



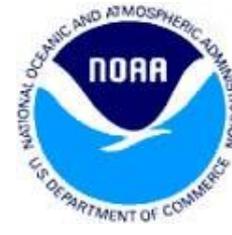
Beacons – How they work

SAR Controllers Training 2014

25 - 27 February 2014

LT Timothy Sinquefield

NOAA SARSAT Operations Officer



C/S 406 MHz Beacons



- COSPAS-SARSAT 406 MHz Beacons

EPIRB Emergency Position Indicating Radio Beacon

PLB Personal Locator Beacon

ELT Emergency Locator Transmitter

SSAS Ship Security Alert System

EPIRB



Emergency Position Indicating Radio Beacon



Two basic types

CAT I – automatic release
and activation

CAT II – manual release

EPIRB – Brackets

CAT I



CAT II



Types of Brackets



- Category 1 (Float Free)
 - Hydrostatic Release between 1.5 – 4.0 meters (4.9-13.1 ft.)
 - EPIRB is transmitting when it gets to the surface

Hydrostatic release needs replacement every two years from installation date or 4 years from manufacture.

CAT 2 BRACKET



Must be manually removed from bracket.

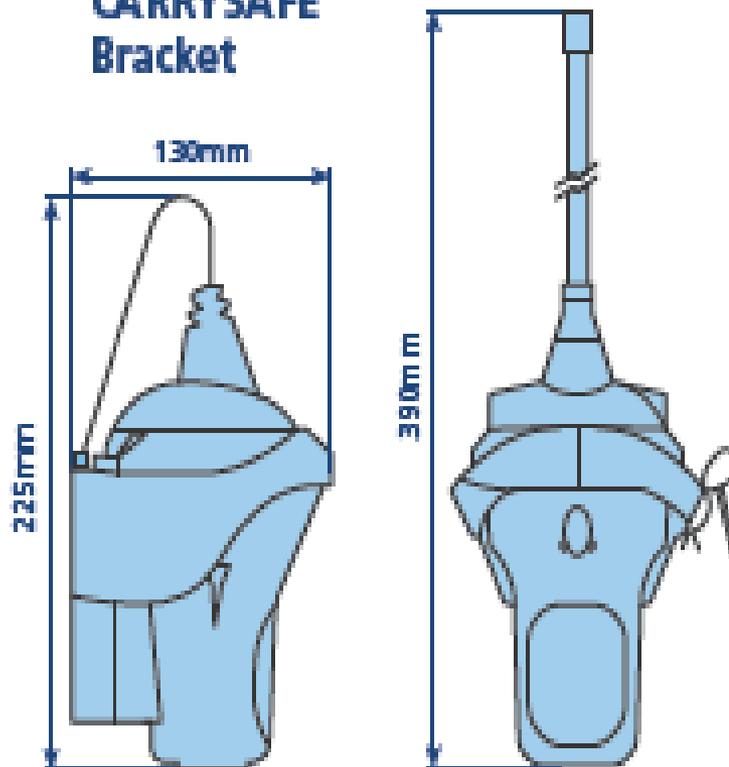
Once removed from bracket can be manually activated or automatically by throwing in the water.



