Beacon Manufacturers Workshop
Friday, May 20, 2011
St. Pete Beach, FL
MINUTES

Introduction and Opening Remarks

Mr. Mickey Fitzmaurice (NOAA), as Chair, opened the meeting and welcomed the participants. He emphasized the priority of lifesaving, and gave a short presentation on 2010 rescues to punctuate the importance of distress beacons and the role manufacturers.

The Chair introduced NOAA staff and contractors that support SARSAT, and others present introduced themselves. The list of participants is enclosed. NOAA planned to post any meeting presentations under 'meetings' on the website: www.sarsat.noaa.gov, and would also be made available at the end of the meeting.

The Chair recognized the company Rakon, a major oscillator manufacturer, for sponsoring lunch for the meeting.

The Chair also asked all manufacturers to complete a beacon manufacturer questionnaire and survey.

RTCM Updates

Mr. Chris Hoffman (ACR/RTCM), Chair of RTCM's Special Committees SC-110 (Beacons) and SC-128 (Satellite Emergency Notification Devices (SENDs)) provided an overview of RTCM. RTCM, which was established in 1947 and is headquartered in the Washington, DC, is mainly a standards organization, and is involved with other organizations worldwide.

RTCM/SC-110

SC-110 mainly develops standards for emergency position-indicating radio beacons (EPIRBs) and personal locator beacons (PLBs) and supports SC-119 (maritime survivor locator devices). RTCM also supports Cospas-Sarsat, especially at the Joint Committee level. SC-110 is working on inclusion of automatic identification system (AIS) capability in EPIRBs and possibly PLBs. RTCM also supports works with the international regulatory bodies International Maritime Organization (IMO) and International Telecommunications Union (ITU).

RTCM works on certain emergency locator transmitter (ELT) issues not being addressed by other organizations. RTCM has filled in some gaps for RTCA, which is limited in what its charter allows it to do on ELT issues, e.g., consideration of secondary ELT antennas and ELT batteries.

RTCM is developing a navigation annex for the PLB standard published about three years ago. Its EPIRB standard needs to be updated to cover internal navigation, GNSS self-test, mounting, thermal shock, etc. Changes will help address false alerts and make the EPIRB easier to carry into a raft. Objectives include keeping the EPIRB from activating while installed in its mounting bracket, and ensuring the EPIRB does not inadvertently fall out or become misaligned in the bracket. Users must be able to carry a beacon from a vessel to a raft while using both hands for other purposes.

Certain battery life matters remain unfinished, including consideration of long-term storage at high temperatures.

RTCM/SC-128

RTCM is coordinating its work on SENDs with the National Search and Rescue Committee, which is interested in various non-beacon devices that might be used for distress alerting.

Satellite devices used for lifesaving should be reliable meet certain criteria comparable to beacon standards. A generic RTCM standard for one-way and two-way SEND devices covers items such as controls, indicators, operation, construction, technical characteristics and tests. The standard only deals with factors that affect distress alerting.

SEND categories are:

CAT 1 (must float);

CAT 2 (not required to float); and

CAT 3 (fixed in vehicles).

The SEND standard is nearly ready for publication. RTCM hopes that the FCC will adopt the standard, which might eventually become international.

False Alert Statistics

Mr. Sam Baker (NOAA) reviewed false alert trends by beacon type. During 2010, ELTs had the highest number of false alerts. EPIRBs false alerts had been dropping over the years. PLB alerts increased in 2010 because special-use PLBs were added to the 2010 PLB statistics.

Based on beacon populations, ELTs had the worst rate, followed by ship security alert system (SSAS) units, and then EPIRBs and PLBs. Improper testing, especially during installation, was a primary cause of false alerts.

53% of false alerts in 2010 were from ELTs, 29% from EPIBS, and 18% from PLBs.

False alert information by manufacturer and model number is available to the manufacturer concerned from NOAA upon request. This data is difficult to reliably capture.

Beacon Malfunction Modes and Coding Issues

Mr. Baker stated that ELT installations, along with testing and coding of beacons, were the main causes of repeated inadvertent activations involving beacons with the same code (not necessarily the same beacon…in some cases multiple beacons had the same identification). Some beacons had also activated during shipment. A way is needed to ensure better reliability of shipboard circuits connecting remote activation locations to SSAS units.

