

DRAFT

**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 MEOSAR System**

**19 February 2016
Version 3.01**



Document History

Version	Revision	Date	Revised Pages	Comments
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 Annex1	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 166 message to “(YES – BY MCC OPERATOR”).
3	0	6 Aug 2015	various	Update manual for MEOSAR data.
3	.01	2 Nov 2015	Annex 10 Annex 11 3.2.3.9 3.5.2 Annex 7	Renumber Annex 10 to Annex 12. Add Annexes 10 and 11 to describe SarMaster format for alerts sent to Canadian RCCs. Describe fields affected by reporting the Canadian SRR per Canadian RCC. Add table 3.2.9 for Canadian RCC SRR buffers, adjust subsequent table numbers as needed.
2	.01	10 Nov 2015	3.3.2	Describe use of PROGRAM field to provide information about beacon tests.
2	.01	25 Nov 2015	4.9.2	Make confirmed and elemental position data consistent in sample message.
2	.01	27 Nov 2015	Annex 7	Reference Chile RCC for backup of the CHMCC.
2	.01	2 Dec 2015	4.7.4	Added sample message for alert site closure due to time alert site open. Renumber previous section 4.7.4 to 4.7.5.
2	.01	11 Dec 2015	4.3.2	Correct SIT number to 172 and distance threshold to 20 km.
2	.01	21 Dec 2015	3.3.2	Clarify that beacon test information is provided for tests that involve a US coded beacon or a beacon located in the US SRR.
2	.01	18 Feb 2016	3.2.7 2.1.1	Describe distribution of suspect MEOSAR alerts by destination type for the operational system. Note that if a suspect MEOSAR alert was the only alert distributed for an alert site, a new alert for the beacon is distributed as a Detection Update, if the alert is not distributed for another reason.

2	.01	18 Feb 2016	2.1.1	Indicate that refined encoded position is provided in an update message (SIT 179) when only coarse encoded position has been provided.
2	.01	19 Feb 2016	3.2.3.2 3.2.3	Describe the Expected Horizontal Error (EE). Add Table 3.2.4.b with sample EE.
2	.01	19 Feb 2016	3.2.3.10	Describe distribution procedures for alerts with DOA position.
2	.01	19 Feb 2016	1.2	Note that this document is a draft and subject to change as the LEOSAR/GEOSAR/MEOSAR capable USMCC is developed and tested in the first half of 2016.

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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 MEOSAR 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), medium earth orbiting (MEO) 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 United States Mission Control Center (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.

