

**United States Mission Control Center  
(USMCC)**

**National Rescue Coordination Center (RCC) and Search and  
Rescue Point of Contact (SPOC)  
406 MHz Alert and Support Messages  
for the LEOSAR/GEOSAR System**

31 July2015  
Version 2.12



## Document History

<b>Version</b>	<b>Revision</b>	<b>Date</b>	<b>Revised Pages</b>	<b>Comments</b>
1	--	Jan 1999 (Est.)	All	Initial Version
1	.82	20 Mar 2009	--	Last published version prior to Version 2.
2	0	12 Mar 2013	All	Removed references to 121 MHz processing; removed redundant field descriptions; enhanced descriptions of data fields and data distribution procedures; updated sample messages.
		19 Mar 2013	Annex 8	Moved sample SEPIRB message to Annex 8 (per table of contents)
		17 Apr 2013	2.1.4 3.2.3.8.1	Add PacArea as a destination for alerts in US SRR with an unreliable beacon message. Note that PacArea and LantArea are destinations for alerts for US coded SSAS beacons.
2	0	1 May 2013	4.10.1	Clarified that an Encoded Position Update message may contain Doppler position data.
2	.10	15 May 2013	3.5.3	Indicate that the PROB and SOL fields are set to the values for the first solution received for a pass in the "Previous Pass Information".
2	.10	6 Jun 2013	4.7	Identify special circumstance in which the RCC only receives missed passes messages starting with the second missed pass.
2	.10	3 Jul 2013	2.1.5	Provide special text in SIT 185 message from CMCC to identify US national use beacons.
2	.10	26 Dec 2013	Annex 8	Include "Position Device" in sample message.
2	.10	17 Jan 2014	2.1.6	Add section for Nationally Defined Alert Messages Designed for Automated Processing

2	.10	22 Jan 2014	3.6 Annexes 1, 6, 10	Replace Incident Feedback request for SPOCs in Annex 6. Add reference to section 3.6 in Table of Contents. Modify definitions in Annex 1 for Incident Feedback Request. Provide Guidance for IHDB Feedback in Annex 10.
2	.10	22 Jan 2014	3.7	Clarify message trailer specified in C/S A.002. Add reference in Table of Contents.
2	.10	22 Jan 2014	1.2 4.7, 4.7.5	Add information for (and sample of) Site Closure message sent to SPOCs.
2	.10	23 Jan 2014	2.1.2 3.4 3.4.5 3.4.6 3.4.7 Annex 1	Describe Beacon Registration Data provided for non US beacons and beacons with an unreliable Id. Update sample messages, terms of reference.
2	.10	23Jan 2014	3.2.6 Annex 1	Add section on Image Position Determination. Update sample messages, terms of reference.
2	.10	23 Jan 2014	Table 3.2.5 3.3.1 Annex 1 3.3.2.1 3.3.2.2	Add section on encoded Position Resolution. Update Table 3.2.5, sample messages, and terms of reference. Remove reference to Position Resolution for special programs.
2	.10	27 Jan 2014	3.2.5 Annex 1	Add section on Accuracy of Doppler Position Data. Update sample messages.
2	.10	05 Feb 2014	2.1.5	Update expected implementation time for special text in SIT 185 message from CMCC to identify US national use beacons.
2	.11	06 Mar 2014	3.2.3.8.1 c	Clarify the distribution of unlocated alerts when the RGDB contains two SRRs.
2	.11	06 Mar 2014	3.2.3.8.1 9	Clarify the use of the SRR and BUFFER fields for unlocated alerts when the RGDB contains two SRRs.

2	.11	07 Mar 2014	3.5.3	Clarify the reporting of encoded position for previous passes.
2	.11	07 Mar 2014	4.6.1	Describe case where multiple Composite Position update messages are sent for the same beacon event.
2	.11	25 Apr 2014	Tables 3.2.12 3.5.2	Make “B” side probability < 50 in sample messages.
2	.11	10 Jul 2014	3.2.3.8 (1), 3.5.2	Clarify the reporting of “echo” destinations in the Supporting Information section.
2	.12	7, 21 Apr 2015	3.1, Annex 8 *	Clarify the special message header for SEPIRB special program beacon alerts.
2	.12	7 Apr 2015	Annex 7	Add LANTAREA to the list of US RCCs.
2	.12	7 May 2015	Annex 8	Include a secondary special header for SEPIRB alerts.
2	.12	22 May 2015	Table 2.1	Indicate that the Message Name for the SIT 169 indicates if ambiguity is resolved.
2	.12	8 Jun 2015	Title, 1.2	Indicate that this document applies to the LEOSAR/GEOSAR system.
2	.12	8 Jun 2015	2.1.3	Clarify “US SPOC” in first reference in the section.
2	.12	8 Jun 2015	2.1.5	Update CMCC distribution of alerts for US national use beacons.
2	.12	11 Jun 2015	3.2.3.4	Add “location” after “Doppler”

2	.12	19 June 2015	2.1.5.n	Describe special program block registration availability during backup by CMCC.
2	.12	23 June 2015	3.3.2.2	Describe field values fields ZEROIZE STATUS and TEST MODE.
2	.12	24 June 2015	3.5.2	Clarify that the transiting MCC and destination MCC are included in the list of message destinations.
2	.12	29 June 2015	3.2.4	Describe use of Detection Frequency to help identify test transmissions
2	.12	14 Jul 2015	Annex 7	Add Dominican Republic, Mexico Telecommunications and Venezuela to the list of US SPOCs.
2	.12	14 Jul 2015	3.3.1 Annex 1	Update description of HOMING values.
2	.12	14 Jul 2015	Annex 1	Corrected title to ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO (i.e., changed BEACON to SIGNAL).
2	.12	14 Jul 2015	4.7 (sub-item 3)	Corrected status for SIT 176 message to “(YES – BY MCC OPERATOR”).
2	.12	30 Jul 2015	Annex 1	Clarify that PASSES includes LEO and GEO unlocated detections not reported in RCC messages.
2	.12	31Jul 2015	4.7	Explain special circumstance in which the RCC does not receive a missed pass when data is not received for a predicted next pass.

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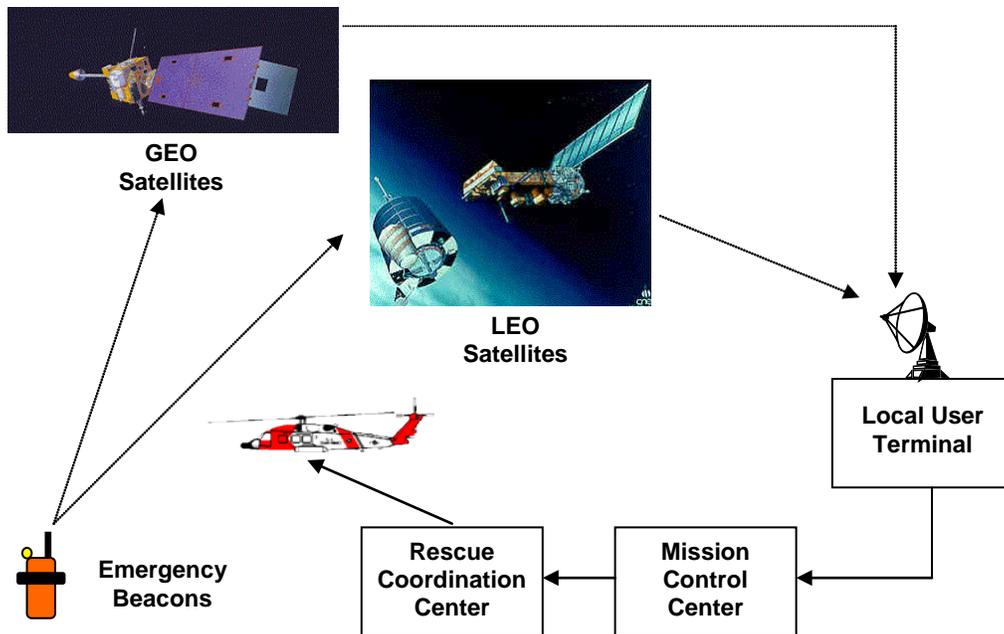
**United States Mission Control Center (USMCC)  
National Rescue Coordination Center (RCC)  
and Search and Rescue Point of Contact (SPOC)  
Alert and Support Messages for the LEOSAR/GEOSAR System**

**1 Introduction**

**1.1 Overview of Cospas-Sarsat**

The purpose of the Cospas-Sarsat (C/S) System is the provision of distress alert and location data for search and rescue (SAR), using spacecraft and ground facilities to detect and locate the signals of Cospas-Sarsat distress radiobeacons operating on 406 MHz. Signals from radiobeacons are transmitted to low-earth orbiting (LEO) or geo-stationary (GEO) orbiting satellites. The signals are then relayed to earth ground stations called Local User Terminals (LUTs) and eventually to Mission Control Centers (MCCs). As the center for Cospas-Sarsat operations in the United States, the USMCC collects and processes data from national LUTs and foreign MCCs. The USMCC then distributes alert data to national Rescue Coordination Centers (RCCs), SAR Points of Contact (SPOCs) and foreign MCCs.

Figure 1.1 presents an overview of the Cospas-Sarsat System.



**Figure 1.1:** Overview of Cospas-Sarsat

## 1.2 Document Objective

This document describes messages transmitted to national RCCs *and SPOCs for the operational LEOSAR/GEOSAR system*. A corresponding document describes messages transmitted to national RCCs and SPOCs for the pre-operational and operational MEOSAR system. National SAR authorities should use this document to respond to alerts generated by 406 MHz distress beacons.

This document only describes US (nationally formatted) messages, unless otherwise noted. US nationally formatted messages are sent to all US RCCs and some US SPOCs (that is, some foreign SPOCs within the United States service area).

Other US SPOCs (that is, SPOCs that do not receive the nationally formatted messages sent to all US RCCs) are sent SIT 185 messages as described in document C/S A.002 (Standard Interface Description). US SPOCs that receive SIT 185 messages are also sent a special form of the site closure message, as described in section 4.7.

## 1.3 Reference Documents

More information on alert message data elements can be found in the following documents:

- a) United States Mission Control Center Data Structures
- b) Cospas-Sarsat Data Distribution Plan, C/S A.001
- c) Cospas-Sarsat Mission Control Centres Standard Interface Description, C/S A.002
- d) Cospas-Sarsat 406 MHz Beacon Specification, C/S T.001
- e) Cospas-Sarsat Specification and Type Approval Standard for 406 MHz Ship Security Alert (SSAS) Beacons, C/S T.015
- f) International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual and the corresponding National SAR Supplement

Cospas-Sarsat (C/S) documents (e.g., C/S A.001) are available on the C/S website at:  
<http://www.cospas-sarsat.org>

## 2 Summary of Messages

The USMCC sends alert messages and support messages to US RCCs, as described below. Upper case (e.g., SAT) is used to indicate a field name as it appears on a message.

### 2.1 Alert Message Overview

The data available at the MCC for beacon alerts includes, but is not limited to the following:

- time of closest approach (Doppler location only) or time of detection;
- satellite identifier;
- frequency of transmitter;
- number of points (beacon bursts);
- duration of Doppler curve;
- probability of the “A” solution being correct (Doppler location only);
- error ellipse;
- confidence factor;
- cross-track angle (Doppler location only); and
- data residuals.

A limited data set is transmitted to RCCs, based on what is useful to the RCC Controller. The following data is provided for each emergency beacon signal:

#### *Alert Data*

- **WHAT** kind of alert message the USMCC is sending;
- **WHEN** the satellite received the beacon signal;
- **WHERE** the beacon is located (if known);
- **WHAT** beacon Id transmitted the signal.

#### *Supporting Data*

- **WHO** received or is receiving alerts for this beacon;
- **WHEN** the beacon was previously detected;
- **WHEN** the beacon should be detected again.

### 2.1.1 Alert Message Types

Table 2.1 provides a brief description of the alert messages generated by the USMCC. The message name is shown in upper case, as it appears on the alert message. The Subject Indicator Type (SIT) is also provided on the alert message, as described in section 3.1.

SIT	Message Name / Comments
160	<p><b>406 BEACON UNLOCATED FIRST ALERT</b></p> <p>This message is sent when a 406 MHz beacon (with registration information or craft identification) is first detected but no encoded or Doppler position information is available. This message is usually sent when a beacon signal is detected first by a Geostationary satellite. Section 3.2.3.8.1 describes distribution procedures for unlocated alerts.</p>
161	<p><b>406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED)</b></p> <p>This message is sent when a 406 MHz beacon is first detected with encoded or Doppler position information available, but ambiguity is not resolved.</p>
162	<p><b>406 BEACON LOCATED FIRST ALERT UPDATE (AMBIGUITY UNRESOLVED)</b></p> <p>This message is sent prior to ambiguity resolution when an alert with Doppler location (SIT 161) was previously sent and updated information regarding the A/B probability is available for the same satellite pass. It is only sent if the “A” side probability in the new solution is at least 30% higher than the “A” side probability in the old solution.</p>
162	<p><b>406 BEACON DOPPLER POSITION MATCH (AMBIGUITY UNRESOLVED)</b></p> <p>This message is sent prior to ambiguity resolution when an alert with Doppler location (SIT 161) was previously sent and both Doppler locations for a new satellite pass match the Doppler locations for a previous pass.</p>
163	<p><b>406 BEACON POSITION CONFLICT ALERT (AMBIGUITY UNRESOLVED)</b></p> <p>This message is sent, prior to ambiguity resolution, when Doppler or encoded positions for a 406 MHz beacon differ by more than 50 kilometers from another position for the beacon. This indicates that at least one of the positions is inaccurate.</p>
164	<p><b>406 BEACON NOTIFICATION OF AMBIGUITY RESOLUTION</b></p> <p>This message is sent when the ambiguity in Doppler (A/B) position is resolved, by independent position data from another Doppler solution or encoded location that matches within 50 kilometers. Ambiguity may be resolved using position data from a previous message or by using the Doppler and encoded positions in the new alert.</p>

SIT	Message Name / Comments
165	<p><b>406 BEACON COMPOSITE POSITION UPDATE</b></p> <p>This message is sent after ambiguity is resolved when the new Doppler or encoded position is within 50 kilometers of the previous resolved position.</p> <p><b>406 BEACON COMPOSITE UPDATE WITH POSITION CONFLICT</b></p> <p>This message is sent after ambiguity is resolved when the new Doppler and/or encoded positions differ by more than 50 kilometers from the previous resolved position.</p>
166	<p><b>406 BEACON MISSED PASS/SITE STATUS REPORT</b></p> <p>This message is sent when a satellite pass (at least 10 degrees above the horizon to the reported beacon position) fails to detect the 406 MHz beacon, or when a site closes due to age out or USMCC Operator action. Generally a 406 MHz site closes when three consecutive missed passes occur or 18 hours pass without a signal being detected. This message may be sent before or after ambiguity is resolved.</p>
167	<p><b>406 BEACON DETECTION UPDATE</b></p> <p>This message is sent when a 406 MHz alert is received with the detect time at least two hours later than the most recent detect time sent to the RCC for the alert site. This message is also sent if an alert is received that causes the count for consecutive missed passes to be reset to zero after a missed pass was reported. This message is only sent for alerts that lack new position data that otherwise cause the alert to be sent (e.g., if an alert is sent for ambiguity resolution it would not also be sent as a Detection Update). This message may be sent before or after ambiguity is resolved.</p>
168	<p><b>NOTIFICATION OF COUNTRY OF REGISTRATION</b></p> <p>This message notifies the country of registration (based on the country code in the 406 MHz beacon) that one of its beacons was detected outside of its Search and Rescue Region (SRR). It is sent to a US RCC when a 406 MHz beacon coded for the US is detected outside the US SRR. It is also sent to the US RCC responsible for the SRR of a foreign country when a 406 MHz beacon coded for that country is detected outside of that country's SRR. This message is distributed to a US RCC based on the homeport or airport for a registered US beacon, based on the beacon type for an unregistered US beacon or based on country code for a non-US beacon. It is usually sent before ambiguity is resolved, but may be sent when Doppler and encoded position from the same alert message resolve ambiguity.</p>

SIT	Message Name / Comments
169	<p><b>406 BEACON ENCODED POSITION UPDATE (AMBIGUITY UNRESOLVED)</b></p> <p><b>406 BEACON ENCODED POSITION UPDATE (AMBIGUITY RESOLVED)</b></p> <p>This message is sent when the position encoded in the 406 MHz beacon message changes by more than 3 kilometers and less than 50 kilometers. It may be sent before or after ambiguity is resolved. This message provide SAR forces with timely updates on beacon position, which may be particularly valuable in difficult SAR conditions, such as rough seas or mountainous terrain.</p> <p>This message is usually sent when Doppler location is not available; for example, when a GOES satellite provides encoded position updates between passes of LEO satellites. If the magnitude of the encoded position change is between 3 and 50 km, and new Doppler position data is available, then the message type (SIT number) will be based on the new Doppler position data.</p>

**Table 2.1: Description of Alert Messages (continued)**

### 2.1.2 Alert Message Structures

Alert messages are structured to present data in a logical, consistent format. Table 2.2 describes the structure of the alert messages, with a list of key fields provided in parenthesis. Sample alert messages are given in Chapter 4.

<p><b>Message Header</b> (message number, transmit time, message type)</p>
<p><b>Alert Data Block</b> (406 MHz Beacon Id, Site Id, alert position, detect time)</p>
<p><b>406 MHz Beacon Decode Information</b> (Country of Registration, Beacon type, Craft Id)</p>
<p><b>406 MHz Beacon Registration Data</b> (Beacon owner, contact information, vehicle/usage information) (For non-US beacons: Beacon Registry contact information)</p>
<p><b>Supporting Information</b> (Alert recipients, previous detections, predicted detections)</p>
<p><b>Incident Feedback Request</b> (Requests RCC feedback on resolution of beacon activation)</p>
<p><b>Message Trailer</b> (formal end of message)</p>

**Table 2.2: Alert Message Structure**

A detailed description of these message sections is provided in Section 3. Other conditions pertinent to alert message content and distribution are described below.

### 2.1.3 Alert Messages for Ship Security Alert System (SSAS) beacons

Alert messages for 406 MHz Ship Security Alert System (SSAS) beacons are sent to the designated Competent Authority based on the country encoded in the 406 MHz beacon Id, in accordance with Cospas-Sarsat specifications. See C/S documents T.001 (406 MHz Beacon Specification), T.015 (Specification and Type Approval Standard for 406 MHz Ship Security Alert Beacons), A.001 (Data Distribution Plan) and A.002 (Standard Interface Description) for more information.

If the Competent Authority (message destination) for a SSAS alert is a US RCC or a US SPOC (i.e., a country in the US Service Area but not in the US Search and Rescue Area) that receives alert messages in RCC format, then the message has the same format as other RCC messages, except that a header line saying “SHIP SECURITY ALERT” is included. This header line immediately precedes the standard message title. SSAS alerts are normally sent only to the designated Competent Authority.

For US SPOCs that are not sent alert messages in RCC format, the USMCC sends SSAS alert messages in SIT 185 format, as specified in C/S A.002 (Standard Interface Description).

#### **2.1.4 Alert Messages with an unreliable 406 MHz beacon message**

The 406 MHz beacon transmits 144 bits every 50 seconds  $\pm$  2.5 seconds. The first 24 bits are used by receiving equipment at the satellite and the LUT (ground station) to identify the signal as coming from a 406 MHz beacon. The remaining 120 bits (bits 25 – 144), also known as the “beacon message”, are normally represented by 30 hexadecimal characters and identify the beacon in LUT to MCC and MCC to MCC communications. (A hexadecimal or “hex” character has 16 possible values, where symbols 0-9 represent values zero to nine and symbols A-F represent values ten to fifteen.) Components of the beacon message are described in document C/S T.001 (Cospas-Sarsat 406 MHz Beacon Specification).

A 406 MHz beacon message is determined to be unreliable when it fails a validation check specified in document C/S A.001 (Cospas-Sarsat Data Distribution Plan); for example, if the country code or the primary (first) error detection code encoded in the beacon message is invalid. When the 406 MHz beacon message is unreliable, no processing is based on the 406 MHz beacon message and the alert message is distributed based only on the Doppler location, in accordance with data distribution procedures specified in document C/S A.001. An alert message with an unreliable beacon message is not distributed if there is no Doppler location.

An unreliable beacon message may be caused by a problem with the beacon, the satellite, the LUT, the MCC or communications to the MCC. An unreliable beacon message may also be caused by a miscoded beacon. Whatever the cause, the absence of a reliable (i.e., usable) beacon message does not imply that the Doppler location is unreliable or that the 406 MHz alert was not transmitted in a distress situation.

Alerts with an unreliable 406 MHz beacon message and a reported Doppler location in the US Search and Rescue region are sent to a US RCC based on the location. In addition, these alerts are sent to the US Coast Guard Atlantic Area (LantArea) and US Coast Guard Pacific Area (PacArea), the US Competent Authorities for Ship Security Alert System (SSAS) alerts, because the associated beacon message may have been transmitted by a SSAS beacon.

When the 406 MHz beacon message is unreliable, the RCC alert message includes an additional header line saying “UNRELIABLE BEACON (HEXADECIMAL) ID”, which immediately precedes the standard message title, as shown in the sample alert message in section 3.6.1. No fields in the 406 MHz beacon message are decoded in the RCC message when the beacon message is unreliable, as described in section 3.1.3.3.

### **2.1.5 Alert Messages Sent During USMCC Backup**

If the USMCC is unavailable, the Canadian MCC (CMCC) will provide alert data to US RCCs in Cospas-Sarsat standard format SIT 185, as described in document C/S A.002. To view this document, go to the C/S web site ([www.cospas-sarsat.org](http://www.cospas-sarsat.org)), select “Documents”, “C/S System Documents”, “C/S Series A.000 Series – Operational”, then “A.002”. Some important differences between the SIT 185 messages sent by the CMCC and USMCC RCC messages are noted below.

a) SIT 185 messages sent by the CMCC do not contain a site Id. Use the 15 digit Beacon Id (field “CMCC REF” in Line “2”) to associate different messages for the same beacon activation. View the Message Title (Line 1) to help determine if a new site was opened for a given beacon Id.

Use the beacon Id and activation time, in order to update the USMCC Incident History Database (IHDB). The IHDB may not be available (or may not contain information on a specific beacon activation), depending on the USMCC failure.

b) CMCC personnel can not close alert sites.

c) SIT 185 messages sent by the CMCC do not contain registration data for US beacons, since the CMCC software does not have access to the USMCC Beacon Registration Database (RGDB). In addition, CMCC personnel do not have access to the USMCC RGDB. The US RCC should query the USMCC RGDB manually for registration information about US beacons. The RGDB may not be available, depending on the USMCC failure.

d) Since the CMCC does not have access to the USMCC RGDB to determine if a beacon is registered, the CMCC sends SIT 185 unlocated alerts for all serialized US beacons. In contrast, the USMCC sends unlocated alerts for serialized US beacons only if the beacon is registered or contained in a US special program.

e) The CMCC sends all SIT 185 unlocated alerts for US beacons to the AFRCC.

f) Next Pass Times (SIT 185, Line 10) are provided based on mutual visibility of the satellite to Canadian LEO LUTs and the reported beacon location. Thus Next Pass Times will not be available for beacons located far from Canada.

g) The CMCC specially routes all alerts for US coded “national use” beacons to the AFRCC, whereas the USMCC specially routes US coded “national use” beacons that are allocated to US government “special programs” to specific destinations per special program (based on agreements made by NOAA/USMCC with other US government agencies).

SIT 185 messages from the CMCC for US national use beacons will contain the following information:

16. REMARKS: USA CODED NATIONAL USE BEACON

h) The CMCC sends a maximum of 4 missed pass messages per reported beacon location.

i) The CMCC message title “MIRROR NOTIFICATION” indicates that ambiguity has been resolved and that the resolved position is not in the SRR of the message destination.

j) The CMCC sends alerts for EPIRBs in the AFRCC SRR and within 50 km of a US Coast Guard SRR to the AFRCC, but the USMCC would send these alerts to the US Coast Guard RCC.

k) SIT 185 messages sent by the CMCC do not contain the two line SIT message header that is sent by the USMCC.

l) CMCC personnel can not remove one destination (RCC) from the distribution list for an alert site except by suppressing the message from all destinations.

m) SIT 185 messages sent by the CMCC do not list the other message destinations, whereas the USMCC provides a list of message recipients in “Supporting Information”.

n) While the USMCC alert message includes the beacon registration data for the associated US special program block registration Id when available, the CMCC cannot provide this information. As a result, US RCC personnel will not be able to access the appropriate beacon registration data for US special program beacons that have a block registration. See section for “PROGRAM BLOCK REGISTRATION ID” in section 3 below.

