

Flight Standardization Board  
EUROCOPTER EC225LP  
Revision 1

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## EUROCOPTER EC225LP

(Rev 1)

### **FSB Composition:**

Chairman – Edward L. Hinch, Operations Inspector, Fort Worth Aircraft Evaluation Group.

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### **Background:**

Search And Rescue (SAR) operations have traditionally been a public use mission, the use of SAR modes in civil operations requires additional crew training for the pilots and a dedicated hoist operator. Utilization of the Hoist for Human External Cargo (HEC) requires the operator to be approved for Class 'D' external loads on their FAR Part 133 Operating Certificate. Supplement 5, Automatic Pilot System SAR Modes, contains the necessary charts to determine aircraft meets Class D external load requirements.

This aircraft was originally validated in the U.S. in May of 2008. This aircraft has novel or unusual design features associated with installing an optional SAR Automatic Flight control System (AFCS). The present applicable airworthiness standards did not contain the additional safety standards the Administrator considers necessary to show a level of safety equivalent to that established by the existing standards therefore a Special Condition was issued for this installation. Both, EASA and the FAA have issued Special Conditions for the installation of this option.

SAR operations, conducted over water in offshore areas clear of obstructions, require the use of dedicated AFCS upper modes in which a fully coupled autopilot provides operational SAR profiles. The SAR modes enable the rotorcraft to fly fully coupled maneuvers, to include predefined search patterns during cruise flight, transition from cruise flight to a stabilized hover, and departure/transition from hover to cruise flight. The SAR AFCS system also includes an auxiliary crew control handgrip adjacent to the sliding door on right side of the aircraft for a hoist operator. The hoist operator has limited authority to control the aircraft's longitudinal and lateral position during hover operations. The SAR mode allows for coupled operations at zero airspeed (hover).

Use of the SAR modes over land is prohibited as stated in the flight manual.

### **Type Ratings and Crew Qualification Tests:**

For EC225LP aircraft that have this option, this training must be included in the original Type rating training for airmen in accordance with FAA-S-8081-20, Area of Operation: Preflight Preparation, Task A1(h) and 2 and for Initial and Recurrent training under FAR Part 135.293a(8) and FAR Part 133.37(b)..

Eurocopter submitted the following proposals for training which were evaluated and found acceptable. (Attachment 1)

Summary and Conclusions: Flight checks are to be conducted in accordance with the instruction, guidance, and requirements contained in the appropriate Practical Test Standards and supplemented by guidance in FAA Order 8900.1.

**EC 225**  
**SAR MODES TRAINING SYLLABUS**  
**PILOTS & HOIST OPERATOR**



This training concerns pilots holding:

- A valid pilot helicopter license on EC 225 (commercial or air transport)
- A valid class 1 or 2 medical certificate
- A general knowledge of the language used in the operating documentation (Read and understand the procedures).

Maximum number of trainees is limited to 8 persons

This syllabus is a proposal for a pilot and hoist operator **initial training**.

A module must be added dealing with the SAR organisation in the country. This instruction cannot be under the ETS responsibility and must be conducted by a local qualified instructor.

This training could be included in Qualification Type course.

The goal of this course is the familiarization with EC225 specific SAR modes, CRM around Hover modes with Joystick operation and during hoist operation.

This training can be performed at Eurocopter in France or at Customers facility. The performance of this training at customer's training area shall permit an improved adaptation of EC225's AFCS capability to customers' specific environment and procedures.

This program is divided in three parts:

- a 2 days theoretical instruction for pilots already SAR qualified or a 3 days theoretical instruction for pilots not SAR qualified
- a 7h30 practical instruction for the pilot (+1h30 test)
- a 7h30 practical instruction for the hoist operator

The practical training will be conducted as follow:

| <b>PILOT</b> | <b>HOIST OPERATOR</b> |
|--------------|-----------------------|
| <b>SAR 1</b> |                       |
| <b>SAR 2</b> |                       |
| <b>SAR 3</b> |                       |
| <b>SAR 4</b> | <b>HOIST 1</b>        |
|              | <b>HOIST 2</b>        |
|              | <b>HOIST 3</b>        |
|              | <b>HOIST 4</b>        |
| <b>SAR 5</b> | <b>HOIST 5</b>        |
| <b>TEST</b>  |                       |

## 1 Theoretical instruction for pilot and winch operator:

### 1.1 Aircraft systems (2 days)

#### 1.1.1 Hoist installation and usage (normal and back-up)

- Presentation
- Description
- Limitations
- Normal and back-up controls
- Safety features

