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## **GUIDELINES FOR SHORE-BASED MAINTENANCE OF SATELLITE EPIRBs**

- 1 The Maritime Safety Committee, at its seventy-fifth session (15 to 24 May 2002), approved Guidelines for shore-based maintenance of satellite EPIRBs, for the purpose of establishing standardized procedures and minimum levels of service for the testing and maintenance of satellite EPIRBs to ensure maximum reliability whilst minimizing the risk of false distress alerts.
- 2 Member Governments are invited to bring the annexed Guidelines to the attention of shore-based maintenance providers, equipment manufacturers, classification societies, shipping companies, shipowners, ship operators, shipmasters and all other parties concerned.

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## ANNEX

### GUIDELINES FOR SHORE-BASED MAINTENANCE OF SATELLITE EPIRBs

#### 1 Introduction

1.1 The purpose of these guidelines is to establish standardised procedures and minimum levels of service for the testing and maintenance of satellite EPIRBs to ensure maximum reliability whilst minimising the risk of false distress alerting.

1.2 The guidelines are intended to be applicable both to 406 MHz EPIRBs and to L-band EPIRBs, as either type may be carried to comply with the requirements of SOLAS regulation IV/7.1.6. EPIRBs may include 121.5 MHz transmitters, or Global Navigation Satellite System (GNSS) receivers.

1.3 The guidelines also apply to service exchange EPIRBs which should be properly encoded to match the appropriate registration database.

#### 2 Shore-based maintenance (SBM) provider

2.1 The SBM provider should:

- .1 have a quality control system audited by a competent authority in respect of its servicing operation;
- .2 have access to adequate calibrated test equipment and facilities to carry out the SBM in accordance with these guidelines;
- .3 have access to batteries and other spare parts to the original equipment specification;
- .4 have access to up-to-date technical manuals, service bulletins and the latest software versions as provided by the original equipment manufacturer;
- .5 keep records of maintenance, available for inspection by the Administration as may be required;
- .6 ensure that all personnel responsible for supervising and for carrying out the maintenance procedures are adequately trained and fully competent to perform their duties; and
- .7 issue a shore-based maintenance report with a list of the test results and maintenance performed.

### **3 Prevention of false distress alerts**

3.1 Throughout the testing and maintenance process, **great care must be taken to avoid the transmission of false distress alerts.** The transmissions may be picked up by aircraft as well as satellites.

3.2 A radio-frequency-screened room or enclosure should be used for all maintenance procedures involving, or likely to involve, any transmission from an EPIRB.

3.3 Provision of a 121.5 MHz monitor receiver is required; this will pick up the homing transmitter and give a warning if the EPIRB is accidentally activated outside the screened enclosure.

3.4 If a distress signal is transmitted accidentally, the local RCC should be contacted immediately and informed of the co-ordinates of the test site.

### **4 Maintenance service interval**

4.1 406 MHz satellite EPIRBs should be inspected and tested in accordance with MSC/Circ.1040.

4.2 Shore-based maintenance of all satellite EPIRBs, as defined in paragraph 1.2, should be carried out in accordance with these guidelines at intervals specified by the flag Administration and not exceeding 5 years. It is recommended that the maintenance be performed at the time when the battery is to be changed.

### **5 Self-test**

5.1 Prior to carrying out any maintenance and, upon completion, a self-test should be performed, following the instructions on the equipment, and the results noted.

5.2 Attention is drawn to paragraph 3 on the prevention of false distress alerts. Avoidance of live transmissions is required to prevent unnecessary loading of the satellite channels.

5.3 It should be verified that the self-test mode operates properly. This check could be performed by holding the switch in self-test mode position for 1 min after the first self-test mode burst transmission. All transmissions should cease after releasing the self-test mode switch. Additionally, for 406 MHz satellite EPIRBs which received the COSPAS-SARSAT type approval after October 1998 (Type Approval Certificates 106 and higher) the number of self-test bursts should be verified to be no more than one.

### **6 Battery change**

6.1 The main battery should be changed in accordance with the manufacturer's recommendations, including the replacement of any other routine service parts (e.g. seals, memory battery, desiccant).

6.2 The removed batteries should be disposed of in accordance with the manufacturer's and/or national/local recommendations.

