Search and Rescue Satellite Aided Tracking (SARSAT) Policy on Non-Distress Transmissions

Title:

Non-Distress Transmissions

Effective Date:

Upon approval by Program Steering Group

Purpose:

To establish SARSAT Program policy on testing, training, and exercising with emergency beacons, survival radios, and Direction Finding/Homing equipment which transmit and/or receive on the 406.0 – 406.1 MHz frequency band,

Applicability:

This policy applies to all US coded 406 MHz emergency beacons type approved by COSPAS-SARSAT. This includes self-test transmissions, test-coded transmissions and transmission from operationally coded beacons used for training, tests, and exercises. This policy does not cover transmissions in the 121.5/243 MHz channels.

Background:

In the United States the use of frequency spectrum is governed by the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA). NTIA manages the Federal Government's use of the spectrum while the FCC manages all other uses. The Communications Act of 1934 provides for the functions of developing classes of radio service, allocating frequency bands to the various services, and authorizing frequency use. However, the Act does not mandate specific allocations of frequency bands for exclusive Federal or non-federal use; all such allocations stem from agreements between NTIA and the FCC.

The Act preserves for the President the authority to assign frequencies to all Federal Government owned or operated radio stations. The Interdepartmental Radio Advisory Committee (IRAC) advises the NTIA on frequency spectrum issues. The relationship between the NTIA and FCC is described at Appendix A.

The FCC and NTIA manage frequency allocation in the United States and coordinate these uses internationally at the International Telecommunication Union (ITU). The table of frequency allocation states the following for the use of 406.0 to 406.1 MHz:

> **5.266** The use of the band 406-406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radio beacons (see also Article 31). (WRC-07)
>
> **5.267** Any emission capable of causing harmful interference to the authorized uses of the frequency band 406-406.1 MHz is prohibited.

Relevant Policy Drivers:

- The Communications Act of 1934, as amended
- The International Telecommunication Union (ITU) Radio Regulations
- Manual of Regulation and Procedure for Federal Frequency Management, NTIA
- Code of Federal Regulations, Title 47, Parts 80, 87 and 95
- Cospas-Sarsat Data Distribution Plan, C/S A.001

Policy:

Definitions

- Beacon Self-Test or Built in Test – activation of an emergency beacon according to manufacturer's instructions to ***internally*** test the beacon unit and assure its operation.
- Testing – activation of an emergency beacon according to manufacturer's instructions and Federal agency requirements to ensure proper installation of the beacon and its component's.
- Exercise – a military maneuver or simulated operation involving planning, preparation, and execution that is carried out for the purpose of training and evaluation of SAR response which may involve activation of an emergency beacon exercise the end-to-end capability of the system.
- Training – activation of an emergency beacon according to manufacturer's instructions to train beacon users on the proper use and operation of a beacon or for Search and Rescue Response personnel to train in the use of direction finding (DF) and/or Homing equipment in locating the beacon or both.

General Policy

The 406.0- 406.1 MHz band is set aside for mobile satellite earth to space transmissions at both the national and international levels. The use of the 406.0 – 406.1 MHz frequency band by a mobile-satellite service is limited to low power satellite emergency radio beacons and any emission capable of causing harmful interference to authorized uses of the band is prohibited.

Beacons coded with operational protocols shall not be used for tests, except on rare occasions when required by and under control of a national administration, or for international exercises coordinated by the Cospas-Sarsat Joint Committee. All MCCs shall be notified of tests using beacons coded with operational protocols, in accordance with the procedure of Annex III / C of the DDP. Tests using beacons coded with the Test User Protocol, may be performed by anyone having coordinated the test with, and received approval from the responsible MCC. Coordination with affected MCCs should be performed by the responsible MCC in accordance with the procedure of Annex III / C of the DDP.