Sample SIT 185 messages from the CMCC are provided in Annex 4.

### **2.1.6 Nationally Defined Alert Messages Designed for Automated Processing**

The USMCC sends nationally defined alert messages designed for automated processing to designated destinations. These alert messages are described in Annex 9.

## 2.2 Support Messages

While alert messages are sent automatically, support messages are sent in response to specific requests by an RCC, SPOC or MCC.

### 2.2.1 Support Message Types

Table 2.3 provides a brief description of the support messages generated by the USMCC. The message name is in upper case, as it appears on the message.

SIT	Message Name/Comments
950	NARRATIVE MESSAGE  This message is used to transmit narrative text to the RCCs.
951	ALERT SITE QUERY  This message is used to provide information on active and closed alert sites processed by the USMCC. Queries may be based on time, site Id, beacon Id or geographical area.
952	406 BEACON REGISTRATION  This message is used to transmit 406 MHz beacon registration information to RCCs and SPOCs, either for US coded or non-US coded beacons. (MCCs use the SIT 925 message to send registration information to other MCCs.) This message may be sent in response to a request for beacon registration. It may also be sent automatically when the USMCC receives a SIT 925 message from another MCC for a beacon located in the SRR of a US RCC or SPOC.
953	BEACON-LUT MUTUAL VISIBILITY  This message is used to transmit a list of satellite passes that have mutual visibility with a United States LEOLUT and a specified location.

**Table 2.3: Description of Support Messages**

### 2.2.2 Support Message Structure

Table 2.4 describes the structure of the alert messages, with a list of key fields provided in parenthesis. Sample support messages are presented in section 4.

<b>Message Header</b> (message number, transmit time, message type)
<b>Support Message Data</b> (E.g., predicted detections, alert data, beacon registration data)

<p style="text-align: center;"><b>Message Trailer</b> (formal end of message)</p>
---

**Table 2.4: Support Message Structure**

### 3 USMCC Alert Message Components

The following sections describe the common components of alerts messages, as summarized in Table 2.2. Components of alert messages that are the same for multiple alert messages (such as the Message Header and Beacon Id) are not described per alert message. Section 4 provides sample alert messages and describes unique components of alert messages.

In the following description, [brackets] are used to indicate that a message component is not present on all messages.

#### 3.1 Message Header

As shown below, the message header contains no field labels. The message header is the same for alert and support messages. Lines 1 and 2 conform to the message header definitions in document C/S A.002.

Line 1 of this header provides the current (Curr#) and original (Orig#) message numbers for this message to the RCC. The current message number is sequential per destination (RCC) to enable message tracking by RCCs. (Thus, an RCC that received message number “00005” followed by message number “00007” would know to request message number “00006”.) The original message number is zero unless the message is a retransmission of a previous message sent to the same RCC. The message source (Srce) is always 3660, which identifies the USMCC. The message transmission time (YY DDD HHMM) contains the Year (YY), day of the year (DDD) and hour (HH) and minutes (MM) of the day. This time is in Zulu or Coordinated Universal Time (UTC), as are all other times on the RCC message.

Line 2 of the message header contains a numeric identifier for the message type, the Subject Indicator Type (SIT), as defined in Table 2.1. An alphanumeric identifier for the message destination (Dest) is also provided. Annex 7 lists message destination identification codes for US RCCs and SPOCs.

Message Title Special Information is only included when the 406 MHz beacon message is unreliable (see section 2.1.3), when the beacon type is Ship Security (see section 2.1.4) or when the beacon is associated with certain national programs (see Annex 8). The Message Name (as defined in Table 2.1) corresponds to the message type.

<pre>/Curr# Orig#/Srce/YY DDD HHMM /SIT/Dest  [Message Title Special Information]  ***** Message Name *****</pre>
---

**Table 3.1.1 Message Header Format**

In the following example, message 17127 was sent by the USMCC to the AFRCC (Dest= 366S) at 0939 UTC on 27 September 2012. The message type is a “406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED) “, otherwise known as a SIT 161.

```

/17127 00000/3660/12 270 0939
/161/366S

***** 406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED) *****

```

**Table 3.1.2 Message Header Sample (non-SSAS beacon)**

The following example contains an additional message title that indicates that a Ship Security (SSAS) beacon was activated.

```

/17111 00000/3660/12 070 1239
/161/CGOP

!!! SHIP SECURITY ALERT !!!!!!!!!!!

***** 406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED) *****

```

**Table 3.1.3 Message Header Sample (SSAS beacon)**

### 3.2 Alert Data Block

As outlined in Table 3.2.1, the alert data block has the following the structure:

- 1) Beacon Id/Site Id Header: always present. Information on Site Closure is only present on SIT 166 messages.
- 2) Ambiguity Resolution Summary: only present when ambiguity is resolved.
- 3) New Alert or Missed Pass Information: always present. Provides the new alert or missed pass information that caused the message to be generated. Missed Pass information is specific to the SIT 166 message.

```

BEACON ID: XXXXX XXXXX XXXXX   SITE ID: NNNNN   [SITE CLOSURE DATA]

[AMBIGUITY RESOLUTION SUMMARY]

NEW ALERT OR MISSED PASS INFORMATION

```

**Table 3.2.1 Alert Data Block Structure**

Table 3.2.2 provides a sample alert data block where ambiguity is not resolved.

BEACON ID: ADCD0 21DDC C2001		SITE ID: 65533						
***** DETECTION TIME AND POSITIONS FOR THE BEACON *****								
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
53	A	35 25.2N	076 36.4W	27 0937 SEP	S8	CMcc	AFRCC	
47	B	31 42.7N	058 40.0W	27 0937 SEP	S8	CMcc	LANTAR	

**Table 3.2.2 Alert Data Block Sample (Ambiguity Not Resolved)**

Table 3.2.3 provides a sample alert data block where ambiguity is resolved.

BEACON ID: ADCD0 21DDC C0801		SITE ID: 73531				
***** AMBIGUITY RESOLVED TO THE FOLLOWING POSITION *****						
LATITUDE	LONGITUDE	DURATION	PASSES	SRR	/BUFFER	
38 45.5N	076 56.9W	001.5 HRS	003	AFRCC		
***** AMBIGUITY RESOLVED FROM THE FOLLOWING NEW INFORMATION *****						
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
N/A	E	38 43.2N	076 52.3W	17 0545 FEB	S12	FL1

**Table 3.2.3 Alert Data Block Sample (Ambiguity Resolved)**

### 3.2.1 Beacon Id/Site Id Header

#### 3.2.1.1 BEACON ID

The BEACON ID is a 15 character hexadecimal code that identifies the 406 MHz beacon. The BEACON ID corresponds to bits 26 to 85 of the 406 MHz message transmitted by the beacon as described in document C/S T.001. For location protocol beacons (which use GPS/navigation input to determine beacon position), the bits of the BEACON ID that contain location are defaulted, so that the same BEACON ID is referenced regardless of its encoded position. The BEACON ID is used to reference USMCC registration data for the beacon. The BEACON ID is useful in discussing a SAR case with other SAR agencies, especially when the other SAR agency does not receive alert messages from the USMCC, since the SITE ID (described below) is specific to the USMCC.

#### 3.2.1.2 SITE ID

The SITE ID is a five digit number generated by the USMCC that identifies all messages for an activated beacon. It is used to discuss the beacon activation with personnel at the USMCC or with other US RCCs or US SPOCs that have received alert messages from the USMCC for the beacon activation.

### 3.2.1.3 Site Closure Information

This information is only present on SIT 166 messages. It indicates whether the site is open or closed, and if closed, the reason for closure. For more information, see the separate description of the SIT 166 message.

### 3.2.2 Ambiguity Resolution Summary

This information is only present when ambiguity is resolved. See the sample in Table 3.2.3.

The composite LATITUDE (DD MM.T H) is provided in degrees (DD), minutes (MM), tenths of a minute (T) and hemisphere (N=north, S=south). The composite LONGITUDE (DDD MM.T H) is provided in degrees (DDD), minutes (MM), tenths of a minute (T) and hemisphere (E=east, W=west). Since the composite position is a weighted average of two or more independent positions calculated at different times, it may not reflect the current beacon position. *To better determine the current position in cases where the beacon is moving, view (or plot) the positions and detect times from the individual alert messages.*

The DURATION is the period of time the beacon has been active, based on the difference between the earliest and most recent detect times. The number of satellite PASSES that detected the beacon is also provided. The SRR is the primary Search and Rescue Region (SRR) of the first alert associated with the composite position. More information on the SRR and BUFFER is provided below in section 3.2.8.

***** AMBIGUITY RESOLVED TO THE FOLLOWING POSITION *****						
LATITUDE	LONGITUDE	DURATION	PASSES	SRR	/BUFFER	
38 45.5N	076 56.9W	001.5 HRS	003	AFRCC		

**Table 3.2.3 Sample Ambiguity Resolution Summary**

### 3.2.3 Solution Data Line (New Alert Data)

A data solution line contains information about an “A” side Doppler solution, a “B” side Doppler solution, an encoded location, the composite position or an unlocated alert, as described below. Solution data lines are provided for new solutions (per the table below) and for previous solutions (see Previous Pass Information section described below). Once ambiguity has been resolved, solution data lines in the Previous Pass Information are only provided for locations that match the composite position and unlocated alerts.

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****								
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
61	A	01 22.2N	103 59.9E	18 1302 FEB	S9	VNMcc	SIMCC	

39	B	08	29.5N	135	58.9E	18	1302	FEB	S9	VNMcc	MARSEC
----	---	----	-------	-----	-------	----	------	-----	----	-------	--------

**Table 3.2.4 Sample Solution Data Lines (New Solution)**

**3.2.3.1 Probability (PROB)**

Field PROB indicates the probability that the associated Doppler (A or B) position is the real position. Of the two positions generated by Doppler location processing, the “A” position is by definition the position that has the higher probability of being real. The values for PROB range from 50 to 99 for the “A” side and from 01 to 50 for the “B” side. *While the solution with the higher probability is more likely to be the real position, even the highest reported probability (99) does not guarantee that the associated position is the real position.* An “A” side location with a higher probability tends to be more accurate; for example, an “A” side location with a 95% probability is likely to be more accurate than an “A” side location with a 55% probability.

For solutions without Doppler location, field PROB has no meaning and is listed as “N/A”.

**3.2.3.2 Solution (SOL)**

Field SOL indicates whether the data line is associated with the “A” position (the Doppler position with the higher probability of being real), the “B” position (the Doppler position with the lower probability of being real), the “C” (composite or ambiguity resolved) position, or the “E” position (position encoded in the 406 MHz beacon message). For solutions with no position, SOL is listed as “N/A”.

**3.2.3.3 Latitude**

The LATITUDE (DD MM.t H) of the Doppler location is provided in degrees (DD), minutes (MM), tenths of a minute (t) and hemisphere (N=north, S=south). The LATITUDE (DD MM.hh H) of the encoded location is provided in degrees (DD), minutes (MM), hundredths of a minute (hh) and hemisphere (N=north, S=south). For solutions with no position, the LATITUDE is listed as “N/A”. Encoded location precision is further described in section 3.2.3.3.a.

**3.2.3.3.a Encoded Location Precision**

The precision on an encoded location provided on alert messages depends on the beacon protocol and the reliability of the two error protected components of the 406 MHz beacon message. If the first error protected data field (PDF-1) is unreliable, then the entire 406 MHz beacon message is unreliable (per section 2.1.4) and no portion of the beacon message is usable, including the encoded location. If the first error protected data field (PDF-1) is reliable and the second error protected data field (PDF-2) is unreliable, then only the portion of the encoded location that is contained in PDF-1 is usable. If encoded location data in PDF-1 is usable, but the encoded

location “offset” in PDF-2 is not usable, then the encoded location is deemed “coarse”. If encoded location data is usable in both PDF-1 and PDF-2, then the encoded location is deemed “refined”.

Table 3.2.5 below provides the resolution of encoded location, based on beacon protocol and the reliability of the 406 MHz beacon message. This table also provides the corresponding value in the “POSITION RESOLUTION” field, as described in section 3.3.1. User protocol beacons seldom contain encoded location and only provide encoded location information in PDF-2.

<b>Beacon Protocol</b>	<b>Only PDF-1 usable (Value in “POSITION RESOLUTION” field)</b>	<b>PDF-1 and PDF-2 usable (Value in “POSITION RESOLUTION” field)</b>
Standard Location	15 minutes (15 MINUTES)	4 seconds (4 SECONDS)
National Location	2 minutes (2 MINUTES)	4 seconds (4 SECONDS)
User (not National)	Encoded location not available (NONE)	4 minutes (4 MINUTES)
User – National (CSEL)	1 degree latitude, 15 degrees longitude (1 DEG LAT, 15 DEG LONG)	2 seconds (2 SECONDS)
User – National (SEPIRB)	1 degree (1 DEGREE)	2 seconds (2 SECONDS)

**Table 3.2.5 Resolution of Encoded Location and “POSITION RESOLUTION” field value Based on Beacon Protocol and Beacon Message Reliability**

For the standard and national location protocols, the precision (or resolution) of the refined location (i.e., latitude and longitude) is 4 seconds (1 fifteenth of a minute), as shown in the table above. This means that a refined encoded location has more precision than a tenth of a minute but less precision than a hundredth of a minute. (Note that coarse encoded location has less precision than 4 seconds.) The possible values for the encoded location, only available in 4 second intervals, are shown in the table below. Values not included in the table for hundredths of a minute (such as .01, .02 and .03) do not occur in the encoded location.

<b>Encoded Seconds</b>	<b>Hundredths of a Minute</b>
0	.00
4	.07
8	.13
12	.20
16	.27
20	.33
24	.40
28	.47

32	.53
36	.60
40	.67
44	.73
48	.80
52	.87
56	.93

**Table 3.2.6 Possible Values for Encoded Location for Location Protocol beacons  
(4 second interval vs. hundredths of a minute)**

### **3.2.3.4 Longitude**

The LONGITUDE (DDD MM.t H) of the Doppler location is provided in degrees (DDD), minutes MM), tenths of a minute (t) and hemisphere (E=east, W=west). The LONGITUDE (DDD MM.hh H) of the encoded location is provided in degrees (DDD), minutes MM), hundredths of a minute (hh) and hemisphere (E=east, W=west). For solutions with no position, the LONGITUDE is listed as “N/A”. Encoded location precision is further described in section 3.2.3.3.a.

### **3.2.3.5 Detect Time**

The DETECT TIME format is DD HHMM MON, where DD is the day of month, HHMM is hour and minute of the day in Zulu time (UTC), and MON is the month of the year. For Doppler solutions, the DETECT TIME is the Time of Closest Approach (TCA) of the satellite to the beacon. The TCA is computed at the ground station (LEOLUT), and may differ from the detect time of the individual 406 MHz beacon bursts received at the satellite by as much as 8 – 10 minutes; for a Doppler solution computed and sent to the MCC in near real-time, it is possible for the RCC to receive the alert message prior to the computed TCA.

For non-Doppler solutions from LEOLUTs, the DETECT TIME is the time that the satellite last detected the beacon for the alert. For solutions from GEOLUTs, the DETECT TIME is the time that the satellite first detected the beacon for the alert. GEOLUTs report the first detect time for each alert so that the time of beacon activation is more accurately provided in the event of an aircraft crash.

### **3.2.3.6 Satellite (SAT)**

The SATellite that detected the beacon is identified by three characters. The first character identifies the type of satellite, as described in Table 3.2.3.7. The remaining two digits are the satellite number. Doppler location can only be generated from beacon burst data received from COSPAS and SARSAT satellites, which are polar orbiting. On occasion, Doppler location may not be generated for beacons detected by polar orbiting satellites, because too few usable beacon bursts were detected.

<b>Prefix</b>	<b>Satellite Type</b>
S	SARSAT (US/Canada/France) low-earth orbiting
C	COSPAS (Russia) low-earth orbiting
G	GOES (US) geostationary satellite
M	MSG (Europe) geostationary satellite
I	INSAT (India) geostationary satellite
R	ELEKTRO/LUCH (Russia) geostationary satellite

**Table 3.2.7 Satellite Type Description**

### **3.2.3.7 Data Source (SOURCE)**

The SOURCE indicates the ground station or LUT (Local User Terminal) that ingested the satellite data. If the source is a US LUT, then the LUT name is provided per Annex 2. If the source is not a US LUT, then the name of the MCC associated with the LUT is provided per Annex 3. “N/A” indicates that the name of the data source is not known.

### **3.2.3.8 Search and Rescue Region (SRR) and BUFFER**

The SRR is the primary Search and Rescue Region (SRR) in which the alert is located. The BUFFER is the second SRR in which the alert is located, which may be either a buffer to the primary SRR or an overlap of the primary SRR. If an alert is located in the primary or buffer SRR for three or more SRRs, the RCC message will only list two SRRs per location, but the message will be routed to all SRRs as appropriate. Annex 7 lists SRR names for US RCCs and SPOCs.

If an alert is located outside of the SRR of Canada (CMCC), Bermuda, COCESNA, the Dominican Republic or any US RCC, but within 50 km of its SRR boundary, then the USMCC designates the alert to be in the buffer for that SRR. Buffer SRRs are not designated for MCCs or SPOCs, except those identified above.

As agreed by the US Air Force and US Coast Guard, if an alert for an EPIRB is located in the AFRCC SRR and in the 50 km buffer of a U. S. Coast Guard SRR, then the Coast Guard SRR is listed as the primary SRR and the AFRCC SRR is removed from the SRR (message destination) list for that location.

#### **3.2.3.8.1 Alert Data Distribution Procedures**

For a site with only unlocated alerts, the SRR is determined as follows:

- a) For US Ship Security Alert System beacons, all alerts (located and unlocated) are sent solely to LantArea (Coast Guard Ops Com). See section 2.1.3.
- b) For US beacons with special routing defined (e.g., US special program beacons), all alerts are sent based on special routing configuration, where the special routing either replaces normal routing or adds to normal routing. Alerts for certain US special program beacons are routed

specially to the AFRCC based on agreement between the US Air Force and the associated special program.

- c) For US registered beacons (that is, US coded beacons in the RGDB), the SRR is based on (1) the home port (or airport) of the craft for which the beacon is registered or (2) the owner’s home address (if the home port or home port SRR is not available). If two SRRs are provided in the RGDB, then the unlocated alert is distributed to both SRRs. If no SRR is available in the RGDB for the registered beacon, then distribution is based on beacon type (per item d).
- d) For US unregistered beacons with a craft Id (i.e., with vessel or aircraft Id), the SRR is based on the beacon type: AFRCC for ELTs and PacArea for EPIRBs.
- e) For US unregistered beacons without a craft Id, no SRR is assigned and an unlocated alert is not distributed.
- f) For non-US coded beacons, the SRR is based on the country code of the beacon Id, as specified on the C/S web site (sub-links “Operations” / “List of Country/Region Codes (MID), and “Contacts” / “SAR Points of Contact (SPOCs)).

As provided on the C/S web site (sub-links “Contacts” / “Beacon Registers”), Table 3.2.8 lists the country/region codes for which beacon registration is maintained in the US Beacon Registration Database.

<b>Code</b>	<b>Country or Region Name</b>
303	Alaska
559	American Samoa
338	Hawaii
536	Northern Mariana Islands
358	Puerto Rico
379	US Virgin Islands
366	USA
367	USA
368	USA
369	USA

**Table 3.2.8 US Country and Region Codes**

While the SRR and BUFFER generally indicate the message destination(s) and responsible SAR agency, the following exceptions apply.

- 1) Due to space limitations on the RCC message, only two SRRs are listed per location, as noted above. The Supporting Information section of the RCC message lists message destinations for additional SRRs not identified in “SRR/BUFFER”. Note that destinations that receive an alert message based on the USMCC “echo” capability are not identified in the Supporting Information section.

2) The SRR based on Doppler or encoded location is irrelevant for SSAS beacons, since the message destination (i.e., Competent Authority) for SSAS beacons is based on the country coded in the 406 MHz beacon Id. View the Message Header section of the RCC message to see if the beacon type is “Ship Security”. Alerts for ship security beacons normally are only sent to the Competent Authority. (As of April 2013, SSAS alerts for US coded beacons are sent to LantArea and PacArea. Future enhancement: alerts for US ship security beacons may be sent to other RCCs, if requested by the US Competent Authority.)

3) Alerts are routed specially for US Special Program beacons, either in addition to normal routing or instead of normal routing. Examine the Beacon Decode section of the RCC message to see if a beacon is part of a special program.

4) Alerts are sent as a Notification of Country of Registration (NOCR). An NOCR is sent to the country of registration (as coded in the 406 MHz beacon Id) when an alert with location is not located in the SRR of that country, so that the country of registration can help with the SAR response for its citizens. Since the SRR is based on the location, the NOCR destination will not be listed as the SRR. The SIT number (168) and message name (NOTIFICATION OF COUNTRY OF REGISTRATION) in the Message Header indicate that an alert message is an NOCR.

5) Once an alert message is sent to a destination for an activated beacon, that destination will receive subsequent alerts for the alert site until ambiguity is resolved, regardless of location. This allows message destinations to coordinate a SAR response, as needed.

6) After ambiguity is resolved, the destination (US RCC or SPOC) in whose area the resolved position lies will normally receive subsequent alerts for the alert site, regardless of the location of subsequent alerts. As an exception, alerts for US Special Program beacons may be sent to a designated destination regardless of alert location (see item 3 above).

7) The USMCC Controller manually resends an alert message to another RCC due to a request by the RCC. The SRR on the resent alert message will be the same as on the initial alert.

8) If an unlocated alert is distributed to two destinations based on the presence of two SRRs in the RGDB for the beacon, then the order of the destinations in the SRR and BUFFER fields is arbitrary. Refer to the “PRIMARY SRR” and “SECONDARY SRR” in the Beacon Registration section to determine which SRR (destination) is primary based on Home Ports in the RGDB.

While no information on the RCC alert message assigns the SAR Mission Coordinator (SMC), the RCC receiving an alert message should take action to ensure that the possible distress is resolved.

### **3.2.3.9 Missed Pass Counter (MP)**

The Missed Pass (MP) counter provides the number of passes that have *not* detected the beacon since the last detection. This field is only present on the SIT 166 message, which is described further in section 4.7. If ambiguity is resolved, the counter only refers to the resolved position. A site with resolved ambiguity will close when there have been three consecutive missed passes on

the resolved position. If ambiguity is not resolved, the first alert positions have independent Missed Pass counters, and the site will close when there have been three consecutive missed passes on both the “A” and the “B” positions (if there is no encoded position), or on the encoded position (if there is no Doppler position). If position conflict occurs before ambiguity is resolved, missed passes will not be computed again until ambiguity is resolved.

### 3.2.4 Detection Frequency

The DETECTION FREQUENCY format is 406.nnnn MHz, and provides the detected frequency of the transmitting 406 MHz beacon for the new alert message to a precision of tenths of a Hz (nnnn), as shown below in Table 3.2.9. The frequency is not provided when the new solution is from a LEOSAR satellite without Doppler location, since the reported frequency includes a Doppler shift of unknown magnitude; in these cases, this field is reported as “FREQUENCY IS UNRELIABLE”, as shown below in Table 3.2.10. This field is not present on the Missed Pass (SIT 166) message.

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****										
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER		
61	A	01 22.2N	103 59.9E	18 1302 FEB	S10	VNMcc	SIMCC			
39	B	08 29.5N	135 58.9E	18 1302 FEB	S10	VNMcc	MARSEC			
DETECTION FREQUENCY: 406.0281 MHZ										
HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM										

**Table 3.2.9 Sample Solution Data with actual Detection Frequency and Information on Doppler Position Data Accuracy**

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****										
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER		
N/A	N/A	N/A		18 1237 JAN	S12	SPMcc	AKRCC			
DETECTION FREQUENCY: FREQUENCY IS UNRELIABLE										

**Table 3.2.10 Sample Solution Data with unreliable Detection Frequency**

Per Table H.2 in document C/S T.012 (revision Oct. 2014), the frequencies in the range of 406.025 to 406.040 MHz are assigned for C/S operational beacons. Frequency 406.022 MHz is reserved for C/S system (non-operational) beacons. Per document C/S R.018, frequencies 406.064 MHz and 406.061 MHz are used for MEOSAR Development and Evaluation (D&E) tests, to avoid conflict with the C/S operational system.