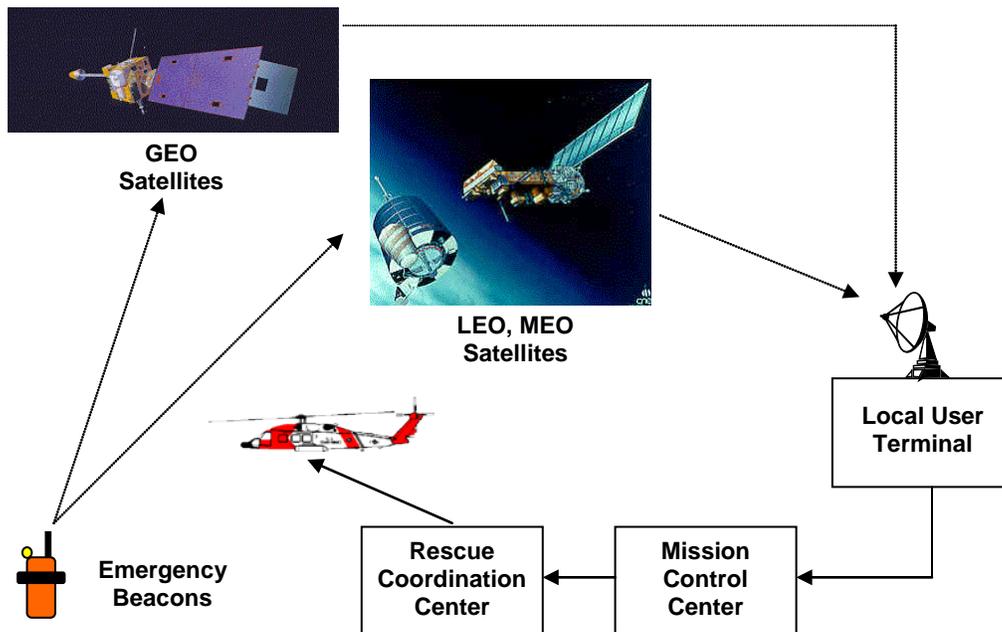


Figure 1.1: Overview of Cospas-Sarsat

1.2 Document Objective

This document describes messages transmitted to national RCCs and SPOCs for the pre-operational MEOSAR system (in which MEOSAR alerts are distributed without reference to operational LEOSAR/GEOSAR alerts) and for the operational LEOSAR/GEOSAR/MEOSAR (LGM) system (in which MEOSAR alerts are matched with LEOSAR and GEOSAR alerts). *This document is provided as a DRAFT, and is subject to change as the LGM capable USMCC is developed and tested in the first half of 2016.*

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

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(s);
- frequency of transmitter;
- number of points (beacon bursts);
- duration of Doppler curve (Doppler location only);
- probability of the “A” solution being correct (Doppler location only);
- error ellipse;
- confidence factor;
- expected horizontal error (DOA location only);
- 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;

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. The SIT 170 – 179 messages described below are comparable to the SIT 160 – 169 messages generated in the LEOSAR/GEOSAR system; for example, the SIT 170 message is comparable to the SIT 160 message.

SIT	Message Name / Comments
170	<p>406 BEACON UNLOCATED FIRST ALERT</p> <p>This message is sent when a 406 MHz beacon (with registration information or craft identification) is first detected but no encoded, DOA 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>
171	<p>406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED)</p> <p>This message is sent when a 406 MHz beacon is first detected with encoded, DOA or Doppler position information available, but position is not confirmed.</p>
172	<p>406 BEACON LOCATED FIRST ALERT UPDATE (POSITION UNCONFIRMED)</p> <p>This message is sent prior to position confirmation when:</p> <p>1) * 1) an alert with Doppler location was previously sent and updated information regarding the A/B probability is available for the same satellite pass indicating that the “A” side probability in the new solution is at least 30% higher than the “A” side probability in the old solution. 2) the new DOA position is “better quality” based on the Expected Horizontal Error 3) the data time of a new DOA position is more than 5 minutes after the newest data time of all previously sent DOA positions.</p>
172	<p>406 BEACON DOPPLER POSITION MATCH (POSITION UNCONFIRMED)</p> <p>This message is sent prior to position confirmation when an alert with Doppler location was previously sent and both Doppler locations for a new satellite pass match the Doppler locations for a previous pass.</p>
173	<p>406 BEACON POSITION CONFLICT ALERT (POSITION UNCONFIRMED)</p> <p>This message is sent, prior to position confirmation, when DOA, Doppler or encoded positions for a 406 MHz beacon differ by more than 20 kilometers** from another position for the beacon. This indicates that at least one of the positions is inaccurate.</p>
174	<p>406 BEACON NOTIFICATION OF POSITION CONFIRMATION</p> <p>This message is sent when a DOA or Doppler position is confirmed by independent DOA, Doppler or encoded position data that matches within 20 kilometers**. The position may be confirmed using position data from a previous message or by using Doppler and encoded positions (or DOA and encoded positions) in the new alert.</p>
175	<p>406 BEACON POSITION CONFIRMATION UPDATE</p> <p>This message is sent after position confirmation when the new Doppler or DOA position is within 20 kilometers** of the previous confirmed position.</p> <p>406 BEACON CONFIRMATION UPDATE WITH POSITION CONFLICT</p> <p>This message is sent after position confirmation when the new Doppler, DOA or encoded positions differ by more than 20 kilometers** from the previous confirmed position.</p>