Mr. Greg Johnson (USCG) tracks all beacon activations to the Coast Guard, and stated that false alerts remained at about six per day in spite of the increase in beacon population. Efforts by RTCM and manufacturers seem to be getting positive results.

406 Beacon Registration Databases

NOAA RGDB Statistical Analysis and Population

Over 300,000 beacons are included in the NOAA registration database (RGDB).Online registrations remained fairly level from month to month during 2010. Mr. Baker said that sometimes beacons that are re-registered show as a new beacon, which skews the statistics a little. NOAA manual entries are running less than half the number of online registrations. EPIRB registrations are dropping, ELT registrations ramped up and then began dropping, and PLB registrations have been growing. The States with the most PLB registrations are Florida, California, North Carolina, Alaska and Washington.

57% of registered beacons are EPIRBs, 17% are ELTs, and 26% are PLBs.

NOAA had taken steps to improve the accuracy of its RGDB, including:

Emphasizing the importance of matching identifications on beacons to those registered;

Double checking NOAA manual data entries;

Double checking identifications not easily legible;

Separating the 15 character ID into blocks of five digits; and

Checking with prior owners before re-registering a beacon to a new owner.

Mr. Baker noted a change in NOAA mailing address; the new mail code is E/SP053.

NOAA is trying to implement measures to enable use of Checksums, expected to be completed by Fall 2011. During discussion, manufacturers seemed to be waiting for NOAA to be ready to handle checksums before they begin using them.

Some manufacturers provide pictures of their beacons on their websites.

Mr. Johnson wanted to know what manufacturers should do when beacons are taken out of service because even out-of-service beacons activate.

Based on the above presentations, **Mr. Baker recommended that manufacturers and/or service centers**:

Pre-print UINs on registration forms;

Help ensure that the correct the beacon identification is programmed into beacons and that proper test procedures are used.

Note the change of address for written correspondence to NOAA and include the correct address in its materials;

Provide pictures of their beacons for the NOAA RGDB so that NOAA knows where the beacon IDs are located on the beacons;

Develop software to implement checksum according to the SC-110 algorithms and pre-print the beacon ID on registration forms;

Provide to NOAA bit representations for various beacon models and identify which bits are used for the beacon ID;

Provide to NOAA a list of beacons received that will not go back into service;

Notify NOAA when issues arise that might affect beacon owners, such as when beacon ids are mislabeled on forms or beacons;

For National Use Serialized beacons (bit 43 = 0), provide NOAA with the Model Name and its associated bit value;

Where the Serial number printed on the beacon label is part of the Beacon ID, provide NOAA with the bit range and format (Decimal or Hexadecimal);

Provide NOAA with a list of beacons received that will not be returned to the same owner;

Contact NOAA immediately when an issue arises which has a direct impact on beacon owners such as: duplicate beacon ID encoded into beacons, mislabeling of beacon IDs on forms or beacons; or any beacon recalls;

Verify NOAA decal currency and remind the owner, if appropriate, to update the beacon's registration with NOAA; and

Inform owners who have vessel information, tail number, MMSI, and radio call sign, encoded into beacon of the importance of recoding the beacon and updating the registration when the beacon is swapped from one vessel to another vessel or swapped from one aircraft to another.

Beacons are registered periodically based on IMO's criteria and in the interest of ensuring registration information is current. Questions on registration can be directed to Mr. Steve Roark at NOAA (301-817-3896; Stephen.Roark@noaa.gov).

Canadian Beacon Registration & Statistics

Major Kelly Freitag (Canadian Mission Control Center) commented that RCCs for the Canadian SAR regions are located in Victoria, Trenton and Halifax.

Canada had 21,548 civil beacons plus 2,000 military beacons registered. During 2010, of the beacon alerts received, 65.4% of the ELT alerts were registered, 72.1% of the EPIRBs were registered, and 75.8% of the PLBs were registered; this represented a roughly ten percent improvement over 2009. About 4% of the received alerts were for actual distress situations. Most alerts were from ELTs and PLBs. Major Freitag also discussed resource hours spent on alerts. False alert rates were 91%, 93% and 76% for EPIRBs, ELTs, and PLBs, respectively; these rates have been dropping year-to-year based on beacon population.