The Detection Frequency may help determine whether an alert originated from an operational beacon. While MEOSAR D&E tests are normally conducted using test coded beacons (which are automatically filtered from operational distribution), certain conditions (i.e., rapid transmission through the SARP-3 on satellites S11, S12 and S13) cause D&E test signals to be treated as operational alerts with an unreliable beacon Id. In short, an alert with an unreliable beacon ID,

reported frequency of 406.061 MHz or 406.064 MHz , and Doppler location near the site of a MEOSAR D&E beacon simulator (including Hawaii) is likely the result of a MEOSAR D&E test transmission, not an operational beacon.

### 3.2.5 Information on Doppler Position Data Accuracy

The statement HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM is provided when all technical parameters for the new Doppler position data are nominal, as described in document C/S A.002, Appendix B.1 to Annex B, Message Field 61. This statement is not provided when any associated technical parameter is not nominal. This statement is also not provided when the maximum expected error in Doppler location exceeds 10 kilometers during the 24 hour period after a satellite maneuver. Table 3.2.9 provides a sample that includes information on Doppler position data accuracy.

### 3.2.6 Doppler Image Position Determination

When one Doppler position (A or B) in the new alert is determined to be an “image” (that is, not the actual position), then a data line is included to the alert message about the “LIKELY IMAGE POSITION” as per the following example. This data line is only provided when a Doppler position is determined to be an image prior to ambiguity resolution.

The image position is determined when a beacon was previously detected as an unlocated alert, and one of the Doppler positions was not visible to the satellite when it detected the unlocated alert, per the “LEOSAR Image Position Determination” algorithm in document C/S A.002 (Appendix B.2 to Annex B). The reported A/B probability is irrelevant to image position determination. When one Doppler position is determined to be an image, it does not imply that the other Doppler position is the real position, since both Doppler positions could be incorrect. A Doppler position is determined to be real based on a match within 50 km to an independent Doppler or encoded position, regardless of image position determination.

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****									
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER	
55	A	08 29.5N	135 58.9E	15 1302 JAN	S13	ARMcc	MARSEC		
45	B	01 22.2N	103 59.9E	15 1302 JAN	S13	ARMcc	SIMCC		
DETECTION FREQUENCY: 406.0281 MHZ									
HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM									
LIKELY IMAGE POSITION: THE A POSITION									

**Table 3.2.12 Sample Solution Data with Likely Image Position**

## 3.3 Beacon Decode Information

***** BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION *****			
COUNTRY	: USA	BEACON TYPE:	EPIRB SERIAL CATEGORY I
MID CODE	: 366	CRAFT ID	: SPECIFIC BEACON:
MANUFACTURER:	ACR	MODEL	: UNKNOWN
SERIAL NUM	: 34679	HOMING	: 121.5 MHZ
POSITION TYPE:	NIL	POSITION RESOLUTION:	4 MINUTES

**Table 3.3.1 Sample Beacon Decode Information (No Special Program)**

The information in this block is decoded from the transmitted 406 MHz beacon Id, in accordance with document C/S T.001. For US beacons, bits in the beacon Id defined for national use in C/S T.001 are decoded per the US Beacon Coding Guideline. National use information for US beacons is further described below, in particular, in section 3.3.2. Beacon decode information is provided on all alert messages except the SIT 166 and SIT 167.

### **3.3.1 Beacon Decode Detailed Information**

The COUNTRY field identifies the country, state or territory associated with the beacon. It identifies the country that maintains registration information for the beacon. For US registered beacons, the registration data is included in most alert messages, as described in Beacon Registration Data below. The C/S web site (sub-link “Beacons”) provides Registry Points of Contact for non US beacons.

The Maritime Identification Digit (MID) CODE is the three digit code assigned by the International Telecommunications Union (ITU) and corresponds to the COUNTRY. Multiple MID codes may be assigned to the same country; for example, 366 to 369 are assigned to the USA, as shown in Table 3.2.8.

BEACON TYPE shows the beacon type (i.e., EPIRB, ELT, PLB, SHIP SECURITY, TEST or NATIONAL USE). It indicates if the beacon Id contains a serial number, which is contained in field SERIAL NUM (described below). Note that a serial number is an arbitrary sequential number (e.g., 1, 291, 1234) that has no intrinsic meaning, and does not directly provide a reference to the vessel or aircraft associated with the beacon.

For location protocol beacons, the values “(STANDARD)” and “(STD)” indicate Standard location protocol and “(NATIONAL)” indicate National location protocol. Standard and National location protocols are capable of being encoded with the beacon location, as described in document C/S T.001 (User protocol beacon may also contain encoded location.) While location is encoded in a common (standard) format for National location protocols, some bits in the 406 MHz beacon message are reserved for “national use”. Further information on beacon type and associated fields coded in the beacon Id is provided below in the Table 3.3.2.

Based on information encoded in the beacon Id, the CRAFT ID identifies the vessel or aircraft and contains the radio call sign, ship station Id, aircraft tail number (registration marking), or aircraft operator designator. It provides a reference to beacon registration data independent of the

USMCC RGDB. For example, the MMSI (i.e., the MID and ship station id) or radio call sign can be used to search the ITU maritime registration database using the following link:

[http://www.itu.int/online/mms/mars/ship\\_search.sh](http://www.itu.int/online/mms/mars/ship_search.sh)

The SPECIFIC BEACON identifies the specific beacon on a vessel or aircraft, and allows multiple beacons on a single vessel or aircraft to be uniquely identified. This field is present for most non-serial beacon protocols. The SPECIFIC BEACON is numeric for some beacon protocols (e.g., Aviation user) and is alphanumeric for other beacon protocols (e.g., radio call sign user).

The MANUFACTURER and MODEL number of the beacon are provided for serial user protocol beacons that contain a US country code, as specified in the US Beacon Coding Guideline. When the Cospas-Sarsat Type Approval (CSTA) number is coded in the beacon Id, the MANUFACTURER field contains the CSTA number in format “CSTA# <number>”. Cospas-Sarsat issues a Type Approval number for a 406 MHz beacon model that successfully completes Type Approval testing, as specified in document C/S T.007. To determine the beacon manufacturer and model associated with a specific CSTA number, refer to <http://www.cospas-sarsat.org/beacons/typeApprovedList.htm>.

The SERIAL NUM is the unique serial number of the beacon. For a beacon with a 24-bit address, the 24-bit address (with the label 24 BIT ADDR) is shown in place of the SERIAL NUMr. HOMING identifies the frequency and type of homer on the beacon, as follow:

“121.5 MHZ”

“MARITIME” (9 GHz Search and Rescue Radar Transponder (SART))

“OTHER” (other auxiliary radio locating device) and

“NONE” (no auxiliary radio locating device).

The POSITION DEVICE indicates the type of device that the beacon uses to provide encoded position. Possible values are INTERNAL, EXTERNAL and NIL, as described below:

INTERNAL – encoded position is provided by a device internal to the beacon

EXTERNAL – encoded position is provided by a device external to the beacon

NIL – no information is available. This means that the beacon type is not location protocol or that the information was not reliably provided in the 406 MHz beacon message for this alert.

The POSITION RESOLUTION indicates the encoded position resolution. Table 3.2.5 above provides the resolution of encoded location and the corresponding value in the POSITION RESOLUTION field, based on beacon protocol and the reliability of the 406 MHz beacon message. The field value is “NONE” if encoded position data is not available.

Beacon Type	Location Protocol	Description / Notes
-------------	-------------------	---------------------

ELT 24 BIT ADDRESS (STD)	Standard	24 Bit Aircraft Address provides a reference to aircraft
ELT A/C OPERATOR (STD)	Standard	Aircraft Operator, such as airline, is provided in field CRAFT ID. Field SERIAL NUM provides the serial number for the aircraft operator.
ELT AVIATION USER	No	Aircraft tail number is provided in field CRAFT ID. Field SPECIFIC Beacon Identifies beacon number on the aircraft.
ELT SERIAL (NATIONAL)	National	Field SERIAL NUM provides the serial number.
ELT SERIAL (STANDARD)	Standard	Field SERIAL NUM provides the serial number.
ELT SERIAL A/C 24BIT ADD	No	24 Bit Aircraft Address provides reference to aircraft
ELT SERIAL A/C OPERATOR	No	Aircraft Operator, such as airline, is provided in field CRAFT ID. Field SERIAL NUM provides the serial number for the aircraft operator.
ELT SERIAL AVIATION	No	Field SERIAL NUM provides the serial number.
EPIRB MARITIME USER	No	Field CRAFT ID contains the Ship Station Id or the radio call sign, as described below for “EPIRB MMSI (STANDARD)” and “EPIRB RADIO CALL SIGN”, respectively.
EPIRB MMSI (STANDARD)	Standard	Field CRAFT ID contains trailing 6 digits of the 9 digit Ship Station Id number, which is one form of MMSI (Maritime Mobile Service Identity). The first 3 digits of the Ship Station Id number are the Maritime Identification Digits (equivalent to country code).
EPIRB RADIO CALL SIGN	No	Field CRAFT ID contains the Radio Call Sign, which provides a reference to the associated vessel. The first 3 digits of a radio call sign identify its country of registration.
EPIRB SERIAL (NATIONAL)	National	Field SERIAL NUM provides the serial number.
EPIRB SERIAL (STANDARD)	Standard	Field SERIAL NUM provides the serial number.
EPIRB SERIAL CATEGORY I	No	Can be activated either manually or automatically
EPIRB SERIAL CATEGORY II	No	Can only be activated manually
NATIONAL USER	Undefined	Specific information that may be encoded in the beacon Id, such as beacon type and location, is defined nationally. Information defined nationally (i.e., for “national use”) will probably not be decoded by foreign MCCs; e.g., national use information in a US coded beacon will probably not be decoded by the Canadian MCC (CMCC).
PLB SERIAL	No	
PLB SERIAL (NATIONAL)	National	
PLB SERIAL (STANDARD)	Standard	
SHIP SECURITY		Contains Standard location protocol. Field CRAFT ID

	Standard	contains trailing 6 digits of the 9 digit Ship Station Id number; see “EPIRB MMSI (STANDARD)”.
TEST	Undefined	Alerts for test beacons are normally not distributed, but may be distributed as part of a controlled test. Specific information that may be encoded in the beacon Id that is defined nationally, such as beacon type and location.
TEST SERIAL (STANDARD)	Standard	Alerts for test beacons are normally not distributed, but may be distributed as part of a controlled test. Contains Standard location protocol.

**Table 3.3.2 Beacon Types Provided in US RCC Messages**

### 3.3.2 Beacon Decode Information for Special Programs

***** BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION *****	
COUNTRY : USA	BEACON TYPE: PLB SERIAL (NATIONAL)
MID CODE : 366	CRAFT ID : SPECIFIC BEACON:
MANUFACTURER:	MODEL :
SERIAL NUM : 2336	HOMING : 121.5 MHZ
POSITION DEVICE: INTERNAL	POSITION RESOLUTION: 2 MINUTES
PROGRAM: XXX	PROGRAM BLOCK REGISTRATION ID: XXXXXXXX81FE0

**Table 3.3.3 Sample Beacon Decode Information (Special Program)**

Based on official agreements between NOAA and US Government agencies, NOAA allocates groups of national protocol 406 MHz beacons with a US country code to a special program. For many of these special programs, the associated 406 MHz beacons are registered in Joint SARSAT Electronic Tracking System (JSETS), a beacon registration database maintained by the Department of Defense for beacons used by the US military.

The name of the special program associated with the beacon Id is provided in PROGRAM, as shown in the sample above. If PROGRAM is set to “SEE JSETS”, then the beacon Id is registered in JSETS but is not part of a group of special program beacons allocated by NOAA. The data line that contains PROGRAM is only included in the alert message if PROGRAM information is available.

PROGRAM BLOCK REGISTRATION ID contains the 15 hexadecimal beacon Id that is linked to Beacon Registration Data for a special program.

If the Program Block Registration Id is set to 000000000000001, then:

- 1) available registration information for the specific beacon Id in the USMCC Beacon Registration Database (RGDB) is provided in the alert message (see section 3.1.4) and
- 2) the next line of the alert message (just prior to “USMCC Registration” data) indicates:

\*\*\* SEE JSETS: BEACONS FOR THIS PROGRAM ARE REGISTERED IN JSETS \*\*\*

US military beacons should be registered in JSETS and not in the Registration Database maintained by the USMCC/NOAA (RGDB). However, since beacons for some US military special program have been registered in the RGDB (instead of, or in addition to, being registered in JSETS), RGDB information for specific beacon Ids and a reference to JSETS is provided for some special programs.

If the Program Block Registration Id is set to a value other than 00000000000001, then this Id identifies a single registration in the RGDB associated with the entire special program, not the specific beacon Id. The associated registration data usually provides a link to a separate registration database, as described below in section 3.4 (Beacon Registration Data).

Some information encoded in the beacon Id is specific to certain US national use protocols and is documented separately.

### **3.3.2.1 Beacon Decode Information for US Naval Submarine Program Beacons**

The following applies only to the US Naval Submarine special program. The SEPIRB ID is the serial number for the beacon. (SEPIRB is an acronym for Submarine EPIRB.) MINUTES FOR GPS LOC provides the number of minutes elapsed between beacon activation and the acquisition of encoded location from a GPS satellite. HOURS ACTIVE contains the number of hours since beacon activation. See the sample message in Annex 8.

### **3.3.2.2 Beacon Decode Information for US CSEL Program Beacons**

The following applies only to the US CSEL special program. The HHR ID is the serial number for this beacon. (HHR is an acronym for Hand Held Radio.) ZEROIZE STATUS (value is “YES”, “NO” or “N/A”) indicates whether associated devices have been cleared. TEST MODE (value is “YES”, “NO” or “N/A”) indicates whether the beacon was activated in test mode or normal operating mode. “N/A” indicates that data is not available for ZEROIZE STATUS and TEST MODE. *The USMCC processes alerts for this special program as operational alerts regardless of the value given in TEST MODE.*

### **3.3.3 Beacon Decode Information for Unreliable Beacon Messages**

When the 406 MHz beacon message contains unreliable information, then no associated data fields are decoded, and the Beacon Decode Information contains the following line:

NO DATA PROVIDED BECAUSE THE BEACON CODING IS NOT RELIABLE
--

Because the beacon coding is not reliable, it is not advisable to decode the beacon Id independently of the USMCC provided message (for instance, from the C/S web site). Alert messages with unreliable 406 MHz beacon messages are distributed based only on Doppler location. See section 2.1.4 for more information on unreliable 406 MHz beacon messages.

### **3.4 Beacon Registration Data**

This block provides data stored in the USMCC Beacon Registration Database (RGDB) for the beacon Id, and contains three sections of RGDB data: 1) owner contacts, 2) carriage and type of use, and 3) registration date and special information. Registration information for non-USA coded beacons is not normally contained in the RGDB. For non-US coded beacons, this block normally contains point of contact information for the associated beacon registry, as described in section 3.4.7. Table 3.2.8 lists the country/region codes for which beacon registration is maintained in the US Beacon Registration Database.

#### **3.4.1 Beacon Registration Data – Owner Contacts**

The first section (“OWNER CONTACTS”) provides the beacon owner and emergency points of contact information, including owner name, owner home address, and names and telephone numbers for emergency points of contact. This section is the same for all beacon types.

If the OWNER NAME indicates “SEE JSETS”, then further beacon registration information about the specific (activated) beacon is provided in the JSETS database. “SEE JSETS” in the OWNER NAME indicates that the beacon belongs to a group of national protocol beacons allocated by NOAA to a US military special program or to another US government special program that registers its beacons in JSETS.

#### **3.4.2 Beacon Registration Data – Carriage and Type of Use**

The second section provides information about beacon carriage and type of use. Its format varies based on beacon type. Annex 5 contains sample beacon registration data for EPIRBs, ELTs and PLBs.

##### **3.4.2.1 Beacon Registration Data – Carriage and Type of Use (EPIRBs and SSAS)**

For EPIRBs and Ship Security Alert System beacons, information is provided about the vessel that carries the beacon, including VESSEL NAME, TYPE, COLOR, LENGTH OVERALL (FT), CAPACITY (i.e., maximum number of people on the vessel), RADIO CALL SIGN, REGISTRATION NUMBER, RADIO EQP (i.e., radio equipment), INMARSAT NUMBER, CELLULAR NUMBER, NUMBER OF LIFE BOATS and NUMBER OF LIFE RAFTS. The HOMEPORT (i.e., name, city and state), PRIMARY SRR and SECONDARY SRR associated with the homeport are provided.

The beacon MANUFACTURER, MODEL NUMBER and ACTIVATION TYPE are listed. The values for ACTIVATION TYPE are “CAT1 (MANUAL AND AUTOMATIC)” and “CAT2 (MANUAL)”. Category 1 (CAT1) beacons can be activated either manually or automatically. Category 2 (CAT2) beacons can only be activated manually.

BEACON CONTAINS SVDR indicates if the beacon contains a Simple Voyage Data Recorder. Its values are NO and “YES. RECOVER IF POSSIBLE”.

#### **3.4.2.2 Beacon Registration Data – Carriage and Type of Use (ELTs)**

For ELTs, information is provided about the aircraft that carries the beacon, including LEASING AGENT, AIRCRAFT MANUFACTURER, MODEL, AIRCRAFT USE, COLOR, RADIO EQP (i.e., radio equipment), CAPACITY (i.e., maximum number of people on the vessel), TAIL NUMBER, FIXED SURVIVAL CRAFT DESCRIPTION AND DEPLOYABLE SURVIVAL CRAFT DESCRIPTION. The AIRPORT (i.e., name, city and state), PRIMARY SRR and SECONDARY SRR associated with the aircraft are provided.

The beacon MANUFACTURER and MODEL NUMBER are also listed.

#### **3.4.2.3 Beacon Registration Data – Carriage and Type of Use (PLBs)**

For PLBs, the RADIO EQP (i.e., radio equipment), VEHICLE TYPE (for PLB usage), and SPECIFIC USAGE are provided. The beacon MANUFACTURER and MODEL NUMBER are also listed.

#### **3.4.3 Beacon Registration Data – Registration Dates and Special Information**

The third and final section provides registration dates, remarks and special status information, and contains the same fields regardless of beacon type. DATE FIRST REGISTERED is the date that the beacon was first registered. If a previously registered beacon is sold and registered by a new owner, then this field contains the date of registration by the new owner. DATE LAST UPDATED is the date that the registration for the beacon was last updated. DATE REGISTRATION EXPIRES is the date by which registration is required to be renewed.

When an owner first registers a beacon, the USMCC issues a proof of beacon registration letter where the expiration date is two years from the date of issue. The USMCC issues courtesy decals for all types of beacons except ELTs. Subsequently, the USMCC reissues proof of registration for the beacon when the owner name changes, the vessel/aircraft name changes or the beacon owner confirms that the registration information is valid, and the new expiration date is set to two years after the date of reissue.

The REMARKS section contains notes based on feedback from the owner, a US RCC or another responding agency. SPECIAL STATUS indicates whether the beacon is in a special status, such as SOLD, STOLEN, REPLACED, OUTOFSERVICE, LOST, RECODED or DESTROYED.

When a beacon is in a special status, it generally means that the beacon is unavailable for normal use or is not in the owner’s possession. SPECIAL STATUS INFO provides additional information about the special status condition. REMARKS and SPECIAL STATUS information are provided for a significant portion of US registered beacons and provide important information that may affect the SAR response.

#### **3.4.4 Beacon Registration Data for Special Programs**

As described in section 3.3.2, a group of 406 MHz beacons with a US country code may be allocated to a special program based on official agreements between NOAA and US Government agencies. For certain special programs, USMCC registration information is provided for specific beacon Ids, as described below and in section 3.4.2.

When the PROGRAM BLOCK REGISTRATION ID is set to 000000000000001 (as described in section 3.3.2), USMCC registration data is provided on the alert message for the specific beacon Id and the beacon is part of a special program associated with JSETS.

When the PROGRAM BLOCK REGISTRATION ID is set to a value other than 000000000000001, then the beacon is part of a special program (that may or may not be associated with JSETS) and USMCC registration data is not provided on the alert message for the specific beacon Id. Specific individual beacon registration information may be maintained by the program owner. If beacons for the special program are registered in JSETS, then the OWNER indicates “SEE JSETS” and no registration information about the specific beacon Id is provided in the alert message.

#### **3.4.5 Beacon Registration Data not available**

If the beacon is US coded or the 406 MHz beacon message is unreliable, and the beacon is not registered in the RGDB, then the following comment is provided.

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE
---

#### **3.4.6 Beacon Registration Data for Alerts with an Unreliable Beacon Message**

When the 406 MHz beacon message contains invalid or inconsistent information, then the beacon coding is not reliable, as described in section 3.3.3. Registration data is provided for beacons with unreliable coding, if registration data is available in the RGDB for the 15 digit Beacon Id. However, RCCs should be cautious in using registration data when the beacon coding is unreliable, since the registration data may pertain to another beacon, not the beacon for which Doppler location is provided in the associated alert message.

#### **3.4.7 Beacon Registry Information for non-US coded beacons**

For non-US coded beacons, this block normally contains point of contact information for the associated beacon registry. (In rare cases where a non-US coded beacon is in the RGDB, RGDB data is provided as described above.) This point of contact information is provided in the following format.

```
REGISTRATION INFORMATION AT
      [Name of Registry Contact]
TELEX:
AFTN:
TELEPHONE:
FACSIMILE:
EMAIL:
WEB:
```

**Table 3.4.1 Beacon Registry Information for non-US coded beacons**

If beacon registry point of contact information is not available for a non-US coded beacon, then the following comment is provided.

```
REGISTRATION INFORMATION - NIL
```

### **3.5 Supporting Information**

This block provides supporting information about the alert message and beacon activation. It starts on a new page in the alert message. A sample is provided below.

***** SUPPORTING INFORMATION *****						
USMCC PROCESSING TIME: 15 0104 FEB						
THIS ALERT MESSAGE IS BEING SENT TO: AFRCC, CGD08, CGD07						
ALERT MESSAGES FOR THIS BEACON PREVIOUSLY SENT TO: N/A						
PREVIOUS PASS INFORMATION: N/A						
NEXT TIME BEACON SHOULD BE DETECTED:						
SOL	DETECT TIME	SAT	SOURCE	VISIBILITY		
A	15 0200 FEB	S7	AK2	HIGH		
A	15 0239 FEB	S8	GU1	LOW (WILL NOT COUNT AS MISSED PASS)		
B	15 0200 FEB	S7	AK2	HIGH		
B	15 0240 FEB	S11	FL1	HIGH		

**Table 3.5.1 Sample Supporting Information**

### 3.5.1 USMCC Processing Time

The USMCC PROCESSING TIME format is DD HHMM MON, where DD is the day of month, HHMM is hour and minute of the day in Zulu time (UTC), and MON is the month of the year. This is the time that this alert message was processed at the USMCC initially, and is usually very close to the message transmission time provided in line 1 of the message header. If the transmission time is more than 1 minute later than the USMCC PROCESSING TIME, then the message was probably retransmitted manually by USMCC personnel.

### 3.5.2 Alert Message Destinations – Current and Previous

ALERT MESSAGE IS BEING SENT TO lists the destinations (US RCCs, US SPOCs or foreign MCCs) for this message from the USMCC. If the USMCC sends the alert to a non-nodal MCC in another Data Distribution Region (DDR), both the immediate MCC destination (e.g., FMCC) and final MCC destination (e.g, UKMCC ) are listed. If the originating LUT (SOURCE) is foreign, then the destination list will exclude those SRRs which would receive the alert from another MCC. For example, if the Canadian MCC (CMCC) sends a first alert to the USMCC with the “A” location in the AFRCC SRR and the “B” location in the CMCC SRR, then ALERT MESSAGE IS BEING SENT TO will only list AFRCC, since the CMCC will send the alert to its own RCC. Thus ALERT MESSAGE IS BEING SENT TO and the SRR should both be examined to determine which SAR agencies are working on a SAR case.

A discrepancy between the SRR and the list of current message destinations may also occur because the message type (e.g., SIT 162, 166 or 167) is specific to US alert data distribution

procedures and is not defined in C/S procedures used to distribute alert data to foreign MCCs and some SPOCs. For example, a SIT 162 message (Located First Alert Update) sent to CGD09 with a location in the FMCC SRR would not list FMCC as a current message destination, because this type of alert is not defined in C/S documentation and not exchanged by MCCs.

In addition, destinations that receive an alert message based on the USMCC “echo” capability are not identified in the Supporting Information section.

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO lists all destinations that previously received alert messages from the USMCC for this beacon activation, using the same logic as the list of current message destinations. This information can be used to contact other SAR agencies that may already be working on the SAR case. On a first alert, a value of “N/A” indicates that no data is available.

