

SARSAT Beacon Manufacturers Workshop

May 8, 2015

Beacon Use, Issues, and the 406 MHz Beacon Registration Database

Presented by:
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Registration Database Lead

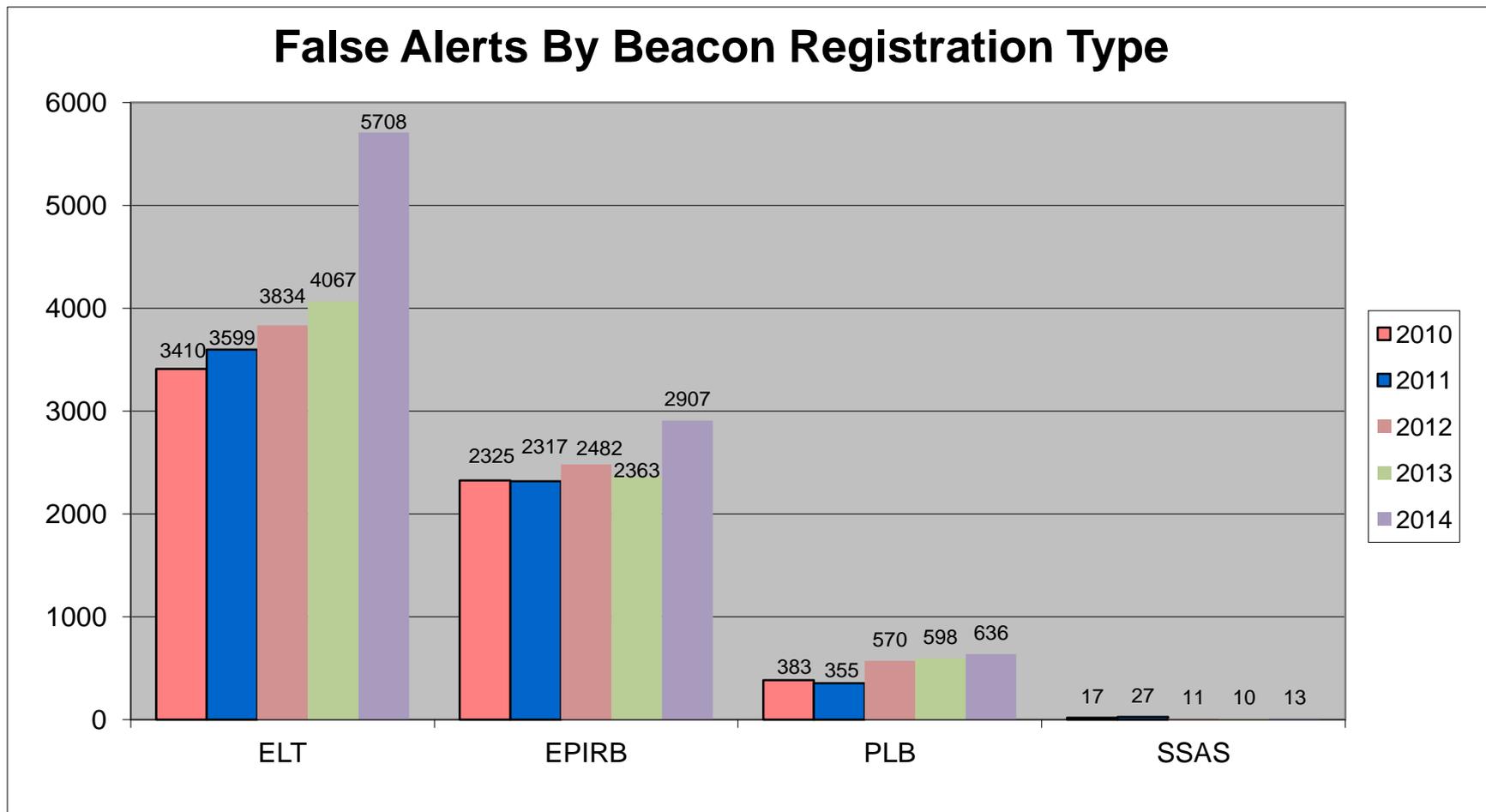




False Alert Statistics



Non-Distress Beacon Counts 2014





Beacon False Alert Rate for 2014

Based on Estimated Beacon Population

EPIRB	0.91 %
ELT	4.33 %
PLB	0.38 %
SSAS	4.69 %
Overall	1.25 %



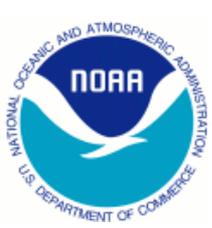
False Alert Rate by Beacon Type vs. Registrations by Beacon Type 2014

ELTs	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
% of Total False Alerts	53%	54%	51%	55%	61%
% of Total Beacons Registered Which are ELTs	17%	17%	18%	18%	18%
EPIRBs	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
% of Total False Alerts	29%	29%	29%	28%	28%
% of Total Beacons Registered Which are EPIRBs	58%	55%	51%	49%	47%
PLBs	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
% of Total False Alerts	16%	18%	19%	16%	11%
% of Total Beacons Registered Which are PLBs	25%	28%	31%	33%	35%