Beacons using Operational coding require an additional level of coordination with our International Partners. Test/Training requests using Operational beacons must submitted according to the following Deadlines:

Using 1-3 Beacons – 48 Hours before first event

Using 4-6 beacons – 30 Days before first event
Using 7+ beacons – Testing/training not allowed

Furthermore, Title 47 (parts 80, 87 and 95) of the Code of Federal Regulations limits the use of emergency beacons to situations of grave and imminent danger.

The SARSAT Program monitors the frequency for unauthorized use and reports interference regularly to the FCC for prosecution.

Classifications of Beacon Burst Types

Activations generally fall into one of three categories:

1) *Self-Test or Built–in Test Transmission* – an on-air transmission where the frame synch is reversed so that the Cospas-Sarsat space and ground segments do not normally process the beacon burst. Note: the ground segment can be configured to process this transmission which is relayed trough satellites that carry a 406 MHz search and rescue repeater.

2) *Test Protocol Transmission* – an on-air transmission where the coding of the beacon is modified so that the Cospas-Sarsat recognizes it as a test transmission and does not forward it through the operational ground segment.

3) *Operational Protocol Transmission* – an on-air transmission where the coding of the beacon corresponds to a distress alert and the resulting alert is treated as if it were an actual distress. Note: this could result in the launch of search and rescue assets.

Exceptions to the General Policy

While NTIA and the FCC manage their respective constituents' uses of the spectrum; both must keep in mind the overall best interests of the public and the Government. To that extent, the SARSAT program recognizes the need for activation of emergency beacons or other devices in the band to support self-tests, training, testing, and exercise requirements.

Transmission by Individuals/Non-SAR Responder

Transmissions in the 406.0 – 406.1 MHz band by Individual or Non-SAR Responders (e.g., private individuals, beacon manufactures, beacon installers, commercials interests, vessel/aircraft inspectors, etc.) is limited to activations in the self-test mode and those inside an anechoic chamber. Activations in the self-test mode should be limited to one digital burst or per direction in manufactures beacon instructions. Prior coordination is not required for either scenario.

If actual beacon activation occurs, beacon owners should immediately notify USAF or USCG SAR Responder as appropriate and also replace their batteries per manufactures recommendations

Transmission by SAR Responders

Transmissions in the 406.0 – 406.1 MHz band by SAR Responders ((e.g., USCG, USAF, other service or DOD entities, Civil Air Patrol, State, Local, Tribal or Territorial, other Federal response agencies, etc.) should be coordinated with the National Oceanic and Atmospheric Administration’s (NOAA) SARSAT program. In general, non-distress transmissions are discouraged as they saturate the Cospas-Sarsat space segment and increase the workload for the U.S Mission Control Center (USMCC) and Rescue Coordination Center (RCC) staff and may cause an actual distress alert to be

missed by the system. If a test cannot be performed in an anechoic chamber and an exercise or field training is required, the NOAA SARSAT program must coordinate the transmission with the Cospas-Sarsat System and can provide additional assistance as required (e.g., distributing the distress alert to a particular site). The SARSAT program will not participate in any test, demonstration, or exercise whose purpose is to promote the sale of beacons or services. The policy on each type of activation is described below and summarized in flow charts in Appendix B and C.

Beacon Self-test/ Built-In Test Transmission: No prior coordination necessary. Transmission should be limited to one burst or per manufacturer's instructions.

Testing: If using an anechoic chamber, no prior coordination necessary. If transmitting outside an anechoic chamber the test must be coordinated with NOAA prior to activation according to SARSAT and Cospas-Sarsat procedures. Transmissions should use self-test function and a hand held local test verification unit or if using operational protocol be extremely limited in duration not to exceed 45 seconds.

Operational Exercise: Must be coordinated with NOAA, through USCG and or USAF Program POCs according to SARSAT and Cospas-Sarsat procedures. Transmission should generally be limited to the test protocol but the operational protocol can be supported in limited cases.

Training: Must be coordinated with NOAA through USCG and USAF program POCs according to SARSAT and Cospas-Sarsat procedures. Transmission should be limited to the test protocol. Operational protocol can be supported in limited cases. Specific beacon training policy can be found in Appendix D and request form in Appendix E.

