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 policy covers self-test transmissions, test-coded transmissions and transmissions 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 (DDP), C/S A.001

Policy:

Definitions

- 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 components
- Exercise – a military maneuver or simulated operation involving planning, preparation, and execution carried out for training and evaluation of search and rescue (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 Cospas-Sarsat mission control centers (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.

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.

Types of Beacon Bursts

Beacon 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 the United States Air Force (USAF) or United States Coast Guard (USCG) SAR responder as appropriate and also replace their batteries per manufacture's 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 (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 Exercises:

Operational exercises must be coordinated with NOAA, through USCG and or USAF Program point of contact (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:

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 has been coordinated with the FCC and are agreed to and supported by the SARSAT Program Steering Group (the PSG member Agencies are NOAA, USAF, USCG, and the National Aeronautics and Space Administration).

Roles and Responsibilities:

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

The Program Steering Group will 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.

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

USAF Program POC: HQ ACC/A8RR Isolated Personnel Branch, Email: ACC.A8RR@langley.af.mil, phone DSN 574-6350 Commercial 757-764-6350

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

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

The 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) via the appropriate program POC to NOAA.

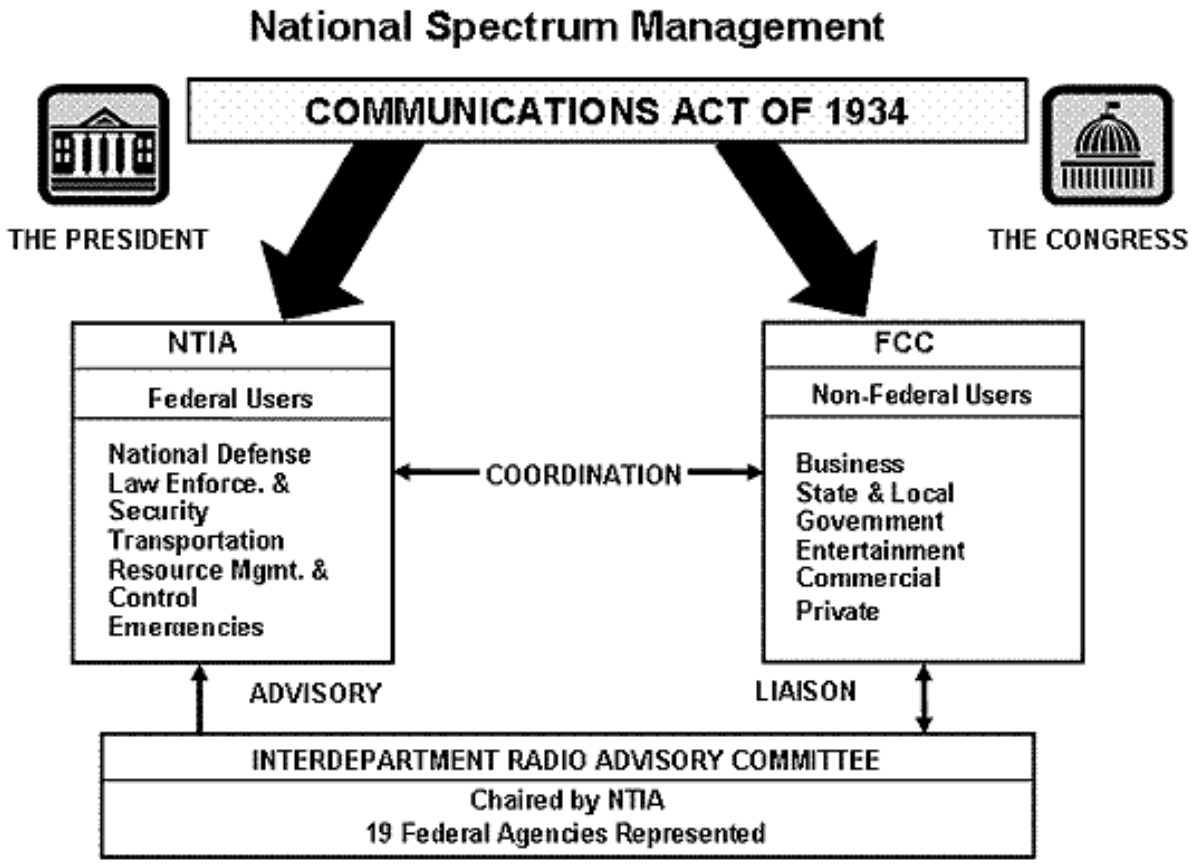
Within NOAA, test requests shall be cleared by the Chief of the USMCC and the SARSAT USMCC System Manager after appropriate coordination with the USAF or USCG Program POCs and RCCs, if required.