National Use Beacons

- When a US Government Agency orders beacons, ask the buyer to contact NOAA to ensure that:
 - Special coding and processing is considered
 - They understand the C-S system and how alerts from their beacons will be distributed
 - They understand beacon operation and do not generate false alerts
 - They are aware of and follow proper test policies
 - The beacons are properly registered
 - Proper procedures are followed for:
 - Battery replacement and disposal
 - Beacon replacement and disposal



NOAA's Beacon Registration Database



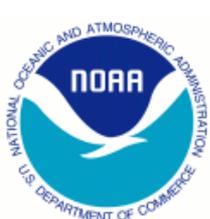
Beacon Registration Postal Mailing Address *REMINDER*



**SARSAT Beacon Registration
NOAA
NSOF E/SPO53
1315 East-West Highway
Silver Spring, MD 20910**

- The RGDB Physical Address has not changed
- Use the following address ONLY if registrations are sent by FedEx or UPS:

SARSAT Beacon Registration
NOAA
NSOF E/SPO53
4231 Suitland Road
Suitland, MD 20746



What Happens to Registration Mail Sent to the Old Address?



- Registration mail sent from owners to NOAA *via USPS* at the 4231 Suitland Road address **is being returned to the sender** as of August 30, 2014



Checksum Implementation

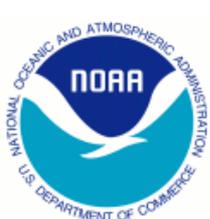
- The registration form (approved by OMB) contains a 5-digit checksum field, which is used to verify the 15-hexadecimal beacon ID
- The checksum is currently provided by only a few manufacturers
- Initial RGDB logic requiring checksum entry confused owners
- Currently, a new registration is accepted regardless of whether the checksum value is correct, incorrect, or absent; this minimizes owner confusion and frustration, so that the owner does not skip registration.
- NOAA is finalizing a plan on what steps will be taken when a checksum value does not match the beacon ID



Beacon Manufacturers' Checksum Implementation



- NOAA has started the Code of Federal Regulations (CFR) process for mandating that checksum be used for most new beacons
- In preparation, NOAA requests that manufacturers start generating checksum values for their new beacons
- Refer questions on implementing the checksum to:
Jesse Reich, SARSAT Ground System Engineer
jesse.reich@noaa.gov
301-817-4509



Ways Beacon Manufacturers & Service Centers Can Help NOAA's RGDB (1 of 2)



- Contact NOAA immediately when an issue arises that has a direct impact on beacon owners, such as:
 - Duplicate beacon ID encoded into beacons
 - Mislabeled beacon IDs on forms or beacons
 - Recalls of beacons you have manufactured
- Promote online registration to increase the likelihood of the owner registering a beacon
- Ensure that the UIN label is legible and affixed to the blank registration form
- Consider ideas to make your manufacturer UIN stand out on both the beacon and the registration form



Ways Beacon Manufacturers & Service Centers Can Help NOAA's RGDB (2 of 2)



- Verify NOAA decal currency and remind the owner, if appropriate, to update the beacon's registration with NOAA, especially if a different beacon is returned to owner
- Inform owners who use non-serialized beacon coding (e.g., tail number, MMSI, and radio call sign) of the importance of recoding the beacon and updating the registration when the beacon is transferred to another vessel or aircraft
- Provide to NOAA the following (if you have not already done so):
 - Arithmetic formulas that correlate beacon IDs and serial numbers for various protocols you use
 - Beacon UINs for beacons received from an owner that will not be returned to that owner



New RGDB Website Improvements (1 of 3)

- The revised RGDB user interface, which we expect to roll out at the end of CY 2015, will result in more accurate registration information by:
 - Allowing owners to gain access to their registration information using a challenge question-and-answer sequence
 - Allowing owners to partially enter a new registration, save their work, and complete the registration at a later time
 - Collecting more specific information for “owners” and “operators”



New RGDB Website Improvements (2 of 3)

- Including more online real-time transparent checks to alert registrants to look for and correct inconsistencies, such as the 24-bit address not matching the tail number for those ELTs where the tail number is programmed into the ID
- Generating customized letters to owners, by beacon type, including information relevant to testing and disposal, which may result in fewer false alerts



New RGDB Website Improvements (3 of 3)

- Informing owners in real-time how their email address will be used to communicate with owner/operators, which should improve accuracy of communications and therefore, registration information
- Providing the means to make it easier for the latest beacon possessor to notify NOAA about their interest in registering a beacon; if a beacon transfer has not been confirmed, the new owner's information can be entered and viewed with its "pending" status



