CIVIL AVIATION
DIRECTORATE
OF THE REPUBLIC
OF SERBIA

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 signal on international emergency frequency - 406 MHz, which is the frequency 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:

for use on aircraft - *Emergency Locator Transmitter (ELT)*

for use on vessels - *Emergency Position Indicating Radio Beacon (EPIRB)*

for personal use (mainly on land, but under certain conditions at sea and aviation also) - *Personal Locator Beacon (PLB)*

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 people 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 beacons 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.

Note: Older 121.5/243 MHz distress beacons could be activated briefly for testing at defined time periods (for example, during the first five minutes of each hour). THIS IS NOT THE CASE FOR 406 MHz BEACONS. These beacons are digitally coded and transmit distress signals without delay. Therefore, 406 MHz beacons must not be activated using the distress switch except in real distress situations or in previously approved beacon testing.

Self 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 antennas. A test of this kind can be performed at any time without the need for an approval. 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 real 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.

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 beacon

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 appropriate *Cospas-Sarsat* Mission Control Center and from there 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 rarely 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 /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.

*** Form can be be downloaded from CAD website:**
http://cad.gov.rs/en/strana/23571/406-mhz-distress-beacons

False Alert Prevention

Note: If you accidentally activate your emergency beacon and you do not need help, it is necessary that you momentarily contact Rescue Coordination Center (no matter what time of day or night it is), to cancel an upcoming SAR operation for you.

Contact telephones of the RCC Serbia: +381 11 228 64 15 and +381 11 228 64 09.

Causes of false alerts

The vast majority of false alerts generated within the *Cospas-Sarsat* system come from users of emergency beacons. And most often, not as a result of their negligence, but ignorance. In order to avoid problems of this kind, it is necessary to pay attention to system user education about the negative effects of false alarms and how to avoid them.

In the first place, reducing the number of false alerts increases the efficiency of the *Cospas-Sarsat* system, on which maritime, aviation and land users rely for the safety of their lives. Responding to false alerts can cause significant delays to respond to real emergencies as well as unnecessary deployment of SAR assets and SAR people sometimes endangering their lives for you.

406 MHz distress beacons user tips:

- Make sure that your radio transmitter is registered with the Civil Aviation Directorate.
- Always test your emergency beacons according to the manufacturers' instructions. Most device activation switches also have a test position. This switch position allows self-testing of the complete device (electronics, batteries and antennas) without actually sending an alert.
- Maintain your *PLB*, *ELT* or *EPIRB* device properly. Periodically check for correctness and expiry date of the batteries and follow all manufacturers' recommendations.
- Spend some time getting acquainted with your *PLB*, *ELT* or *EPIRB*. Ask yourself if and how it would function in a real situation and make sure you know how to use it. Learn what you need to know to avoid accidental activation and false alerts and stick to it.
- Proper disposal of old emergency beacons helps prevent false alerts.

Disposal of Old 406 MHz Distress Beacons (*ELT, PLB, EPIRB*)

At the end of a beacon's service life (*ELT*, *PLB*, *EPIRB*), the device must be disposed of carefully to prevent false alerts. False alerts could divert limited search-and-rescue resources from a real emergency, putting other lives at risk.

If you decide to dispose of an old, unneeded beacon you need to be careful to take certain steps:

1 **Do NOT merely toss the beacon in a garbage or rubbish bin!**
Over the time the casing and electronics could degrade, possibly causing the beacon to begin transmitting a false alert from, for example, a garbage heap.

2 **The battery must have been removed!**
Beacon batteries contain chemically-aggressive substances which could be hazardous to the environment and cause injury. Always handle batteries in accordance with manufacturer instructions and local disposal regulations.

3 **You must have the beacon clearly labeled on the outside that it has been deactivated!**
This is important so that no one mistakenly tries to use it in a real emergency.

4 **You must update your information in the registration database of the Civil Aviation Directorate of the Republic of Serbia!**
It is necessary to complete the Form for Registration of Radio Beacons and forward it to the CAD. Among other necessary information, it is important to state the reason for the disposal of the radio transmitter (sale, destruction, theft, loss or disposal).

Note: When it is possible, the components of your old beacon and old beacon batteries should be recycled in an appropriate recycling facility. For more specific advices, consult the beacon manufacturer using contact information in the user manual.

* More information on registration, testing and disposal of emergency beacons could be found on *Cospas-Sarsat* web page: https://www.cospas-sarsat.int/en/search-and-rescue/programme-videos-en

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