Approved By:

_____

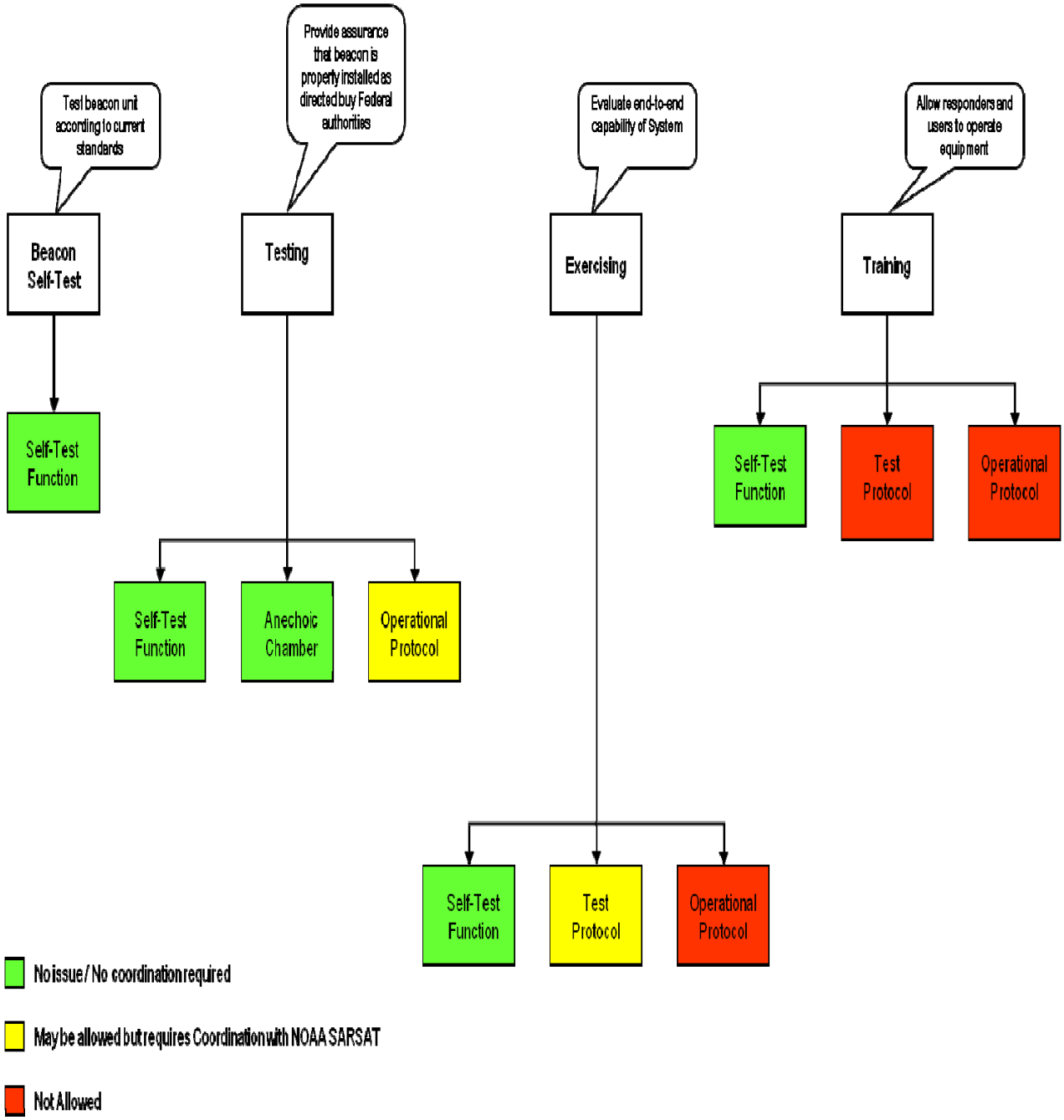
SARSAT Program Steering Group on 13 December 2011