Important

Any radio transmission in the United States is governed by the FCC and NTIA. The SARSAT Program cannot authorize any transmission. The policy and guidance stated here reflects what been coordinated with the FCC and agreed to by the SARSAT Program Steering Group composed of, NOAA, the National Aeronautics and Space Administration, the U.S. Air Force and U.S. Coast Guard will support at national forums.

Implementation

The SARSAT Operations Lead will develop and maintain the appropriate standard operating procedures to implement this policy and relevant international procedures.

Roles and Responsibilities

The Program Steering Group shall be responsible for maintaining and updating this policy. NOAA shall be responsible for implementing this policy and providing a status to the Program Steering Group.

USAF Program POC will be responsible for coordinating all USAF, Civil Air Patrol, other Service, DoD, and State, test, training, and exercise requests, including Rescue Center coordination, if required.

USAF Program POC: HQ ACC/A3JS Special Activities Branch,
Email: ACCA3JS.PRSPACTIVIT@langley.af.mil,

Phone DSN 574-3619 Commercial 757-764-3619

USCG Program POC will be responsible for coordinating all USCG and USCG Auxiliary test, training, and exercise requests, including Rescue Center coordination, if required.

USCG Program POC: HQ USCG CG-534 Office of Search and Rescue,
Email HQS-DG-M-406-TEST-Request@uscg.mill,
Phone 202-372-2088

NOAA Program POC will be responsible for coordinating all other requests for test, training and exercise

NOAA Program POC: NOAA–SARSAT Program,
Email beacon.test@noaa.gov,
Phone 301-817-4538

Agencies desiring to conduct test, training or exercise shall forward a test request (Appendix E) through the appropriate program POC to NOAA.

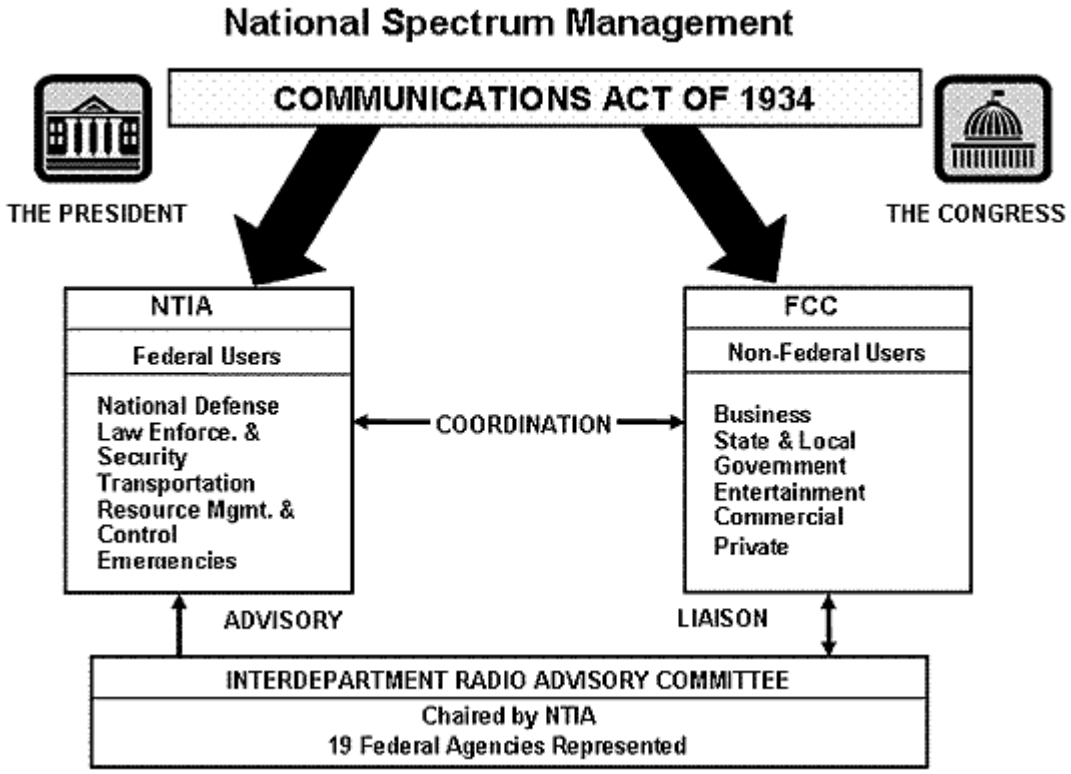
Within NOAA, test requests shall be cleared by the Chief of the USMCC and the SARSAT USMCC System Manager after appropriate coordination with the Air Force or U.S. Coast Guard Program POC's and Rescue Coordination Center's, if required.