Canada requires 24 bit ELT identifications; EPIRBs and PLBs are mostly serialized.

About half of the initial alerts received are unlocated, and on average it takes about one hour to receive locations. With MEOSAR, locations will be received with every burst, so registrations will be more important.

Canada is updating registrations annually, follows up on all unregistered beacons, and does not wait until an unregistered alert is received to follow up on registrations. Secondary sources of information are used to find information about the beacon owners and discover miscoded beacons.

Canada is also developing software to help identify unregistered beacons, mainly from secondary sources, and to generate an email to the owners when they can be identified. Registration data will also be emailed to owners when alerts are received to verify the data.

Major Freitag recommended that:

All manufacturers send Canadian Hex IDs to the Canadian Beacon Registry (CBR) once the beacon is coded along with information on the Distributor/Reseller they are sold to;

Resellers send the same information to CBR when beacons are sold to end users, and to include information about beacon owners and their beacon serial numbers; and that

Regulating bodies add CBR notification to their change-of-registration checklists and promote proper beacon disposal.

Canada uses accident investigations and RCC daily summaries to identify crashes where ELTs did not activate.

Canada is trying to mandate 406 MHz ELTs carriage or equivalent.

Rechargeable Batteries

Mr. Jim Christo (NASA) stated that lithium ion rechargeable batteries are subject to Cospas-Sarsat letters of compatibility rather than approvals. Temperature increases have a dramatic impact on loss of battery capacity. DOD deals with military use of batteries and wants to standardize the types of batteries that can be used. RTCA has convened a special committee (SC-225) to look at small and medium size batteries aboard aircraft. The RTCA document DO-311 (Minimum Operational Performance Standards for Rechargeable Lithium Battery Systems) will be either updated or replaced. RTCM SC-128 includes specifications on Li Ion batteries.

NASA is proposing a definition of Li Ion batteries for Cospas-Sarsat, and wants to provide guidance on use of a pulse mode method to estimate the life of a Li Ion battery. Less is known about how to estimate the life of rechargeable batteries compared to non-rechargeable ones. Numerous issues with Li Ion batteries remain to be resolved.

Cospas-Sarsat Overview and Beacon Statistics

Mr. Dany St-Pierre (Cospas-Sarsat) provided an update on Cospas-Sarsat and beacon activities. Cospas-Sarsat has 43 participants (countries) which represent about 72% of the world's population. The low Earth orbit (LEO) and geostationary Earth orbit (GEO) systems provide current 406 MHz alerting capability. Six LEO satellites are in operation, with three ready for deployment, and 57 LEO local user terminals (LEOLUTs) receive signals from these satellites. There are five GEO satellites in operation, with one in testing, and 20 GEOLUTs. Russia launched an Electro-L GEO satellite in December, which will help provide space segment redundancy.

During 2010, about half of the events were based on EPIRB alerts, with the remaining events about equally divided between ELTs and PLBs. The average number of lives saved per day continues to increase each year. Cospas-Sarsat contributed to the rescue of over 30,700 persons in 2010, mostly within the maritime environment.

Mr. St-Pierre (Cospas-Sarsat) reviewed some limitations of the system, including latency in receipt of alerts, limited coverage of the GEO system (excludes polar areas), only 2D locations, and delayed transmission of first alerts.

The medium Earth orbit search and rescue system (MEOSAR) will overcome such limitations. MEOSAR's space segment will be made up of U.S. (GPS), Russian (GLONASS) and ESA/EC (Galileo) constellations. Multiple satellites will immediately detect a beacon signal and the ground stations will determine the beacon location using both frequency of arrival (FOA) and time of arrival (TOA) techniques. Beacons with return link components will receive some type of signal back to the beacon; the nature of the return message is to be defined. A total operational system is expected by 2018 with the beginning of the final operational capability (FOC) phase, but the initial operational capability (IOC) will begin by 2015. Planning is underway for the next phase, which is Demonstration and Evaluation (D&E). Operational use of data will be limited during the D&E and IOC.