Registration Database Statistics



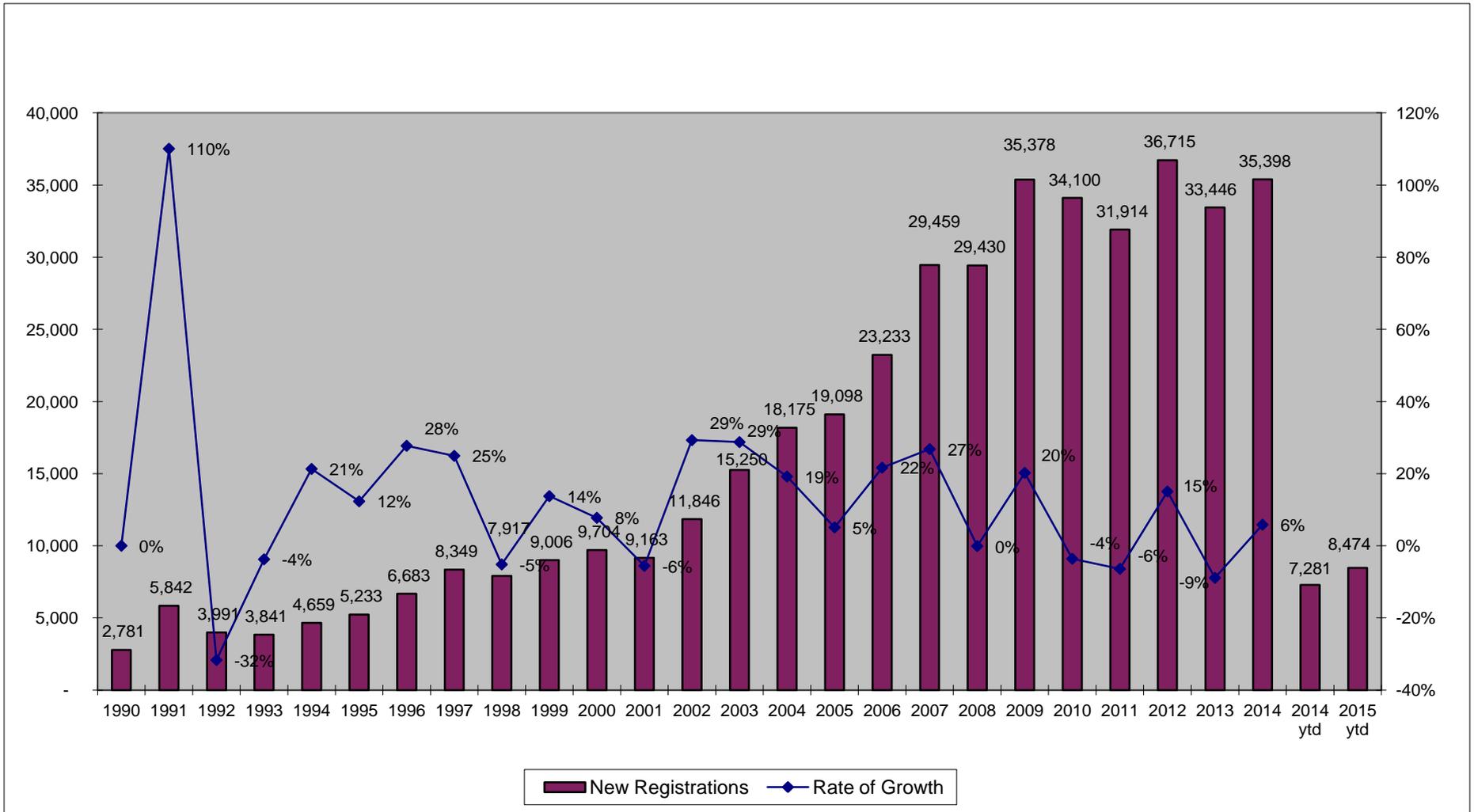
Statistics on Registration Renewals March 2014 to March 2015

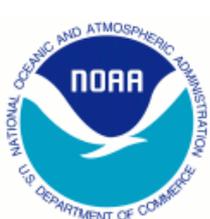


<u>Month/Year</u>	<u>Updated by Owners Through Website</u>	<u>Updated by NOAA</u>	<u>Total Registration Renewals</u>	<u>Percentage Updated by Owners Through Website</u>	<u>Percentage Updated by NOAA</u>
Mar-14	10,276	3,400	13,676	75%	25%
Apr-14	11,952	3,427	15,379	78%	22%
May-14	10,801	4,030	14,831	73%	27%
Jun-14	10,848	4,038	14,886	73%	27%
Jul-14	9,455	3,600	13,055	72%	28%
Aug-14	8,658	3,012	11,670	74%	26%
Sep-14	7,882	2,788	10,670	74%	26%
Oct-14	8,014	3,082	11,096	72%	28%
Nov-14	7,533	2,447	9,980	75%	25%
Dec-14	8,894	2,929	11,823	75%	25%
Jan-15	11,406	3,291	14,697	78%	22%
Feb-15	9,952	2,650	12,602	79%	21%
Mar-15	13,059	3,836	16,895	77%	23%

