Civil Aviation Authority

UK Helicopter Search and Rescue (SAR) National Approval Guidance

CAP 999

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Enquiries regarding the content of this publication should be addressed to: Safety and Airspace Regulation Group, Civil Aviation Authority, Aviation House, Beehive Ring Road, Crawley, West Sussex, RH6 0YR. E-mail: FOD.Admin@caa.co.uk

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Contents

Revision history

Revisions in the second edition **August 2014**

This edition has been updated to incorporate various minor changes to improve the text and to amend the guidance to align with European aviation regulations.

Revisions in the third edition **December 2020**

This edition has been updated to incorporate changes to UK aviation legislation from 1 January 2021 and improve the guidance generally. It also introduces comprehensive information for the selection and training of Technical Crew Members for SAR operations.

Revisions in the fourth edition **March 2023**

This edition has been updated to incorporate the CAA's acceptable alternative to the requirement for PC1 at Hospital HLS.

Foreword

Introduction

This CAP has been published to assist operators intending to conduct civil Search and Rescue helicopter operations in the UK in accordance with national requirements and recommended practices. It provides an expected means of compliance together with guidance in determining operational procedures and Operations Manual development.

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
Air Ops	Air Operations Regulation
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
EU	European Union
FATO	Final approach and take-off area
FC	Flight Crew
FTL	Flight Time Limitations
HEMS	Helicopter Emergency Medical Services
HESLO	Helicopter External Sling Load Operations
HHO	Helicopter Hoist Operations
HOFO	Helicopter Offshore 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	Air Operations Regulation Annex IV - Commercial Air Transport Operations
Part-FCL	Aircrew Regulation Annex I - Flight Crew Licensing
Part-MED	Aircrew Regulation Annex IV – Medical requirements
Part-ORO	Air Operations Regulation Annex III - Organisation Requirements for Air Operations
Part-SPA	Air Operations Regulation Annex V - Specific Approvals
Part-SPO	Air Operations Regulation Annex VIII - Specialised Operations
PT	Public Transport
RNLI	Royal National Lifeboat Institution
SAR	Search and Rescue
SOLAS	Safety of Life at Sea
TCA	UK SAR Technical Crew Member Attestation
TCM	Technical Crew Member
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 based and 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.

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; or
- 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 Member - 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.

Suitable Accommodation - A dedicated area at the SAR operating base to enable the on-shift SAR crew to take rest while holding a state of readiness. Sleeping accommodation must be individual and quiet with the ability of each crew member to control heat and light to enable undisturbed sleep.

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 Commission Regulation (EU) No. 965/2012 the Air Operations Regulation (Air Ops) and the Air Navigation Order (ANO) as amended.

1.6 SAR operators should refer to the requirements established in Air Ops and the ANO for all aspects of helicopter operations not covered by this CAP.

1.7 References to EU regulations in this document are to those regulations as retained and amended in UK domestic law under the European Union (Withdrawal) Act 2018.

Chapter 2

Legal requirements

Helicopter SAR operations

2.1 Search and Rescue is a State activity 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 101 of the ANO requiring a national Air Operator's Certificate (AOC).

2.2 An operator holding a Part-CAT AOC issued by the Civil Aviation Authority (CAA) 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 national operating requirements and the guidance in this CAP.

2.4 Flights not operated under a SAR approval will be operated in accordance with the appropriate national operational 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 UK SAR flights if the operator has been approved by the CAA.

2.7 To obtain a national SAR approval the operator will:

1. hold a national PT AOC or a Part-CAT AOC issued by the CAA;
2. demonstrate to the CAA compliance with the guidance detailed in this CAP;
3. hold a Helicopter Hoist Operations (HHO) Approval in accordance with Air Ops Part-SPA, Subpart I; and
4. hold a Helicopter Offshore Operations (HOFO) approval in accordance with Air Ops, Part-SPA, Subpart K.

Additional approvals

Night Vision Imaging Systems (NVIS) approval

2.8 Helicopters may only be operated with the aid of NVIS if the operator has been approved by the CAA.

2.9 To obtain a NVIS approval the operator will demonstrate compliance with Air Ops 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 an LVO approval the operator will demonstrate 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. To obtain a HEMS approval the operator will:

1. hold an Air Ops AOC issued by the CAA in accordance with Air Ops; and
2. demonstrate compliance with Part-SPA Subpart J.