Over 30 satellites are expected to be available by FOC and eventually up to 75 MEO satellites could be operational. Coverage depends on availability of ground stations, some of which are already in service.

The Air France Flight 447 flight data recorder was very difficult to recover. France's Bureau d'Enquetes et d'Analyses (BEA) established a Triggered Transmission of Flight Data Working Group that has been trying to find better ways to find crashed aircraft and flight data recorders. This Group helped generate some requirements for 2nd generation beacons. ELT activation prior to impact could be used to ensure crashed aircraft can be found. No testing has been conducted

yet on ELT signals transmitted from fast moving objects. RTCM has the final report of the BEA Group.

Cospas-Sarsat is developing 2nd generation beacon standards. Two Expert Working Group (EWG) meetings on 2nd generation beacons developed operational requirements. A draft *Second Generation 406 MHz Beacon Implementation Plan* (BIP) was developed and will be reviewed at the Joint Committee meeting in June.

The beacon implementation timeline calls for the relevant Cospas-Sarsat documents to be completed by 2013, and anticipates that standards of other organizations will be completed by about the end of 2015.

The International Beacon Registration Database (IBRD) contains 26,340 beacon records. About 88% of Administrations using the database have fewer than 500 beacons in the IBRD.
Mr. St-Pierre commented about planned improvements to the IBRD, such as enhanced database search features.

The Cospas-Sarsat website has been updated, making documents easier to download via an improved website interface.

Mr. St-Pierre reviewed some analysis of beacon detection in mountainous areas. Complex time and space gaps between satellite passes complicate this analysis. When beacons are blocked from viewing satellites, as they might be in the Grand Canyon, it would help for the user to know to move to areas where the beacon signal detection would be improved, especially since at least three bursts must be received for a Doppler location. It is important to inform beacon users that rescue time can be adversely affected if they are not in areas with good visibility. If the user is moving, exposure to the sky will improve from time to time.

Mr. Hoffman pointed out the benefit of current beacons having GPS capability to improve the chances of receiving a location if only a single beacon burst is received.

Mr. St-Pierre recommended that manufacturers inform users of the benefits of relocating to improve beacon detection.

> ***ACTION: RTCM to review its documentation to see whether something can be included on improving detection in locations with obstructed views of satellites.***

Mr. Andryey Zhiteney (Cospas-Sarsat) reviewed some results of the 2010 survey of beacon manufacturers. About 172,000 beacons were produced in 2010, a decrease of 24% compared to 2009, reversing the growth in production in prior years. The global beacon population is estimated to be 1,082,000. 50 manufacturers participated in the survey, mostly in Europe and North America. 24% of the manufacturers were in Asia and Australia. 50% of the manufacturers produced more than 500 beacons. In total, manufacturers produced about 77,000 EPIRBs, 27,000 ELTs, and 69,000 PLBs, 56% of which used location protocols.

Reasons for the slowdown in 2010 beacon production include factors such as the economic recession, reduced vessel deliveries, and halted government programs. Mr. Hoffman expressed the view that the main reason for the 2010 slowdown was that replacements of the 121.5 MHz beacons with 406 MHz beacons began tapering off. Major Freitag felt that switching to devices other than 406 MHz beacons, such as SPOT, might have been a factor in the decrease. Mr. Doug Ritter (Equipped to Survive) agreed with Mr. Hoffman and commented that if Cospas-Sarsat cannot provide a competitive product, it will lose market share due to relatively less perceived value of beacons to voluntary users.

Over 226,000 beacons are anticipated to be produced in 2011 according to the survey. However, such forecasts have typically been optimistic in the past. The Secretariat expects about 32

applications for approval of new beacon models in 2011. There are five type approval test facilities.

The Cospas-Sarsat website will provide better information on beacon models, including pictures, and better ability to sort, print and save reports.

Next year's survey results will likely be released around June 2012, ahead of when the Beacon Manufacturer Workshop is scheduled for September.

Proposed Beacon Coding Change

LCDR Mark Turner (USCG) commented on a proposed change to 47 CFR Part 80 that would include the provision: "The programming of an EPIRB for use in the U.S. may incorporate any protocol allowed in Annex A of the Cospas-Sarsat document T.001, with the exception of those using ship station identifications of MMSI numbers or Radio Call Signs."

