False Alerts

What causes False Alerts?

What did you enter in IHDB?
Why do we care about EPIRB False Alerts?

• 96% EPIRB Alerts are false.
• 85% Resolved by CC with registration and good detective work.
• $3.6 million in A/C time and fuel on EPIRB false alerts.
• Projected increase in EPIRB population will bring increase in number of false alerts.
Cost of Coast Guard A/C Sorties Searching for False 406 EPIRB Activations for the Month of July 2007 - $708,815.25

01/18/2008 L.T. Yarbrough, D7 CFVS
EPIRB Operational Requirements

- Positive visual and/or audible indication that EPIRB is activated (strobe light flashing).
- Easily manually deployed, activate, and deactivated, and transferred to survival craft.
- Not be activated or deactivated by conditions encountered in maritime environment.
Prevention of Inadvertent Activation

• Must be fitted with means to prevent inadvertent activation and deactivation.
• Not automatically activate when water washes over while in bracket.
• Most EPIRBs use bracket with magnet to disable activation circuit.
• EPIRB held securely in bracket when bumped or vibrated.
False Alert Study

67% Mounting Failure.

- CG Study of False Alerts.
- 232 Secondary Collection – Critical ?’s.
- 23 EPIRB Testing
- 140 Activated in Bracket.
- 15 Knocked from Bracket.
EPIRB Operational Requirements

Not be activated or deactivated by conditions encountered in maritime environment.

67% Of False Alerts Mounting Failure.
Deactivation Reed Switch for wet sensor
Wet Sensor Deactivation System

Deactivation Reed Switch for wet sensor

Magnet
ACR Universal Low Pro™ Cat 2 Bracket

Magnet mounting location changes with model beacon
Magnet Missing

Failure of material that held magnet
Magnet Still There

Magnet still there, but plastic showing stress cracks.
Magnet Corrosion
Magnet Corrosion
EPIRB Mounted Backward

01/18/2008   L.T. Yarbrough, D7 CFVS
EPIRB Assembled Backward
Not Just a US Problem!!

01/18/2008

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# Beacon False Alert Rate For 2005

False Alert Rate By Beacon Type

(Number of False Alerts/Estimated Beacon Population)

<table>
<thead>
<tr>
<th>Beacon Type</th>
<th>False Alert Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIRB</td>
<td>1.67%</td>
</tr>
<tr>
<td>ELT</td>
<td>10.84%</td>
</tr>
<tr>
<td>PLB</td>
<td>0.68%</td>
</tr>
</tbody>
</table>
## Beacon False Alert Rate

False Alert Rate = False Alerts / Estimated Beacon Population By Manufacturer and Model

<table>
<thead>
<tr>
<th>Beacon Type</th>
<th>Model Number</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIRB</td>
<td>Model 43</td>
<td>0.47%</td>
<td>1.42%</td>
<td></td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 27</td>
<td>0.59%</td>
<td>1.25%</td>
<td>1.36%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 26</td>
<td>0.67%</td>
<td>1.81%</td>
<td>1.36%</td>
</tr>
<tr>
<td>PLB</td>
<td>Model 45</td>
<td>0.41%</td>
<td>1.31%</td>
<td></td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 11</td>
<td>1.95%</td>
<td>1.29%</td>
<td></td>
</tr>
<tr>
<td>PLB</td>
<td>Model 12</td>
<td>1.96%</td>
<td>0.49%</td>
<td>1.25%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 19</td>
<td>1.26%</td>
<td>1.40%</td>
<td>1.22%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 21</td>
<td>1.21%</td>
<td>1.22%</td>
<td></td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 37</td>
<td>0.96%</td>
<td>1.13%</td>
<td></td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 16</td>
<td>1.91%</td>
<td>1.11%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beacon Type</th>
<th>Model Number</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIRB</td>
<td>Model 22</td>
<td>0.96%</td>
<td>1.61%</td>
<td>1.07%</td>
</tr>
<tr>
<td>ELT</td>
<td>Model 54</td>
<td></td>
<td></td>
<td>1.04%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 18</td>
<td>1.37%</td>
<td>1.09%</td>
<td>1.00%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 24</td>
<td>0.70%</td>
<td>2.40%</td>
<td>0.96%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 44</td>
<td></td>
<td></td>
<td>0.45%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 9</td>
<td>2.32%</td>
<td>3.38%</td>
<td>0.78%</td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 20</td>
<td></td>
<td></td>
<td>0.76%</td>
</tr>
<tr>
<td>ELT</td>
<td>Model 52</td>
<td></td>
<td></td>
<td>0.68%</td>
</tr>
<tr>
<td>PLB</td>
<td>Model 35</td>
<td>1.20%</td>
<td>0.65%</td>
<td></td>
</tr>
<tr>
<td>EPIRB</td>
<td>Model 36</td>
<td>1.14%</td>
<td>0.54%</td>
<td></td>
</tr>
</tbody>
</table>
Category 1 ACR Satellite $2$ 406 MHz
Category 1 ACR Satellite 406 MHz
Category 2 ACR Satellite \textsubscript{2} 406 MHz
Category 2 ACR Satellite 406 MHz
Category 1 McMurdoo 406 GPS
Category 1 McMurdo 406 GPS