6.3 After having changed the battery, the new expiration date should be displayed on the exterior surface of the EPIRB.

## **7 Satellite distress transmission**

7.1 The satellite EPIRB should be activated in its normal transmitting mode (i.e. not just self-test). Attention is drawn to paragraph 3 on the prevention of false distress alerts. Where seawater contacts are fitted, these should be connected together to activate the EPIRB.

7.2 The transmitted signal should be checked with a suitable test receiver to verify the signal integrity and coding.

7.3 The frequency of the transmitted signal should be recorded and verified to be within the limits required by the specification to which it is approved.

7.4 The output power of the transmitter should be checked in the self-test mode. A simple method of the emission verification, such as a low sensitivity receiver placed at an unobstructed distance of at least 3 m from the EPIRB antenna, may be used for this check. The original equipment manufacturer may suggest an appropriate method to verify the output power. Attention is drawn to paragraph 3 on the prevention of false distress alerts.

## **8 121.5 MHz homing transmission**

8.1 The satellite EPIRB should be activated in its normal transmitting mode (i.e. not just self-test). Attention is drawn to paragraph 3 on the prevention of false distress alerts. Where seawater contacts are fitted, these should be connected together to activate the EPIRB.

8.2 The transmitted signal should be checked with a suitable test receiver for the characteristic swept tone modulation.

## **9 Global Navigation Satellite System (GNSS)**

9.1 Some satellite EPIRBs are designed to transmit a position derived from a GNSS receiver, which may be internal or external to the EPIRB.

9.2 The original equipment (EPIRB) manufacturer should be consulted for a method of testing the correct operation of this function, e.g.: by using a GNSS repeater/simulator or external input. This test may involve a live transmission from the EPIRB and should be performed in a screened room or enclosure in accordance with paragraph 3.2. Attention is drawn to paragraph 3 on the prevention of false distress alerts.

9.3 A test receiver should be used to verify that the signal transmitted by the satellite EPIRB contains the correctly encoded position data derived from the GNSS receiver. Attention is drawn to paragraph 3 on the prevention of false distress alerts.

## **10 Waterproof integrity**

10.1 The satellite EPIRB should be inspected for any signs of damage or cracks to the casing, or of water ingress. Any damaged item should be replaced in accordance with the manufacturer's recommended procedures.

10.2 The satellite EPIRB should be tested for waterproof integrity at the end of the SBM. The equipment manufacturer may suggest an appropriate method to test the integrity of the EPIRB.

10.3 One method involves immersing the equipment in hot water (20-30°C above ambient) for a period of 1 min. It can be readily seen if there are any problems with the seals, as the air inside the beacon expands and escapes as a stream of bubbles. This test should not be carried out with cool water, as the water may be drawn into the equipment without showing significant release of air bubbles.

10.4 Satellite EPIRBs equipped with seawater switches should have this function disabled during the immersion test to prevent activation, unless the complete test is performed inside a screened room. This disabling may be achieved by immersing the EPIRB complete with a mounting bracket if the bracket includes an interlock to prevent activation before release. In some cases the EPIRB contains an inversion switch, so it will not be activated if immersed in the inverted position. The manufacturer should be consulted for specific guidance.

## **11 Labelling**

11.1 As a minimum, the equipment external labelling should be checked for the following details:

- .1 manufacturer's serial number. This identifies the equipment, even if the programmed data (e.g. MMSI or callsign) is later changed;
- .2 the transmitted identification code:
  - for L-band EPIRBs, it will be the Inmarsat System Code; and
  - for 406 MHz EPIRBs, this will be the beacon 15 Hexadecimal Identification (15 Hex ID) and other encoded identification information (MMSI / callsign) as required by the Administration. It should be verified that the label matches the information decoded from the self-test mode transmission using the test receiver. For the COSPAS-SARSAT location protocol beacons, the 15 Hex ID should correspond to position data set to default values;
- .3 the expiration date of the battery; and
- .4 the date when the next shore-based maintenance is due (see paragraph 12.1).

11.2 The above checks also apply if a replacement EPIRB is provided by the SBM provider.

## **12 Shore-based maintenance report and other documentation**

12.1 The results of shore-based maintenance should be provided in the form of a shore-based maintenance report, a copy of which is to be kept on board, and a label affixed to the exterior of the beacon detailing the name of the SBM provider and the date when the next shore-based maintenance is due.

12.2 The SBM provider may affix a tamperproof seal or similar device on completion of the SBM.

12.3 Before returning the beacon to the owner, or when providing a replacement beacon, the SBM provider should check the registration details with the beacon registry, where practicable.

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