LCDR Turner recommended that manufacturers voluntarily implement this change pending promulgation of a new regulation.

Mr. Al Knox (USAF) mentioned that shortly a 3rd Notice of Proposed Rulemaking on further use of 121.5 MHz ELTs is expected to be released by the Federal Communications Commission (FCC). He recommended that rulemaking be monitored so that comments can be submitted. Mr. Ghassan Khalek (FCC) noted that all the agencies seem close to agreeing on a way forward on the 121.5 MHz rule.

Second Generation Beacon Development

Captain David McBride (USCG) addressed provisions of Cospas-Sarsat Document R.017 (*Operational Requirements for Cospas-Sarsat Second Generation 406 MHz Beacons*). The R.017 requirements were proposed by the search and rescue (SAR) community; their feasibility still needs to be assessed. R.017 has been reviewed by RTCM SC-110, with the work documented in the SC-110 summaries, and it will be reviewed by the Cospas-Sarsat Joint Committee and Council later this year. Some SAR requirements need to be met by the Cospas-Sarsat system rather than by beacons.

Some desired beacon capabilities (objectives) listed in R.017 might be addressed by various organizations or administrations.

2nd generation beacons will be backwards compatible rather than interoperable with the LEO-GEO system.

CAPT McBride briefly highlighted some of the operational requirements in R.017, such as location accuracies, timeliness, uses of self-tests, and signal cancellations.

The SAR community would like to have a beacon capability that supports beacon registration.

CAPT McBride believed it is important that beacons support homing and on-scene locating, particularly making use of an AIS capability in lieu of 121.5 MHz homing signals; AIS could be used to alert local responders more directly. The EWG had been particularly interested in the possibility of activating an ELT in flight upon indication of an emergency.

The Coast Guard has authority to require recreational vessels that operate more than three miles offshore to carry EPIRBs; the regulatory process for this will take some time.

U.S. SARSAT Agency Reports

NOAA

The Chair stated that NOAA had six operational LEO satellites and five GOES satellites in service. Future planned satellite launches include MetOp B (LEO) in April 2012 and GOES R (GEO) in September 2015. NOAA has two operational LUTs each in Alaska, California, Florida, Guam, and Hawaii. The U.S. mission control center (USMCC) had been available for 99.97% of the time during 2010. A backup MCC is located at Wallops Island, VA.

There were 295 U.S. rescues in 2010 in 116 incidents. As of May 6, 2011, there were 70 U.S. rescues in 30 incidents.

Mr. Paul Steward (ACR) pointed out that 406 MHz direction finders (DFs) are becoming more commonplace and that more people and organizations will want to use 406 MHz beacons for training. He felt that an offset frequency for training should be provided. The Civil Air Patrol (CAP) spends hours training as well as searching. Mr. Steward believed that the procedure for requesting tests is too cumbersome. Mr. Ritter felt that requests for tests should be able to be submitted online.

NOAA stated that testing of operational beacons is not allowed. In rare exceptions, testing is allowed by other Government agencies and the procedure for getting approval is rather cumbersome. Al Knox suggested that the SARSAT Joint Working Group review the procedures.

Mr. Larry Yarbrough (USCG) supported looking for a special frequency for testing.

Mr. St-Pierre commented that beacons with test protocols are not required by Cospas-Sarsat to involve an MCC. Mr. Knox believed that use of 406 MHz frequencies for training would violate frequency spectrum regulations. Mr. Hoffman made the point that inverted frame sync could accomplish the purpose for training without a live transmission; the training RF load would be small compared to the self-test RF load. National users are not very familiar with the Cospas-Sarsat data distribution plan (DDP), but a caution could be included in the DDP to check with national requirements before testing. The first 100 ms carrier wave burst could be used.

The Chair pointed out that NOAA needs to know that testing is being done, or else the signal will be reported as an interference problem. He added that MEOSAR will be particularly adept at detecting tests.

ACTION: NOAA to review the procedures for requesting authorization to conduct tests to see if the process can be simplified.