### 3.5.3 Previous Pass Information

PREVIOUS PASS INFORMATION lists previous satellite passes for the site, in descending order by time the pass was first received at the USMCC. It may occur that the previous passes are not in order by DETECT TIME, because alerts are not necessarily received by the USMCC in the order they are detected by the satellite. If position conflict exists and ambiguity is not resolved, all previous passes are listed. Otherwise, only the 4 passes received most recently are reported.

Encoded position is reported as a previous pass, independent of Doppler position. Multiple encoded positions are merged into the same previous “pass”, based on a match within 3 km. When a merged encoded position is reported, the “SAT” field contains one of the satellites that reported an encoded position associated with the merged position. If encoded positions for the beacon do not match within 3 km, multiple encoded position “passes” are reported, subject to limitation of 4 passes described above.

The “PROB” (probability), “SOL” (solution), “LATITUDE”, “LONGITUDE”, “DETECT TIME”, “SAT” (satellite), and “SOURCE” are provided, in the same format as described above in the Alert Data Block. SRR and BUFFER are only provided on messages generated before ambiguity resolution.

The SOURCE is listed as MULT to indicate that data for the pass (with positions that match within 50 km) was received from multiple LUTs. In this case, the location provided is a composite of all locations received for the pass that match within 50 km. ***Thus, the location initially reported for a pass from only one LUT may differ from the location reported when that pass is later reported as a previous pass from multiple LUTs.*** When a previous pass is received from multiple LUTs, the SOL and PROB fields are set to the values for the first solution received for the pass.

On the first alert for a beacon activation (i.e., alert site), a value of “N/A” indicates that no data is available. However, the first alert that a specific RCC receives for an alert site may contain previous pass information. This could occur if the first/previous alert for the site is:

- a) sent to another destination instead (e.g., due to the country code in the Beacon Id for a previous unlocated alert or the Doppler or encoded location on the previous alert), or
- b) not sent to any destination (e.g., an unlocated alert for an unregistered, serialized US beacon is usually not sent to any destination).

Once ambiguity is resolved, positions that do not match the resolved position (within 50 km) are no longer reported in the previous pass information. ***Therefore, to detect a moving beacon after ambiguity is resolved, examine new location data in the Alert Data Block in different alert messages instead of relying on the Previous Pass Information in the current message.***

PREVIOUS PASS INFORMATION:						
PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
85	A	64 14.9N	149 23.3W	17 1023 FEB	S8	AK1
90	A	64 11.9N	151 11.9W	17 0700 FEB	S9	CMCC
42	B	64 12.1N	150 16.9W	17 0400 FEB	S11	MULT
N/A	U	N/A	N/A	17 0415 FEB	G12	MD1

**Table 3.5.2 Sample Previous Pass Information**

### 3.5.4 Next Pass Information

The NEXT TIME SIGNAL SHOULD BE DETECTED indicates the next two satellite passes that should detect the beacon, based on the reported beacon location(s). Next pass prediction is based on a polar orbiting satellite having mutual visibility of the reported beacon location and a United States LEO (Low Earth Orbiting) LUT that is scheduled to track that particular satellite pass. Next pass data is presented in ascending time order.

SOL indicates the received solution (i.e., A side, B side, Encoded or Composite location) for which next pass information is provided. The DETECT TIME is the date-time that the satellite (SAT) is scheduled to pass over the reported beacon location. The SOURCE is the LUT scheduled to track the satellite pass.

The VISIBILITY of a satellite varies based on the elevation of the satellite above the horizon (relative to both the beacon location and the LUT antenna) and the geographic and man-made obstructions in the vicinity of the LUT antenna. In general, satellite passes with elevation angles at least 5 degrees above the horizon provide usable data.

Satellite passes with a maximum elevation angle of at least 10 degrees are termed “HIGH” passes. When a high satellite pass over a reported beacon location fails to detect the beacon, the pass is counted as missed and a Missed Pass (SIT 166) message is sent to the RCC. Satellite passes with a maximum elevation angle between 5 and 10 degrees are termed “LOW” passes. Satellite passes

with a maximum elevation angle less than 5 degrees are not listed as predicted passes. Subsequent detections of the beacon are reported to the RCC regardless of the satellite's maximum elevation angle; however, only high satellite passes that fail to detect the beacon are treated as missed passes.

Next pass information is not available for sites without a located alert (and is reported as "N/A"), since next pass prediction requires a reported beacon location. Prior to ambiguity resolution, next pass information is not provided for sites with position conflict. (However, the RCC Controller may request the MCC Controller to provide Next Pass information for any specific location; this information is provided in the SIT 953 message, as described in section 5.4 below.) Once ambiguity is resolved, next pass information is provided only for the resolved position.

Next pass information is not available for some locations, since the beacon location and a US LEOLUT must have mutual visibility to the satellite. Since US LEOLUTs are positioned to maximize coverage of the US SRR, next pass information is more likely to be available for beacons located within the US SRR. Sample next pass information is provided in the table below.

NEXT TIME SIGNAL SHOULD BE DETECTED:					
SOL	DETECT TIME	SAT	SOURCE	VISIBILITY	
A	25 1250 MAR	S11	AK1	HIGH	
A	25 1258 MAR	S12	CA1	HIGH	
B	25 1537 MAR	S8	GU2	LOW (WILL NOT COUNT AS MISSED PASS)	
B	25 1727 MAR	S10	FL1	HIGH	

**Table 3.5.3 Sample Next Pass Information**

### 3.6 Incident Feedback Request

Feedback on 406 MHz alert sites is needed in order to identify opportunities to improve beacon design, beacon usage, regulation, information processing and alert response. The incident feedback request requests feedback from the RCCs and SPOCs that were involved in the response to a given beacon activation. Annex 1 describes fields in the incident feedback request and Annex 6 contains a sample incident feedback request. If present, the incident feedback request starts on a new page in the alert message.

As of March 2009, this block is not included in alert messages to any RCC, because the RCCs provide incident feedback information directly to the Incident History Database (IHDB) on the web (<https://incidenthistory.noaa.gov/ihdb/>). The incident feedback request is included in alert messages to SPOCs, since SPOCs do not have direct access to the IHDB. A sample message that contains an incident feedback request is provided in Section 4.7.5.

When a 406 MHz alert site closes, a site closure (SIT 166) message is sent to the appropriate RCC(s) and SPOCs, and information on the closed site is added to the IHDB. RCC personnel can provide feedback in the IHDB once the closed site is added to the IHDB. SPOC personnel can

provide incident feedback to the USMCC upon receipt of the site closure message, and USMCC personnel will update the IHDB on behalf of the SPOC.

### **3.7 Message Trailer**

The message trailer consists of three lines of fixed text, as shown below. Every alert and support message begins with a message header and ends with a message trailer. The first line of the message trailer contains “QQQQ” (as defined nationally, for US RCCs) or “END OF MESSAGE” (as specified in document C/S A.002 for SPOCs). The last two lines of the message trailer are specified in document C/S A.002.

QQQQ /LASSIT /ENDMSG
----------------------------

**Table 3.7 Message Trailer**

## 4 Alert Messages Samples and Further Descriptions

In the following examples, actual registration data has been altered (or removed) to protect personally identifiable information. Table 2.1 provides an overview on types of alert messages.

### 4.1.1 Unlocated First Alert for PLB (SIT 160)

Notes on example: the beacon type (BEACON TYPE) is Serial PLB with Standard Location Protocol. The unlocated alert for this PLB was sent to CGD07 (SRR) based on the OWNER home address in the Beacon Registration, because PLBs, unlike EPIRBs and ELTs, do not have a registered HOMEPORT or AIRPORT.

```
/24211 00000/3660/12 359 1843
/160/366M
```

```
***** 406 BEACON UNLOCATED FIRST ALERT *****
```

```
BEACON ID: 2DCE6 82200 FFBFF          SITE ID: 54792
```

```
***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
```

```
PROB SOL  LATITUDE  LONGITUDE  DETECT TIME  SAT  SOURCE SRR  /BUFFER
N/A   N/A   N/A           24 1842 DEC  G13  MD1   CGD07
```

```
DETECTION FREQUENCY: 406.0368 MHZ
```

```
***** BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION *****
```

```
COUNTRY      : USA                BEACON TYPE: PLB SERIAL (STANDARD)
MID CODE     : 366                CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: CSTA# 208          MODEL      :
SERIAL NUM   : 256               HOMING     : 121.5 MHZ
POSITION DEVICE: INTERNAL        POSITION RESOLUTION: NONE
```

```
***** BEACON REGISTRATION DATABASE INFORMATION *****
```

```
OWNER: John Doe
      999 First Street          TEL 1: CELL 954123 4567
      Fort Lauderdale         FL   TEL 2: WORK 954222 3333
      33315 USA                TEL 3:
                                  TEL 4:
      EMAIL: JohnDoe@gmail.com
```

```
CONTACTS: Jack Smith
      TEL 1: CELL 9541112222    TEL 1:
      TEL 2: HOME 9540124567    TEL 2:
      TEL 3:                    TEL 3:
      TEL 4:                    TEL 4:
```

```
RADIO EQP:
```

VEHICLE TYPE: Boat  
SPECIFIC USAGE: Other

MANUFACTURER: ACR

MODEL NUMBER: PLB-350B

DATE FIRST REGISTERED: 27 APR 2011  
DATE LAST UPDATED: 27 APR 2011

DATE REGISTRATION EXPIRES: 27 APR 2013

REMARKS:

SPECIAL STATUS:  
SPECIAL STATUS INFO:

SPECIAL STATUS DATE:

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1843 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD07

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO: N/A

PREVIOUS PASS INFORMATION: N/A

NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ  
/LASSIT  
/ENDMSG

- Remainder of Page Blank -

## 4.1.2 Unlocated First Alert for ELT (SIT 160)

Notes on example: the beacon type (BEACON TYPE) is 24 Bit Address ELT with Standard Location Protocol. The unlocated alert for this ELT was sent to AFRCC (SRR) based on the AIRPORT address in the Beacon Registration. The 24 Bit Address (24 BIT ADDR), which corresponds to the tail number for US aircraft, is provided in hexadecimal (HEX=) in the Beacon Decode section.

89666 00000/3660/12 018 1239  
/160/366F

\*\*\*\*\* 406 BEACON UNLOCATED FIRST ALERT \*\*\*\*\*

BEACON ID: 2DC74 33BFC FFBFF SITE ID: 75100

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	N/A	N/A		18 1237 FEB	G13	SPMcc	AFRCC	

DETECTION FREQUENCY: 406.0370 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	CRAFT ID	: N203JP	SPECIFIC BEACON:
MID CODE	: 366	HOMING	: 121.5 MHZ	
MANUFACTURER:		MODEL	:	
24 BIT ADDR	: HEX=A19DFE	BEACON TYPE:	ELT 24 BIT ADDRESS (STD)	
POSITION DEVICE:	EXTERNAL	POSITION RESOLUTION:	NONE	

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

OWNER: Era Helicopters LLC  
P.O. Box 6550 TEL 1: WORK 3374786131  
Lake Charles LA TEL 2:  
70605 USA TEL 3:  
TEL 4:  
EMAIL: JohnSmith@erahelicopters.com

CONTACTS: Operation Supervisor  
TEL 1: HOME 3371112222 TEL 1:  
TEL 2: TEL 2:  
TEL 3: TEL 3:  
TEL 4: TEL 4:

LEASING AGENT:

AIRCRAFT MANUFACTURER/MODEL: AgustaWestland / AW119MKII  
AIRCRAFT USE: Helicopter COLOR: red/white/black  
RADIO EQP: VHF CAPACITY: 8  
TAIL NUMBER: N203JP

FIXED SURVIVAL CRAFT DESCRIPTION:

DEPLOYABLE SURVIVAL CRAFT DESCRIPTION:

pop-out floats

AIRPORT PRIMARY SRR: AFRCC  
AIRPORT: LAKE CHARLES REGIONAL

SECONDARY SRR:  
LAKE CHARLES LA

MANUFACTURER: ARTEX

MODEL NUMBER: C406N-HM

DATE FIRST REGISTERED: 27 MAY 2008  
DATE LAST UPDATED: 12 MAY 2010

DATE REGISTRATION EXPIRES: 12 MAY 2012

REMARKS: PRIMARY USAGE IS IN GULF OF MEXICO

SPECIAL STATUS:  
SPECIAL STATUS INFO:

SPECIAL STATUS DATE:

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 18 1239 FEB

THIS ALERT MESSAGE IS BEING SENT TO:  
AKRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO: N/A

PREVIOUS PASS INFORMATION: N/A

NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ  
/LASSIT  
/ENDMSG

- Remainder of Page Blank -

## 4.2.1 Located First Alert (Ambiguity Unresolved), Doppler Location (SIT 161)

/74542 00000/3660/10 049 1315  
/161/366G

\*\*\*\*\* 406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: 46683 82668 FFBFF SITE ID: 75102

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
61	A	01 22.2N	103 59.9E	18 1302 FEB	S13	VNMCC	SIMCC	
39	B	08 29.5N	135 58.9E	18 1302 FEB	S13	VNMCC	MARSEC	

DETECTION FREQUENCY: 406.0343 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: SINGAPORE	CRAFT ID	:	SPECIFIC BEACON:
MID CODE	: 563	HOMING	: 121.5 MHZ	
MANUFACTURER:	CSTA# 112	MODEL	:	
SERIAL NUM	: 4916	BEACON TYPE:	ELT SERIAL (STANDARD)	
POSITION DEVICE:	EXTERNAL	POSITION RESOLUTION:	NONE	

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION AT

MCC Singapore  
TELEX:  
AFTN: WSSSZSZX  
TELEPHONE: (65) 65425024  
FACSIMILE: (65) 65422548  
EMAIL: CAAS\_RCC@caas.gov.sg  
WEB: www.406registration.com

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 18 1315 FEB

THIS ALERT MESSAGE IS BEING SENT TO:  
MARSEC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
SIMCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	U	N/A	N/A	18 1259 FEB	S11	GU1		

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
A	18 1733 FEB	S10	GU2	LOW (WILL NOT COUNT AS MISSED PASS)
A	19 0525 FEB	S12	GU2	LOW (WILL NOT COUNT AS MISSED PASS)
B	18 1549 FEB	S10	GU2	HIGH

B 18 1635 FEB S12 GU2 HIGH

QQQQ  
/LASSIT  
/ENDMSG

## 4.2.2 Located First Alert (Ambiguity Unresolved), Encoded Location (SIT 161)

Notes on example: this unresolved alert with encoded location was detected at “24 1843 DEC” (DETECT TIME) from G13 (SAT), one minute after an unlocated alert was detected from G13 (see PREVIOUS PASS INFORMATION).

/24212 00000/3660/12 359 1844  
/161/366M

\*\*\*\*\* 406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: 2DCE6 82200 FFBFF SITE ID: 54792

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	E	26 30.00N	078 30.00W	24 1843 DEC	G13	SPMcc	CGD07	

DETECTION FREQUENCY: 406.0368 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	PLB SERIAL (STANDARD)
MID CODE	: 366	CRAFT ID	: SPECIFIC BEACON:
MANUFACTURER:	CSTA# 208	MODEL	:
SERIAL NUM	: 256	HOMING	: 121.5 MHZ
POSITION DEVICE:	INTERNAL	POSITION RESOLUTION:	15 MINUTES

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

OWNER: John Doe  
999 First Street  
Fort Lauderdale FL 33315 USA  
TEL 1: CELL 954123 4567  
TEL 2: WORK 954222 3333  
TEL 3:  
TEL 4:  
EMAIL: JohnDoe@gmail.com

CONTACTS: Jack Smith  
TEL 1: CELL 9541112222  
TEL 2: HOME 9540124567  
TEL 3:  
TEL 4:  
TEL 1:  
TEL 2:  
TEL 3:  
TEL 4:

RADIO EQP:

VEHICLE TYPE: Boat  
SPECIFIC USAGE: Other

MANUFACTURER: ACR MODEL NUMBER: PLB-350B

DATE FIRST REGISTERED: 27 APR 2011 DATE REGISTRATION EXPIRES: 27 APR 2013  
DATE LAST UPDATED: 27 APR 2011

REMARKS:

SPECIAL STATUS: SPECIAL STATUS DATE:  
SPECIAL STATUS INFO:

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1844 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD07

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD07

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	U	N/A	N/A	24 1842 DEC	G13	MD1	CGD07	

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
E	24 1908 DEC	S10	FL2	HIGH
E	24 1942 DEC	S7	AK1	LOW (WILL NOT COUNT AS MISSED PASS)

QQQQ  
/LASSIT  
/ENDMSG

### 4.2.3 Located First Alert (Ambiguity Unresolved), Unreliable Beacon Message (SIT 161)

Notes on example: because the 15 hexadecimal beacon Id is unreliable, this alert message was distributed solely based on the Doppler location. The “A” side position has a 61% probability and is located in the CGD01 SRR. The “B” side position has a 39% probability and is located in the United Kingdom (UKMCC) SRR. The message SOURCE is the Spain MCC (SPMCC). Following C/S data distribution rules, the SPMCC distributed this alert to the France MCC (FMCC) which distributed it to the UKMCC. Note that field THIS ALERT MESSAGE IS BEING SENT TO only shows CGD01, not UKMCC, because the USMCC did not distribute the alert to the UKMCC.

/64125 00000/3660/12 128 1745  
/161/366B

!!! UNRELIABLE BEACON (HEXADECIMAL) ID !!!!!!!!!!!

\*\*\*\*\* 406 BEACON LOCATED FIRST ALERT (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: D4EB2 A9A69 A68B6            SITE ID: 20000

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
61	A	42 57.8N	058 18.8W	24 1807 DEC	S7	SPMcc	CGD01	
39	B	53 21.9N	000 59.0W	24 1807 DEC	S7	SPMcc	UKMCC	

DETECTION FREQUENCY: 406.0311 MHZ

HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

NO DATA PROVIDED BECAUSE THE BEACON CODING IS NOT RELIABLE

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1809 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD01

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO: N/A

PREVIOUS PASS INFORMATION: N/A

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
A	24 1842 DEC	S12	FL1	LOW (WILL NOT COUNT AS MISSED PASS)
A	24 1912 DEC	S10	FL2	HIGH
B	24 1829 DEC	S8	AK1	HIGH
B	24 1922 DEC	S9	AK1	HIGH

QQQQ  
/LASSIT  
/ENDMSG

### 4.3.1 Located First Alert Update (Ambiguity Unresolved) (SIT 162)

Notes on example: this unresolved alert was sent because the “A” side probability (86%) is at least 30% higher than the “A” side probability on the previous alert sent for the same pass. The higher probability gives RCCs working the case more information about the true location, but location data from an independent pass is still required to resolve ambiguity about the true location. Field THIS ALERT MESSAGE IS BEING SENT TO only lists CGD01, not UKMCC, because this message was distributed based on US (national) rules, not C/S data distribution procedures. The POSITION DEVICE is NIL because the beacon type (ELT AVIATION USER) is not location protocol.

/24303 00000/3660/12 359 1817  
/162/366B

\*\*\*\*\* 406 BEACON LOCATED FIRST ALERT UPDATE (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: ADC64 99D71 CBBE1 SITE ID: 54789

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
86	A	53 17.2N	000 53.6W	24 1807 DEC	S7	CMcc	UKMCC	
14	B	42 21.4N	058 13.8W	24 1807 DEC	S7	CMcc	CGD01	

DETECTION FREQUENCY: 406.0276 MHZ

HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	ELT AVIATION USER
MID CODE	: 366	CRAFT ID	: N177CK SPECIFIC BEACON: 0
MANUFACTURER:		MODEL	:
SERIAL NUM	:	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1817 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD01

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD01

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
------	-----	----------	-----------	-------------	-----	--------	-----	---------

50 A 42 57.4N 058 18.8W 24 1807 DEC S7 SPMcc CGD01  
50 B 53 21.2N 000 58.6W 24 1807 DEC S7 SPMcc UKMCC

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
A	24 1829 DEC	S8	AK1	HIGH
A	24 1922 DEC	S9	AK1	HIGH
B	24 1842 DEC	S12	FL1	LOW (WILL NOT COUNT AS MISSED PASS)
B	24 1911 DEC	S10	FL2	HIGH

QQQQ  
/LASSIT  
/ENDMSG

### 4.3.2 Doppler Position Match (Ambiguity Unresolved) (SIT 162)

Notes on example: this unresolved alert was sent because each of the new Doppler positions match the Doppler positions from a separate satellite pass within 50 km. While ambiguity is normally resolved when a new location matches a previous location from an independent source within 50 km, when both new Doppler positions match previous Doppler positions, the MCC can not determine which matching location is the true location. Despite the absence of ambiguity resolution, the “A” and “B” side probabilities of the matching Doppler locations can be used to help determine which location is likely real; in this case, the “A” probability is 95%.

/03324 00000/3660/11 242 1026  
/162/366M

\*\*\*\*\* 406 BEACON DOPPLER POSITION MATCH (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: ADCD0 22959 44801 SITE ID: 02957

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
95	A	27 05.7N	082 23.1W	30 0959 AUG	S10	FL2	CGD07	
5	B	24 26.0N	069 57.6W	30 0959 AUG	S10	FL2	CGD07	/SANJN

DETECTION FREQUENCY: 406.0276 MHZ

HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	EPIRB SERIAL CATEGORY I
MID CODE	: 366	CRAFT ID	: SPECIFIC BEACON:
MANUFACTURER:	ACR	MODEL	: UNKNOWN
SERIAL NUM	: 35414	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 30 1023 AUG

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD07,SANJN

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD07,SANJN

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	U	N/A	N/A	30 0901 AUG	G13	GSE		
90	A	27 05.7N	082 23.2W	30 0958 AUG	S11	FL1	CGD07	

10 B 24 26.1N 069 57.6W 30 0958 AUG S11 FL1 CGD07 /SANJN

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
A	30 1251 AUG	S7	FL2	HIGH
A	30 1358 AUG	S9	FL2	HIGH
B	30 1246 AUG	S8	FL1	HIGH
B	30 1356 AUG	S9	FL2	HIGH

QQQQ  
/LASSIT  
/ENDMSG

#### 4.4 Position Conflict Alert (Ambiguity Unresolved) (SIT 163)

Notes on example: this position conflict alert was sent because neither of the new Doppler positions match the Doppler positions from the previous satellite pass within 50 km. The new alert is sent to CGD07 (SRR) due to its Doppler positions. Because the previous Doppler alert

was sent to CGD08 (ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO), the new alert is also sent CGD08 so that the two RCCs can coordinate the SAR response.

/24210 00000/3660/12 359 1837  
/163/366M

\*\*\*\*\* 406 BEACON POSITION CONFLICT (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: ADCE0 224AD 43001            SITE ID: 54780

\*\*\*\*\* POSITION DIFFERENCES OF MORE THAN 50 KMS EXIST FOR THIS BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
52	A	26 40.3N	078 56.6W	24 1838 DEC	S12	PEMcc	CGD07	
48	B	27 22.3N	077 52.6W	24 1838 DEC	S12	PEMcc	CGD07	

DETECTION FREQUENCY: 406.0278 MHZ

HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	EPIRB	SERIAL	CATEGORY II
MID CODE	: 366	CRAFT ID	:	SPECIFIC	BEACON:
MANUFACTURER:	ACR	MODEL	:	UNKNOWN	
SERIAL NUM	: 35115	HOMING	:	121.5 MHZ	
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE		

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1837 DEC

THIS ALERT MESSAGE IS BEING SENT TO:

CGD07, CGD08

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:

CGD08

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
50	A	29 32.60N	095 02.53W	24 1821 DEC	S11	ARMcc	CGD08	
50	B	29 32.66N	095 02.60W	24 1821 DEC	S11	ARMcc	CGD08	

NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ  
/LASSIT  
/ENDMSG

## 4.5 Notification of Ambiguity Resolution (SIT 164)

Notes on example: this alert was sent because the new “A” side Doppler position from satellite S8 matches the Doppler position from a previous S7 satellite pass within 50 km, thereby resolving ambiguity in the Doppler locations. Even though the resolved position is in the UKMCC SRR, the ambiguity resolution alert is sent to CGD01 because it previously received messages for the alert site.