Appendix A – National Spectrum Management



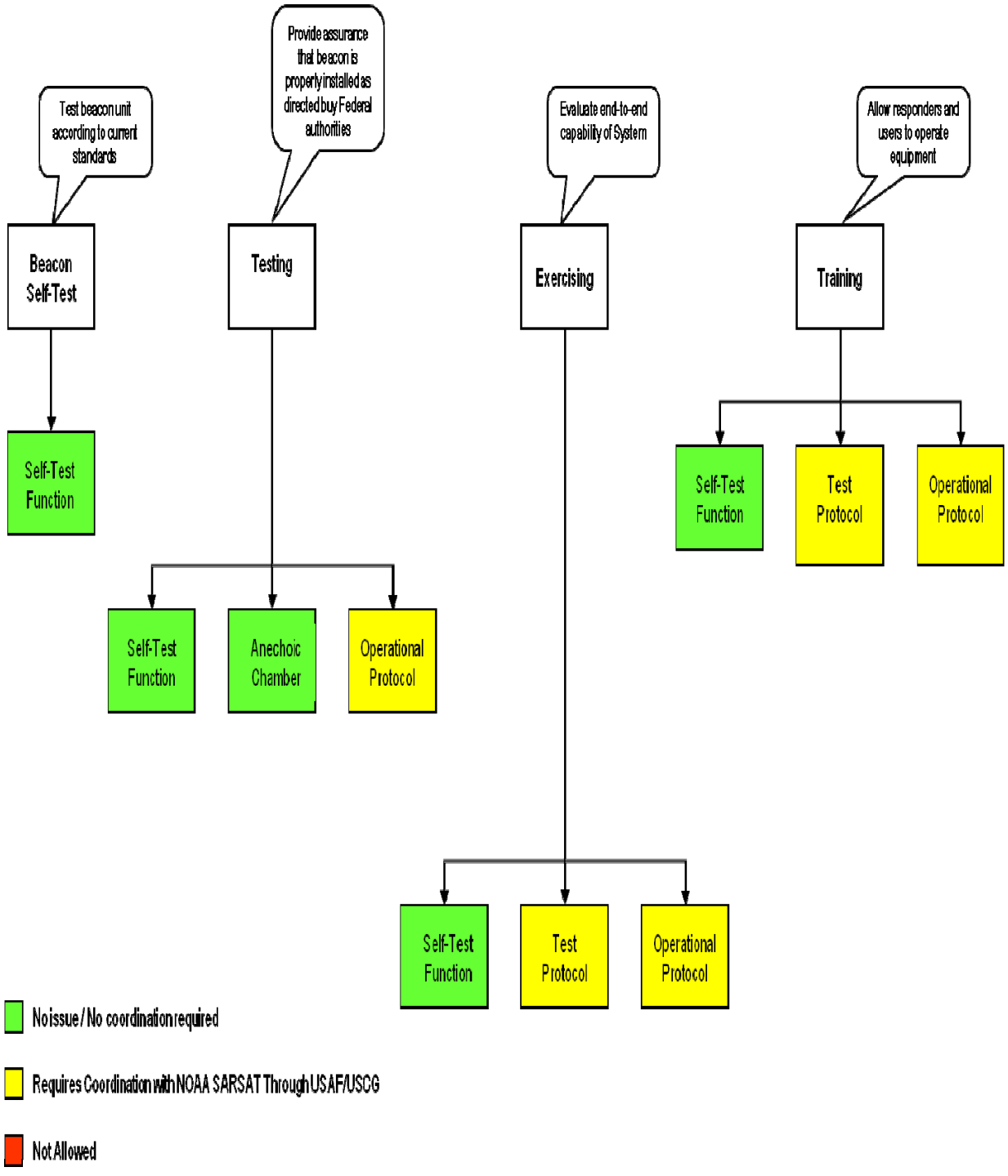
Appendix B

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 above.

   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]

Appendix E

Instructions for completing Request for 406 MHz Beacon Test Form:

- Please review the SARSAT policy on non-distress transmissions prior to submitting your request; do not submit requests for types of tests not authorized by the policy.
- Complete relevant parts of the request form below (direct any questions on completing the form to the responsible NOAA, USAF or USCG POC via e-mail); ensure that the reason for the test and any expected distribution of resulting messages are clear.
- Use email to submit the request to the relevant agency - NOAA: beacon.test@noaa.gov, USAF: ACC.A8RR@langley.af.mil; USCG: HQS-DG-M-406-TEST-Request@uscg.mil). Questions regarding the policy and form can be directed to the same e-mail addresses.
- **The Requestor should complete the following information on the Beacon Test form.**
    - Appropriate contact information pertinent to section 1 of this form.
    - Reason for request should include enough information to fully justify using system resources for this effort.
    - Check the box relevant to distribution of the message. If message should be distributed, include fax number or name of RCC. Include RCC POC and appropriate telephone number. If there is another way the message should be distributed, please include information on the lines provided.
    - Under "Activation Details", include:
        - Name, email, and phone number of the on-site coordinator. The on-site coordinator would be expected to be reachable during the proposed test period and should be familiar with all details of the test.
        - The proposed start time and date of the activation along with the duration and location of the activation.
        - The hours and minutes of the duration of activation.
        - The latitude and longitude pertaining to the location of the activation. The latitude and longitude should be in ddd mm.m format.
        - In the chart provided, please include the information pertaining to the beacon being tested. This includes: beacon ID, beacon type, manufacturer, model, and frequency. Also include Y or N if the beacon is test coded.
    - **Once the form has been completed, it should be submitted to the appropriate Agency (USAF, USCG or NOAA) for consideration.**

SAMPLE ONLY -- REQUEST FOR 406 MHZ BEACON TEST

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

DATE:_____

USMCC System Manager Decision: ☐ APPROVED ☐ DENIED

DATE:_____

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

Sign:_____ DATE:_____
USMCC System Manager

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