USAF

Mr. Dave Fuhrmann (AFRCC) gave a quick update of Air Force SAR statistics: 1004 missions, 5823 incidents, and 561 saves in 2010. 83% of the incidents were related to distress beacons. 65% of the alerts received were ELTs, and about 17% were PLBs. The statistics do not include Alaska.

Many PLB alerts are from military sources, and guidance is being promulgated on proper military use of beacons.

About 2% of all incidents involve real distresses. Most non-aircraft incidents were missing persons or other rescues. Most persons in distress were saved.

The Air Force increasing needs to conduct cell phone and radar forensics, usually for missing persons.

The AFRCC would have a new commander, Lt Col Bob Russell, beginning June 15, 2011 and has a new mission (military personnel recovery). It has also been working to improve SAR coordination with Mexico.

The AFRCC hands off PLB alerts to States (as missing person alerts) following arrangements with each State. AFRCC statistics include these cases.

USCG

LCDR Turner reviewed the structure of the SAR Office at USCG Headquarters.

The Coast Guard sponsors the National Search and Rescue Committee (NSARC). NSARC's Member Agencies are the Department of Defense (DOD), Department of Interior (DOI), Department of Commerce (DOC), Department of Transportation (DOT), the Federal Communications Commission (FCC), the National Aeronautics and Space Administration (NASA), and the Department of Homeland Security (DHS). DOD, DOI and DHS have SAR response capabilities. NSARC has several Working Groups, two of which are a 121.5 MHz phase-out Working Group (phase out of 121.5 MHz ELTs) and one working on handling non-Cospas-Sarsat alerts.

The Coast Guard's Amver System tracks commercial ships as potential SAR resources and has about 3400 ships on plot in a typical day. These ships volunteer to handle SAR in remote sea areas, and any RCC in the world can request information from Amver for a SAR case.

Each day on average, the Coast Guard has 109 SAR cases, saves 10 lives, assists 192 persons in distress, and saves $2,791,841 in property. The number of SAR cases has been decreasing, possibly because fewer people are on the water due to the economy. The Coast Guard rescued 226 persons in 2010 based on SARSAT alerts.

The Coast Guard is working on improving beacon registration, mitigating false alerts, as well as supporting development of 2nd generation beacons.

NASA

Mr. Jim Christo (NASA) reported that the SARLab houses the GPS-based Distress Alerting Satellite System (DASS) proof-of-concept ground station (MEOLUT), and that a new maintenance contract has been signed for it.

The SARLab has, among its current initiatives, an effort to determine how many bits various beacon user ID's require for coding.

Action Items

Enclosure (2) lists all the action items that remain open from this and prior Workshops.

Closing Remarks

The expressed appreciation to RTCM, Rakon and the NOAA contractor staff for supporting the Beacon Manufacturer Workshop, and especially thanked all who attended and participated in the meeting.

He closed the meeting after announcing that the Workshop will be in Orlando next year on Friday, September 28th.

[Note that an electronic copy of a presentation that had been made by Mr. Gordon Garrett to the GMDSS Task Force on the day prior the Beacon Manufacturer Workshop was provided to

participants along with the other Workshop presentations at the end of the meeting. This Mr. Garrett's presentation provided a business case for requiring certain recreational vessels to carry EPIRBs as the Coast Guard was authorized to do in the Coast Guard 2010 Authorization Act.]

Enclosures:

1. List of Participants
2. Open Action Items

Enclosure (1)

2011 Beacon Manufacturers Workshop

May 20, 2011
St. Pete Beach, FL

List of Participants

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Enclosure (2)

Open Action Items from Beacon Manufacturers Workshops

2011 and Prior

Action Items from the 2005 Beacon Manufacturers Workshop:

2. An action was given to the USAF to work with the existing guidelines and prepare a standardized message to the public concerning the disposal of beacons and circulate the message for comment.

Status: Closed. There is information on the NOAA SARSAT website (under FAQ's) that directs individuals on how to properly dispose of beacons and batteries.

Action Items Generated at the 2007 Beacon Manufacturers Workshop:

2. NOAA accepted an action to engage the user community in discussions to obtain input and requirements for use in completing Phase I of the Beacon Modernization Plan.