Flight Time Limitations

2.13 The operator is to establish and maintain a Flight Time Limitation (FTL) scheme adapted for SAR which is to be approved by the CAA.

Permissions and exemptions

2.14 The 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.

2.15 Certain Rules of the Air alleviations are published separately by the CAA for emergency services operations.

2.16 Air displays in the form of SAR role demonstrations may only be conducted with the prior agreement of the CAA and in accordance with the ANO.

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 Air Ops AMC3 ORO.MLR.100.

3.3 The manual is to describe the management and supervision of SAR flights and the procedures used for the initiation, continuation, termination and diversion of a SAR operational flight.

Performance requirements

3.4 SAR operational flights should operate to the highest possible performance standard.

- Helicopters conducting operations to/from a FATO at a hospital that is located in a congested hostile environment are to be operated in accordance with Performance Class 1, except for ground level sites only where the following alleviation may be applied:

  Where the obstacle environment, its size or aircraft performance is such that Class 1 cannot be utilised then operations shall be conducted in accordance with procedures developed in response to a full risk assessment made available to the CAA for review and acceptance.

- 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.

3.5 Guidance on take-off and landing procedures at previously un-surveyed SAR operating sites are to be contained in the Operations Manual.

3.6 Operations in accordance with defined Performance Classes are applicable to all other phases of flight.

3.7 The operator is to produce or obtain a relevant Hospital Helicopter Landing Site (HHLS) Directory of UK Major trauma centres and any UK Hospital, including with an elevated HHLS, where it is likely a SAR helicopter could be operated in order for performance criteria to be established.

The SAR crew

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

1. Selection **and Crew Composition**

a) The Operations Manual is to contain specific criteria for the selection of SAR crew and is to detail the minimum experience and recency levels for all SAR crew members based on the following sub-sections.

b) The operator is to 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

2. Flight **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. Commanders must additionally have a minimum of 500 hours on helicopters in the UK SAR role.

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 flight crew should have successfully completed the operator's training and checking programme approved by the CAA.

3. **SAR Technical Crew Members (TCM)**

a) **Conditions for assignment to duties**

i) TCMs in SAR operations are only be assigned duties if they:

- are at least 18 years of age;

- have been assessed as physically and mentally fit to perform their duties and discharge their responsibilities safely;
- have successfully completed all applicable training and checking required by this section and are competent to perform the assigned duties in accordance with the procedures specified in the Operations Manual; and
- hold a valid UK SAR technical crew attestation (TCA).

ii) Before assignment to duties of TCMs who are self-employed and/or working on a freelance or part-time basis, the Operator is to verify that all applicable requirements of this section are complied with, taking into account all services rendered by the TCM to other operator(s) to determine in particular:

- the total number of helicopter types;
- the applicable flight and duty time limitations and rest requirements.

b) **Medical Assessment**

i) TCMs are to undergo aero-medical assessments to verify that they are free from any physical or mental illness which might lead to incapacitation or an inability to perform their assigned safety duties.

ii) Before being assigned to SAR duties, or before being re-assigned following a decrease in medical fitness, each TCM is to be assessed in accordance with the Aircrew Regulation Part-MED.

iii) Following initial assessment, a TCM is to hold, and maintain by re-assessment in accordance with the Aircrew Regulation Part-MED, a valid class 2 medical certificate.

4. **Crew personal safety clothing and equipment**

The operator will ensure that flight crew and technical crew members are equipped with suitable clothing and equipment from head to toe for the environment which they are operating. All equipment used by SAR crew must be integrated to ensure safe use and survivability in the event of an aircraft incident. The operator is to ensure that all SAR Crew are trained accordingly with the equipment they use while operating. All equipment must be serviced and maintained in accordance with the manufacturer's requirements.

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, display 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 capable of meeting the requirements for conducting two-way communication with the organisations for which SAR is being provided and communicating with the associated ground/maritime emergency service personnel. Any such additional equipment will require airworthiness approval.

Helicopter equipment general

3.16 The operator is to ensure that all equipment required by the national operating regulations, including State helicopter Flight Recorder requirements, are complied with.

SAR operating base facilities

3.17 The operator is to provide the necessary facilities for the planning and local management of the SAR operation including suitable accommodation on base to enable the on-shift SAR crew to take rest while holding a state of readiness.

