Emergency Locator Beacon Guidance for Offshore Rescue Crews
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- Maritime and Coastguard Agency (MCA)
- Emergency Response and Rescue Vessel Association (ERRVA)
- Evacuation, Escape and Rescue Technical Advisory Group (EERTAG)
- Marine Safety Forum (MSF)
# ABBREVIATIONS

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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ADELT</td>
<td>Automatically Deployed Emergency Locator Transmitter</td>
</tr>
<tr>
<td>BITE</td>
<td>Built-In Test Equipment</td>
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<tr>
<td>CPI</td>
<td>Crash Position Indicator</td>
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<tr>
<td>ELT</td>
<td>Emergency Locator Transmitter</td>
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<tr>
<td>EPIRB</td>
<td>Emergency Position Indicating Radio Beacon</td>
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<tr>
<td>ERRV</td>
<td>Emergency Response and Rescue Vessel</td>
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<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>HSE</td>
<td>Health and Safety Executive</td>
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<tr>
<td>IAD</td>
<td>International Air Distress</td>
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<tr>
<td>MHz</td>
<td>Mega Hertz</td>
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<tr>
<td>MRCC</td>
<td>Maritime Rescue Co-ordination Centre (Coastguard in the UK)</td>
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<td>PLB</td>
<td>Personal Locator Beacon</td>
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<td>TEMPSC</td>
<td>Totally Enclosed Motor Propelled Survival Craft</td>
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<td>UKCS</td>
<td>United Kingdom Continental Shelf</td>
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<td>WWPLB</td>
<td>Wrist Watch Personal Locator Beacon</td>
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1.0 INTRODUCTION AND PURPOSE

This guidance document has been produced to provide information and guidance to offshore rescue crews in the correct handling of emergency locator beacons currently in use in the offshore oil and gas industry in the UKCS. Its content may be applied in other geographical and / or commercial sectors, but it should be known that there are many other products and items of equipment in use worldwide that are not contained in this document.

2.0 OVERVIEW OF EMERGENCY LOCATOR BEACONS

Emergency locator beacons are tracking transmitters which aid in the detection and location of boats, aircraft and people in distress. They are radio beacons that can interface with satellite systems for search and rescue (SAR) and radio direction finders on SAR vessels and aircraft with the basic purpose of ensuring people are rescued as quickly as possible.

When activated, such beacons send out a distress signal, some of which can be detected by satellite on 406 MHz, but all of which can be detected by radio direction finders locally on 121.5 MHz, which is essential for homing at close range. In the case of 406 MHz beacons which transmit digital signals, the beacons can be uniquely identified by satellite almost instantly, and furthermore, a GPS position can be encoded into the signal, which provides instantaneous identification of the registered user and its location.

By using the initial position provided via the satellite system or mayday / distress radio broadcast, SAR aircraft and surface search parties can home in on the 121.5MHz distress signals from the beacons and come to the aid of the concerned boat, aircraft, or people.

The title Emergency Locator Beacons covers a wide range of beacons which are often given a variety of names depending on their application. Beacon types that are commonly used are also known as Emergency Beacons, Emergency Location Transmitters (ELTs), Automatically Deployed Emergency Location Transmitters (ADELTs), Crash Position Indicators (CPIs), Emergency Position Indicating Radio Beacons (EPIRBs) and Personal Locator Beacons (PLBs).

There are three main types of distress radio beacons which can be put into the following three categories: -

- **EPIRBs** which signal maritime distress.
- **ELTs** which signal aircraft distress (Including ADELTs and CPIs).
- **PLBs** which indicate a person in distress

*Note: All beacons are of greater assistance to the rescue crew in darkness, restricted visibility and adverse weather. Experience has shown in good conditions it may be possible to locate the casualty visually before the homing frequency is detected depending on the strength of the signal being transmitted. Therefore a good visual and listening lookout should be maintained at all times.*

2.1 Helicopter Beacons

All helicopters operating offshore in the UKCS are equipped with at least one ELT / CPI which can be deployed and activated manually by the pilot or co-pilot or automatically upon impact or when submerged in water.

These beacons transmit the aircraft’s last known GPS position to satellites on 406 MHz and are located by radio direction finders on 121.5 MHz.

See Appendix A for the types in use and deactivation instructions.
2.2 Helicopter Liferaft Beacons

All helicopters operating offshore in the UKCS are equipped with two liferafts which contain an ELT. There is one type in use offshore in the UKCS which is activated manually by the occupants of the liferaft.