Status: Still Open. Operational Requirements (both minimum and objective) were discussed at EWGs on Next Gen Beacon Requirements in 2010 and 2011. However Beacon Modernization Plan, a National Level document, remains to be completed. NOAA has lead for this effort.

3. USCG & USAF accepted an action to discuss the establishment of a single point of contact for the consumer to contact for false alerts.

Status: Closed. USCG and AFRCC number on website under FAQs. Contract info follows:

For EPIRBs, USCG Contact Info -- one-call toll free number for EPIRB's 1-855-406-USCG (8724).

For PLBs and ELTs, USAF Contact Info -- 1-800-851-3051

Action Item from 2008 Beacon Manufacturers Workshop:

2. The USCG to review including bracket inspections in the 5 year maintenance check or during USCG inspections to ensure they are properly maintained and operational. The USCG's review will also include whether specific updates to IMO/MSC Circular 1040, et al. are needed.

Status: Closed. COMSAR 15 Working Paper 3. Guidelines on Annual Testing of 406 MHz Satellite EPIRBs includes two guidelines that will assist with annual testing requirements - 3.14 – after the test, remount the EPIRB in the bracket checking that no transmission has been started and 3.3 – carrying out the visual inspection for defects. Will be approved at the Maritime Safety Committee Meeting 11-20 May 2011.

4. The SARSAT agencies will improve outreach and educational activities to help improve user knowledge of common beacon false alert problems including installation errors, testing requirements, and beacon registration. This outreach should go beyond just the production of brochures but should also include cooperation with non-governmental organizations (NGOs), web-based material, etc.

Status: Closed. Registration covered in beacon registration brochure. All SARSAT brochures have been included on the www.sarsat.noaa.gov website. Discussing false alerts is an ongoing part of outreach.

Action Items Generated at the 2010 Beacon Manufacturers Workshop:

1. Action: Beacon manufacturers to provide NOAA (Mr. Mathur) with an algorithm to convert serial numbers to 15 digit hex IDs if available.

Status: Still Open. Request beacon manufacturers provide information if available. ACR has provided a tool for use in identifying the correct beacon IDs by matching to their serial number scheme. McMurdo has provided a partial list.

2. BMW participants to review registration forms and provide recommended changes to LT Shawn Maddock by June 11, 2010.

Status: Closed. Registration forms changed as needed and OMB approval for use of revised forms has been received.

3. Beacon manufacturers to contact LT Maddock if there are any issues with duplicating graphic for Business Reply Envelope.

Status: Closed. No manufacturers requested information.

4. NOAA to investigate methods where service centers can notify NOAA of sold or out of service beacons.

Status: Closed. Program will address on a case by case basis. There is no mechanism or process for unilateral approach.

5. NOAA to review the forecast ELT population in light of FAA statistics on the number of general aviation aircraft.

Status: Closed. NOAA received no additional information and found no evidence of an FAA forecast that showed a decrease in the number of general aviation aircraft – thereby affecting NOAA's ELT population forecast.

6. NOAA will review its policy on providing beacon manufacturers with false alert statistics and information. Due January 2011.

Status: Closed. NOAA reports generic beacon information in the Cospas-Sarsat Annual System and Operations Report. If more specific information is needed, NOAA will address with manufacturers individually.

7. Beacon manufacturers to provide NOAA with a point of contact to assist with resolving duplicate beacon IDs.

Status: Still open. Request beacon manufacturers provide POC information. ACR provided a point of contact for duplicate IDs. USMCC coordinates with Revere Supply for McMurdo. No other manufacturers have provided information.

8. Beacon manufacturers to provide NOAA with bit representations used in each serialized beacon model provided for special national programs.

Status: Still open. Request manufacturers provide information.

9. Beacon manufacturers to provide NOAA (A. Mathur) with an algorithm to convert serial numbers to 15 Hex ID, where available.

Status: REMOVE, duplicate of #1 above.

Action Items Generated at the 2011 Beacon Manufacturers Workshop:

1. RTCM to review its documentation to see whether something can be included on improving detection in locations with obstructed views of satellites.

2. NOAA to review the procedures for requesting authorization to conduct tests to see if the process can be simplified.