3.18 The operator is to ensure that all SAR flights from the time the helicopter departs until it arrives at it final destination are flight followed and suitable arrangements are in place to deal with any occurrence.

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

- Cloud base and visibility indicating and recording systems;
- facilities for obtaining base current and forecast weather (TAF and METAR), predicted illumination levels information; and
- satisfactory communications with the appropriate Air Traffic Services (ATS) unit when based at an active aerodrome.
- weather and light level information for the area of operation.

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

Passenger safety

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

3.22 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

3.23 The operator should 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.

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 and is to be agreed with by the CAA.

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 Part-FCL and 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 Part-FCL and 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;
   - NVIS operations;
   - 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 and renewable energy, 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 members

Training and checking process

4.5 Each SAR TCM is to be trained in accordance with the requirements of this CAP.

4.6 Training methods may include the use of computer-based training, virtual-reality training devices, and simulator training devices in addition to flying training, as most appropriate to the training element. Where different training methods are used, a reasonable balance should be achieved in order to ensure that the crew member attains the level of proficiency necessary for a safe performance of all related crew duties and responsibilities.

4.7 During each element of training, an assessment is to be made of the TCM's proficiency. Following completion of all required training, each TCM is to undergo independent checking covering all elements of the relevant training programme, except for crew resource management (CRM) training. Checks are to be performed by suitably qualified and experienced, independent personnel to verify that the TCM has achieved and/or maintains the required level of proficiency.

Training and checking personnel

4.8 Training and checking is to be performed by personnel qualified and experienced in role:

- A technical crew instructor should have a minimum of 1000 hours in an operational search and rescue role.
- A technical crew examiner should have a minimum of 100 hours search and rescue instructional experience.
- Training and checking personnel should complete at least a course in instructional techniques, including methods of instruction on the ground and in the air.
- Personnel performing training and checking should be assessed in their role at least every three years.

- In the event of absence from training or checking duties for more than one year, an instructor or examiner should be assessed in role prior to recommencing instructional or examining duties.

Provision of initial training

4.9 Each applicant is to complete an initial training course before undertaking operator conversion training.

4.10 Initial training should be:

- provided by the holders of an AOC issued by the CAA to perform SAR or organisations accredited to do so by the CAA; and
- conducted in accordance with a documented training programme and syllabus covering the elements of this section.

Technical crew attestation

4.11 Following completion of initial training and the associated check, an applicant is to be provided with a UK SAR technical crew attestation, which is to be kept and provided on request for the purpose of inspection or verification.

4.12 UK SAR technical crew attestation are to be issued by holders of an AOC issued by the CAA to perform SAR or organisations accredited to do so by the CAA and in accordance with the following:

- the issuing organisation is to maintain a record of attestations issued; and
- the attestation is be issued in the format described at Appendix 1.

4.13 The privileges of holders of a technical crew attestation are to act as TCMs in UK SAR operations as defined in this CAP.

4.14 TCMs may exercise the privileges specified above only if they:

- hold a valid UK SAR technical crew attestation;
- comply with all requirements of this section; and
- the specified requirements of Part-MED.

4.15 A technical crew attestation is to be issued with unlimited duration and will remain valid unless:

- it is suspended or revoked by the organisation employing the services of the TCM; or
- the holder has not exercised the privileges during the preceding 60 months on at least one helicopter type.

4.16 An operator employing the services of a TCM is to take measures, including the suspension or revocation of a technical crew attestation, at least in the following cases:

- non-compliance with this CAP where a safety issue has been identified;
- obtaining or maintaining the validity of the technical crew attestation by falsification of submitted documentary evidence;
- exercising the privileges of the technical crew attestation when adversely affected by alcohol or drugs; or
- evidence of malpractice or fraudulent use of the technical crew attestation.

4.17 Where an operator employing the services of a TCM has cause to suspend or revoke a technical crew attestation, or reinstate following suspension, the issuing organisation is to be notified in order to enable the record of attestations issued to be amended.

Initial Training

4.18 The initial training course is to include practical training and checking in the role of winchman and/or winch operator.