/24304 00000/3660/12 359 1833  
/164/366B

\*\*\*\*\* 406 BEACON NOTIFICATION OF AMBIGUITY RESOLUTION \*\*\*\*\*

BEACON ID: ADC64 99D71 CBBE1            SITE ID: 54789

\*\*\*\*\* AMBIGUITY RESOLVED TO THE FOLLOWING POSITION \*\*\*\*\*

LATITUDE	LONGITUDE	DURATION	PASSES	SRR	/BUFFER
53 19.6N	000 57.0W	000.4 HRS	003	UKMCC	

\*\*\*\*\* AMBIGUITY RESOLVED FROM THE FOLLOWING NEW INFORMATION \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
77	A	53 17.6N	000 57.8W	24 1830 DEC	S8	GRMCC

DETECTION FREQUENCY: 406.0276 MHZ

HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	ELT AVIATION USER
MID CODE	: 366	CRAFT ID	: N177CK            SPECIFIC BEACON: 0
MANUFACTURER:		MODEL	:
SERIAL NUM	:	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1833 DEC

THIS ALERT MESSAGE IS BEING SENT TO:

CGD01

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:

CGD01

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
50	B	53 19.9N	000 56.8W	24 1807 DEC	S7	MULT

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT	TIME	SAT	SOURCE	VISIBILITY
C	24	1922	DEC	S9 AK1	HIGH
C	24	1939	DEC	S11 AK2	HIGH

QQQQ  
/LASSIT  
/ENDMSG

## 4.6 Composite Updates (SIT 165)

### 4.6.1 Composite Position Update (SIT 165)

A Composite Position Update message is generated when the position from a new satellite pass matches the composite (resolved) position within 50 km. Multiple Composite Position update messages are reported for the same beacon event (i.e., satellite/time combination) when position data in a subsequent alert for a beacon event does not match position data in the first alert for the beacon event within 50 km, but position data in each alert matches the resolved position within 50 km.

/41207 00000/3660/12 359 1818  
/165/366H

\*\*\*\*\* 406 BEACON COMPOSITE POSITION UPDATE \*\*\*\*\*

BEACON ID: B3A95 0D041 934D1 SITE ID: 54770

\*\*\*\*\* POSITION UPDATED TO THE FOLLOWING \*\*\*\*\*

LATITUDE	LONGITUDE	DURATION	PASSES	SRR	/BUFFER
09 56.6N	139 58.1W	008.9 HRS	012	CGD14	

\*\*\*\*\* POSITION UPDATED FROM THE FOLLOWING ALERT \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
52	A	21 28.6N	165 05.4E	24 1812 DEC	S11	HI1
48	B	09 35.7N	139 58.9W	24 1812 DEC	S11	HI1

DETECTION FREQUENCY: 406.0255 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: CHINA	BEACON TYPE:	EPIRB MARITIME USER
MID CODE	: 413	CRAFT ID	: 693320 SPECIFIC BEACON: 0
MANUFACTURER:		MODEL	:
SERIAL NUM	:	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1818 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD14

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD14,CNMCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
57	A	09 40.1N	140 04.5W	24 1720 DEC	S8	MULT
51	A	09 44.7N	139 59.6W	24 1633 DEC	S9	MULT
60	A	09 51.1N	139 58.6W	24 1517 DEC	S7	MULT
51	A	09 54.0N	140 00.6W	24 1453 DEC	S9	MULT

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
C	24 1900 DEC	S8	HI2	HIGH
C	24 2009 DEC	S11	HI2	LOW (WILL NOT COUNT AS MISSED PASS)

QQQQ  
/LASSIT  
/ENDMSG

#### 4.6.2 Composite Update with Position Conflict (SIT 165)

A Composite Update with Position Conflict message is generated when the new reported beacon position is more than 50 km from the composite (resolved) position. The conflict may be due to an inaccurate computed position or a moving beacon. Repeated position conflicts for an alert site (without a Composite Position Update) probably mean that the beacon is moving. Examine new location data in the Alert Data Block in different alert messages to determine if the beacon is moving.

/41208 00000/3660/12 359 1858  
/165/366H

\*\*\*\*\* 406 BEACON COMPOSITE UPDATE WITH POSITION CONFLICT \*\*\*\*\*

BEACON ID: B3A95 0D041 934D1            SITE ID: 54770

\*\*\*\*\*            POSITION UPDATED TO THE FOLLOWING            \*\*\*\*\*

LATITUDE LONGITUDE DURATION PASSES SRR /BUFFER  
09 55.5N 139 58.2W 009.8 HRS 014        CGD14

\*\*\* COMPOSITE POSITION DIFFERS BY MORE THAN 50 KM FROM THE FOLLOWING ALERT \*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
54	A	09 23.6N	139 44.5W	24 1900 DEC	S8	CA1
46	B	15 14.0N	165 36.4W	24 1900 DEC	S8	CA1

DETECTION FREQUENCY: 406.0253 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: CHINA	BEACON TYPE:	EPIRB MARITIME USER
MID CODE	: 413	CRAFT ID	: 693320            SPECIFIC BEACON: 0
MANUFACTURER:		MODEL	:
SERIAL NUM	:	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1858 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD14

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD14,CNMCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
48	B	09 33.3N	139 58.7W	24 1812 DEC	S9	MULT
57	A	09 40.9N	140 02.7W	24 1720 DEC	S8	MULT
51	A	09 44.8N	139 59.6W	24 1633 DEC	S9	MULT
60	A	09 51.1N	139 58.6W	24 1517 DEC	S7	MULT

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
C	24 2009 DEC	S11	HI2	LOW (WILL NOT COUNT AS MISSED PASS)
C	24 2200 DEC	S12	CA2	HIGH

QQQQ  
/LASSIT  
/ENDMSG

#### 4.7 Missed Pass/Site Status Report (SIT 166)

The Beacon Id/Site Id Header Line in the SIT 166 message indicates the site status, and if the site is closed, the reason why it was closed. The site status has four possible values:

- 1) "(OPEN)" indicates that the site is still open,
- 2) "(YES - MISSED PASS)" indicates that the site closed due to missed passes,
- 3) "(YES - BY MCC OPERATOR)" indicates that the site was forced closed by the MCC operator (usually at direction of RCC personnel when the beacon has been secured), and
- 4) "(YES - TIME)" indicates that the site closed because 18 hours passed without the beacon being detected.

***Closing an MCC site due to missed passes or time is not intended to give the RCC direction on prosecuting a SAR case but is primarily an MCC administrative function.***

US SPOCs that receive SIT 185 messages also receive an abbreviated form of the SIT 166 message when they are a destination for an alert site that closes; see the sample message provided in section 4.7.5. This site closure message includes a Message Header, the Beacon Id/Site Id Header Line (as described above), an Incident Feedback Request (as shown in Annex 6), and a Message Trailer.

If ambiguity is resolved, the "CURRENT ACTIVE SITE" provides the Ambiguity Resolution Summary (per section 3.2.2). If ambiguity is not resolved, the "CURRENT ACTIVE SITE" provides information about the Solution Data Line(s) (per section 3.2.3). If a site without location is closed (due to time or operator action), then SOL = 'U' and the LATITUDE and LONGITUDE are set to "N/A".

The Missed Pass (MP) counter provides the number of passes that have *not* detected the beacon since the last detection. If ambiguity is resolved, the counter only refers to the resolved position. A site will close when there are three consecutive missed passes on the resolved position.

If ambiguity is not resolved, the first alert positions have independent Missed Pass counters, and the site will close when there have been three consecutive missed passes on both the "A" and the "B" positions (if there is no encoded position), or on the encoded position (if there is no Doppler position). If position conflict occurs before ambiguity is resolved, missed passes will not be computed again until ambiguity is resolved.

The DETECT TIME, SAT (satellite) and SOURCE of the missed detection is provided below the header "ABOVE BEACON WAS NOT DETECTED DURING THE FOLLOWING PASS", in the same format as described in the Solution Data Line. The DETECT TIME is the time of Loss of Signal for the satellite pass over the US LUT (SOURCE) that failed to detect the beacon. These fields are set to "N/A" if the site closes due to time or operator action.

The SIT 166 message does not contain Beacon Decode or Beacon Registration information. It is possible for an RCC to only receive missed passes messages starting with the second missed pass in the following unusual circumstance:

- 1) USMCC sends first alert only (received from a foreign MCC) to foreign MCC(s) based on location for US beacon. (USMCC does not send NOCR for US beacon because the first alert was not an NOCR.)
- 2) USMCC detects missed pass based on location (no RCC assigned to site).
- 3) USMCC sends NOCR to US RCC based on NOCR sent by foreign MCC on first alert (RCC now assigned to site).
- 4) USMCC detects second missed pass based on location (sends to assigned RCC).

It is possible for an RCC to not receive a missed pass message for a predicted next pass with high visibility in the following circumstance:

- 1) USMCC sends a located alert to an RCC that includes a predicted next pass with high visibility to the reported location.
- 2) USMCC receives a GEO alert with a detect time after the detect time (TCA) of the predicted pass. The GEO alert is not sent because the detect time is within 2 hours of the most recent detect time for an alert to the RCC.
- 3) USMCC receives the predicted pass (say at 2210 UTC) without the expected new alert. Since the predicted detect time (say 2203 UTC) is less than the detect time of the GEO alert (say 2208 UTC), the USMCC does not send a missed pass message.

#### 4.7.1 Missed Pass/Site Status Report (SIT 166) – Site Closure due to Time

The following message indicates that the alert site closed due to time; that is, the beacon was not detected for more than 18 hours.

```

/52520 00000/3660/12 359 1801
/166/366S

***** 406 BEACON MISSED PASS/SITE STATUS REPORT *****

BEACON ID: 2DD78 ED9BF 81FE0      SITE ID: 54750 (CLOSED - TIME)

***** CURRENT ACTIVE SITE *****

LATITUDE LONGITUDE DURATION  PASSES  SRR  /BUFFER  MP
31 07.3N 066 32.9E  001.0 HRS  004                0

***** ABOVE BEACON WAS NOT DETECTED DURING THE FOLLOWING PASS *****

DETECT TIME  SAT SOURCE
NA           NA  NA

***** SUPPORTING INFORMATION *****

```

USMCC PROCESSING TIME: 24 1801 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
AFRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
AFRCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
89	A	31 07.3N	066 32.8E	23 2317 DEC	S10	MULT	TRMCC	/PAMCC
88	A	31 07.3N	066 33.6E	23 2247 DEC	S12	MULT	TRMCC	/PAMCC
N/A	U	N/A	N/A	23 2216 DEC	R1	CMC		

NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ  
/LASSIT  
/ENDMSG

#### 4.7.2 Missed Pass/Site Status Report (SIT 166) – Missed Pass, Ambiguity Resolved

The following message indicates that an expected S8 pass at 24 1800 DEC was not detected by AK1, 1 consecutive missed pass has occurred and the alert site is open. The NEXT TIME SIGNAL SHOULD BE DETECTED is provided for the “C” (composite) position because ambiguity has been resolved.

/52111 00000/3660/12 359 1811  
/166/366A

\*\*\*\*\* 406 BEACON MISSED PASS/SITE STATUS REPORT \*\*\*\*\*

BEACON ID: ADCD0 16672 C0401            SITE ID: 73321 (OPEN)

\*\*\*\*\* CURRENT ACTIVE SITE \*\*\*\*\*

LATITUDE	LONGITUDE	DURATION	PASSES	SRR	/BUFFER	MP
64 12.8N	149 23.0W	003.3 HRS	002	AKRCC		1

\*\*\*\*\* ABOVE BEACON WAS NOT DETECTED DURING THE FOLLOWING PASS \*\*\*\*\*

DETECT TIME	SAT	SOURCE
24 1800 DEC	S8	AK1

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1811 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
AKRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
AKRCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
89	A	64 12.9N	148 23.3W	24 1617 DEC	S10	MULT	AKRCC	
90	A	64 11.9N	152 11.9W	24 1300 DEC	S11	AK2	AKRCC	

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
C	24 1842 DEC	S12	AK1	LOW (WILL NOT COUNT AS MISSED PASS)
C	24 1912 DEC	S10	CA2	HIGH

QQQQ  
/LASSIT  
/ENDMSG

### 4.7.3 Missed Pass/Site Status Report (SIT 166) – Missed Pass, Ambiguity Unresolved

In the following message, a second missed pass occurred for the “B” side Doppler location.

/52576 00000/3660/12 361 1642  
/166/366S

\*\*\*\*\* 406 BEACON MISSED PASS/SITE STATUS REPORT \*\*\*\*\*

BEACON ID: ADCD0 20D19 41001            SITE ID: 54877 (OPEN)

\*\*\*\*\* CURRENT ACTIVE SITE \*\*\*\*\*

SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER	MP
B	51 05.8N	105 20.3W	26 1556 DEC	S11	CMcc	CMCC		2

\*\*\*\*\* ABOVE BEACON WAS NOT DETECTED DURING THE FOLLOWING PASS \*\*\*\*\*

DETECT TIME    SAT    SOURCE  
26 1641 DEC    S8    AK1

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 26 1642 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD01,AFRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD01,AFRCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
50	A	44 02.2N	069 11.9W	26 1556 DEC	S11	MULT		CGD01
50	B	51 02.5N	105 17.2W	26 1556 DEC	S11	MULT		CMCC

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
B	26 1641 DEC	S8	CA1	HIGH
B	26 1710 DEC	S9	AK2	LOW (WILL NOT COUNT AS MISSED PASS)

QQQQ  
/LASSIT  
/ENDMSG

#### 4.7.4 Missed Pass/Site Status Report (SIT 166) – Site Closed by MCC Operator

The following message indicates that the alert site was closed manually by the USMCC Operator. In accordance with USMCC Standard Operator Procedures, the USMCC Operator may close an alert site when requested to do so by the RCC Controller, provided that the 406 MHz beacon has been secured.

```
/52578 00000/3660/12 361 1712
/166/366S

***** 406 BEACON MISSED PASS/SITE STATUS REPORT *****
BEACON ID: 2DCE6 85918 FFBFF          SITE ID: 54880 (CLOSED - BY MCC OPERATOR)
***** CURRENT ACTIVE SITE *****
SOL  LATITUDE LONGITUDE  DETECT TIME  SAT  SOURCE  SRR  /BUFFER  MP
U    N/A      N/A       26 1623 DEC  G13  SPMcc           0
***** ABOVE BEACON WAS NOT DETECTED DURING THE FOLLOWING PASS *****
DETECT TIME  SAT SOURCE
NA           NA  NA
***** SUPPORTING INFORMATION *****
USMCC PROCESSING TIME: 26 1712 DEC
THIS ALERT MESSAGE IS BEING SENT TO:
    AFRCC
ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
    AFRCC
PREVIOUS PASS INFORMATION:
PROB SOL  LATITUDE  LONGITUDE  DETECT TIME  SAT  SOURCE  SRR  /BUFFER
N/A   U    N/A      N/A       26 1623 DEC  G13  SPMcc
NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ
/LASSIT
/ENDMSG
```

#### 4.7.5 Site Status Report (SIT 166) – Sent to a US SPOC that receives SIT 185 messages

The following message indicates that the alert site was closed based on time and that the destination is the Mexico SPOC, a US SPOC that receives SIT 185 messages. As shown below, site closure messages sent to US SPOCs (that receive SIT 185 messages) include the Beacon Id/Site Id Header Line, followed by an Incident Feedback Request (as shown in Annex 6).

/02645 00000/3660/14 017 2043  
/166/3450

\*\*\*\*\* 406 BEACON MISSED PASS/SITE STATUS REPORT \*\*\*\*\*

BEACON ID: DB476 E2E28 D35C1            SITE ID: 46222 (CLOSED - TIME)

\*\*\*\*\* INCIDENT FEEDBACK REPORT FOR 406 ALERT. SEND REPORT TO USMCC: \*\*\*\*\*  
\*\*\*            301-817-4568 (FAX), USMCC@NOAA.GOV (EMAIL) OR KZDCZSZA (AFTN) \*\*\*

BEACON ID: DB476 E2E28 D35C1            SITE ID: 46222            CLOSE TIME: 17 1526 JAN

ACTUAL LOCATION    LAT:                            LONG:

INCIDENT OUTCOME:  
DISTRESS / NON-DISTRESS / UNDETERMINED

INCIDENT TYPE:  
AVIATION / MARITIME / TERRESTRIAL / OTHER / UNKNOWN

BEACON REGISTRATION USED TO RESOLVE INCIDENT:  
PRIMARY MEANS / CONTRIBUTED / NOT USED

BEACON REGISTRATION ACCURACY -  
OWNER INFORMATION:            ACCURATE / INACCURATE / UNVERIFIED

EMERGENCY CONTACT INFO:        ACCURATE / INACCURATE / UNVERIFIED

VESSEL/AIRCRAFT USAGE INFO: ACCURATE / INACCURATE / UNVERIFIED

SARSAT DATA USED TO RESOLVE INCIDENT:  
YES ONLY NOTIFICATION / YES FIRST NOTIFICATION / YES ASSISTED / NO

NUMBER RESCUED:                    NUMBER IN DISTRESS:

REASON ACTIVATED (SELECT ONE):  
DISTRESS: AUTOMATIC / MANUAL / ACTIVATION METHOD UNKNOWN

FALSE ALERT (SEE CATEGORIES BELOW) -  
BEACON MISHANDLING: INSTALLATION / TESTING-MAINTENANCE / USAGE / DISPOSAL

BEACON MALFUNCTION: SWITCH / WATER INTRUSION / SELF-TEST / ELECTRONICS

BEACON MOUNTING: BRACKET FAILURE / HYDROSTATIC RELEASE / MAGNET

OTHER FALSE ALERT: ENVIRONMENTAL CONDITIONS / REASON UNKNOWN

UNKNOWN-INCONCLUSIVE

ACTIVATION COMMENT:

END OF MESSAGE  
/LASSIT  
/ENDMSG

## 4.8 Detection Update (SIT 167)

The SIT 167 message does not contain Beacon Decode or Beacon Registration information.

/03934 00000/3660/12 357 0330  
/167/366E

\*\*\*\*\* 406 BEACON DETECTION UPDATE \*\*\*\*\*

BEACON ID: 2DCE6 DD3BE FFBFF SITE ID: 54645

\*\*\*\*\* DETECTION UPDATE DUE TO FOLLOWING UNLOCATED ALERT \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	N/A	N/A		22 0319 DEC	S9	AK1	CGD13	/CMCC

DETECTION FREQUENCY: FREQUENCY IS UNRELIABLE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 22 0330 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD13,AFRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CMCC,CGD13,AFRCC

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
46	B	49 04.4N	123 07.0W	22 0023 DEC	S7	MULT
N/A	E	49 05.93N	123 00.67W	21 2311 DEC	S10	MULT

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
C	22 0507 DEC	S11	CA1	HIGH
C	22 0516 DEC	S8	CA2	HIGH

QQQQ  
/LASSIT  
/ENDMSG

## 4.9.1 Notification of Country of Registration (SIT 168) – Ambiguity Unresolved

This Notification of Country of Registration (NOCR) was sent to CGD07 so that CGD07 can distribute the NOCR to SAR authorities for the Bahamas (the COUNTRY encoded in the Beacon Id). The NOCR is distributed to SAR authorities for the country of registration when the alert is

not located in the SRR of that country, so that responsible agencies in that country can help coordinate the SAR response for its citizens.

/24223 00000/3660/12 359 1944  
/168/366M

\*\*\*\*\* NOTIFICATION OF COUNTRY OF REGISTRATION \*\*\*\*\*

BEACON ID: A6E8D 40D28 D34D1            SITE ID: 54796

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
50	A	57 27.9N	024 11.3E	24 1940 DEC	S11	TRMCC	NMCC	
50	B	53 57.1N	003 34.7E	24 1940 DEC	S11	TRMCC	FMCC	/UKMCC

DETECTION FREQUENCY: 406.0250 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: BAHAMAS	BEACON TYPE:	EPIRB MARITIME USER
MID CODE	: 311	CRAFT ID	: 030400            SPECIFIC BEACON: 0
MANUFACTURER:		MODEL	:
SERIAL NUM	:	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION AT  
MRCC Falmouth  
TELEX: 45560 FALMCG G  
AFTN:  
TELEPHONE: 44 1326-317575  
FACSIMILE: 44 1326-318342  
EMAIL: CKEMP@PUBBAHAMAS.GOV.BS  
WEB:

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 24 1944 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD07

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD07

PREVIOUS PASS INFORMATION: N/A

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
A	24 2011 DEC	S8	AK2	LOW (WILL NOT COUNT AS MISSED PASS)
A	25 1007 DEC	S12	AK2	HIGH
B	24 2010 DEC	S8	AK2	HIGH
B	24 2120 DEC	S11	AK1	HIGH

QQQQ

/LASSIT  
/ENDMSG

## 4.9.2 Notification of Country of Registration (SIT 168) – Ambiguity Resolved

When ambiguity is resolved, the Alert Data block in the associated Notification of Country of Registration (NOCR) contains the same information about ambiguity resolution as the SIT 164 (Ambiguity Resolution) message contains. (This is a future enhancement: currently information about ambiguity resolution is not included in the NOCR message.)

In the following message, the “A” side location and encoded (“E”) location resolved ambiguity to the SIMCC and VNMCC SRR for a beacon with a USA country code. (The alert is located in an overlap SRR between SIMCC and VNMCC; this is evident because the USMCC does not send alerts for a BUFFER to the VNMCC SRR, as indicated in section 3.2.3.8.) The NOCR is sent to CGD14 because the HOME PORT in the BEACON REGISTRATION DATABASE is located in the CGD14 SRR.

```
/32620 00000/3660/12 355 2131
/168/366H
```

```
***** NOTIFICATION OF COUNTRY OF REGISTRATION *****
```

```
BEACON ID: 2DCC3 F91DE FFBFF      SITE ID: 19548
```

```
***** AMBIGUITY RESOLVED TO THE FOLLOWING POSITION *****
```

```
LATITUDE LONGITUDE DURATION PASSES SRR /BUFFER
09 04.0N 108 15.2E 000.0 HRS 001 SIMCC /VNMCC
```

```
***** AMBIGUITY RESOLVED FROM THE FOLLOWING NEW INFORMATION *****
```

```
PROB SOL LATITUDE LONGITUDE DETECT TIME SAT SOURCE
79 A 09 04.1N 108 15.5E 20 2020 DEC S7 FL1 SIMCC /VNMCC
21 B 00 30.1N 145 47.7E 20 2020 DEC S7 FL1
N/A E 09 03.94N 108 15.20E 20 2020 DEC S7 FL1 SIMCC /VNMCC
```

```
DETECTION FREQUENCY: 406.0270 MHZ
```

```
HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM
```

```
***** BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION *****
```

```
COUNTRY      : USA                BEACON TYPE: EPIRB SERIAL (STANDARD)
MID CODE     : 366                CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: CSTA# 127          MODEL      :
SERIAL NUM   : 239                HOMING     : 121.5 MHZ
POSITION DEVICE: INTERNAL        POSITION RESOLUTION: 4 SECONDS
```

```
***** BEACON REGISTRATION DATABASE INFORMATION *****
```

```
OWNER: MARY JOHNSON
      111 MAIN STREET #101        TEL 1: HOME 8081234567
      HONOLULU                   HI   TEL 2:
      96815      USA              TEL 3:
                                   TEL 4:
      EMAIL:
```



#### 4.10.1 Encoded Position Update (SIT 169) – Ambiguity Unresolved

Note: an Encoded Position Update message may contain Doppler position data, either before or after ambiguity resolution. This will occur when the Doppler position data is redundant (i.e., message for same pass already sent) but the encoded position has changed by more than 3 km.