CAT 2



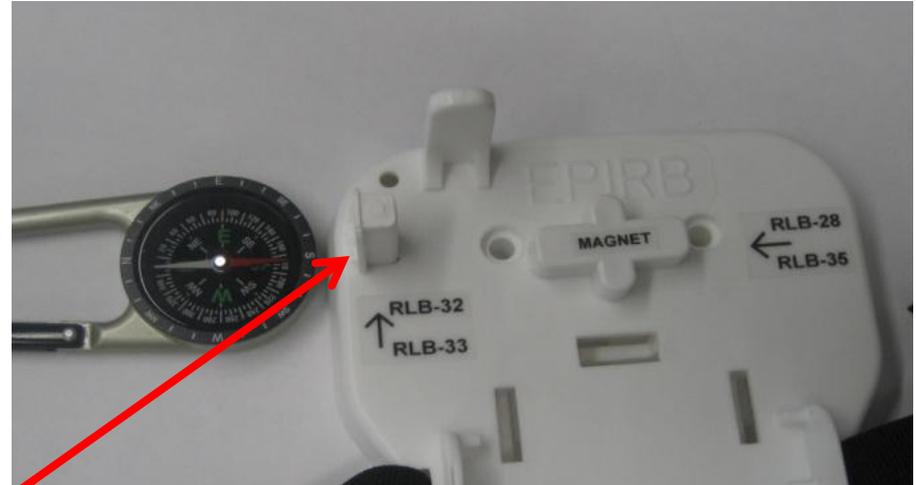
Smartfind in
CARRYSAFE
Bracket



CAT 2 Bracket



Testing Bracket Magnet



A Compass provides simple detection on bracket magnet.



Activation

- Typical activation includes
- Auto – put in “Armed” or “Ready” position
- Manual - switch to “Manual” or “On”
Has a barrier to keep from accidental manual activation.

EPIRB SWITCHES



EPIRB SWITCHES



EPIRB SWITCHES



Lanyard



Lanyard:

- 5 to 8 meters
- Orange/yellow color
- Not rot/deteriorate





406 MHz S-VDR

Simplified Voyage Data Recorder



- Is a CAT 1 EPIRB



PLB

Personal Locator Beacon

PLB

Manual activation

Carried on persons

May or may not float

Held out of water to transmit

NO Strobe light required

Min 24 hour transmit

Some GPS Enabled

Red 406
Button
Underneath





PLB





Military Personal Recovery Devices

- AN-URT 44 PLB



- AN-PRC 112



- C-SEL





AN-URT 44 PLB

- USAF 121.5, 243, 406 PLB
- DEPLOYED WITH CHUTE





AN/PRC 112 G – HOOK RADIO

- Frequencies:
 - 118.5-124.5 / 225-320 (25KHz steps)
 - 406 MHz (Optional)
- Interface to legacy CSAR systems
- GPS Readout for NAV
- Two way dedicated SATCOM





Combat Survivor Evader Locator (CSEL)

- Over the Horizon and Line of Sight
- Secure texting /messages
UHF SATCOM
- XMIT Acknowledged return messages
- Multiple VHF channels
- SARSAT Beacon





ELT

Emergency Locator Transmitter

Operational Applications

- Automatic Fixed - AF
- Automatic Portable - AP
- Survival Equipment – S
 - Class A (buoyant)
 - Class B (non-buoyant)
- Automatic Deployable - AD

406/121.5 MHz

24 hr Transmitter

“ON-OFF-ARMED-
RESET” controls

ELT activated by pilot,
crash forces or water
activated.

AUTOMATIC ACTIVATION

- G-Switch - fixed



- Some are water activated like EPIRB but coded for aircraft using portable ditch bag



DESIGNED FOR ROTARY WING





ELT – MANUAL ACTIVATION



RESET



SSAS

Ship Security Alert System

- 406 MHz Ship Security Alert System (SSAS)
- All SOLAS vsls on international voyages.
- Two stealth switches for remote activation.
- Alert goes to national authority.





Manual Activation





SEND DEVICES

Satellite Emergency Notification Device

- In Reach
- SPOT
- Cell phones and Apps
- Spidertracks



inReach

- Two way text paired with smart phone
- Emergency SOS function Confirmed on delivery
- Uses Iridium Satellite System
- GEOS Emergency Response Center

inReach SE





SPOT

- “SPOT ASSIST”
Roadside/Boat assistance
for non-emergency
- Emergency SOS function
- Uses Globalstar Satellite
System
- GEOS Emergency
Response Center





SPECIALIZED CELL PHONES and APPS

- Marketed for industrial professionals
- Intrinsically safe
- Has accelerator detection to detect falls and will auto-alert
- Domestic telecoms (ATT, Sprint, etc)
- GEOS Emergency Response Center



SONIM



Spidertracks

- “Spiderwatch” SOS function alerts when no longer broadcasting
- Uses Iridium Satellite System
- Uses aircraft power supply no battery backup





Questions

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