4.19 General theoretical knowledge on aviation regulations relevant to duties and responsibilities:

- the importance of crew members performing their duties in accordance with the operations manual;
- continuing competence and fitness to operate as a crew member with regard to flight and duty time limitations and rest requirements;
- an awareness of the aviation regulations relating to crew members and the role of the competent and inspecting authority;
- general knowledge of relevant aviation terminology, theory of flight and meteorology;
- the importance of identifying when crew members have the authority and responsibility to initiate an evacuation and other emergency procedures; and
- the importance of safety duties and responsibilities and the need to respond promptly and effectively to emergency situations.

4.20 Fire and smoke training:

- emergencies involving fire and smoke, emphasis on the need for prompt response, identification of the fire source and communication with the flight crew;
- the classification of fires and the appropriate type and techniques of application of extinguishing agents, the consequences of misapplication, and of use in a confined space; and
- the general procedures of ground-based emergency services at aerodromes.

4.21 Evacuation procedures and other emergency situations, including:

- evacuations on land or water, including procedures for preparing passengers and the cabin as appropriate to the situation and recognition of unusable exits; and
- practical water survival training, including underwater escape training using a life jacket and emergency breathing system, and use of life rafts.

4.22 Survival training:

- principles of survival in hostile environments.

4.23 Introductory course on human factors (HF) and crew resource management (CRM) covering the elements detailed under Table 1.

4.24 Crew communication and co-ordination:

- emphasis on importance of airmanship;
- the importance of identifying and promptly communicating hazards to flight safety; and
- communication between all crew members during all phases of flight.

4.25 Duties in the SAR role:

- UK SAR organisation, role of ARCC, MCA and other rescue services;
- crew composition and crew member safety responsibilities.

4.26 Basic understanding of helicopter flight and performance:

- overview of principal flying controls;
- principles of flight;
- performance considerations during winching operations;

4.27 Navigation, including:

- map reading, navigation aid principles and use;
- meteorological considerations; and
- search patterns.

4.28 Radio communication:

- radio communication technique and terminology;
- civil, military, maritime and distress frequencies.

4.29 SAR operating site selection and use:

- site reconnaissance;
- identification of hazards associated with specific operating sites, including cliffs, offshore installations and vessels;
- recognition of meteorological conditions associated with specific sites; and
- landing and take-off in confined areas.

4.30 Passenger handling:

- SAR passengers;
- equipment carried by specialist rescue personnel;
- passenger briefing; and
- embarking and disembarking with rotors-running with emphasis on the effects of rotor wash, securing of objects to prevent damage, danger areas and safe approach areas.

4.31 Survivor handling:

- scene assessment and personal safety;
- casualty assessment;
- positioning of casualty, based on medical condition;
- basic life-support techniques, including cardio-pulmonary resuscitation;
- handling of clinical waste and human remains; and
- techniques for handling patients who are, or become, aggressive or violent.

4.32 Training in the carriage of dangerous goods in accordance with the ICAO Technical Instructions Table 1-4 column 11 / Table 1-5 column 17.

Initial Practical Training

4.33 Each TCM is to complete practical training as applicable to their role. During practical training, emphasis should be placed on general safety awareness, the safe use of equipment, survivor handling, and appropriate rescue techniques for the task being performed.

Initial Generic Training

4.34 The aim of the flying training phase is to allow the student the opportunity to learn and then demonstrate competency in conducting rescues using standard winching techniques and rescue equipment in the following situations:

4.35 Basic helicopter crewman operating procedures by day, to include:

- Take off/landing (including sloping ground)
- Circuits
- Malfunctions and
- Confined area landings.

4.36 The crewman phase should include the following skills:

- Distance assessment from the cabin door
- manoeuvring the aircraft with open con and direction, range, tendency (DRT) con

- Height assessment and control, including backdrop technique

Initial Winchman Practical Training

4.37 Practical instruction is to include at least 20 hours flying training in role, of which 25% may be performed in a simulator training device. On completion, a student should be able to demonstrate capability and competency without instructor assistance. The following elements should be covered.

- Basic winching techniques, to include deployment to, and recovery from, level and sloping ground, use of appropriate rescue equipment, and actions in the event of hoist malfunction;
- Deck winching, to include all rescue techniques and equipment including use of hi-line, deployment and recovery to vessels (maritime vessels and RIBs);
- Situation winching, to include all rescue techniques and equipment, suspended casualty, cliff-walking;
- Wet winching, to include free-floating survivor, drowning survivor, survivor with canopy
- attached (e.g. parachute, inflatable wing etc), recovery from inflatable device, and single and multi-seat life rafts.