/62659 00000/3660/12 340 0424  
/169/3660

\*\*\*\*\* 406 BEACON ENCODED POSITION UPDATE (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: 2DD43 8273F 81FE0 SITE ID: 53301

\*\*\*\*\* DETECTION TIME AND POSITIONS FOR THE BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	E	29 32.66N	095 02.60W	05 0421 DEC	G13	ARMcc	CGD08	

DETECTION FREQUENCY: 406.0278 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	EPIRB SERIAL (NATIONAL)
MID CODE	: 366	CRAFT ID	: SPECIFIC BEACON:
MANUFACTURER:		MODEL	:
SERIAL NUM	: 28750	HOMING	: 121.5 MHZ
POSITION DEVICE:	EXTERNAL	POSITION RESOLUTION:	4 SECONDS

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 05 0424 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
CGD08

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
CGD08

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
N/A	E	29 32.66N	095 02.60W	05 0421 DEC	G13	MULT	CGD08	

NEXT TIME SIGNAL SHOULD BE DETECTED:

SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
E	05 0722 DEC	S12	FL2	HIGH
E	05 0757 DEC	S10	FL2	LOW (WILL NOT COUNT AS MISSED PASS)

QQQQ

/LASSIT  
/ENDMSG

## 4.10.2 Encoded Position Update (SIT 169) – Ambiguity Resolved

/64075 00000/3660/12 361 2052  
/169/CGOP

\*\*\*\*\* 406 BEACON ENCODED POSITION UPDATE (AMBIGUITY RESOLVED) \*\*\*\*\*

BEACON ID: 2DCC5 6E226 FFBFF SITE ID: 54888

\*\*\*\*\* COMPOSITE POSITION \*\*\*\*\*

LATITUDE	LONGITUDE	DURATION	PASSES	SRR	/BUFFER
22 16.6N	026 43.2W	002.0 HRS	005	SPMCC	

\*\*\*\*\* POSITION UPDATED FROM THE FOLLOWING ALERT \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
N/A	E	22 17.27N	026 46.80W	26 2051 DEC	G13	MD1

DETECTION FREQUENCY: 406.0276 MHZ

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY	: USA	BEACON TYPE:	EPIRB SERIAL (STANDARD)
MID CODE	: 366	CRAFT ID	: SPECIFIC BEACON:
MANUFACTURER:	CSTA# 173	MODEL	:
SERIAL NUM	: 275	HOMING	: 121.5 MHZ
POSITION DEVICE:	INTERNAL	POSITION RESOLUTION:	4 SECONDS

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

REGISTRATION INFORMATION IS NOT AVAILABLE IN THE USMCC DATABASE

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 26 2051 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
LANTAREA

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
SPMCC,CGD13,LANTAREA

PREVIOUS PASS INFORMATION:

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE
57	A	22 17.9N	026 45.8W	26 1857 DEC	S8	SPMCC
N/A	E	22 17.95N	026 45.90W	26 1937 DEC	G13	MULT
N/A	E	22 17.27N	026 46.80W	26 2051 DEC	G13	MD1

NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ  
/LASSIT  
/ENDMSG

## 5 Support Messages

As noted in Table 2.4, support messages contain a standard message header, support message data and message trailer. The different support messages are described below, with examples provided. Definitions for the different fields in support messages are provided in Annex 1.

### 5.1 Narrative Message (SIT 950)

This message is used to transmit a narrative message to the RCC. It may be used to indicate a System status change, including satellite, LUT or MCC failures. A sample message follows.

```
22664 00000/3660/12 346 1710
/950/366A
/TO: ALL RCCS
FROM: USMCC
SUBJECT: USMCC RESUMES NORMAL OPERATIONS
```

THE USMCC RESUMED NORMAL OPERATIONS AT 12/11/2012 1710 UTC.

PLEASE CALL 301-817-4576 TO CONFIRM RECEIPT OF THIS MESSAGE..

USMCC CONTROLLER

```
QQQQ
/LASSIT
/ENDMSG
```

### 5.2 Alert Site Query Report (SIT 951)

This message is sent in response to an RCC's request for alert site information, based on a specified time period, geographical area (defined as a rectangle or point and radius), site Id or 406 MHz beacon Id.

This message provides the SEARCH CRITERIA. The NORTH BOUNDARY, SOUTH BOUNDARY, EAST BOUNDARY and WEST BOUNDARY are provided for a geographical area defined as a rectangle. The CENTER POSITION and RADIUS are provided for a geographical area defined as a point and radius. The REPORT START and REPORT END are provided for the specified time period. The SITE ID and BEACON ID used to define the search are also provided. SEARCH RESULTS include the LATITUDE and LONGITUDE

The following is a sample report for a query based on time range and SITE ID.

/51787 00000/3660/12 349 1631  
/951/366S  
/TIME OF QUERY: 2012-12-14 16:31

SEARCH CRITERIA

CENTER POSITION: NONE RADIUS: NONE  
NORTH BOUNDARY: NONE EAST BOUNDARY: NONE  
SOUTH BOUNDARY: NONE WEST BOUNDARY: NONE  
REPORT START: 14 0758 DEC 12 REPORT END: 14 1159 DEC 12  
SEARCH FREQ: 406 SITE ID: 54067  
BEACON ID: N/A COUNTRY CODE: N/A  
MMSI, SHIP CALL SIGN, OR AIRCRAFT REGISTRATION: N/A  
TRACK BOUNDARY: N/A

SEARCH RESULTS

LATITUDE LONGITUDE FIRST TCA DUR FREQ SWP SITE/BEACON ID  
26 10.9N 080 10.0W 14 1314 DEC 2.0 406 UNK E0E64D6F6553191

DETAIL INFORMATION

BEACON ID: E0E64D6F6553191 SITE ID: 54067  
SITE CREATED: 14 1315 DEC 12 SITE CLOSED: N/A  
FIRST TCA: 14 1314 DEC 12 LAST TCA: 14 1511 DEC 12  
LAST DATA PROCESSED: 14 1559 DEC 12 PASSES: 7

REASON CLOSED:  
MESSAGE DESTINATIONS: SPMCC, CGD07, AFRCC, VZMCC

DETECTION TIME AND POSITIONS

SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR\BUFFER	PROB
U			14 1314 DEC	G13	SPMCC2	0000\0000	0
B	26 11.4N	080 11.4W	14 1329 DEC	S11	MULTI	366S\366M	45
A	26 10.6N	080 09.5W	14 1342 DEC	S9	MULTI	366S\366M	50
A	26 11.8N	080 10.7W	14 1411 DEC	S8	MULTI	366S\366M	89
A	26 11.1N	080 08.9W	14 1510 DEC	S11	MULTI	366S\366M	54

BEACON NOT DETECTED ON FOLLOWING PASSES  
DETECT TIME SAT SOURCE MISSPASS

NEXT PASS INFORMATION

SITE ID	SOL	DETECT TIME	SAT	SOURCE	VISIBILITY
5C54067	C	14 1705 DEC	S12	FL1	LOW (NOT COUNTED AS MISSED PASS)
5C54067	C	14 1845 DEC	S12	FL1	HIGH

QQQQ  
/LASSIT  
/ENDMSG

### 5.3 406 MHz Beacon Registration (SIT 952)

This message is sent in response to an RCC's request for 406 MHz beacon registration information, based on a specified beacon Id, craft Id (e.g., tail number or radio call sign), vessel name or owner name. The narrative text shows the BEACON ID, followed by the registration information, either for a US beacon or a non-US beacon. For US beacons, the registration information is provided in the same format as in alert messages (see section 3.4).

The example below provides registration information for a French beacon.

/58612 00000/3660/12 307 2243

/952/CGOP

/

MESSAGE# 66391 WAS SENT TO THE USMCC BY FMCC AT 12 307 2242

FM FMCC COSPAS-SARSAT TOULOUSE

TO USMCC

FMCC REF NO 77062

HEXACODE : 9C69064D65034D1

REF 406 BEACON : 320230/0, COUNTRY : 227/FRANCE

VESSEL FLAG:227 MMSI:227320230

QU:BA REGISTRATION NUMBER:334732P RCS:FP6446

NAME:ITSAS BELLARA TYPE:FISHING

LENGTH:15

OWNER

MRCC GRIS NEZ

TEL:+33 3 21 87 21 87

QQQQ

/LASSIT

/ENDMSG

#### 5.4 Beacon-LUT Mutual Visibility Schedule (SIT 953)

This message is used to transmit a list of passes that have mutual visibility with a US LUT and a specified location. The Support Data provides predicted the DETECT TIME, SAT (satellite), SOURCE (US LUT) and VISIBILITY, as described in section 3.5.4 (Next Pass Information).

```
/50745 00000/3660/12 339 1650  
/953/366S  
/NEXT TIME SIGNAL SHOULD BE DETECTED FOR POSITION 28 09.0N,082 46.0W  
FOR THE NEXT 6 PASSES  
AT ELEVATION ANGLE UNKNOWN DEGREES FOR FREQUENCY 406
```

DETECT	FREQ	DETECT-TIME	SAT	SOURCE	VISIBILITY
406		04 1656 DEC	S11	CA1	LOW
406		04 1712 DEC	S12	FL1	LOW
406		04 1852 DEC	S12	FL1	HIGH
406		04 1928 DEC	S10	FL2	HIGH
406		04 2109 DEC	S10	FL1	HIGH
406		04 2110 DEC	S7	FL2	HIGH

```
QQQQ  
/LASSIT
```

```
/ENDMSG
```

## Annex 1 Alert and Support Message Definitions

This Annex defines the fields and terms used in alert and support messages transmitted by the USMCC. “N/A” means either that the information is not applicable or not available.

The beginning of the definition column indicates the alert message section and/or support message in which the term is used. Beacon Registration data in an alert or support message is based on information reported by the beacon owner or operator. Information provided for the “Incident Feedback Request” should also be used when incident feedback is provided directly the on-line Incident History Database (IHDB). For terms defined in the “Incident Feedback Request” section of the alert message, Annex 10 provides Guidance on Providing Incident Feedback to the USMCC.

Term	Alert Message Section	Support Message
	Definition	
<b>ACTIVATION COMMENT</b>	<b>Incident Feedback Request</b> Description of beacon activation.	
<b>ACTIVATION TYPE</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Activation method of an EPIRB, as decoded from the 15 hexadecimal beacon Id. CAT1 means that the EPIRB can be activated either manually or automatically. CAT2 means that the EPIRB can only be activated manually.	
<b>ACTUAL LOCATION</b>	<b>Incident Feedback Request</b> The actual location of the beacon as determined by the SAR forces.	
<b>AFTN</b>	<b>Beacon Registration Data Block</b> AFTN address point of contact for beacon registry for non-US beacon.	
<b>AIRCRAFT MANUFACTURER/ MODEL</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Manufacturer and model of the aircraft on which the ELT is carried.	
<b>AIRCRAFT REGISTRATION</b>		<b>Alert Query Report</b>
	Aircraft registration used for the alert query. Can include the 24-bit address, aircraft operator designation, and aircraft registration (or tail number).	
<b>AIRCRAFT USE</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The type of the aircraft on which the ELT is carried. Values for the field include (but are not limited to) Single Engine Jet, Single Engine Propeller, Helicopter, Multi Engine Jet, and Multi Engine Propeller.	

Term	Alert Message Section	Support Message
	Definition	
<b>AIRPORT</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Home airport (name, city, state) for the aircraft on which the ELT is carried.	
<b>AIRPORT PRIMARY SRR</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The primary SRR (RCC, MCC or SPOC) responsible for the home airport of the aircraft on which the ELT is carried.	
<b>AIRPORT SECONDARY SRR</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The secondary SRR (RCC, MCC or SPOC) responsible for the home airport of the aircraft on which the ELT is carried.	
<b>ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO</b>	<b>Support Data Block</b>	
	A list of all destinations that have received messages from the USMCC for this alert site.	
<b>AT</b>	<b>Beacon Registration Data Block</b>	
	Field "REGISTRATION INFORMATION AT" provides the name of the beacon registry point of contact for non-US beacons.	
<b>BEACON CONTAINS SVDR</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Indicates whether the EPIRB contains a Simple Voyage Data Recorder. Values are "NO "and "YES. RECOVER IF POSSIBLE".	
<b>BEACON ID</b>	<b>Alert Data Block</b>	<b>Alert Query Report</b>
	<b>Incident Feedback Request</b>	
	The unique 15 character hexadecimal identifier of a 406 MHz beacon. The 15 characters represent bits 26 to 85 of a complete 406 MHz beacon message (bits 25 to 144 or bits 25 to 112), as defined in document C/S T.001. For Location protocol beacons, bits 26 to 85 contain the Beacon Id and position information; the bits that contain position information are set to default values to provide a fixed Beacon Id in case the encoded position changes. For User protocol beacons, bits 26 to 85 contain the Beacon Id and no position information.	
<b>BEACON REGISTRATION ACCURACY</b>	<b>Incident Feedback Request</b>	
	Accuracy of beacon registration. Values are ACCURATE, INACCURATE and UNVERIFIED. Answers to be provided separately for OWNER INFORMATION, EMERGENCY CONTACT INFO and VESSEL/AIRCRAFT USAGE INFO.	

Term	Alert Message Section	Support Message
	Definition	
<b>BEACON REGISTRATION DATA USED TO RESOLVE INCIDENT</b>	<b>Incident Feedback Request</b> Indicates if 406 MHz beacon registration data helped resolve the incident. “PRIMARY MEANS” indicates that beacon registration data was the primary means used to resolve the incident. “CONTRIBUTED” indicates that beacon registration data contributed to incident resolution as a secondary means. “NOT USED” indicates that beacon registration data did not help resolve the incident.	
<b>BEACON TYPE</b>	<b>Beacon Decode Data Block</b> The beacon type decoded from the digital message by the USMCC. Valid types are provided in Table 3.3.2. Location protocol beacons are described as standard (“(STANDARD)” or “(STD)”) or national (“(NATIONAL)”). Alerts are not normally distributed for “Spare” and “Test” protocol beacons.	
<b>BUFFER</b>	<b>Alert Data Block, Support Data Block</b> The BUFFER is the second SRR in which the alert is located, based on a 50 km buffer to the primary SRR or an overlap of the primary SRR. If an alert is located in the primary or buffer SRR for three or more SRRs, the RCC message will only list one buffer SRR per location, but the message will be routed to all SRRs as appropriate. See section 3.2.3.8 for more information.	
<b>CAPACITY</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The maximum number of people on board the vessel or aircraft on which this EPIRB or ELT is carried.	
<b>CELLULAR NUMBER</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Cellular telephone number for the vessel on which the EPIRB is carried.	
<b>CENTER POSITION</b>		<b>Alert Query Report</b>
	The position (latitude and longitude) used to conduct an alert query based on a center point and radius.	
<b>CLOSE TIME</b>	<b>Incident Feedback Request</b>	
	Time that USMCC alert site was closed.	
<b>CLOSED</b>	<b>Alert Data Block</b>	
	Indicates if the USMCC alert site is closed or not, and for a closed site, whether the site closed due to missed passes, time or action by the USMCC operator. For more information about site closure, see the description of the SIT 166 message.	

Term	Alert Message Section	Support Message
	Definition	
<b>COLOR</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The color of the vessel or aircraft on which this EPIRB or ELT is carried.	
<b>CONTACTS</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Emergency points of contact. Up to 4 primary (left hand column) and 4 alternate (right hand column) telephone numbers are provided. See field "TEL #".	
<b>COUNTRY</b>	<b>Beacon Decode Data Block</b>	
	The name of the country, nationality, state or territory associated with the Maritime Identification Digits (MID) code. The MID codes are assigned by the International Telecommunications Union (ITU). The C/S web site (sub-links "Contacts" / "Beacon Registers") provides a list of Country/Regions for which a MID code is assigned. Table 3.2.8 lists the country/region codes for which beacon registration is maintained in the US Beacon Registration Database.	
<b>COUNTRY CODE</b>		<b>Alert Query Report</b>
	The Maritime Identification Digits (MID) for the country, nationality, state or territory associated with a 406 MHz beacon, assigned by the International Telecommunications Union (ITU). A complete list is provided on the C/S web site (sub-links "Operations" / "List of Country/Region Codes (MID)) or in Appendix 43 of the ITU Radio Regulations. One county may have more than one country code assigned to it.	
<b>CRAFT ID</b>	<b>Beacon Decode Data Block</b>	
	The decoded identifier of the vessel/aircraft on which the EPIRB or ELT is carried. The USMCC decodes this information from the beacon Id. The Craft Id can be a radio call sign, a MMSI number, an aircraft tail number or registration marking, an aircraft 24 bit address or an aircraft operator designator.	
<b>DATE FIRST REGISTERED</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The date that this beacon was first registered to the current owner.	
<b>DATE LAST UPDATED</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The date that registration information for this beacon was last updated.	
<b>DATE REGISTRATION EXPIRES</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The date that the registration information for this beacon expires. When an owner first registers a beacon, the USMCC issues proof of beacon registration with an expiration data two years from the date of issue. When the registration information is successfully renewed, the expiration data is reset for two years from the renewal date.	

Term	Alert Message Section	Support Message
	Definition	
<b>DEPLOYABLE SURVIVAL CRAFT DESCRIPTION</b>	<b>Beacon Registration Data Block</b> Description of the deployable survival equipment on the aircraft on which the ELT is carried.	<b>Beacon Registration</b>
<b>DETECT FREQ</b>	<b>Beacon-LUT Mutual Visibility Schedule</b> The frequencies that can be detected by the corresponding satellite.	
<b>DETECT TIME</b>	<b>Alert Data Block</b> For solutions with Doppler location, the Time of Closest Approach (TCA) of the satellite to the beacon. The TCA is computed at the ground station (LEOLUT) and may differ from the detect time of the individual 406 MHz beacon bursts by 8-10 minutes; for a Doppler solution computed and sent to the MCC in near real-time, it is possible for the RCC to receive the alert message prior to the computed TCA.  For non-Doppler solutions from LEOLUTs, the time that the satellite last received a burst from the 406 MHz beacon. For non-Doppler solutions from GEOLUTs, the time that the satellite first received a 406 MHz burst for the beacon; GEOLUTs report the first detect time per alert to provide the time of beacon activation more accurately in the event of an aircraft crash.	<b>Alert Query Report</b>
	<b>Support Data Block</b> For PREVIOUS PASS INFORMATION, see description above for “Alert Data Block”.  For NEXT TIME SIGNAL SHOULD BE DETECTED, the time of the closest approach of the satellite to the reported beacon location.	<b>Alert Query Report</b>
<b>DETECT TIME</b>	<b>Beacon-LUT Mutual Visibility Schedule</b> The time of the closest approach of the satellite to the reported beacon location.	
<b>DETECTION FREQUENCY</b>	<b>Alert Data Block</b> The DETECTION FREQUENCY format is 406.nnnn MHz, and provides the detected frequency of the transmitting 406 MHz beacon for the new solution to a precision of tenths of a Hz (nnnn), as shown in Table 3.2.9. The frequency is not provided when the new solution is from a LEOSAR satellite without Doppler location, since the reported frequency includes a Doppler shift of unknown magnitude; in these cases, this field is reported as “FREQUENCY IS UNRELIABLE”.	
<b>DUR</b>	<b>Alert Site Query</b> The number of hours that this beacon has been active, calculated from the earliest and most recent times that the beacon was detected.	

Term	Alert Message Section	Support Message
	Definition	
<b>DURATION</b>	<b>Alert Data Block</b> The number of hours that this beacon has been active, calculated from the earliest and latest times that the beacon was detected. This information is only provided if ambiguity was resolved for the alert site.	
<b>EAST BOUNDARY</b>	<b>Alert Query Report</b> The eastern boundary of an alert query based on a search rectangle.	
<b>EMAIL</b>	<b>Beacon Registration Data Block</b> The email address for the beacon owner from US beacon registry (RGDB) for US beacon. Email address point of contact for beacon registry for non-US beacon.	<b>Beacon Registration</b>
<b>FACSIMILE</b>	<b>Beacon Registration Data Block</b> Facsimile number point of contact for beacon registry for non-US beacon.	
<b>FIRST TCA</b>	<b>Alert Query Report</b> The first time that the beacon was detected based on data received by the USMCC; see "Detect Time".	
<b>FIXED SURVIVAL CRAFT DESCRIPTION</b>	<b>Beacon Registration Data Block</b> Description of fixed survival equipment on the aircraft on which the ELT is carried.	<b>Beacon Registration</b>
<b>FREQ</b>	<b>Alert Query Report</b> The frequency of a 121.5, 243 or 406 MHz signal presented in MHz. Set to "406" for 406 MHz beacons.	
<b>HOME PORT</b>	<b>Beacon Registration Data Block</b> Home port (name, city, and state) for the vessel on which the EPIRB is carried.	<b>Beacon Registration</b>
<b>HOME PORT PRIMARY SRR</b>	<b>Beacon Registration Data Block</b> The primary SRR (RCC, MCC or SPOC) responsible for the home port of the vessel on which the EPIRB is carried.	<b>Beacon Registration</b>

Term	Alert Message Section	Support Message
	Definition	
<b>HOMING</b>	<b>Beacon Decode Data Block</b>	
	The type of homing provided in this beacon. Values are: “121.5 MHZ” “MARITIME” (9 GHz Search and Rescue Radar Transponder (SART)) “OTHER” (other auxiliary radio locating device) and “NONE” (no auxiliary radio locating device).	
<b>INCIDENT OUTCOME</b>	<b>Incident Feedback Request</b>	
	The outcome of the incident. Values are DISTRESS, NON-DISTRESS AND UNDETERMINED.	
<b>INCIDENT TYPE</b>	<b>Incident Feedback Request</b>	
	Type of incident. Values are AVIATION, MARITIME, TERRESTRIAL, OTHER and UNKNOWN.	
<b>INMARSAT NUMBER</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	INMARSAT contact number for the vessel on which this EPIRB is carried.	
<b>LAST DATA PROCESSED</b>	<b>Alert Query Report</b>	
	The time (in DD HHMM MON YY format where DD is day of month, HH is the hour in UTC, MM is minutes, MON is month and YY is year) when the USMCC last processed data for this site. This time differs from the last TCA, which is based on detection time at the satellite or ground station.	
<b>LAST TCA</b>	<b>Alert Query Report</b>	
	The last time that the beacon was detected, based on data received by the USMCC; see “Detect Time”.	
<b>LATITUDE</b>	<b>Alert Data Block</b> <b>Support Data Block</b>	<b>Alert Site Query</b>
	The latitude position of the alert. On alert messages, provided in degrees, minutes and tenths of minute for Doppler location (computed by the LEOLUT) or degrees, minutes and hundredths of minute for position encoded in the 406 MHz digital message. See description of encoded position precision in section 3.1.2.3.3.a.	
<b>LEASING AGENT</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The leasing agent of the aircraft on which this ELT is carried.	

Term	Alert Message Section	Support Message
	Definition	
<b>LENGTH OVERALL (FT)</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The length of the vessel or aircraft on which the EPIRB or ELT is carried.	
<b>LIKELY IMAGE POSITION</b>	<b>Alert Data Block</b>	
	When one Doppler position (A or B) in the new alert is determined to be an “image” (that is, not the actual position), then a data line is included in the alert message about the “LIKELY IMAGE POSITION”. This data line is only provided when a Doppler position is determined to be an image prior to ambiguity resolution. Possible values are “The A POSITION” and “THE B POSITION”.	
	The image position is determined when a beacon was previously detected as an unlocated alert, and one of the Doppler positions was not visible to the satellite when the unlocated alert was detected, per the “LEOSAR Image Position Determination” algorithm in document C/S A.002 (Appendix B.2 to Annex B). See section 3.2.6 for more details.	
<b>LONGITUDE</b>	<b>Alert Data Block</b> <b>Support Data Block</b>	<b>Alert Site Query</b>
	The longitude position of the alert. On alert messages, provided in degrees, minutes and tenths of minute for Doppler location (computed by the LEOLUT) or degrees, minutes and hundredths of minute for position encoded in the 406 MHz digital message. See description of encoded position precision in section 3.1.2.3.3.a.	
<b>MANUFACTURER</b>	<b>Beacon Decode Data Block</b>	
	The manufacturer of the beacon as decoded from the beacon Id. This information is only available on user protocol US serialized beacons.	
	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The manufacturer of the beacon as provided in the beacon registration.	
<b>MESSAGE DESTINATIONS</b>		<b>Alert Query Report</b>
	All destinations that have received alert messages for this site.	
<b>MMSI</b>		<b>Alert Query Report</b>
	The Mobile Maritime Service Identity (MMSI) used for the alert query. The MMSI consists of the three digit country code (or MID code) and the trailing six digits of the ship station identity in accordance with Appendix 43 of ITU Radio Regulations.	
<b>MODEL</b>	<b>Beacon Decode Data Block</b>	
	The model name of the beacon as decoded from the beacon Id. This information is only available on user protocol US serialized beacons.	

Term	Alert Message Section	Support Message
	Definition	
<b>MODEL NUMBER</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The model name/number of the beacon as provided in the beacon registration.	
<b>MP</b>	<b>Alert Data Block</b>	
	The number of missed passes; that is, the number of LEO satellite passes with visibility to the reported beacon location that have not detected the beacon since the last detection. If ambiguity is resolved, the counter only refers to the resolved position. This field is only present on the SIT 166 message.	
<b>NEXT TIME SIGNAL SHOULD BE DETECTED</b>	<b>Support Data Block</b>	
	The two next times the beacon should be detected by a US LEOLUT based on the reported beacon location. The “SOL” (solution), “DETECT TIME”, “SAT” (satellite), “SOURCE” (US LUT) and the “VISIBILITY” are provided, as described separately. If ambiguity is resolved, only the resolved (composite) location is used to determine the next (pass) times. If ambiguity is not resolved and position conflict exists, this information is not provided. Section 3.5.4 further describes Next Pass Information.	
<b>NORTH BOUNDARY</b>		<b>Alert Query Report</b>
	The northern boundary of an alert query based on a search rectangle.	
<b>NUMBER IN DISTRESS</b>	<b>Incident Feedback Request</b>	
	The number of people in distress during the incident (distress cases only), excludes rescue personnel.	
<b>NUMBER OF LIFE BOATS</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The number of life boats on board the vessel on which the EPIRB is carried.	
<b>NUMBER OF LIFE RAFTS</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The number of life rafts on board the vessel on which the EPIRB is carried.	
<b>NUMBER RESCUED</b>	<b>Incident Feedback Request</b>	
	The number of people rescued during the incident (distress cases only).	
<b>OWNER</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The owner of the 406 MHz beacon. This section of the message also contains the owner’s mailing address, telephone numbers and email address.	