Approved By:

SARSAT Program Steering Group on 13 December 2011

NOTE: Revised policy, Version 1.1, approved by SARSAT Program Steering Group on 16 July 2013.

Appendix A – National Spectrum Management

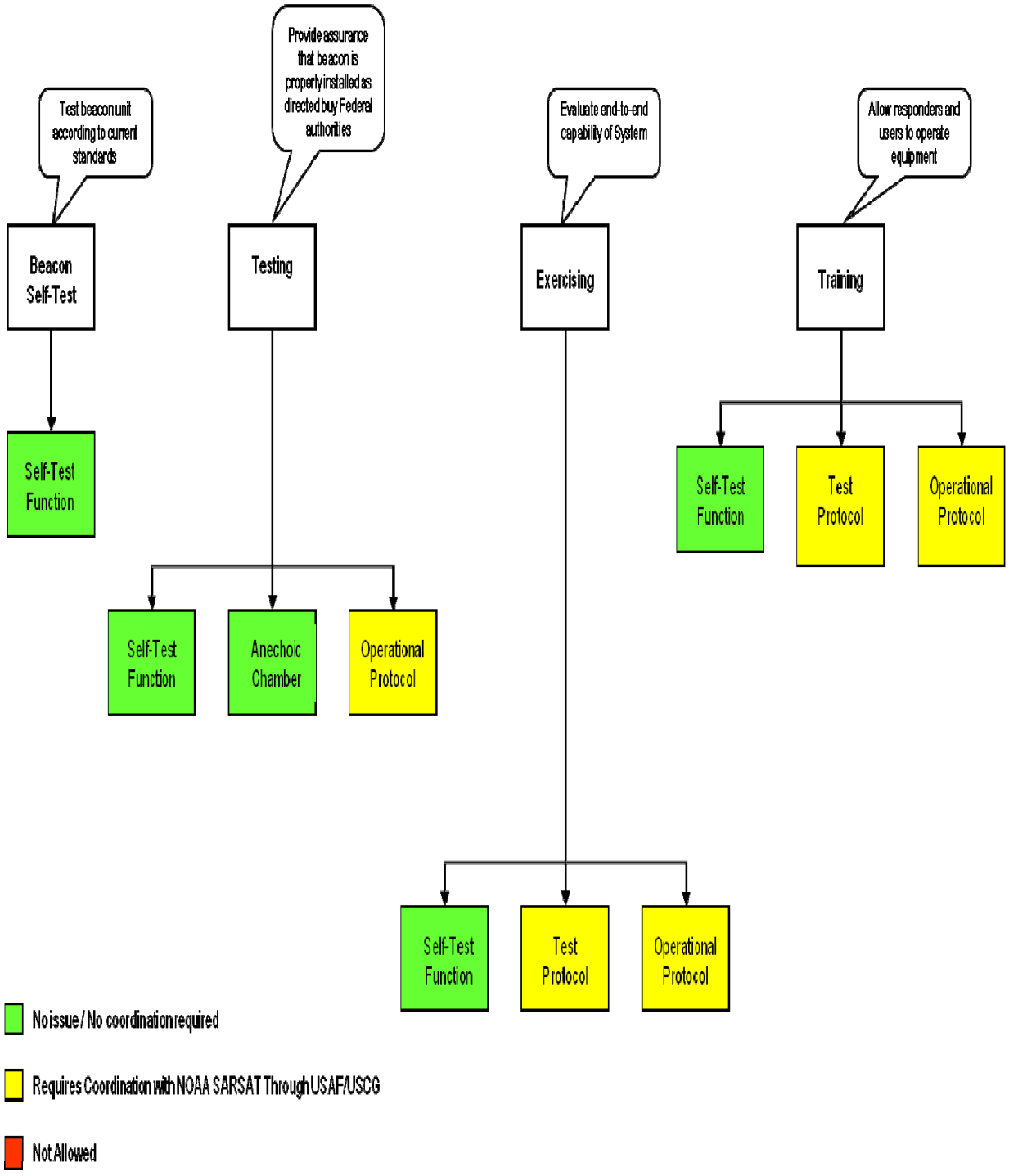


Appendix B

SARSAT 406 MHz Emergency Beacon Testing / Training – Individual / Non SAR Responder

Appendix C

SARSAT 406 MHz Emergency Beacon Testing / Training – SAR Responder



Appendix D

U.S. Search and Rescue Satellite Aided Tracking (SARSAT) Interagency Program Steering Group (PSG) Joint Policy Statement

Title: U.S. 406 MHz Training Beacon Policy

Effective Date: 1 June 2007

Purpose: This policy applies to the production, modification, and use of 406 MHz beacons for training purposes by search and rescue (SAR) agencies of the Federal government.

Background: The proliferation of 406 MHz beacons within the United States amongst the maritime, aviation, and recreational user communities has prompted many search and rescue agencies to begin upgrading direction-finding equipment to enable their units to more effectively locate and home on 406 MHz beacons. The U.S. Coast Guard, in particular, expects to have upgraded its entire inventory of SAR aircraft to 406 MHz direction finders by 2012 and is considering the use of 406 MHz direction finders for all surface assets. In addition, the USAF Auxiliary - Civil Air Patrol is in the process of installing 406 MHz direction finders in their light search aircraft.

Direction-finding using the 406 MHz frequency provides significant advantages over traditional direction finding on a beacon's 121.5 MHz homer. This includes increased detection range and decoding a beacon's unique identification number among other benefits. Given that most 406 MHz direction finders also provide the ability to home on the 121.5 MHz frequency, these devices are considered far more capable.