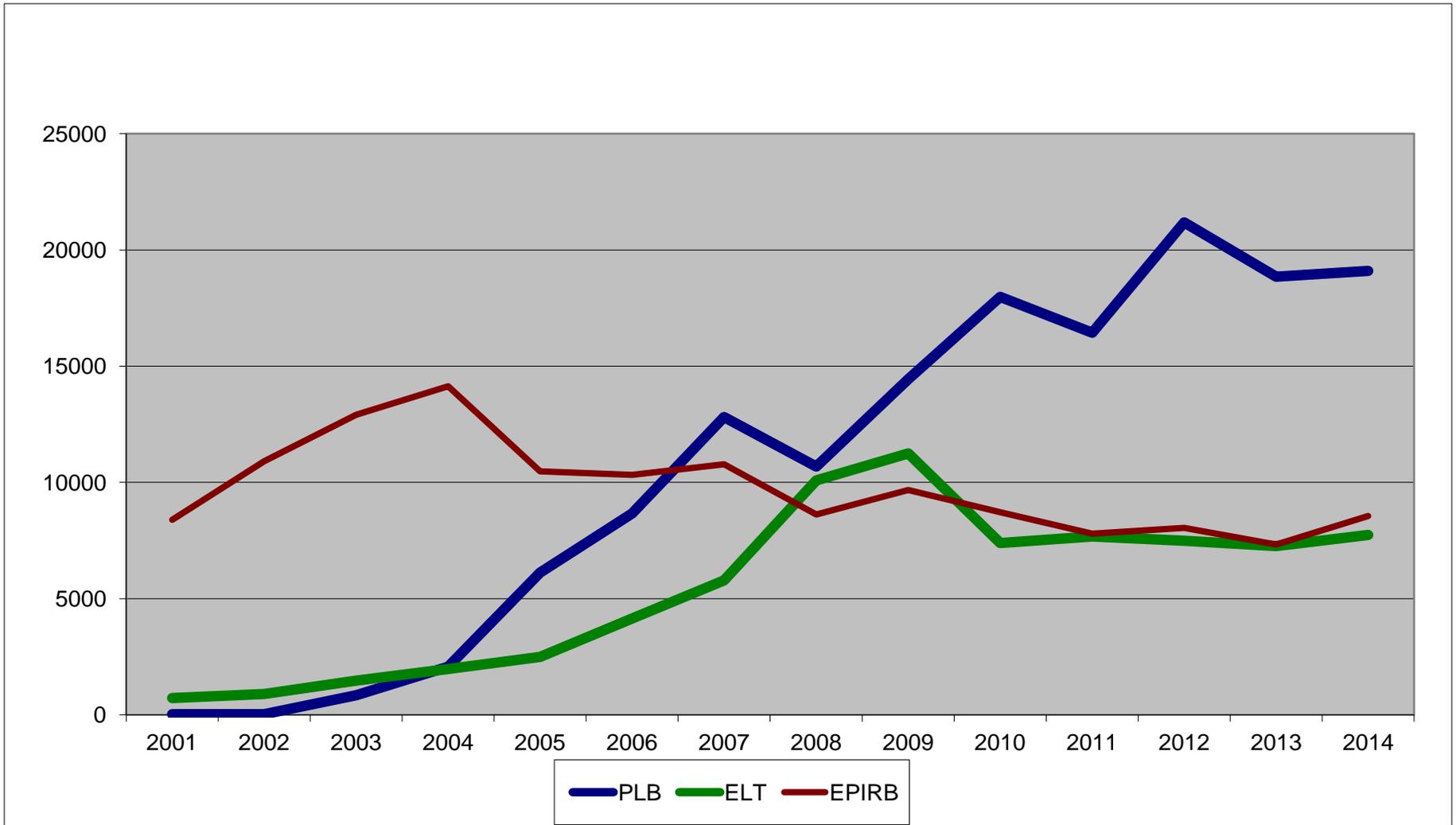


New Registrations by Year as of March 2015

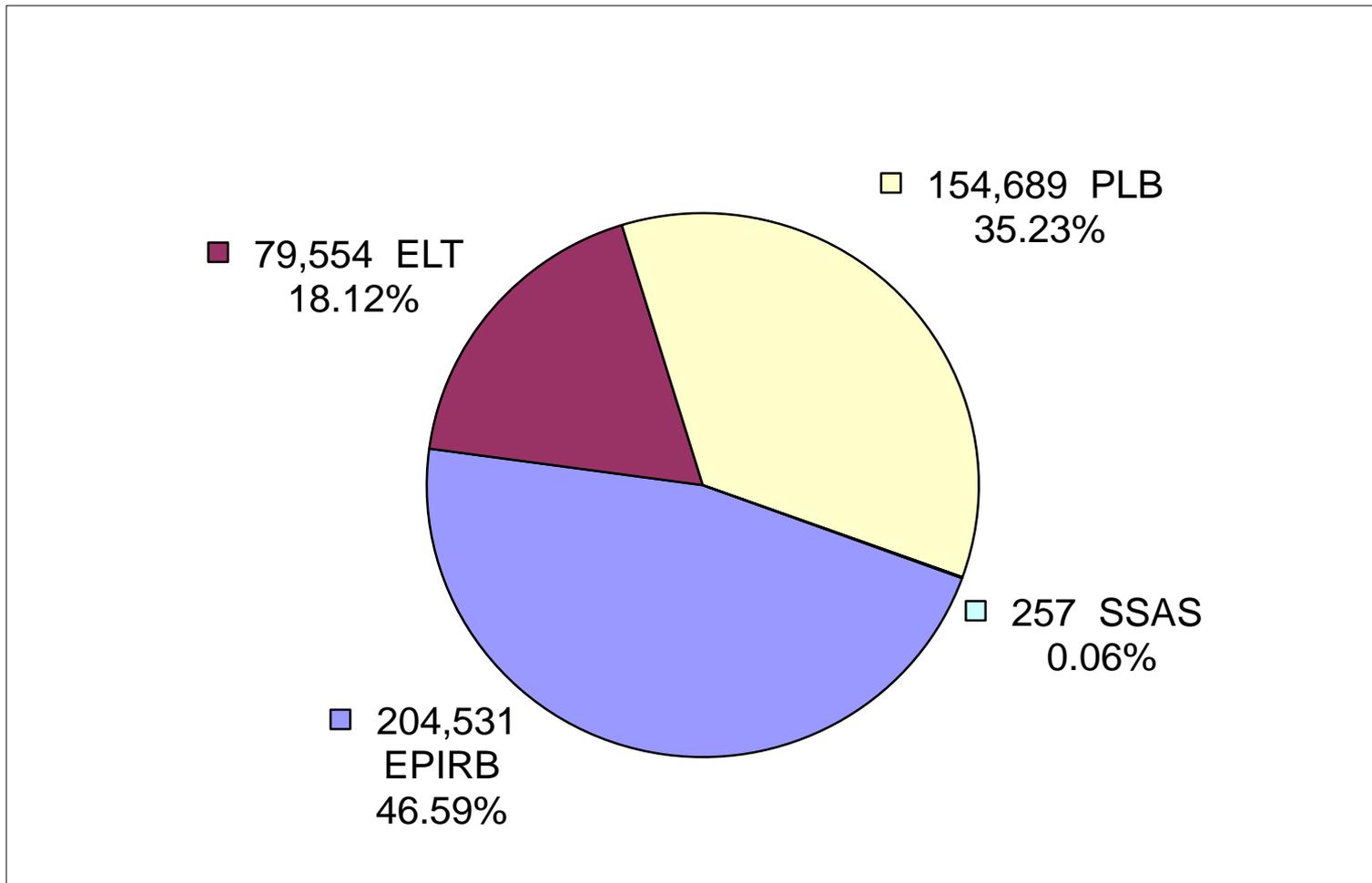




New Beacon Registrations 2001 - 2014

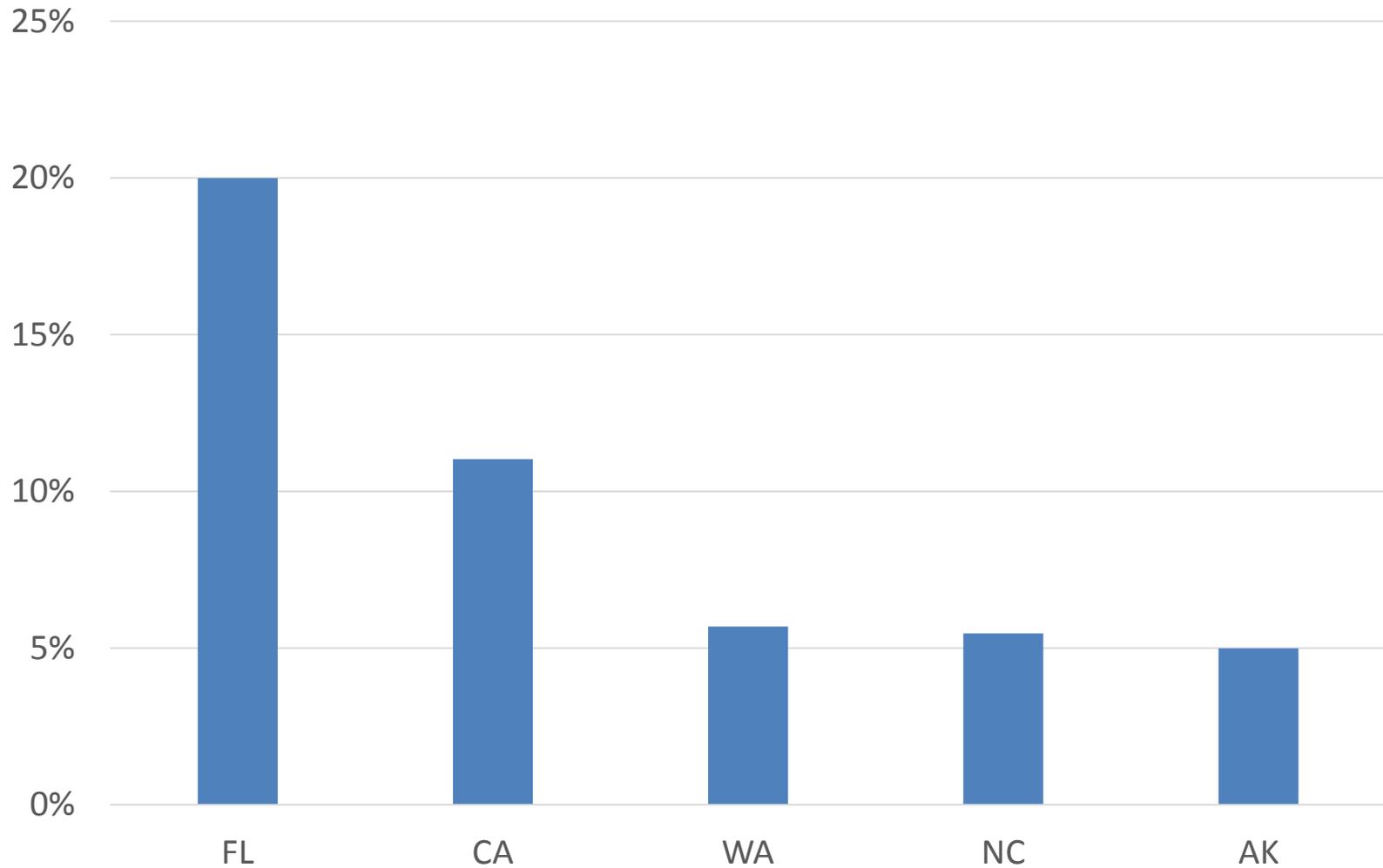


Distribution of Registered Beacons by Beacon Type as of March 2015