Term	Alert Message Section	Support Message
	Definition	
<b>PASSES</b>	<p><b>Alert Data Block</b></p> <p>The number of satellite passes that detected the beacon. This information is only provided if ambiguity was resolved for the alert site. Each LEO satellite pass that detects the beacon is counted separately. The count is incremented by 1 for each geostationary (GEO) satellite that detects the beacon, regardless of the detect time; e.g, if G13 and G15 detect the beacon, the count is incremented by 2. The count may include unlocated GEO and LEO alerts that are not reported in RCC messages, when the unlocated alerts are deemed redundant.</p>	
<b>POSITION DEVICE</b>	<p><b>Beacon Decode Data Block</b></p> <p>The POSITION DEVICE indicates the type of device that the beacon uses to provide encoded position. Possible values are INTERNAL, EXTERNAL and NIL, as described below:</p> <p>INTERNAL – encoded position is provided by a device internal to the beacon  EXTERNAL – encoded position is provided by a device external to the beacon  NIL – no information is available. This means that the beacon type is not location protocol or that the information was not reliably provided in the 406 MHz beacon message for this alert.</p>	
<b>POSITION RESOLUTION</b>	<p><b>Beacon Decode Data Block</b></p> <p>The POSITION RESOLUTION indicates the encoded position resolution. Table 3.2.5 provides the resolution of encoded location and the corresponding value in the POSITION RESOLUTION field, based on beacon protocol and the reliability of the 406 MHz beacon message. The field value is “NONE” if encoded position data is not available.</p>	
<b>PREVIOUS PASS INFORMATION</b>	<p><b>Support Data Block</b></p> <p>The previous satellite passes for the site, in descending order by time the pass was first received at the USMCC. It may occur that the previous passes are not in order by DETECT TIME, because alerts are not necessarily received by the USMCC in the order they are detected by the satellite. If position conflict exists and ambiguity is not resolved, all previous passes are listed. Otherwise, only the 4 passes received most recently are reported. Once ambiguity is resolved, positions that do not match the resolved position (within 50 km) are no longer reported</p> <p>The “PROB” (probability), “SOL” (solution), “LATITUDE”, “LONGITUDE”, “DETECT TIME”, “SAT” (satellite), and “SOURCE” are provided, as described separately. SRR and BUFFER are only provided on messages generated before ambiguity resolution. Section 3.5.3 further describes Previous Pass Information.</p>	

Term	Alert Message Section	Support Message
	Definition	
<b>PROB</b>	<b>Alert Data Block</b> <b>Support Data Block</b>	
	The probability that the associated Doppler (A or B) position is the real position. For a Doppler solution, the position that is more likely to be real is, by definition, the “A” position. Valid ranges are 01 to 99. Section 3.2.3.1 provides more information.	
<b>RADIO CALL SIGN</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The radio call sign of the vessel on which the EPIRB is carried. This may be a foreign radio call sign for a foreign flagged vessel.	
<b>RADIO EQP</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The type of radio equipment on board the vessel, aircraft or person for the associated EPIRB, ELT or PLB, respectively. May include INMARSAT number, VHF_FM, VHF_AM, HF, MF, SSB or other value.	
<b>RADIUS</b>		<b>Alert Query Report</b>
	The radius (in kilometers) used to conduct an alert query based on a center point and radius.	
<b>REASON ACTIVATED</b>	<b>Incident Feedback Request</b>	
	Reason that the beacon was activated. See Annex 10 for details.	
<b>REASON CLOSED</b>		<b>Alert Query Report</b>
	The reason the site was closed. A site can be closed due to a configurable number of missed satellite detections, a configurable time period or action by the USMCC Controller.	
<b>REGISTRATION NO</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The documentation or registration number of the vessel on which the EPIRB is carried.	
<b>REMARKS</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Additional remarks or comments provided in the beacon registration. This section may contain information on the new owner of the beacon.	
<b>REPORT END</b>		<b>Alert Query Report</b>
	Search end time of the alert query. The information is provided in DD HHMM MON YY format where DD is day of month, HH is the hour in UTC, MM is minutes, MON is month and YY is year.	

Term	Alert Message Section	Support Message
	Definition	
<b>REPORT START</b>	<p style="text-align: right;"><b>Alert Query Report</b></p> <p>Search start time of the alert query. The information is provided in DD HHMM MON YY format where DD is day of month, HH is the hour in UTC, MM is minutes, MON is month and YY is year.</p>	
<b>SARSAT DATA USED TO RESOLVE INCIDENT</b>	<p><b>Incident Feedback Request</b></p> <p>Possible answers are provided below.</p> <p>“YES ONLY NOTIFICATION”  “YES FIRST NOTIFICATION”  “YES ASSISTED”  “NO”</p>	
<b>SAT</b>	<b>Alert Data Block, Support Data Block</b>	<b>Alert Query Report</b>
	<p>The satellite that detected the beacon, identified by three characters. The first character identifies the type of satellite, as described in Table 3.2.3.7. The remaining two digits are the satellite number. Doppler location can only be generated from beacon burst data received from COSPAS and SARSAT satellites, which are polar orbiting. On occasion, Doppler location may not be generated for beacons detected by polar orbiting satellites, because an insufficient number of usable beacon bursts were detected.</p>	
<b>SEARCH FREQ</b>	<p style="text-align: right;"><b>Alert Query Report</b></p> <p>Frequency of the signal or beacon included in the search. May contain multiple frequencies. Set to “406” for 406 MHz beacons.</p>	
<b>SECONDARY SRR</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	<p>The secondary SRR (RCC, MCC or SPOC) responsible for the home port of the vessel on which the EPIRB is carried.</p>	
<b>SERIAL NUM</b>	<b>Beacon Decode Data Block</b>	
	<p>The unique serial number of the beacon (serialized beacons only). For user protocol national use US serialized beacons, the 40 bits allocated for serial number and national in document C/S T.001 are used to identify the manufacturer, model and (US defined) serial number.</p>	
<b>24 BIT ADDR</b>	<b>Beacon Decode Data Block</b>	
	<p>The 24 bit aircraft address for user Protocol 24 bit Aircraft Operator and Location Protocol ELT 24 bit address ELTs. Only present on alert messages for ELTs with a 24 bit address, in which case it replaces SERIAL NUM on the alert message. The 24 bit address is presented as 6 hexadecimal digits and has a prefix of “HEX=”.</p>	

Term	Alert Message Section	Support Message
	Definition	
<b>SHIP CALL SIGN</b>	<b>Alert Query Report</b>	
	The radio call sign used for the alert query. The radio call sign is an alphanumeric sequence (letters and digits) assigned to a particular vessel by the flag State administration.	
<b>SITE CLOSED</b>	<b>Alert Query Report</b>	
	The time (in DD HHMM MON YY format where DD is day of month, HH is the hour in UTC, MM is minutes, MON is month and YY is year) when the site was closed by the USMCC. The site may be closed due to missed satellite detections, age-out time or action by the USMCC Controller.	
<b>SITE CREATED</b>	<b>Alert Query Report</b>	
	The time (in DD HHMM MON YY format where DD is day of month, HH is the hour in UTC, MM is minutes, MON is month and YY is year) when the site was opened or created at the USMCC.	
<b>SITE ID</b>	<b>Alert Data Block Incident Feedback Request Support Data Block</b>	<b>Alert Query Report</b>
	The USMCC assigned site identifier consisting of unique five digits.	
<b>SOL</b>	<b>Alert Data Block Support Data Block</b>	<b>Alert Query Report</b>
	Indicates whether the data line is associated with the “A” position (the Doppler position with the higher probability of being real), the “B” position (the Doppler position with the lower probability of being real), the “C” (composite or ambiguity resolved) position, or the “E” position (position encoded in the 406 MHz beacon message). For solutions with no position, SOL is listed as “N/A”.	
<b>SOURCE</b>	<b>Alert Data Block, Support Data Block</b>	<b>Alert Query Report</b>
	The ground station or LUT (Local User Terminal) that ingested or is predicted to ingest the satellite data. If the source is a US LUT, then the LUT name is provided per Annex 2. If the source is not a US LUT, then the name of the MCC associated with the LUT is provided per Annex 3. If the associated satellite data is received from multiple sources, then “MULT” is listed on the alert message and “MULTI” is listed on the Alert Query Report.	
<b>SOUTH BOUNDARY</b>	<b>Alert Query Report</b>	
	The southern boundary of an alert query based on a search rectangle.	

Term	Alert Message Section	Support Message
	Definition	
<b>SPECIAL STATUS</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Special status for beacon. Valid values are: LOST, STOLEN, SOLD, REPLACED, DESTROYED, OUTFSERVICE and RECODED.	
<b>SPECIAL STATUS DATE</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The date on which the special status became effective.	
<b>SPECIAL STATUS INFO</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Information pertinent to the special status; see SPECIAL STATUS.	
<b>SPECIFIC BEACON</b>	<b>Alert Data Block</b>	
	Identifies the specific beacon on a vessel or aircraft, and is present for most non-serial beacon protocols. Its value is numeric for some beacon protocols (e.g., Aviation user) and alphanumeric for other beacon protocols (e.g., Radio Call Sign user).	
<b>SPECIFIC USAGE</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Information on the specific usage of the PLB.	
<b>SRR</b>	<b>Alert Data Block, Support Data Block</b>	
	The primary Search and Rescue Region associated with the given position (or beacon activation). For US RCCs the SRR is associated with a given Area of Responsibility for Coast Guard, Air Force and Joint RCCs. For foreign SRRs the position is associated with either the MCC service area or a national SAR boundary for SAR Points of Contact. See section 3.2.3.8 for more information.	
<b>SWP</b>		<b>Alert Query Report</b>
	The presence of sweep (audio modulation) for 121.5/243 MHz signals. Possible values are "YES" or "UNK" (unknown). Set to "UNK" for 406 MHz beacons.	
<b>THIS ALERT MESSAGE IS BEING SENT TO</b>	<b>Support Data Block</b>	
	Lists all destinations for the current alert message from the USMCC. See section 3.5.2 for more information.	
<b>TAIL NUMBER</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The tail number or registration number of the aircraft on which the ELT is carried.	
<b>TELEX</b>	<b>Beacon Registration Data Block</b>	
	Telex number point of contact for beacon registry for non-US beacon.	

Term	Alert Message Section	Support Message
	Definition	
<b>TELEPHONE</b>	<b>Beacon Registration Data Block</b>	
	Telephone number point of contact for beacon registry for non-US beacon.	
<b>TEL #</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	Telephone number type and telephone number for the owner of the beacon, primary contact or alternate contact. “#” is a sequential number (1 to 4) for this telephone number. The telephone number type is (“HOME”, “WORK”, “CELL”, “FAX “or “OTHR”). For example, “TEL 1: CELL” means that the first number is a cell phone.	
<b>TYPE</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The type of the vessel or aircraft, respectively, on which the EPIRB or ELT is carried. Aircraft are categorized as general, commercial or an air carrier. Sailing vessels are categorized as sail (sloop, yawl, schooner or other) or power (fishing, tug/tow, cargo, tanker, cabin cruiser or other).	
<b>USMCC PROCESSING TIME</b>	<b>Support Data Block</b>	
	The time that the USMCC processed this alert. Is usually very close to the message transmission time provided in line 1 of the message header. If the transmission time is more than 1 minute later that the USMCC Processing Time, then the message was probably retransmitted by USMCC personnel.	
<b>VEHICLE TYPE</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The type of the vehicle on which the PLB is carried.	
<b>VESSEL NAME</b>	<b>Beacon Registration Data Block</b>	<b>Beacon Registration</b>
	The name of the vessel on which the EPIRB is carried.	
<b>VISIBILITY</b>	<b>Support Data Block</b>	<b>Alert Query Report</b> <b>Beacon-LUT Mutual Visibility Schedule</b>
	The mutual visibility between the satellite, LUT and beacon position. Satellite passes with a maximum elevation angle of at least 10 degrees to the beacon position are deemed “HIGH” visibility passes. When a high visibility pass over a reported beacon location fails to detect a beacon, the pass is counted as missed and a Missed Pass message is sent to the RCC. Satellite passes with a maximum elevation angle between 5 and 10 degrees to the beacon position are deemed “LOW” visibility passes. For “LOW” visibility passes, no missed pass is counted and no Missed Pass message is sent. Satellite passes with a maximum elevation angle less than 5 degrees are not listed as predicted passes.	

Term	Alert Message Section	Support Message
	Definition	
<b>WEB</b>	<b>Beacon Registration Data Block</b>  Web address point of contact for beacon registry for non-US beacon. The web address for the C/S International Beacon Registration Database (IBRD) is <a href="http://www.registration.com">www.registration.com</a> .	
<b>WEST BOUNDARY</b>	<b>Alert Query Report</b>  The western boundary of an alert query based on a search rectangle.	

**Annex 2 - US LUTs**

<b>Name on RCC message</b>	<b>Description</b>	<b>Location</b>
AK1	Alaska LEOLUT 1	Fairbanks, Alaska
AK2	Alaska LEOLUT 2	Fairbanks, Alaska
CA1	California LEOLUT 1	Vandenberg AFB, California
CA2	California LEOLUT 2	Vandenberg AFB, California
FL1	Florida LEOLUT 1	Miami, Florida
FL2	Florida LEOLUT 2	Miami, Florida
HI1	Hawaii LEOLUT 1	Wahiawai, Hawaii
HI2	Hawaii LEOLUT 2	Wahiawai, Hawaii
GSE	GEOLUT Support Equipment	Suitland, Maryland
GU1	Guam LEOLUT 1	Andersen AFB, Guam
GU2	Guam LEOLUT 2	Andersen AFB, Guam
LSE	LEOLUT Support Equipment	Suitland, Maryland
MD1	Maryland GEOLUT 1	Suitland, Maryland
MD2	Maryland GEOLUT 2	Suitland, Maryland

### Annex 3 – Foreign MCCs

Name on RCC message	Country
ALMCC	Algeria
AEMCC	United Arab Emirates
ARMCC	Argentina
ASMCC	South Africa
AUMCC	Australia
BRMCC	Brazil
CHMCC	Chile
CMC	Russia
CMCC	Canada
CNMCC	China
FMCC	France
GRMCC	Greece
HKMCC	Hong Kong
IDMCC	Indonesia
INMCC	India
ITMCC	Italy
JAMCC	Japan
KOMCC	Korea
NIMCC	Nigeria
NMCC	Norway
PAMCC	Pakistan
PEMCC	Peru
SAMCC	Saudi Arabia
SIMCC	Singapore
SPMCC	Spain
TAMCC	Taiwan
THMCC	Thailand
TRMCC	Turkey
UKMCC	United Kingdom
VNMCC	Vietnam

**Annex 4**

**1. Alert Message Sent to US RCC by the CMCC**

1. DISTRESS COSPAS-SARSAT INITIAL ALERT  
2. MSG NO: 00061 REF No: 2DD7A0A73F81FE0  
3. DETECTED AT: 15 FEB 12 1936 28 UTC BY SARSAT S11  
4. DETECTION FREQUENCY: 406.0368 MHz  
5. COUNTRY OF BEACON REGISTRATION: 366/ USA  
6. USER CLASS:  
NATIONAL LOCATION  
PLB - SERIAL NO: 213326  
7. EMERGENCY CODE: NIL  
8. POSITIONS:  
RESOLVED - NIL  
DOPPLER A - 52 52.0 N 160 39.3 W PROBABILITY 55 PERCENT  
DOPPLER B - 45 41.0 N 123 11.7 W PROBABILITY 45 PERCENT  
ENCODED - (DEFAULT)  
9. ENCODED POSITION PROVIDED BY: INTERNAL DEVICE  
10. NEXT PASS TIMES (UTC):  
RESOLVED - NIL  
DOPPLER A - 15 FEB 12 2048 UTC CHURCHILL LEOLUT  
DOPPLER B - 15 FEB 12 2048 UTC CHURCHILL LEOLUT  
ENCODED - NIL  
11. HEX ID: 2DD7A0A73F81FE0 HOMING SIGNAL 121.5 MHZ  
12. ACTIVATION TYPE: NIL  
13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO:  
14. OTHER ENCODED INFORMATION: NIL  
15. OPERATIONAL INFORMATION:  
THE A POSITION IS LIKELY TO BE AN IMAGE POSITION.  
LUT ID: EDMONTON LEOLUT  
16. REMARKS: NIL  
END OF MESSAGE

## 2. Missed Pass Message Sent to US RCC by the CMCC

1. DISTRESS COSPAS-SARSAT MISSED DETECTION ALERT  
2. MSG NO: 00010 REF No: 2DCC442FBAFFBFF  
3. DETECTED AT: 15 FEB 12 1852 16 UTC BY SARSAT S12  
4. DETECTION FREQUENCY: 406.0275 MHz  
5. COUNTRY OF BEACON REGISTRATION: 366/ USA  
6. USER CLASS:  
STANDARD LOCATION  
EPIRB - SERIAL NO: 0136 06109  
7. EMERGENCY CODE: NIL  
8. POSITIONS:  
RESOLVED - NIL  
DOPPLER A - 30 41.9 N 096 56.3 W PROBABILITY 57 PERCENT  
DOPPLER B - 35 35.8 N 074 50.6 W PROBABILITY 43 PERCENT  
ENCODED - (DEFAULT)  
9. ENCODED POSITION PROVIDED BY: INTERNAL DEVICE  
10. NEXT PASS TIMES (UTC):  
RESOLVED - NIL  
DOPPLER A - 15 FEB 12 2047 UTC EDMONTON LEOLUT  
DOPPLER B - 15 FEB 12 1959 UTC GOOSE BAY LEOLUT  
ENCODED - NIL  
11. HEX ID: 2DCC442FBAFFBFF HOMING SIGNAL 121.5 MHZ  
12. ACTIVATION TYPE: NIL  
13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO:  
14. OTHER ENCODED INFORMATION:  
MISSED BEACON DETECTION : 2DCC442FBAFFBFF  
CSTA CERTIFICATE NO: 0136  
15. OPERATIONAL INFORMATION:  
RELIABILITY OF DOPPLER - SUSPECT : WF > 2  
LUT ID: CHURCHILL LEOLUT  
16. REMARKS: NIL  
END OF MESSAGE

**Annex 5**  
**Beacon Registration Data Block Formats**

The format for registration data varies based on the beacon type. Sample registration information for an EPIRB, an ELT, and a PLB are presented below.

**ELT Beacon Registration Data Block Format**

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

OWNER: JOHNSON AIRLINE  
1235 AIRPORT AVENUE TEL 1: WORK 6141234567  
COLUMBUS OH TEL 2:  
43218 USA TEL 3:  
TEL 4:  
EMAIL:

CONTACTS: SAM SMITH  
TEL 1: WORK 8001234321 TEL 1:  
TEL 2: TEL 2:  
TEL 3: TEL 3:  
TEL 4: TEL 4:

LEASING AGENT:

AIRCRAFT MANUFACTURER/MODEL: CESSNA CITATION / 750 CITATION X  
AIRCRAFT USE: (NO DATA PROVIDED) COLOR: WHITE/MAROON STRIPES  
RADIO EQP: VHF,HF CAPACITY: 10  
TAIL NUMBER: N999AB

FIXED SURVIVAL CRAFT DESCRIPTION:

DEPLOYABLE SURVIVAL CRAFT DESCRIPTION:

AIRPORT PRIMARY SRR: AFRCC SECONDARY SRR:  
AIRPORT: KCMH COLUMBUS OH

MANUFACTURER: IESM MODEL NUMBER: 406

DATE FIRST REGISTERED: 11 APR 2003 DATE DECAL EXPIRES: 27 AUG 2011  
DATE LAST UPDATED: 27 AUG 2009

REMARKS:

SPECIAL STATUS: SPECIAL STATUS DATE:  
SPECIAL STATUS INFO:

## EPIRB Beacon Registration Data Block Format

\*\*\*\*\* USMCC REGISTRATION DATABASE INFORMATION \*\*\*\*\*

OWNER: GULF SHRIMP PRODUCERS INC  
1234 SECOND AVENUE  
TARPON SPRINGS FL  
34689 USA  
EMAIL: GULFSHRIMP@AOL.COM

TEL 1: HOME 813-934-1111  
TEL 2: WORK 813-934-5678  
TEL 3: CELL 813-934-1234  
TEL 4: WORK 813-934-4444

CONTACTS: ROY JONES  
TEL 1: HOME 813-937-3333  
TEL 2: WORK 813-934-2222  
TEL 3: CELL 813-934-1111  
TEL 4:

NANCY JONES  
TEL 1: HOME 904-827-1234  
TEL 2: CELL 904-829-9999  
TEL 3:  
TEL 4:

VESSEL NAME: PROUD MARY  
TYPE: POWER TRAWLER  
COLOR: BLUE  
RADIO CALL SIGN: WAQ1234  
RADIO EQP: VHF-FM, INMARSAT  
CELLULAR NUMBER:

LENGTH OVERALL (FT): 75  
CAPACITY: 9  
REGISTRATION NO: 654321  
INMARSAT NUMBER:

NUMBER OF LIFE BOATS: 0  
NUMBER OF LIFE RAFTS: 1

HOME PORT PRIMARY SRR: LANTAREA  
HOME PORT: RICK'S MARINA

SECONDARY SRR:  
SHALLOTTE NC

MANUFACTURER: LITTON  
ACTIVATION TYPE: CAT1 (MANUAL AND AUTOMATIC)

MODEL NUMBER: 948-01

BEACON CONTAINS SVDR: NO

DATE FIRST REGISTERED: 26 JUN 1999  
DATE LAST UPDATED: 11 JAN 2009

DATE DECAL EXPIRES: 31 DEC 2010

REMARKS:

SPECIAL STATUS:  
SPECIAL STATUS INFO:

SPECIAL STATUS DATE:

## PLB Beacon Registration Data Block Format

\*\*\*\*\* USMCC REGISTRATION DATABASE INFORMATION \*\*\*\*\*

OWNER: HAWKEYE PIERCE  
RFD 1 BOX 1111  
CRABAPPLE COVE ME  
04682 USA  
TEL 1: CELL 2342222222  
TEL 2: HOME 2071111111  
TEL 3: WORK 2223333333  
TEL 4:  
EMAIL: PIERCE.HAWKEYE@AOL.COM

CONTACTS: MILDRED PIERCE  
TEL 1: HOME 2071234567  
TEL 2: WORK 2078765432  
TEL 3: CELL 3014444444  
TEL 4: CELL 2121111111  
BILLY BRAY JR  
TEL 1: HOME 2071234567  
TEL 2: CELL 3015555555  
TEL 3:  
TEL 4:

RADIO EQP: VHF-FM

VEHICLE TYPE: LAND VEHICLE  
SPECIFIC USAGE: HUNTING

MANUFACTURER: MPR/ALDEN MODEL NUMBER: 406S1010

DATE FIRST REGISTERED: 13 NOV 1999 DATE DECAL EXPIRES: 02 OCT 2009  
DATE LAST UPDATED: 02 OCT 2007

REMARKS:

SPECIAL STATUS: SPECIAL STATUS DATE:  
SPECIAL STATUS INFO:

## Annex 6 Incident History Feedback Request

\*\*\*\*\* INCIDENT FEEDBACK REPORT FOR 406 ALERT. SEND REPORT TO USMCC: \*\*\*\*\*  
\*\*\* 301-817-4568 (FAX), USMCC@NOAA.GOV (EMAIL) OR KZDCZSZA (AFTN) \*\*\*

BEACON ID: DB476 E2E28 D35C1 SITE ID: 46222 CLOSE TIME: 17 1526 JAN

ACTUAL LOCATION LAT: LONG:

INCIDENT OUTCOME:  
DISTRESS / NON-DISTRESS / UNDETERMINED

INCIDENT TYPE:  
AVIATION / MARITIME / TERRESTRIAL / OTHER / UNKNOWN

BEACON REGISTRATION USED TO RESOLVE INCIDENT:  
PRIMARY MEANS / CONTRIBUTED / NOT USED

BEACON REGISTRATION ACCURACY -  
OWNER INFORMATION: ACCURATE / INACCURATE / UNVERIFIED

EMERGENCY CONTACT INFO: ACCURATE / INACCURATE / UNVERIFIED

VESSEL/AIRCRAFT USAGE INFO: ACCURATE / INACCURATE / UNVERIFIED

SARSAT DATA USED TO RESOLVE INCIDENT:  
YES ONLY NOTIFICATION / YES FIRST NOTIFICATION / YES ASSISTED / NO

NUMBER RESCUED: NUMBER IN DISTRESS:

REASON ACTIVATED (SELECT ONE):  
DISTRESS: AUTOMATIC / MANUAL / ACTIVATION METHOD UNKNOWN

FALSE ALERT (SEE CATEGORIES BELOW) -  
BEACON MISHANDLING: INSTALLATION / TESTING-MAINTENANCE / USAGE / DISPOSAL

BEACON MALFUNCTION: SWITCH / WATER INTRUSION / SELF-TEST / ELECTRONICS

BEACON MOUNTING: BRACKET FAILURE / HYDROSTATIC RELEASE / MAGNET

OTHER FALSE ALERT: ENVIRONMENTAL CONDITIONS / REASON UNKNOWN

UNKNOWN-INCONCLUSIVE

ACTIVATION COMMENT:

**Annex 7**  
**SRR Names and Message Destination Codes for US RCCs and SPOCs**

<b>US RCC</b>	<b>SRR Name</b>	<b>Destination Code</b>
US Air Force RCC	AFRCC	366S
Alaska RCC	AKRCC	366A
US Coast Guard District 1	CGD01	366B
US Coast Guard District 5	CGD05	366N
US Coast Guard District 7	CGD07	366M
US Coast Guard District 8	CGD08	366O
US Coast Guard District 9	CGD09	366C
US Coast Guard District 13	CGD13	366E
US Coast Guard District 14	CGD14	366H
US Coast Guard District 17	CGD17	366J
US Coast Guard Atlantic Area	LANTAREA	CGOP
US Coast Guard Sector Guam	MARSEC	366G
US Coast Guard Pacific Area	PACAREA	366F
US Coast Guard Sector San Juan	SANJN	366U
<b>US SPOC</b>		
Bermuda	BERMUDASP	3100
COCESNA (Central American Corporation for Navigation Area Services)	COCESNA	CNAM
Dominican Republic	DOMREPSP	3270
Ecuador	ECSP	7350
Guyana	GUYSP	7500
Mexico	MEXISP	3450
Mexico Telecommunications	MEXTEL	3451
Netherlands Antilles	NANTSP	3060
Panama	PANSP	3520
Venezuela	VZMCC	7750

**Annex 8**

**Sample alert message for a US Naval Submarine Program Beacon (SEPIRB)**

Alert messages sent for **US Naval Submarine Program Beacons (SEPIRBs)** contain a **special header (starting with "SUBMARINE DISTRESS ALERT")**, as shown in the following sample message. Missed Pass messages for SEPIRBs do not contain this special header.