Initial Winch Operator Practical Training

4.38 Practical instruction is to include at least 20 hours flying training in role, of which 25% may be performed in a simulator training device. On completion, a student should be able to demonstrate capability and competency without instructor assistance. The following elements should be covered.

- Basic winching techniques, to include voice marshalling techniques, deployment of personnel to, and recovery from, level and sloping ground, deployment and recovery of appropriate rescue equipment, and actions in the event of hoist malfunction and intercom failure;
- Deck winching, to include deployment and recovery of personnel to all vessel axis (including maritime vessels and RIBs), use of all appropriate equipment and use of hi-line;
- Situation winching, to include deployment and recovery of personnel and all appropriate equipment, suspended casualty and cliff walking; and
- Wet winching, to include winching circuit recovery of drum, free-floating survivor,
- drowning survivor, survivor with canopy attached, recovery from inflatable device, and single and multi-seat life rafts.

Operator Conversion Training

4.39 Each TCM is to complete appropriate operator conversion training, and the operator is to ensure they have demonstrated their ability and competency in all required training elements, before being:

- first assigned duties as a TCM by an operator, including when joining another operator; or
- assigned by that operator to operate on another helicopter type.

Safety and Emergency Training

4.40 Fire and smoke training, including practical training in the use of all fire-fighting equipment carried in the helicopter. Each TCM should extinguish a fire characteristic of a helicopter interior fire, except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used.

4.41 Evacuation procedures and other emergency situations, including:

- procedures for evacuation on land or water, including preparing passengers and the cabin as appropriate to the situation;
- other in-flight emergencies as determined by operator.

4.42 Actions if a pilot becomes incapacitated, including:

- use of the pilot's seat mechanism and restraint system; and
- use of pilots' checklists as required by the operator.

4.43 Training on, and demonstration of the use of safety equipment, including the following:

- life rafts, including the equipment attached to, and/or carried in, the raft;
- life jackets and flotation devices;
- fire extinguishers;
- crash axe or crowbar;
- emergency lights, including portable lights;
- communication equipment;
- survival packs, including their contents;
- pyrotechnics (actual or representative devices);
- first-aid kits, their contents and emergency medical equipment including the use of automated external defibrillator with consideration to the environment and hazards of a helicopter cabin; and
- other safety equipment or systems as applicable.

4.44 Crew resource management (CRM) training in accordance with Table 1.

Helicopter Type Specific Training

4.45 Description of the helicopter type, including:

- dimensions and rotor diameter;
- cabin configuration;
- stowage locations;
- location and types of exits;
- quantity and location of safety & medical equipment;
- Night vision imaging systems (NVIS);
- description of winch and winch controls;
- overview of principal flying controls; and
- performance requirements.

4.46 Practical training on operating and opening all normal and emergency exits for evacuation in the helicopter or representative training device.

4.47 Operation of communication equipment as required in role.

4.48 Operation of specialist SAR equipment, including:

- Use of navigation equipment;
- Use of search and homing equipment, and visual search techniques;
- Operation of winch; and
- Night vision imaging systems (NVIS) and use in role specific tasks as required;

4.49 Monitoring techniques and role of automation, warnings, and use of normal and emergency check lists in assistance of the flight crew as required.

SAR Operating Procedures

4.50 Pre-flight duties, including:

- crew composition and individual crew member responsibilities;
- preparing the helicopter and specialist equipment for subsequent SAR departure:
- pre-flight equipment and systems checks;
- briefing and use of applicable mission planning information
- response to SAR tasking and mission planning;

4.51 Crew communication and co-ordination:

- use of terminology;
- communication between all crew members, co-ordination personnel and other rescue services; and

- communication with flight crew during all phases of flight.

4.52 SAR 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;
- briefing of passengers including specialist rescue personnel for normal flight operations and emergency situations with emphasis on the importance of following crewmember instructions;
- the stowage of articles and equipment carried by passengers in the cabin.
- 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.

4.53 SAR operating site selection and use:

- site reconnaissance;
- identification of hazards associated with the specific operating area and sites;
- landing and take-off in confined areas; and
- hazards of downwash.