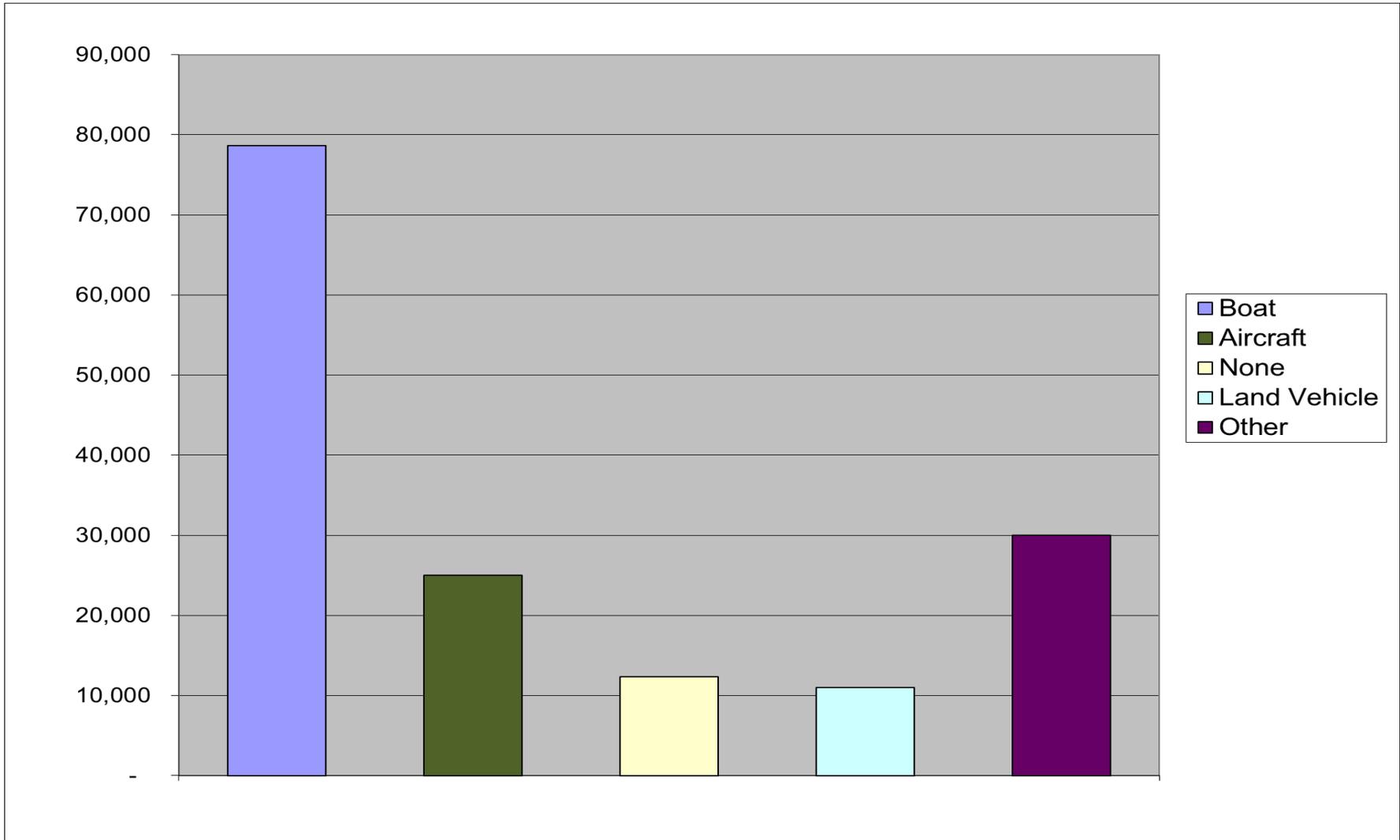


Top 5 States for PLBs by Home Address





Specific Usage for PLBs





Registration Statistics Available on the SARSAT Website



- Registration statistics are updated on a monthly basis on the NOAA SARSAT website (www.sarsat.noaa.gov) under “Other Resources”/“SARSAT Statistics” (<http://www.sarsat.noaa.gov/statistics.html>)
 - New Beacon Registrations by Type
 - This is a table of first-time registrations of beacons, listed by type of beacon, for each month from January 2010 through the most recent month