See Appendix B for the type in use and deactivation instructions.

2.3 Helicopter Crew Beacons

All helicopter pilots and co-pilots operating offshore in the UKCS are equipped with a PLB. There are two types in use offshore in the UKCS. Both can be activated manually or automatically when submerged in water.

See Appendix B & C for the types in use and deactivation instructions.

2.4 Helicopter Passenger Beacons

By mid 2010 all helicopter passengers travelling offshore in the UKCS will be equipped with PLBs. There are currently two types of passenger PLBs approved for use offshore in the UKCS. Both can be activated manually or automatically when submerged in water.

See Appendix D for the types in use and deactivation instructions.

2.5 TEMPSC / Lifeboat Beacons

Some offshore installation TEMPSC / Lifeboats are equipped with EPIRBs. Their fitment is not mandatory and there are many different types in use (too many to list in this document). If fitted, Duty Holders and rescue crews should ensure information is available on the type fitted at the installation(s) they are supporting.

2.6 Installation Liferaft Beacons

Some offshore installation liferafts are equipped with locator beacons. Their fitment is not mandatory and there are many different types in use (too many to list in this document). If fitted, Duty Holders and rescue crews should ensure information is available on the type fitted at the installation(s) they are supporting.

2.7 Overside Work Beacons

Not all duty holders in the UKCS currently equip personnel with PLBs for overside work situations but some do. Those companies that do will provide them to all personnel engaged in overside work. As well as the two types of helicopter passenger PLBs in use offshore (which can also be used for overside work) in the UKCS there is a third PLB (that is no longer permitted on aircraft) that can also be used onboard installations. This can be activated manually or automatically when submerged in water.

See Appendix D & E for the types in use and deactivation instructions.
3.0 EQUIPMENT TESTING AND CREW FAMILIARISATION

All offshore rescue crews should ensure they have sufficient knowledge to ensure they can correctly operate any homing equipment they may have to operate as part of their duties and / or recognise and deactivate any Emergency Locator Beacons that may be recovered during a rescue.

Crews should also ensure they are aware of how their equipment ‘behaves’ when it encounters multiple signals. Most modern direction finding equipment will home in on the strongest signal but this should be verified by the crew for each individual piece of equipment.

Exercises and familiarisation training should be conducted to verify crew competence.

It is also recommended that Duty Holders validate the correct use and operation of associated equipment by means of independently witnessed trials with rescue crews. This could be conducted in conjunction with other independently witnessed exercises to minimise the impact to other crew and / or vessel commitments.

Any ‘live’ testing of homing equipment for exercise and training purposes should be conducted on the test frequency only (121.65 MHz). Duty Holder’s should provide test units for this purpose.

Testing should **NOT** be conducted on the ‘emergency’ frequency 121.5 MHz.

4.0 RECOVERY PROCEDURE

So as not to impede the rescue, all **recovered** beacons should be deactivated. However, rescue crews should not endanger themselves by boarding abandoned helicopters just to find and deactivate locator beacons.

Direction finding equipment will normally lock on to the strongest signal which is likely to be coming from the beacon that is highest or closest to the receiving antennae. If not deactivated it is likely homing equipment will lock onto the beacon which is onboard the rescuing aircraft or vessel (whether onboard your own or a nearby aircraft / vessel) before detecting any further casualties in the water.

Crews should be aware that some beacons transmit on higher power than others so a high powered aircraft beacon, for example, may mask the detection of lower powered PLBs worn by immersed casualties. Therefore, when conducting a search for survivors rescue crews should also attempt to locate and deactivate any beacons that may have floated free to avoid confusion during the rescue.

At the earliest opportunity, the time and location of the beacon recovery must be passed to the co-ordinating rescue centre - normally a Coastguard MRCC. This is of particular importance for the PLBs (crew or passenger). Whilst this may appear to add to the rescue unit's workload, time and location details can greatly assist the MRCC in defining or refining search areas for other survivors - particularly important in the event of a malfunction of an individual PLB.
HR Smith Techtest 503-1 – Helicopter Crash Position Indicator

Deactivation:
1. Remove from Water
2. Press and Hold RESET Switch for 2 Seconds
HR Smith 503-16 – Helicopter Crash Position Indicator

Summary
This is a large round orange disc that usually mounts on the LHS tail/baggage bay area of the aircraft, when deployed transmits homing signals on both 121.5 MHz (Civil) and 243.0 MHz (Military) distress frequencies together with 406.025 MHz for satellite location.