4.54 Marshalling signals, including:

- voice marshalling technique and terminology;
- use of hand signals on the ground; and
- procedures in the event of failure of communications equipment.

4.55 Winch operations:

- helicopter performance and safety priorities with regard to all engines operative (AEO) and one engine inoperative (OEI);
- 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 winching harness and human external cargo equipment;
- use of hi-line;
- voice and visual communications during winching;

- cabin entry procedures

4.56 Ground safety procedures, including conducting refuelling/de-fuelling and rotors-running refuelling.

4.57 Under-slung load operations (HESLO) as required.

Winchman Practical Training

4.58 Practical training is to incorporate all applicable operator specific procedures, equipment and systems, and be conducted with regard to the helicopter type. For performance criteria see Appendix 1.

- Overland techniques, to include voice marshalling techniques, deployment of personnel
- to and recovery from level and sloping ground, deployment and recovery of appropriate rescue equipment, and actions in the event of hoist malfunction and intercom failure;
- Deck winching, to include deployment and recovery of personnel to all vessel axis (including maritime vessels and rigid inflatable boats (RIB's)), use of all appropriate equipment and use of hi-line;
- Situation winching, to include deployment and recovery of personnel and all appropriate equipment, suspended casualty and cliff walking; and
- Wet winching, to include winching circuit recovery of drum, free-floating survivor,
- drowning survivor, survivor with canopy attached (e.g. parachute, inflatable wing etc), recovery from inflatable device, and single and multi-seat life rafts.

Winch Operator Practical Training

4.59 Practical training is to incorporate all applicable operator specific procedures, equipment and systems, and be conducted with regard to the helicopter type. For performance criteria see Appendix 1.

- Overland techniques, to include voice marshalling techniques, deployment of personnel to and recovery from level and sloping ground, deployment and recovery of appropriate rescue equipment, and actions in the event of hoist malfunction and intercom failure;
- Deck winching, to include deployment and recovery of personnel to all vessel axis (including maritime vessels and rigid inflatable boats (RIB's)), use of all appropriate equipment and use of hi-line;
- Situation winching, to include deployment and recovery of personnel and all appropriate equipment, suspended casualty and cliff walking; and
- Wet winching, to include winching circuit recovery of drum, free-floating survivor, drowning survivor, survivor with canopy attached (e.g. parachute, inflatable wing etc), recovery from inflatable device, and single and multi-seat life rafts.

Table 1: Technical Crew Member CRM Training

CRM training elements	Initial CRM training	Operator conversion training when joining operator	Annual recurrent training
General principles			
Human factors in aviation; General instructions on CRM principles and objectives; Human performance and limitations; Threat and error management.	In depth	Required	Required
Relevant to the individual crew member			
Personality awareness, human error and reliability, attitudes and behaviours, self-assessment and self-critique; Stress and stress management; Fatigue and vigilance; Assertiveness, situation awareness, information acquisition and processing.	In depth	Not required	Required
Relevant to the entire crew			
Shared situation awareness, shared information acquisition and processing; Workload management; Effective communication and coordination; Leadership, cooperation, synergy, delegation, decision-making, actions; Resilience development; Surprise and startle effect; Cultural differences.	In depth	Required	Required
Relevant to the operator and the organisation			
Operator's safety culture and company culture, standard operating procedures (SOPs), organisational factors, factors linked to the type of operations; Effective communication and coordination with other operational personnel.	Not required	In depth	Required
Case studies	Not required	In depth	In depth

Recurrent Safety and Emergency Training

4.60 Within every 12-month period, each TCM is to undergo recurrent training relevant to the type of aircraft and equipment that the TCM operates. CRM concepts are to be integrated into all appropriate elements of the recurrent training.

4.61 The validity of annual recurrent training is 12 months from the last day of the month when the previous check was completed. If training and checking is undertaken within the last 3 calendar months of validity, the new 12-month period may be counted from the original expiry date.

4.62 Annual recurrent training should include the following:

- emergency procedures, including pilot incapacitation;
- evacuation procedures;
- touch-drills by each TCM for opening normal and emergency exits for
- evacuation;
- the location and handling of emergency equipment;
- first aid and the contents of the first-aid kit(s);
- stowage of articles in the cabin;
- incident and accident review; and
- crew resource management: all major topics of the initial CRM training should be covered over a period not exceeding 3 years.
- Dangerous goods (the validity of training is 24 months from the last day of the month when the previous check was completed. If training and checking is undertaken within the last 3 calendar months of validity, the new 24-month period may be counted from the original expiry date).