RGDB Contact Information

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Back-up Slides



False Alerts by Beacon Manufacturer and Model

- The next four slides show false alerts by Beacon Manufacturer and Model
 - Manufacturers are only identified by a “Model Number” (manufacturers may contact the RGDB lead for information concerning their beacons)
 - The false alert percentage is calculated based on number of false alerts and estimated beacon population. The estimated beacon population is based on the number of registered beacons activated and total beacons activated.



False Alert Rate=False Alerts/Beacon Population by Manufacturer and Model (1 of 4)

Beacon Type	Model Number	2010	2011	2012	2013	2014
ELT	Model 74	27.07%	30.13%	43.83%	28.98%	18.36%
ELT	Model 95			19.29%	11.20%	11.50%
ELT	Model 77	6.36%	7.88%	4.86%	3.19%	10.26%
EPIRB	Model 79	0.81%	1.35%	3.88%	6.38%	9.84%
ELT	Model 68	4.73%	3.35%	6.48%	6.14%	8.21%
ELT	Model 78	14.43%	6.47%	6.48%	5.56%	7.85%
ELT	Model 61	8.50%	9.18%	7.41%	8.65%	7.02%
ELT	Model 69	3.96%	3.90%	7.59%	6.35%	6.62%
ELT	Model 31	8.16%	4.51%	7.66%	6.13%	5.67%
ELT	Model 76	5.34%	4.83%	9.70%	4.73%	5.57%
ELT	Model 87		5.91%	5.75%	5.02%	5.52%
ELT	Model 53	7.31%	10.03%	4.16%	5.64%	5.33%
ELT	Model 88		10.00%	6.75%	4.14%	5.26%
ELT	Model 65	3.66%	4.56%	1.58%	2.96%	5.03%
ELT	Model 93			4.67%	3.46%	4.90%
ELT	Model 30	3.91%	3.85%	8.50%	0.91%	4.84%
ELT	Model 105					4.76%
ELT	Model 1	5.11%	4.07%	5.71%	5.01%	4.68%
ELT	Model 3	5.04%	5.05%	4.43%	4.06%	4.57%
EPIRB	Model 64	1.28%	1.25%	3.82%	4.35%	4.37%
ELT	Model 106					4.13%
EPIRB	Model 6	1.89%	1.45%	4.03%	3.61%	3.89%
ELT	Model 54	1.64%	2.38%	4.36%	3.54%	3.81%
ELT	Model 2	5.77%	3.64%	6.93%	3.39%	3.77%
PLB	Model 104				0.00%	3.73%
EPIRB	Model 36	0.39%	0.76%	0.94%	3.04%	3.41%



False Alert Rate= False Alerts/Beacon Population by Manufacturer and Model (2 of 4)

Beacon Type	Model Number	2010	2011	2012	2013	2014
EPIRB	Model 91		0.99%	0.77%	1.94%	3.16%
ELT	Model 51	2.36%	2.28%	2.38%	2.54%	3.04%
EPIRB	Model 10	1.81%	1.98%	2.45%	3.61%	2.96%
EPIRB	Model 13	2.52%	3.60%	2.71%	2.05%	2.81%
ELT	Model 94			0.00%	1.71%	2.59%
EPIRB	Model 19	1.19%	1.14%	2.57%	1.99%	2.12%
ELT	Model 75	3.81%	2.87%	2.50%	2.64%	2.04%
EPIRB	Model 7	1.20%	0.96%	2.43%	1.87%	2.02%
EPIRB	Model 16	0.34%	0.44%	1.29%	2.58%	1.97%
EPIRB	Model 21	0.61%	0.62%	0.00%	0.00%	1.91%
ELT	Model 70	4.23%	1.88%	1.25%	2.26%	1.69%
EPIRB	Model 27	1.21%	1.54%	1.28%	1.23%	1.63%
EPIRB	Model 34	0.74%	0.51%	2.84%	0.63%	1.62%
EPIRB	Model 98			0.00%	1.14%	1.50%
ELT	Model 39	1.25%	5.35%	0.39%	0.36%	1.33%
PLB	Model 46	0.76%	0.93%	1.02%	0.81%	1.02%
EPIRB	Model 33	1.41%	1.26%	1.76%	1.05%	1.02%
EPIRB	Model 26	2.06%	0.99%	1.58%	2.34%	0.98%
EPIRB	Model 5	1.68%	1.10%	1.51%	0.84%	0.87%
EPIRB	Model 20	0.79%	0.71%	0.92%	0.96%	0.86%
PLB	Model 42	1.93%	1.42%	1.36%	0.40%	0.85%
PLB	Model 58	0.42%	0.53%	1.06%	0.64%	0.84%
PLB	Model 100			0.37%	0.91%	0.77%
PLB	Model 92		0.81%	0.90%	0.79%	0.76%
ELT	Model 4	1.90%	1.21%	2.76%	0.74%	0.76%
EPIRB	Model 25	0.23%	0.39%	0.08%	0.54%	0.71%
PLB	Model 45	0.00%	0.00%	0.00%	0.00%	0.70%