Deactivation
On the rear flat face there is a connector plug and a round button, press and hold the button for approx 5 seconds to deactivate. The CPI’s beeping will then stop.
Caledonian Airborne Systems CPT-900 – Helicopter Emergency Locator Transmitter

Summary for deactivation of CPT-900

1. Remove from water
2. Flick ‘ARM’ Switch to OFF
3. Press TST/RST button

The beacon is no longer transmitting when the green power LED and the amber transmit (XMT) LED are both off.
Summary

The Kannard transmits homing signals on both 121.5 MHz (Civil) and 243.0 MHz (Military) distress frequencies together with 406.025 MHz for satellite location.

It is inside the Baggage Bay of the aircraft and is not under normal circumstances removed from there.

Deactivation

The Kannard is off or deactivated when the switch on the front of the unit is set to OFF. The status of the CPI is confirmed as being off by an inactive LED.
B HELICOPTER LIFERAFT BEACON TYPES AND OPERATION

(ALSO WORN BY SOME HELICOPTER PILOTS)
HR Smith Series 500-12 - Multi Function Locator Beacons
(Contained in helicopter liferafts and also worn by some helicopter pilots)

Summary
The HR Smith Series 500-12 beacon transmits modulated homing signals on both 121.5MHz (Civil) and 243.0 (Military) distress frequencies together with 406.025 MHz for satellite location.

Deactivation
The HR Smith Series 500-12 beacon is off or deactivated when the sliding switch on the front left hand side of the unit is set to OFF in the central position. No more lights or sounds should come from the handset.
C HELICOPTER CREW BEACON TYPES AND OPERATION (SEE APPENDIX B ALSO)
The HR Smith Series 500-1 beacon transmits modulated homing signals on both 121.5MHz (Civil) and 243.0 (Military) distress frequencies Together with 406.025 MHz for satellite location.

Deactivation

The HR Smith Series 500-1 beacon is off or deactivated when the sliding switch on the front of the unit is set to OFF in the central position.

To check this, the switch can be slid up further to initiate BITE, whereupon two simultaneous audible and light bursts will be emitted, followed by a steady red LED. Releasing the switch will allow it to slide back to its relaxed position. The beacon is now off but ready to transmit again.
D HELICOPTER PASSENGER BEACON TYPES AND OPERATION

(MAY BE USED FOR OVERSIDE WORK ALSO)
RHOTHETA RT-B77 HELB - Helicopter Passenger Personal Locator Beacon *(May be used for Overside Work also)*

**Summary**

The RHOTHETA RT-B77 HELB beacon transmits homing signals on 121.5MHz (Civil) distress frequency

**Deactivation**

The RHOTHETA RT-B77 HELB beacon is off or deactivated when the rotary switch on the top right hand corner of the unit is set to the OFF position. It may be easier to do this once the beacon is removed from its pouch. When successfully deactivated, all visual and audible activities stop.
Sea Marshall® AU9-HT Helicopter Passenger Personal Locator Beacon

(May be used for Overside Work also)

Summary

The Sea Marshall® AU9-HT Helicopter Transit PLB transmits homing signals on 121.5MHz (Civil) distress frequency.

Deactivation

The Sea Marshall® AU9-HT Helicopter Transit PLB is off when the sliding switch on the left hand side of the unit is set to OFF in the upper position, and the black button is held for 3 seconds. Deactivation is confirmed with the handset beeping three times, followed by no activity.

Modelled on an inflated jacket

Modelled on an un-inflated jacket

PLB Storage Pouch on Left hand side of lifejacket
APPENDIX E  OVERSIDE WORK BEACON TYPES AND OPERATION
SML TECHNOLOGIES - Wrist Watch Personal Locator Beacon (*Overside Work Only*)

**CONFIRM**
Button

**ARMING**
Button

**Summary**

The SML TECHNOLOGIES - Wrist Watch PLB transmits homing signals on 121.5MHz (Civil) distress frequency

**Deactivation**

To stop transmitting, manually press and hold both ARMING and CONFIRM buttons for 5 seconds. The WWPLB will acknowledge with a double beep and an LED flash.

**Disarm**

Step 1. Press the CONFIRM button 6 times. A single beep and LED flash will confirm step one.
Step 2. Press the ARMING button once. The WWPLB will acknowledge with a double beep and an LED flash.