With the growth in 406 MHz direction finders being used by SAR agencies there is a requirement for SAR responders to properly train on these systems to acquire and enhance (through routine, recurring training) the skills needed to respond effectively and home on 406 MHz beacon activations. However, there exists no practical means to achieve this. That is, there are no 406 MHz beacons available for training purposes or supporting regulations/policy to support this capability.

Policy: It is the policy of the United States, therefore, to:

1) Permit the development, modification, and use of 406 MHz beacons for training purposes by and for Federal SAR agency use only;

2) Allow non-Federal SAR agencies to only use 406 MHz training beacons with the express consent of a sponsoring Federal SAR agency. *(This is in alignment with current Federal regulations which do not permit the use of 406 MHz beacons by non-Federal SAR entities in any situation other than in a distress.)*

Technical & Physical Requirements: All 406 MHz training beacons shall typically meet the following minimum characteristics:

1) Shall be coded with the Test Protocol as defined in document Cospas-Sarsat T.001;

2) The homing transmitter shall be offset to an approved training frequency (e.g. 121.65 MHz, 121.775 MHz, etc.);

3) Shall meet the minimum technical requirements for 406 MHz beacons as defined in C/S T.001 and RTCM & RTCA Standards;

4) Shall be clearly marked to denote a training device and labeled to denote the operating parameters; and

5) Should have an easily maintainable battery due to repeated use.

Additional Requirements:

1) All 406 MHz training beacons shall be registered in the National 406 MHz Beacon Registration Database at: www.beaconregistration.noaa.gov;

2) All training exercises using a 406 MHz training beacon shall be coordinated at least 48 hours in advance with the SARSAT U.S. Mission Control Center (USMCC). A unit's training supervisor shall submit a 406 MHz Training/Test Request Form (included in Appendix E) via e-mail to appropriate program POC.