/31419 31418/3660/12 340 2335  
/163/NCSP

SUBMARINE DISTRESS ALERT MESSAGE - IMMEDIATE ACTION REQUIRED  
U. S. SUBMARINE DISTRESS ALERT MESSAGE FROM NOAA MCC FOLLOWS

THIS ALERT SENT TO NAVSUBCMD, PACAREA, LANTAREA IN ADDITION  
TO THE DESTINATIONS LISTED IN SUPPORTING INFORMATION BELOW

\*\*\*\*\* 406 BEACON POSITION CONFLICT (AMBIGUITY UNRESOLVED) \*\*\*\*\*

BEACON ID: ADD38 0143F BFFFF SITE ID: 18496

\*\*\*\*\* POSITION DIFFERENCES OF MORE THAN 50 KMS EXIST FOR THIS BEACON \*\*\*\*\*

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
51	A	39 42. 4N	137 56. 6E	05 2236 DEC	S12	PEMcc	JAMCC	
49	B	32 27. 1N	113 52. 4E	05 2236 DEC	S12	PEMcc	CNMCC	
N/A	E	41 31. 97N	071 18. 67W	05 2236 DEC	S12	PEMcc	AFRCC	/CGD01

DETECTION FREQUENCY: 406.0245 MHZ  
HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

\*\*\*\*\* BEACON ID CONTAINS THE FOLLOWING ENCODED INFORMATION \*\*\*\*\*

COUNTRY : USA	BEACON TYPE: NATIONAL USER
MID CODE : 366	CRAFT ID : SPECIFIC BEACON:
MANUFACTURER:	MODEL :
SERIAL NUM : N/A	HOMING : none
POSITION DEVICE: INTERNAL	POSITION RESOLUTION: 2 SECONDS

PROGRAM: NAVAL SUBMARINE	PROGRAM BLOCK REGISTRATION ID: ADD380000000000
SEPIRB ID : 40	
MINUTES FOR GPS LOC: 2	HOURS ACTIVE: 0

\*\*\*\*\* BEACON REGISTRATION DATABASE INFORMATION \*\*\*\*\*

OWNER: US NAVY - SEPIRB	
610 DOWELL STREET	TEL 1: OTHR (no data provided)
KEYPORT	TEL 2:
98345 USA	TEL 3:
	TEL 4:
EMAIL:	

CONTACTS: CONSUBLANT CMMNCTNS	COMSUBPAC CMMNCTNS
TEL 1: WORK 7578361078	TEL 1: WORK 8084735598
TEL 2:	TEL 2:
TEL 3:	TEL 3:

TEL 4:

TEL 4:

RADIO EQP:

VEHICLE TYPE: SUBMARINE  
SPECIFIC USAGE: SUBMARINE

MANUFACTURER: MCMURDO (USCG)

MODEL NUMBER: NO DATA PROVIDED

DATE FIRST REGISTERED: 18 JUL 2002  
DATE LAST UPDATED: 28 OCT 2003

DATE REGISTRATION EXPIRES: 28 OCT 2005

REMARKS: THIS IS PART OF A GROUP REGISTRATION Earlier system data as signed the SRR for this beacon as: 366E

SPECIAL STATUS:  
SPECIAL STATUS INFO:

SPECIAL STATUS DATE:

\*\*\*\*\* SUPPORTING INFORMATION \*\*\*\*\*

USMCC PROCESSING TIME: 05 2306 DEC

THIS ALERT MESSAGE IS BEING SENT TO:  
NAVSUBLANT, NAVSUBPAC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:  
NAVSUBLANT, NAVSUBPAC

PREVIOUS PASS INFORMATION: N/A

PROB	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	SOURCE	SRR	/BUFFER
51	A	39 42. 4N	137 56. 6E	05 2236 DEC	S12	PEMcc	JAMCC	
49	B	32 27. 1N	113 52. 4E	05 2236 DEC	S12	PEMcc	CNMCC	

NEXT TIME SIGNAL SHOULD BE DETECTED: N/A

QQQQ  
/LASSIT  
/ENDMSG

**Annex 9**  
**Nationally Defined Alert Messages Designed for Automated Processing**

These messages contain 9 lines, as described in table Annex 9.1 below. Field separators are “/” or “ ” (blank), as shown in the Character Representation for each data line. Table Annex 9.2 describes the Message Type (per Line 2, Field 1 in table Annex 9.1)

Line	Field	Field Description	Character Representation
1		<b>Message Header (Line 1).</b> Matches line 1 of Message Header as described in section 3.1.	/nnnnn nnnnn/3660/yy jjj hhmss
1	1	Current Message Number for Destination	nnnnn
1	2	Original Message Number - 0 if first attempt	nnnnn
1	3	Source (USMCC) Id	3660
1	4	Message Transmission Time: Year, Julian Day, Hour, Minute, Second	yy jjj hhmss (spaces separate Year from Julian Day and Julian Day from time)
2		<b>Message Header (Line 2)</b>	/nna/aaa
2	1	Message Type Id	nna (nnn=SIT number per Table 2.1. “a” is the message sub-type per Annex 9- Table 2 below.)
2	2	Destination Id	aaa
3		<b>Identification Data (Line 3)</b>	/xxxxxxxxxxxxxxxx/nnnnnn/nnnnn/a/a (length 21)/aaaaaaaaaaaaaaaaaaaaa
3	1	Beacon Id. See section 3.2.1.1.	xxxxxxxxxxxx
3	2	HHR ID (only set for CSEL beacons, "NA " if non-CSEL). See section 3.3.2.2.	nnnnnn
3	3	USMCC Alert Site Id. Last 5 digits match Alert Site Id per section 3.2.1.2.	nnnnn
3	4	Beacon Id is reliable ("Y"=Yes, "N"=no. If "N", neither HHR ID or Special Program Name are set). See section 2.1.4.	a
3	5	Special Program Name (per USMCC processing), "NA" (space filled to length 21) if no information. See section 3.3.2.	aaaaaaaaaaaaaaaaaaaaa (length 21)
3	6	Beacon Type. "Unknown" if "Beacon Id is Reliable" = "N". See Table 3.3.2.	aaaaaaaaaaaaaaaaaaaaa (length 24)
4		<b>New Alert Data (Line 4)</b>	/yy jjj hhmss/ann/nnn
4	1	Detection Time	yy jjj hhmss
4	2	Associated Satellite. See section 3.2.3.6.	ann
4	3	Associated LUT / Ground Station. The first	nnn

		three digits correspond to the code for the associated country.	
5		<b>Encoded Position (Line 5)</b>	<b>/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmss/a</b>
5	1	Encoded Position Latitude - ("szz.zzzz" = default when no data is available)	\$nn.nnnn
5	2	Encoded Position Longitude - ("szzz.zzzz" = default when no data is available)	\$nnn.nnnn
5	3	Encoded Position Uncertainty Estimate (9999.99 = no information)	9999.99
5	4	Encoded Position Detection Time (same as Time on Line 4; "zz zzz zzzzzz" = no data is available)	yy jjj hhmss
5	5	Encoded Position Quality Indicator ("R" = refined, "C"= coarse, "G" = gross, "Z"= no data is available). See section 3.2.3.3.a.	a
6		<b>Doppler "A" Position (Line 6)</b>	<b>/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmss/nn</b>
6	1	Doppler "A" Position Latitude - ("szz.zzzz" = default when no data is available)	\$nn.nnnn
6	2	Doppler "A" Position Longitude - ("szzz.zzzz" = default when no data is available)	\$nnn.nnnn
6	3	Doppler "A" Position Uncertainty Estimate (9999.99= no information)	9999.99
6	4	Doppler "A" Position Detection Time (same as Time on Line 4; "zz zzz zzzzzz" = no data is available)	yy jjj hhmss
6	5	Doppler "A" Position Probability (50 - 99; "zz" = no data is available)	nn
7		<b>Doppler "B" Position (Line 7)</b>	<b>/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmss/nn</b>
7	1	Doppler "B" Position Latitude - ("szz.zzzz" = default when no data is available)	\$nn.nnnn
7	2	Doppler "B" Position Longitude - ("szzz.zzzz" = default when no data is available)	\$nnn.nnnn
7	3	Doppler "B" Position Uncertainty Estimate (9999.99 = no information)	9999.99
7	4	Doppler "B" Position Detection Time (same as Time on Line 4; "zz zzz zzzzzz" = no data is available)	yy jjj hhmss

7	5	Doppler "B" Position Probability (01 - 50; "zz" = no data is available)	nn
8		<b>Resolved Position (Line 8)</b>	<b>/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmss</b>
8	1	Resolved Position Latitude - ("szz.zzzz" = default when no data is available)	\$nn.nnnn
8	2	Resolved Position Longitude - ("szzz.zzzz" = default when no data is available)	\$nnn.nnnn
8	3	Resolved Position Uncertainty Estimate (9999.99= no information)	9999.99
8	4	Resolved Position Detection Time (same as Time on Line 4; "zz zzz zzzzzz" = no data is available)	yy jjj hhmss
9		<b>End of message identifier (Line 9)</b>	<b>/ENDMSG</b>
		<b>Character</b>	<b>Definition</b>
		n	Numeric character, 0-9
		a	Alphanumeric character, Aa-Zz, 0-9
		\$	"+" or "-"
		x	Hexadecimal character, A-F, 0-9
		yy	Year, 00 - 99
		jjj	Julian day, 001 - 366
		hh	Hour, 00 - 23
		mm	Minute, 00 - 59
		ss	Seconds, 00 - 59
		szz.zzzz	Default for latitude when data is not available
			Default for longitude when data is not available

**Table Annex 9.1. Field Descriptions for  
Nationally Defined Alert Messages Designed for Automated Processing**

<b>Message (SIT) Number</b>	<b>Message Number Subtype</b>	<b>Alert Message Description</b>
160	P	Unlocated First Alert
161	E	First Alert Doppler Position, ambiguity unresolved
161	P	First Alert Encoded Position, ambiguity unresolved
162	E	Doppler Position Update, ambiguity unresolved
162	L	Doppler Position Match, ambiguity unresolved
163	E	Doppler Position Conflict, ambiguity unresolved
163	P	Encoded Position Conflict, ambiguity unresolved, no Doppler Position
164	E	Ambiguity Resolution with Doppler Position
164	P	Ambiguity Resolution with Encoded Position, no Doppler Position
165	A	Doppler Position Conflict, ambiguity resolved
165	F	Encoded Position Conflict, ambiguity resolved, no Doppler Position
165	E	Doppler Position Update to Composite (resolved) Position
165	P	Encoded Update to Composite (resolved) Position, no Doppler Position
167	P	Updated Unlocated Alert
168	E	Notification of Country of Registration (NOCR), Doppler Position
168	P	NOCR, Encoded Position, no Doppler Position
169	F	Encoded Position Update, ambiguity resolved, no Doppler Position
169	E	Encoded Position Update, ambiguity unresolved, Doppler Position
169	P	Encoded Position Update, ambiguity unresolved, no Doppler Position
169	V	Encoded Position Update, ambiguity resolved, Doppler Position

**Table Annex 9.2. Message Type Descriptions for  
Nationally Defined Alert Messages Designed for Automated Processing**

## Sample Nationally Defined Alert Messages Designed for Automated Processing

/00030 00021/3660/13 345 194431  
/164E/XXXX  
/2DD79DB3BF81FE0/NA /143801/Y/USAF\_648Aeronautical\_/PLB SERIAL (NATIONAL)  
/13 344 192038/S12/3673  
/+43.0456/-115.8678/9999.99/13 344 192038/R  
/+43.0431/-115.8753/9999.99/13 344 192038/64  
/+51.5094/-071.4631/9999.99/13 344 192038/36  
/+43.0453/-115.8688/9999.99/13 344 192038  
/ENDMSG

**Annex 10**  
**Guidance on Providing Incident Feedback to the USMCC**

When an alert site closes, the USMCC will send a Site Closure (SIT 166) message to each USA SPOC that was an active message destination for the alert site at the time of closure. This Site Closure message includes an Incident Feedback form. SPOCs are requested to complete this Incident Feedback form, either by writing on the form (if they received a paper copy of the message) or in a text document (if they received the message electronically). The completed form should be sent to the USMCC by fax (301 817-4568), by email ([USMCC@noaa.gov](mailto:USMCC@noaa.gov)) or AFTN (KZDCZSZA), within 12 hours of receipt of the Site Closure message. Note that the form must be available in a text document in order to be provided by AFTN.

A description of the data fields on the Incident Feedback form follows. Note that all times should be provided in UTC.

<b>Field</b>	<b>Description</b>
<b>BEACON ID:</b> (Provided by USMCC)	The beacon Id for which feedback is to be provided.
<b>SITE ID:</b> (Provided by USMCC)	Alert Site number for which feedback is to be provided. If an alert site closes for a beacon Id and a new alert site is later opened for the same beacon Id, then the new alert site will have a different (unique) number.
<b>CLOSE TIME:</b> (Provided by USMCC)	Time that the USMCC alert site closed, in UTC. Format is DD HHMM MON, where DD is the day of the month, HH is hours of day, MM is minutes of hour, and MON is the month.
<b>ACTUAL LOCATION</b> <b>LAT:        LONG:</b>	True location (LATitude, LONGitude) of the beacon, estimated independently of USMCC alert data. Acceptable formats are provided below. <ul style="list-style-type: none"> <li>• LAT: DD MM-SSH, DD MM.mH or sDD.ddd,</li> <li>• LONG: DDD MM-SSH, DDD MM.mH, sDDD.ddd</li> </ul> where DD and DDD are degrees, MM is minutes, SS is seconds, s="+" or "-," ddd is fraction of degrees, m is fraction of minutes and H is hemisphere (E=east, W=west, N=north, S=south).
<b>INCIDENT OUTCOME:</b>	Select one of the following: <ul style="list-style-type: none"> <li>• DISTRESS,</li> <li>• NON-DISTRESS or</li> <li>• UNDETERMINED.</li> </ul> The INCIDENT OUTCOME should be consistent with the REASON ACTIVATED (see below).
<b>INCIDENT TYPE:</b>	Select one of the following choices. <ul style="list-style-type: none"> <li>• AVIATION - beacon activated on an aircraft</li> <li>• MARITIME - beacon activated in a maritime area, not on an aircraft</li> <li>• TERRESTRIAL - beacon activated on land, not on an aircraft</li> <li>• OTHER - if selected, provide details in ACTIVATION COMMENT (see below).</li> <li>• UNKNOWN</li> </ul>
<b>BEACON REGISTRATION USED TO RESOLVE</b>	Indicates if 406 MHz beacon registration data helped resolve the incident. <ul style="list-style-type: none"> <li>• "PRIMARY MEANS" indicates that beacon registration data was the</li> </ul>

<b>INCIDENT:</b>	<p>primary means used to resolve the incident.</p> <ul style="list-style-type: none"> <li>• “CONTRIBUTED” indicates that beacon registration data contributed to incident resolution as a secondary means.</li> <li>• “NOT USED” indicates that beacon registration data was not available or did not help resolve the incident.</li> </ul>
<b>BEACON REGISTRATION ACCURACY</b>	<p>Only applicable if beacon registration was accessed. The beacon registration may have been provided with the alert message, or provided in another registration database (such as the C/S International Beacon Registration Database). Provide a separate answer (ACCURATE, INACCURATE OR UNVERIFIED) for each section below:</p> <ul style="list-style-type: none"> <li>• OWNER INFORMATION,</li> <li>• EMERGENCY CONTACT INFO, and</li> <li>• VESSEL/AIRCRAFT INFO.</li> </ul> <p>IF “NOT ACCURATE”, provide at least one registration field that was determined to be inaccurate. This information is used to improve the accuracy of beacon registration databases.</p>
<b>SARSAT DATA USED TO RESOLVE INCIDENT:</b>	<p>Select one of the following choices.</p> <ul style="list-style-type: none"> <li>• YES ONLY NOTIFICATION - the USMCC/SARSAT alert was used to resolve the incident, and no independent data was used to resolve the incident. Applicable if any beacon registration data was used due to receipt of a SARSAT alert.</li> <li>• YES FIRST NOTIFICATION - the USMCC/SARSAT alert data was used to resolve the incident, was the first data received that was used to resolve the incident, but other independent data was also used to resolve the incident. Applicable if any beacon registration data was used due to receipt of a SARSAT alert.</li> <li>• YES ASSISTED - the USMCC/SARSAT alert data helped to resolve the incident, but independent data was received earlier that was also used to resolve the incident. Applicable if any beacon registration data was used due to receipt of a SARSAT alert.</li> <li>• NO - the USMCC/SARSAT alert and/or beacon registration data was not used to resolve the incident; either independent data alone was used to resolve the incident or the INCIDENT OUTCOME is UNDETERMINED.</li> </ul>
<b>NUMBER RESCUED:</b>	<p>Number of people rescued in the incident (only set if INCIDENT OUTCOME is DISTRESS).</p>
<b>NUMBER IN DISTRESS:</b>	<p>Number of people who were in distress in the incident (only set if INCIDENT OUTCOME is DISTRESS). Does not include rescue personnel.</p>
<b>REASON ACTIVATED:</b>	<p>REASON ACTIVATED must be consistent with INCIDENT OUTCOME. The following descriptions are based on information provided in document C/S A.003.</p> <p>If INCIDENT OUTCOME is DISTRESS, select one of the following.</p> <ul style="list-style-type: none"> <li>• DISTRESS – AUTOMATIC (distress, automatic beacon activation)</li> <li>• DISTRESS – MANUAL (distress, manual beacon activation)</li> <li>• DISTRESS – ACTIVATION METHOD UNKNOWN</li> </ul> <p>If INCIDENT OUTCOME is NON-DISTRESS, select one of the following.</p> <p>BEACON MISHANDLING – INSTALLATION</p> <ul style="list-style-type: none"> <li>• Exposed to sea action or ship’s work, beacon activated by sea spray or wave, crewman bumped beacon, equipment struck beacon, beacon installed upside down, improperly placing beacon into</li> </ul>

	<p>bracket</p> <p>BEACON MISHANDLING – TESTING-MAINTENANCE</p> <ul style="list-style-type: none"> <li>• Failure to follow proper testing procedures, negligence, poor beacon testing instructions, aircraft in situ test, left beacon in “on” position too long. Inspection by authorized inspector: accidental activation during vessel equipment inspection.</li> <li>• Repair by owner (usually unauthorized) or authorized facility: causing damage to beacon, activation during battery change, changing of hydrostatic release while servicing beacon.</li> <li>• Improper removal from bracket: inspection, test, cleaning, or safe keeping without switching off.</li> <li>• Beacon shipped to / by retailer, owner, repair facility (in transit): shipped while armed, improperly packed, improperly marked, rough handling.</li> <li>• Maintenance of craft: mechanical, electronic, wash down, painting, winterization.</li> <li>• Beacon stored improperly: stored while armed.</li> </ul> <p>BEACON MISHANDLING – USAGE</p> <ul style="list-style-type: none"> <li>• Illegal activation: hoax, vandalism, theft.</li> <li>• Accidental activation.</li> <li>• Demonstration / test not coordinated with Cospas-Sarsat / SAR authorities: training, exercise, product demonstration using on position instead of test.</li> </ul> <p>BEACON MISHANDLING – DISPOSAL</p> <ul style="list-style-type: none"> <li>• Beacon sold with craft for scrap, discarded as trash, abandoned.</li> </ul> <p>BEACON MALFUNCTION – SWITCH</p> <ul style="list-style-type: none"> <li>• Faulty activation switch, i.e., gravity activated, magnetic, mercury, or crash.</li> <li>• Hard landing, excessive craft vibration.</li> </ul> <p>BEACON MALFUNCTION – WATER INTRUSION</p> <ul style="list-style-type: none"> <li>• Water leakage due to manufacturing defect, cracked casing, faulty seal.</li> </ul> <p>BEACON MALFUNCTION – SELF-TEST</p> <ul style="list-style-type: none"> <li>• Transmitted distress signal while in self-test mode.</li> </ul> <p>BEACON MALFUNCTION – ELECTRONICS</p> <ul style="list-style-type: none"> <li>• Electronics malfunction</li> <li>• Non-GPS electronics malfunction.</li> </ul> <p>BEACON MOUNTING – BRACKET FAILURE</p> <ul style="list-style-type: none"> <li>• Strap or bracket failure</li> </ul>
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	<ul style="list-style-type: none"> <li>• Strap failure, mounting bolts sheared, retainer pin broken, beacon fell out of bracket.</li> </ul> <p>BEACON MOUNTING – HYDROSTATIC RELEASE</p> <ul style="list-style-type: none"> <li>• Hydrostatic release failure.</li> </ul> <p>BEACON MOUNTING – MAGNET</p> <ul style="list-style-type: none"> <li>• Faulty mounting magnet for externally mounted ELT</li> <li>• Switch magnets not effective.</li> </ul> <p>OTHER FALSE ALERT – ENVIRONMENTAL CONDITIONS</p> <ul style="list-style-type: none"> <li>• Extreme weather conditions</li> <li>• Hurricane / cyclone conditions, vessel knocked down, aircraft overturned, heavy seas, ice build-up.</li> <li>• Beacon activated normally, non-distress situation</li> </ul> <p>OTHER FALSE ALERT – REASON UNKNOWN</p> <p>If INCIDENT OUTCOME is NON-DISTRESS, select the following:</p> <p>UNKNOWN-INCONCLUSIVE</p>
<b>ACTIVATION COMMENT:</b>	<p>Additional information about the incident. If INCIDENT OUTCOME is DISTRESS, provide details on what caused the distress, the SAR forces launched (what, where and when) and how USMCC/SARSAT alert data and other information that was used to assist the rescue. USMCC personnel will follow up with the RCC/SPOC as needed, to clarify information that the RCC/SPOC provided about DISTRESS cases.</p>