406 MHz DISTRESS BEACONS

406 MHz Distress Beacons (also collectively known as Emergency Beacons, or simply Beacons) are devices designed to be manually or automatically activated in the event of a life-threatening situation to send a coded message as a notice to rescue crews about aircraft, vessel or people in distress. Beacons transmit a specific emergency frequency (406 MHz) continuously monitored by the Cospas-Sarsat satellite system. Some emergency beacons also transmit a 121.5 MHz homing signal, based on which the rescue teams, in the vicinity of the transmitter, using direction finder, can accurately locate it. Depending on the purpose, there are three types of emergency beacons:

- **Position Indicating Radio Beacon (EPIRB) -** For use on vessels (or rescue personnel on board). When it is activated, it is automatically detected by the Cospas-Sarsat system and an alert message is sent to local aviation authorities in such case.
- **Emergency Locator Transmitter (ELT) -** For use on aircraft. When in distress and saving lives.
- **Personal Locator Beacon (PLB) -** For personal use (mainly on land, but under certain conditions at sea and aviation also). Registered beacons will transmit a 121.5 MHz homing signal, which can be detected by nearby aircraft, which can alert search and rescue teams to locate activated device.

Registration of 406 MHz Distress Beacons

Whether an emergency beacon is registered could make the difference between life and death in distress situations. Registering a beacon makes relevant information about device and owner details available to the persons who plan, coordinate and conduct search and rescue operations, thus facilitating and accelerating their response. Registering a beacon is quick and free of charge. The emergency beacon must be registered with the Civil Aviation Directorate of the Republic of Serbia. *Note: Before testing, make sure the emergency beacon is properly registered and programmed with a valid hexadecimal identification (“Hex ID”). This way, in case of sending false alert, the person in charge of SAR operations in the RCC will have contact information and know whom to call before deploying search and rescue units to locate activated device.*

Testing of 406 MHz Distress Beacons

Owners of the emergency beacons are required to test their devices periodically in accordance with the manufacturers’ recommendations.

- **Correct testing** of any device will be required for the device to be considered a registered beacon.
- **Self-testing** of the device should be done to ensure it is functioning properly.

Testing of 406 MHz distress beacon

Most of the emergency beacons have a special switch or switch position, intended for testing, which can determine if the elements of the device function properly - batteries, electronics and antennae. A test of this kind can be performed at any time without the need for an approval. If it is necessary to keep in mind that the manufacturer has determined the number of tests that can be performed over the lifetime of the device, since the built-in battery capacity is limited, in order to prevent situation where beacon does not work in emergency. Also, some devices, when in self-testing mode, transmit 121.5 MHz homing signal, so it is necessary to consider it when choosing a place and time for the beacon testing and coordinating with the local aviation authorities in such case.

Testing of 406 MHz distress beacon

**Warning!!!** In case of accidental activation of the device - by switching it to the emergency position or automatically when EPIRB is in touch with water or ELT when performing a hard landing, it is necessary to switch off the device and call Rescue Coordination Center, to inform the authorities that it was a false alarm and that there is no need for launching a search and rescue operation.

Live testing of 406 MHz distress beacons

In very rare situations, it could be necessary to test the device by switching it to the emergency position. Regardless of the location and duration of the transmission, the Cospas-Sarsat system satellites will receive the signal and generate an emergency message, which will be forwarded to the responsible Rescue Coordination Center. In addition, the device will transmit a 121.5 MHz homing signal, which can be detected by nearby aircraft, which can alert appropriate Air Traffic Service Units. Considering all the consequences of activation, the emergency beacons are made to require live testing. To avoid false alarms and initiating search and rescue operation, it is essential that approval for every live testing of an emergency beacon be requested correctly and in time.

**Warning!!!** Emergency beacon activation when there is no real distress or without prior approval obtained from the Mission Control Center of the Cospas-Sarsat System and/or Rescue Coordination Center as a stakeholder of the Cospas-Sarsat system, is considered a violation in many countries of the world and can lead to prosecution.

Request for Live Testing of 406 MHz Distress Beacon

Emergency beacon test should be requested by submitting a completed Form - Request for testing of emergency beacons to CAD. For each test, an announcement is made to the Cospas-Sarsat Mission Control Center (in case of the Republic of Serbia, it is the Italian Mission Control Center – ITMCC in Bari). In that way the Mission Control Center is notified to filter satellite-generated emergency notifications, so in a given period of time the activation of the emergency beacon is not treated as a real emergency. Otherwise, when the message arrives, the RCC could declare an emergency situation and could dispatch SAR units to the location of the beacon. False alerts like this must be avoided so that search and rescue resources are not occupied with false alerts, because at any time they may need to engage in real emergencies,locating people in distress and saving lives.

CIVIL AVIATION DIRECTORATE OF THE REPUBLIC OF SERBIA

Form can be downloaded from CAD website: http://cad.gov.rs/en/strana/23571/406-mhbeacons