4.63 Recurrent training should include every 3 years:

- practical training on operating and opening all normal and emergency exits for evacuation;
- evacuation in an aircraft or representative training device and demonstration of the
- operation of all other exits;
- practical training in the use of all firefighting equipment representative of that carried in the aircraft. Each TCM should extinguish a fire characteristic of a helicopter interior fire, except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used;
- use of pyrotechnics (actual or representative devices); and
- demonstration of the use of life rafts.

Refresher Training

4.64 Each TCM who has not undertaken flying duties in the previous six months and remains within the validity of the previous required check, is to complete refresher training as specified in the operations manual.

4.65 Where a TCM is trained to operate on more than one helicopter type and has not performed flying duties on one of those types during the preceding six months is to, before being assigned on that type, complete either:

- refresher training on the helicopter type; or
- flying under supervision on the type as specified in the operations manual.

4.66 Refresher training for each helicopter type should cover:

- emergency procedures;
- evacuation procedures;
- practical training on operating and opening all normal and emergency exits for evacuation;
- location and handling of emergency equipment installed.

4.67 An operator may elect to replace refresher training by recurrent training if the reinstatement of the TCM's flying duties commences within the validity period of the last recurrent training and checking. If that validity period has expired, refresher training may only be replaced by operator conversion training.

Record of helicopter type qualification

4.68 Following completion of operator conversion and helicopter type training, and the associated check(s), a crew member is to be provided with a UK SAR technical crew member helicopter type qualification, which is to be kept and provided on request for the purpose of inspection or verification – Appendix 2.

4.69 UK SAR technical crew member attestations are to be issued by holders of a UK national air operator's certificate to perform Search and Rescue in the format described under Appendix 1.

Record keeping

4.70 Technical crew training records are to be stored for the periods indicated below:

Technical crew attestation	As long as the crew member is exercising the privileges of the attestation for the operator
Crew member training & checking qualifications	3 years
Dangerous Goods	3 years
Crew member recency experience on type	15 months

APPENDIX A

Technical crew attestation

1. Technical crew member attestations issued are to conform to the following specifications:

United Kingdom Search & Rescue Technical Crew Member Attestation
CAP 999

Reference number:
Full name of holder:
Date and place of birth:
Nationality:
Signature of holder:

Issuing body:

Signature of issuing officer:

Date of issue:

The holder may exercise the privileges to act as a technical crew member in UK search & rescue operations if he/she complies with the applicable requirements described in CAP 999 for continuous fitness and validity of helicopter type qualification.

2. The attestation is to be printed in English and the size is to be 105mm × 74mm. Material used should prevent or readily show any alterations or erasures.

3. The technical crew member attestation will be recognised by all operators holding a United Kingdom national air operator's certificate to perform search and rescue operations. It is not necessary to exchange the attestation when a crew member is employed by another such operator.

4. The content of the technical crew attestation is to conform to the following:

- "United Kingdom Search & Rescue Technical Crew Attestation CAP 999".
- reference number is to commence with GBR, followed by the two last numbers of the year of issue, the issuing organisations AOC number or accreditation number and the sequential issue number of the attestation by the organisation, e.g. GBR-19-AOCGBXXXX-001;
- full name of holder (last name and first name) stated in the official identity document of the holder;
- date and place of birth, and nationality as stated in the official identity document of the holder;

- issuing body, including AOC number or accreditation number, postal address and logo of organisation;
- date of issue in standard date format day/month/year (DD/MM/YYY).

APPENDIX B

Record of helicopter type qualification

United Kingdom Search & Rescue **Technical Crew Member helicopter type qualification**	
Reference number of the Technical Crew Member attestation:	
Technical Crew Member attestation holder's full name: The above-mentioned person may act as an operating technical crew member with the holder of a United Kingdom air operator's certificate to perform search & rescue operations only if his/her helicopter type qualification listed below complies with the applicable validity period(s)	
Issuing organisation: (name, postal address, AOC number and logo)	
Date of issue: (DD/MM/YYY)	
Helicopter type	**Qualification valid until**
Type 1	(DD/MM/YYY)
Type 2	(DD/MM/YYY)