#### 1.1.2 Additional hoist operator controls (description, usage and limitations)

- The drift control box
- The Joystick

#### 1.1.3 Emergency Procedures

- Engine failure in hover out of ground effect
- Hoist failures
- Problems with rescue diver
- Intercommunication system failures

#### 1.1.4 Multi Function Displays and AFCS SAR modes

- Cockpit control panels
- Flight and Navigation Display description (Radio altimeter, AFCS strip, HOV mode)
- Navigation Display description
- AFCS SAR modes description (settings, engagement/disengagement, protections)
- AFCS SAR modes limitations
- Check lists

#### 1.1.5 Aircraft preparation for a SAR mission

- SAR mission parameters (Altitude, visibility)
- FMS SAR patterns (Square, ladder, sector)
- FMS Hover mode
- FMS Doppler management
- Weather radar description
- Joystick control and FMS management
- Additional search equipments (Search light, FLIR, Homming, Direct Finder)

#### 1.1.6 Performances (grid or MPAI air intakes)

- HOGE performances
- Loss of height
- HOGE performances with wind effect

## 1.2 Procedures (1 day)

### 1.2.1 Basic hoisting procedures

- Hoisting pattern
- Cabin preparation
- Hooking
- Guidance
- Descent
- Raising
- Controls

### 1.2.2 Phraseology

- Hoisting phraseology
- Guidance phraseology

### 1.2.3 Recovery procedures

- Recovery by hoisting
- Stretcher on shore
- Stretcher at sea
- Life raft dropping
- Conventional signs
- Crew survival equipments

## 2. Pilot practical training

| SESSION         | TIME | SUBJECT   | KEYNOTE   | REV00 |
|-----------------|------|---|---|-------|
| [DAY - SAR-1]   | 1H30 | <ul style="list-style-type: none"> <li>➤ SAR procedure &amp; performance</li> <li>➤ Mode of NAV(GPS-DOP)</li> <li>➤ FLP route inbound to the site of research</li> <li>➤ UPD procedures</li> <li>➤ Use of SAR modes</li> <li>➤ CR.HT(automatic acquisition &amp; hold of a pre-selected radio altimeter cruise height)</li> <li>➤ Ladder pattern</li> <li>➤ T.DWN(automatic transition from cruise to hovering flight at a preset final radio altimeter height)</li> <li>➤ H.HT(hover height acquisition &amp; hold)</li> <li>➤ T.UP(automatic transition from the hover to a preset radio altimeter height)</li> </ul> | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> </ul>  |       |
| [DAY - SAR-2]   | 1H30 | <ul style="list-style-type: none"> <li>➤ [SAR-1] procedure &amp; performance</li> <li>➤ Square pattern</li> </ul>   | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ Crew cooperation &amp; between Nav system</li> </ul>   |       |
| [DAY - SAR-3]   | 1H30 | <ul style="list-style-type: none"> <li>➤ [SAR-1] procedure &amp; performance</li> <li>➤ Sector pattern</li> </ul>   | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ Crew cooperation &amp; between Nav system</li> <li>➤ Ensuring systems redundancy</li> </ul>  |       |
| [DAY - SAR-4]   | 1H30 | <ul style="list-style-type: none"> <li>➤ [SAR-1] procedure &amp; performance</li> <li>➤ Various pattern of research</li> <li>➤ G.SPD(longitudinal or/and lateral speeds acquisition and hold)</li> <li>➤ GA(Go-around)</li> <li>➤ FLY-UP(safety mode)</li> <li>➤ PWR(power limitation)</li> <li>➤ Emergency procedures</li> </ul>   | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ Crew cooperation &amp; between Nav system</li> <li>➤ Ensuring systems redundancy</li> <li>➤ Flight management</li> </ul>   |       |
| [NIGHT - SAR-5] | 1H30 | <ul style="list-style-type: none"> <li>➤ Use of night equipment</li> <li>➤ SAR night flight procedure</li> </ul>  | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ Crew cooperation &amp; between Nav system</li> <li>➤ Ensuring systems redundancy</li> <li>➤ Flight management</li> <li>➤ Ensuring safety redundancy</li> <li>➤ Scanning between internal &amp; external reference</li> <li>➤ Attitude reference &amp; aircraft response</li> </ul> |       |
| [TEST-6]        | 1H30 | <ul style="list-style-type: none"> <li>➤ Simulated SAR mission</li> </ul>   | <ul style="list-style-type: none"> <li>➤ SAR operation</li> <li>➤ Ability of controlling &amp; managing a degraded situation</li> <li>➤ Announcements and crew coordination</li> <li>➤ Ensuring systems redundancy</li> </ul>   |       |