   Note: SAR units shall determine, in advance, whether the training exercise will require the distribution of data from their training beacon via the USMCC to a Rescue Coordination Center (RCC) or whether the training exercise will be localized in nature (training using only the direction finder). This information shall be submitted with the Training Request Form and, if approved by the USMCC, must be coordinated with the appropriate RCC by the requestor.

3) No more than one 406 MHz training beacon should typically be used in a training exercise unless otherwise approved.

Implementation: This policy shall be implemented by the U.S. SARSAT Program Steering Group (PSG) which is responsible for maintaining and updating its contents.

Approved by: SARSAT Program Steering Group on 13 December 2011 (Version 1.0). Revised policy, Version 1.1, approved by SARSAT Program Steering Group on 16 July 2013.

Appendix E

Request for 406 MHz Emergency Beacon Test

NOTE: Request Submission Deadlines – 1 to 3 Beacons 48 Hours before first event; 4-6 Beacons – 30 Days before first event. 7 or more Beacons not allowed

Requesting Agency/Organization: _____

Requestor Name: _____

E-mail: _____

Telephone: _____

Date Submitted: _____

Reason for Request:

_____

_____

_____

Should alert message be distributed? ☐ Yes ☐ No

If yes, distribute alert via (choose one of the following):

(Fax)_____
Fax Number

(Normal Distribution Methods) to _____RCC.
Name of RCC

RCC POC: _____ Telephone: _____

(Other, please explain):

_____

_____

Activation Details:

On-Site Coordinator: _____
Name Email Phone Number

Proposed Date/Start Time (UTC):

Duration of Activation: _____HH / _____MM

Location: _____Latitude: _____ Longitude: _____
ddd mm.m ddd mm.m

BEACON ID (15 HEX ID)	*BEACON TYPE*	*MANUFACTURER*	*MODEL*	*FREQUENCY*	*TEST CODED? (Y or N)*

Agency Validation

Reviewed by:_____
Name Email Phone Number

☐ This request has been reviewed and forwarded to NOAA for approval and requestor has been notified

☐ This request has been reviewed and has been rejected and requestor has been notified

NOAA Coordination and Approval

Type of Testing: ☐ Testing ☐ Exercise ☐ Training

USMCC Chief Recommendation: ☐ APPROVE ☐ DENY

Sign:_____ DATE:_____
Chief United States Mission Control Center

USMCC System Manager Decision: ☐ APPROVED ☐ DENIED

Sign:_____ DATE:_____
USMCC System Manager

☐ The requestor and sponsor agency have been notified of the status of the request.

Instructions for Completing the Request for 406 MHz Emergency Beacon Test

Please complete the attached only once you have read the SARSAT Policy on Non-Distress Transmissions and determined that you have a requirement to test that fits within one of the noted exceptions : *Self-Test or Built–in Test Transmission, Test Protocol Transmission, and Operational Protocol Transmission.*

Submission Deadlines: 1-3 Beacons - 48 hours prior to first event; 4-6 Beacons - 30 Days before first event; and 7+ Beacons - Test/Training not allowed.

Use email to submit the request to the relevant agency - NOAA: beacon.test@noaa.gov, USAF: ACCA3JS.PRSPACTIVIT@langley.af.mil; USCG: HQS-DG-M-406-TEST-Request@uscg.mil.

The requestor should complete all required information on Page 1 of the form to include:

- Requestor Contact information: All pertinent contact information should be included as noted.

- Reason for Request: Provide justification on why the test should be conducted and details on if, and how, the alert should be distributed. This information is vital to ensuring that the proper coordination can be made with the USMCC and test coordinator.

- Activation Details: Provide on-site coordinator contact info, proposed start/end time, duration and location of test. Most importantly, provide the 15-hex ID and other identifying information for the beacon(s) being tested.