Note: The magnet is positioned under the EPIRB and is not visible until the EPIRB is removed.
Category 1 Pains Wessex 406 MHz
Category 2 Pains Wessex 406 MHz
Alden / NAT S1010

- Magnet Location
IHDB False Alert Reason

- Beacon Mishandling
- Beacon Malfunction
- Mounting Failure
- Environmental Conditions
- Unknown
IHDB False Alert Reason

• Beacon Mishandling
  – False Alert – Mishandling – Installation
  • Exposed to sea action or ship’s work, equipment struck beacon, *improperly placing beacon in bracket.*
IHDB False Alert Reason

• Beacon Mishandling
  – False Alert – Mishandling – Installation
  – False Alert – Mishandling – Testing
    • Failure to follow proper testing procedures
    • Repair by owner or service center causing activation.
    • Improper removal from bracket while testing, cleaning.
    • Beacon shipped while armed and activated.
    • Beacon stored improperly
IHDB False Alert Reason

- Beacon Mishandling
  - False Alert – Mishandling – Installation
  - False Alert – Mishandling – Testing
  - False Alert – Usage
    - Illegal activation: hoax, vandalism, theft
    - Accidental activation: reported, NFI
    - Demonstrated / test not co-ordinated.
IHDB False Alert Reason

• Beacon Mishandling
  – False Alert – Mishandling – Installation
  – False Alert – Mishandling – Testing
  – False Alert – Mishandling – Usage
  – False Alert – Mishandling – Disposal
    • Beacon discarded as trash, abandoned.
IHDB False Alert Reason

- Beacon Malfunction
  - False Alert – Malfunction – Switch
    - Switch broken
IHDB False Alert Reason

• Beacon Malfunction
  – False Alert – Malfunction – Switch
  – False Alert – Malfunction – Water Intrusion
    • Water leakage due to manufacturing defect, cracked casing, faulty seal.

• **Not** exterior of beacon getting wet.
IHDB False Alert Reason

• Beacon Malfunction
  – False Alert – Malfunction – Switch
  – False Alert – Malfunction – Water Intrusion
  – False Alert – Malfunction – Test
    • Transmitted non-inverted frame (?)
IHDB False Alert Reason

• Beacon Malfunction
  – False Alert – Malfunction – Switch
  – False Alert – Malfunction – Water Intrusion
  – False Alert – Malfunction – Test
  – False Alert – Malfunction – Electronics
    • Electronics malfunction
    • Non-GPS electronics malfunction
IHDB False Alert Reason

- Mounting Failure

67% Of False Alerts Mounting Failure.
IHDB False Alert Reason

- Mounting Failure
  - False Alert – Mounting – Bracket
    - Strap or bracket failure
    - Beacon fell out of bracket

67% Of False Alerts Mounting Failure.
IHDB False Alert Reason

- Mounting Failure
  - False Alert – Mounting – Bracket
  - False Alert – Mounting – Mounting Release
    - Hydrostatic release failure (?)

71% Of False Alerts Mounting Failure.
IHDB False Alert Reason

- Mounting Failure
  - False Alert – Mounting – Bracket
  - False Alert – Mounting – Mounting Release
  - False Alert – Mounting – Magnet
    - Switch magnet not effective or missing.

67% Of False Alerts
Mounting Failure.
IHDB False Alert Reason

- Environment Conditions
  - False Alert – environmental Conditions
    - Extreme Weather conditions (?)
    - Hurricane / cyclone conditions, vsl knocked down, heavy seas, ice build-up. (?)
False Alert ELT – environmental Conditions - YES
False Alert EPIRB—environmental Conditions - NO
IHDB False Alert Reason

• Unknown
  – False Alert – Reason Unknown
    • Confirmed Beacon False Alert
    • No feedback on why activated
    • Investigation in to beacon activation cause was inconclusive.