### 3. Hoist operator practical training

The program hereafter is designed for a hoist operator already qualified on another aircraft and should be performed by a hoist operator instructor.

| SESSION   | TIME | SUBJECT   | KEYNOTE  | REV00 |
|---|------|---|--|-------|
| [BY DAY OVER SEA]<br>HOIST-1<br><br>= Pilot SAR 4                         | 1H30 | <ul style="list-style-type: none"> <li>➤ SAR procedure &amp; performance</li> <li>➤ Use of SAR modes</li> <li>➤ CR.HT(automatic acquisition &amp; hold of a pre-selected radio altimeter cruise height)</li> <li>➤ <b>Various pattern of research</b></li> <li>➤ T.DWN(automatic transition from cruise to hovering flight at a preset final radio altimeter height)</li> <li>➤ H.HT(hover height acquisition &amp; hold)</li> <li>➤ T.UP(automatic transition from the hover to a preset radio altimeter height)</li> <li>➤ G.SPD(longitudinal or/and lateral speeds acquisition and hold)</li> <li>➤ GA(Go-around)</li> <li>➤ FLY-UP(safety mode)</li> <li>➤ PWR(power limitation)</li> <li>➤ Emergency procedures</li> </ul> | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ <b>Crew Interface</b></li> <li>➤ HOIST terminology</li> </ul>   |       |
| [BY DAY OVER SEA]<br><br>With Guidance<br>With hoist operation            | 1H30 | <ul style="list-style-type: none"> <li>➤ FLP route inbound to the site of research</li> <li>➤ ALT Selection</li> <li>➤ Automatic T.DWN(management / hovering)</li> <li>➤ Manual H.HT(hover height acquisition &amp; hold)</li> <li>➤ Hoist Operation over a Buoy with marks</li> </ul>  | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ FMS use</li> <li>➤ <b>Crew Interface</b></li> <li>➤ HOIST terminology</li> </ul>  |       |
| [BY DAY OVER SEA]<br>HOIST-3<br><br>With Marks<br>With hoist operation    | 1H30 | <ul style="list-style-type: none"> <li>➤ FLP route inbound to the site of research</li> <li>➤ ALT Selection</li> <li>➤ F.TDN (automatic transition down)</li> <li>➤ H.HT(hover height acquisition &amp; hold)</li> <li>➤ Hoist Operation over a Buoy without mark</li> <li>➤ Joystick operation</li> </ul>  | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ FMS use</li> <li>➤ Joystick use</li> <li>➤ <b>Crew Interface</b></li> <li>➤ HOIST terminology</li> </ul>                          |       |
| [BY DAY OVER SEA]<br>HOIST-4<br><br>Without Marks<br>With hoist operation | 1H30 | <ul style="list-style-type: none"> <li>➤ FLP route inbound to the site of research</li> <li>➤ CR.HT (automatic acquisition &amp; hold of a pre-selected radio altimeter cruise height)</li> <li>➤ F.TDN (automatic transition down)</li> <li>➤ Manual T.DWN(management / hovering)</li> <li>➤ H.HT(hover height acquisition &amp; hold)</li> <li>➤ Hoist Operation over a Buoy without mark</li> <li>➤ Joystick operation</li> <li>➤ Drift selection</li> <li>➤ T.UP (automatic transition up and pre selected cruise height acquisition)</li> </ul>  | <ul style="list-style-type: none"> <li>➤ Specific pre-flight / post-flight inspection</li> <li>➤ FMS use</li> <li>➤ Joystick use</li> <li>➤ Drift box use</li> <li>➤ <b>Crew Interface</b></li> <li>➤ HOIST terminology</li> </ul> |       |
| [BY NIGHT OVER SEA]<br>HOIST-5<br><br>= Pilot SAR 5                       | 1H30 | <ul style="list-style-type: none"> <li>➤ Automatic T.DWN(management / hovering)</li> <li>➤ H.HT(hover height acquisition &amp; hold)</li> <li>➤ Joystick operation</li> <li>➤ Hoist Operation with a stretcher</li> </ul>   | <ul style="list-style-type: none"> <li>➤ SAR terminology</li> <li>➤ Joystick use</li> <li>➤ <b>Crew Interface</b></li> <li>➤ HOIST terminology</li> <li>➤ Safety for ground personal</li> </ul>                                    |       |

**NOTE: Hoist training over ground can replace one or several of the sessions mentioned above.  
Rescue diver can be trained simultaneously by a rescue diver instructor.**