False Alert Rate= False Alerts/Beacon Population by Manufacturer and Model (3 of 4)

Beacon Type	Model Number	2010	2011	2012	2013	2014
PLB	Model 35	0.00%	0.00%	0.00%	0.00%	0.70%
EPIRB	Model 9	0.53%	0.54%	0.41%	0.26%	0.67%
EPIRB	Model 28	0.41%	0.49%	0.55%	0.46%	0.59%
ELT	Model 48	0.38%	0.25%	0.23%	0.10%	0.56%
PLB	Model 86	0.72%	0.06%	0.27%	0.25%	0.56%
EPIRB	Model 60	0.56%	0.55%	0.48%	0.39%	0.54%
EPIRB	Model 97			3.31%	0.38%	0.52%
EPIRB	Model 90		0.50%	1.10%	0.84%	0.47%
EPIRB	Model 96			0.20%	0.40%	0.46%
PLB	Model 63	0.09%	0.00%	0.09%	0.16%	0.46%
EPIRB	Model 32	0.88%	0.89%	1.58%	0.87%	0.45%
EPIRB	Model 22	0.22%	0.11%	0.22%	0.22%	0.45%
EPIRB	Model 43	0.78%	1.18%	0.45%	1.95%	0.44%
PLB	Model 72	0.60%	0.26%	0.00%	0.00%	0.41%
EPIRB	Model 82	0.51%	0.41%	0.65%	0.35%	0.40%
ELT	Model 55	2.69%	3.30%	0.40%	0.00%	0.38%
EPIRB	Model 23	0.49%	0.25%	0.50%	0.48%	0.37%
ELT	Model 52	0.40%	0.42%	0.40%	0.70%	0.37%
EPIRB	Model 37	0.20%	0.13%	0.47%	0.29%	0.36%
EPIRB	Model 17	0.65%	0.66%	0.42%	0.37%	0.34%
EPIRB	Model 11	1.17%	0.71%	0.49%	0.44%	0.33%
PLB	Model 80	0.12%	0.09%	0.33%	0.17%	0.32%
EPIRB	Model 15	0.74%	0.75%	0.38%	0.12%	0.31%
EPIRB	Model 66	0.30%	0.38%	0.34%	0.34%	0.31%
PLB	Model 101			0.00%	0.00%	0.30%
PLB	Model 41	0.25%	0.12%	0.35%	0.97%	0.30%
PLB	Model 12	0.24%	0.42%	0.09%	0.27%	0.29%
PLB	Model 85	0.55%	0.26%	0.26%	0.11%	0.28%



False Alert Rate= False Alerts/Beacon Population by Manufacturer and Model (4 of 4)

Beacon Type	Model Number	2010	2011	2012	2013	2014
PLB	Model 103				0.45%	0.26%
EPIRB	Model 8	0.71%	0.30%	0.65%	0.63%	0.26%
EPIRB	Model 24	0.74%	1.24%	0.25%	1.71%	0.25%
ELT	Model 40	0.14%	0.23%	0.24%	0.24%	0.25%
EPIRB	Model 18	0.67%	0.49%	0.38%	0.53%	0.24%
PLB	Model 99			0.13%	0.30%	0.23%
EPIRB	Model 89		0.22%	0.21%	0.47%	0.20%
PLB	Model 81	0.60%	0.36%	0.16%	0.17%	0.17%
PLB	Model 71	0.49%	0.14%	0.09%	0.11%	0.16%
PLB	Model 102			0.00%	0.20%	0.12%
EPIRB	Model 62	0.00%	0.00%	0.00%	0.00%	0.10%
PLB	Model 47	0.10%	0.20%	0.09%	0.41%	0.09%
ELT	Model 50	0.12%	0.15%	0.17%	0.02%	0.02%
EPIRB	Model 29	0.07%	0.08%	0.04%	0.03%	0.01%
EPIRB	Model 44	0.47%	0.00%	0.48%	0.00%	0.00%
EPIRB	Model 59	0.00%	0.00%	0.00%	0.00%	0.00%
ELT	Model 67	0.00%	0.00%	0.12%	0.11%	0.00%
EPIRB	Model 14	0.00%	0.85%	0.00%	0.00%	0.00%
EPIRB	Model 38	0.00%	0.00%	0.00%	0.00%	0.00%
EPIRB	Model 49	0.00%	0.00%	0.00%	0.00%	0.00%
PLB	Model 56	0.00%	0.00%	0.76%	0.00%	0.00%
PLB	Model 57	0.82%	0.00%	0.00%	0.00%	0.00%
PLB	Model 107					0.00%
EPIRB	Model 84	0.00%	0.00%	0.00%	0.00%	0.00%
PLB	Model 73	0.57%	0.05%	0.00%	0.00%	0.00%
EPIRB	Model 83	0.00%	0.00%			