellite tracking;
- ATC tracking and information;
- ADS-B tracking and display.

3.18 At each operating base, the crew are to be provided with:

- cloud base and visibility indicating and recording systems;

- facilities for obtaining current and forecast weather information; and
- satisfactory communications with the appropriate Air Traffic Services (ATS) unit.

3.19 Satisfactory facilities are to be available for the planning of all tasks.

Passenger safety

3.20 The operator is to establish procedures to take all reasonable measures to achieve passenger safety.

Chapter 4

Training and checking

Training and checking programme

- 4.1 The operator is to establish a training and checking programme. This programme should establish procedures that are appropriate and relevant to the operating environment.

SAR flight crew

- 4.2 The operator is to ensure that SAR flight crews are trained in all specialisations of the SAR role. This should include use of suitable simulator training.
- 4.3 The flight crew should satisfy EASA Part-FCL and EASA Ops Annex III (Part-ORO) Subpart FC training requirements and the following additional items:
1. meteorological training concentrating on the understanding and interpretation of available weather information;
 2. preparing the helicopter and specialist medical equipment for subsequent SAR departure;
 3. practice of SAR departures;
 4. the assessment from the air of the suitability of SAR operating sites;
 5. the medical effects air transport may have on the patient/survivor; and
 6. liaison and training with other emergency services.
- 4.4 The flight crew should satisfy EASA Part-FCL and EASA Ops Annex III (Part-ORO) Subpart FC checking requirements with the following additional items:
1. VMC proficiency day and/or night checks as appropriate including the landing and take-off profiles likely to be used at SAR operating sites.
 2. Line checks, recurrent training and recency with special emphasis on the following:
 - local area meteorology;
 - SAR flight planning;
 - SAR departures;
 - search patterns;
 - winching – normal and emergency procedures;

- the selection from the air of SAR operating sites to include land-based and water-based rescue situations including vessels, offshore installations, mountain and cliff situations etc.;
- low-level flight in poor weather;
- operations into local hospital sites;
- poor weather recovery procedures; and
- mountain flying techniques where appropriate.

SAR technical crew

Medical standards

- 4.5 The medical fitness of the SAR technical crew to perform his/her duties should be assessed by, or under the supervision of, a CAA Aero Medical Examiner (AME), or specialist in Occupational Medicine familiar with the working environment of SAR technical crew members.
- 4.6 A pre-employment medical examination is appropriate, with periodic (e.g. annually) re-assessment by self-declaration with or without clinical examination determined by age and any other indication for increased medical surveillance. The operator and doctor should agree the examination/ assessment criteria.
1. The assessment should include functional performance relevant to the duties performed and the risk of medical incapacity that might affect operational readiness or cause mission termination whilst operating.
 2. Following illness or injury, if there is any doubt regarding fitness, a further medical opinion or assessment should be sought.
 3. Guidance material is provided in EASA Ops GM1 ORO.TC.105. Additional reference material for assessing an individual's fitness in terms of visual, hearing and incapacitation risk are the private pilot (EASA class 2) medical standards, and national medical standards for fire-fighters, as the physical and environmental challenges of the role exceed that of the private pilot and more resemble a Fire/Rescue worker.
 4. Following assessment, a written opinion of the crew member's fitness for work with any appropriate limitations should be provided to the operator.

Training and checking process

- 4.7 The SAR technical crew member is to be trained in accordance with the requirements of Part-ORO Subpart TC and all applicable requirements for HHO under Part-SPA Subpart I (HHO) with the following additional items:
1. Duties in the SAR role:

- UK SAR organisation, role of ARCC, MCA and other rescue services;
 - crew composition and individual crew member responsibilities; and
 - response to SAR tasking and mission planning.
2. Navigation (map reading, navigation aid principles and use):
 - mission planning, including range and endurance;
 - in-flight navigation and use of navigation equipment;
 - meteorological considerations; and
 - search patterns.
 3. Operation of radio equipment:
 - radio communication technique and terminology;
 - civil, military, maritime and distress frequencies; and
 - use of helicopter communication equipment as required in role.
 4. Operation of specialist SAR equipment:
 - use of search and homing equipment fitted to the helicopter; and
 - NVIS operations, where applicable.
 5. Use of on-board medical equipment:
 - safety of crew members, passengers and casualty when equipment, e.g. automated external defibrillator (AED), is in use; and
 - handling of clinical waste and human remains.
 6. Preparing the helicopter and specialist medical equipment for subsequent SAR departure:
 - pre-flight equipment and systems checks; and
 - securing of the cabin.
 7. Instrument reading, warnings, and use of normal and emergency check lists in assistance of the flight crew as required.
 8. Basic understanding of the helicopter type in terms of location and design of normal and emergency systems and equipment:
 - overview of principal flying controls.
 9. Crew co-ordination:
 - emphasis on importance of airmanship; and

- communication with flight crew, with emphasis on role of technical crew members during approach and departure at SAR site and during winching operations.
10. Practice of response to SAR call-out.
 11. Conducting refuelling/defueling and rotors-running refuelling.
 12. SAR operating site selection and use:
 - site reconnaissance;
 - identification of hazards associated with specific operating sites, including cliffs, offshore installations and vessels, as applicable;
 - recognition of meteorological conditions associated with specific sites; and
 - landing and take-off in confined areas.
 13. Techniques for handling SAR passengers:
 - briefing of passengers;
 - carriage of specialist rescue personnel and their equipment, including animals;
 - seating and distribution of passengers and any associated equipment with reference to helicopter mass and balance;
 - effect of the movement of personnel on the centre of gravity and mass during winching operations; and
 - effect of the movement of personnel on performance during normal and emergency flight conditions.
 14. Techniques for handling patients/survivors, the medical consequences of air transport and some knowledge of hospital casualty reception:
 - casualty assessment;
 - positioning of casualty, based on medical condition; and
 - basic life-support techniques, including cardio-pulmonary resuscitation.
 15. Marshalling signals:
 - voice marshalling technique and terminology.
 16. Under-slung load operations as appropriate.
 17. Winch operations:
 - helicopter performance, single engine performance and actions in the event of loss of one engine in the hover;

- use of Auto-Hover Trim;
- operation of the winch system;
- pre-flight and post-flight checks of the winch system;
- recording of winch cycles;
- winch defect recording and reporting;
- safety of persons onboard when operating with door open;
- use of harness and strops;
- voice and visual communications during winching;
- winching from land, water, cliffs, vessels and life rafts including:
 - i) single and double lifts;
 - ii) hypothermic casualty lifts;
 - iii) stretcher lifts;
 - iv) use of hi-line; and
 - v) day and night winching procedures; and
- winch malfunction and associated actions.

18. The dangers to self and others of rotors-running helicopters including loading of patients/survivors.

19. The use of the helicopter intercommunications system.

4.8 Training and checking should be conducted by suitably qualified personnel and may include an appropriate balance of computer based training and the use of synthetic training devices.

4.9 Prior to operating, a technical crew member should undergo a check to verify proficiency in his specific role.

SAR passengers

SAR passengers are to be briefed on the following, wherever possible and relevant:

1. familiarisation with the helicopter type(s) operated;
2. entry and exit under normal and emergency conditions;
3. use of the relevant on-board specialist medical equipment;
4. the need for the commander's approval prior to use of specialised equipment;
5. method of supervision of other medical staff;

6. the use of helicopter intercommunication systems;
7. location and use of on-board fire extinguishers; and
8. use of personal safety equipment.

Ground/maritime emergency service personnel

- 4.10 An operator will take all reasonable measures to ensure that ground emergency service personnel are familiar with the following:
1. two-way radio communication procedures with helicopters;
 2. the selection of suitable SAR operating sites for SAR flights;
 3. the physical danger areas of helicopters;
 4. crowd control in respect of helicopter operations; and
 5. the evacuation of helicopter occupants following an on-site helicopter accident.