SIT	Message Name / Comments
176*	<p>406 BEACON SITE STATUS REPORT</p> <p>This message is sent when a 406 MHz beacon is not detected for one hour or when a site closes due to age out or USMCC Operator action. Generally a 406 MHz site closes when 12 hours pass without a signal being detected. (The age out period is 12 hours for the pre-operational MEOSAR system, 2 hours once the MEOSAR system is operational.) A site also closes if it has been open for 72 hours. This message may be sent before or after position is confirmed. Will only be provided once the MEOSAR system is operational.</p>
177*	<p>406 BEACON DETECTION UPDATE</p> <p>This message is sent when a 406 MHz alert is received with the detect time at least one hour later than the most recent detect time sent to the RCC for the alert site, or when a new alert is received and a suspect MEOSAR alert was the only alert distributed for the alert site. However, 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 position confirmation it would not also be sent as a Detection Update). This message may be sent before or after position is confirmed. Will only be provided once the MEOSAR system is operational.</p>
178	<p>NOTIFICATION OF COUNTRY OF REGISTRATION</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 may be sent when Doppler and encoded position (or DOA and encoded position) from the same alert confirm position.</p>
179	<p>406 BEACON ENCODED POSITION UPDATE (POSITION UNCONFIRMED)</p> <p>406 BEACON ENCODED POSITION UPDATE (POSITION CONFIRMED)</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 20 kilometers**. It is also sent when a refined (more precise) encoded position is received after a coarse encoded position is received. It may be sent before or after position is confirmed. This message provides 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 DOA or 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 20 kilometers**, and new (i.e., non-redundant) DOA or Doppler position data is available, then the message type (SIT number) will be based on the new DOA or Doppler position data.</p>

Table 2.1: Description of Alert Messages (continued)

* - US national message only, this message is not specified by Cospas-Sarsat.

** - The 20 kilometer threshold is used for the MEOSAR operational system, per C/S specifications. For pre-operational MEOSAR alerts, distribution is based on a 10 kilometer threshold and MEOSAR data is processed independently from operational LEOSAR/GEOSAR data. Doppler data will only be distributed in SITs 170-179 once the MEOSAR system is operational.

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.

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

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.

The USMCC distributes alerts with unreliable 406 MHz beacon messages based only on:

- a) the MEOLUT computed Difference of Arrival (DOA) location or LEOLUT computed Doppler location (if available), or
- b) Data in the US Registration database (if registered, and DOA or Doppler location not available).

An alert message with an unreliable beacon message is not distributed if there is no DOA or Doppler location and the beacon Id is not registered in the US Registration database.

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 associated DOA or Doppler location is unreliable or that the 406 MHz alert was transmitted in a non-distress situation.

Alerts with an unreliable 406 MHz beacon message and a reported DOA or 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), 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.

Note: this section has not been updated for the LGM system.

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 generally provided based on mutual visibility of the satellite to Canadian LEO LUTs and the reported beacon location. The CMCC may also provide next pass times based on information received from the AUMCC for non-Canadian LEOLUTs (annotated on the message as “FOREIGN LUT”).

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:

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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) While the USMCC sends alerts for EPIRBs in the AFRCC SRR and within 50 km of a US Coast Guard SRR to the US Coast Guard RCC (not the AFRCC), the CMCC would send these alerts to the AFRCC and send to the buffer US Coast Guard RCC per normal CMCC distribution rules.

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 cannot remove one destination (RCC) from the distribution list for an alert site except by suppressing the message for 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.

Note: These messages are not currently defined for MEOSAR alerts.

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 LEOSAR 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.

Message Header (message number, transmit time, message type)
Support Message Data (E.g., narrative text, alert data, beacon registration data)

Message Trailer
(formal end of message)

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 RCCs and SPOCs that receive alert messages from the USMCC.

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 2015. The message type is a “406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED)“, otherwise known as a SIT 171.

<pre>/17127 00000/3660/15 270 0939 /171/366S</pre>
--

```
***** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED)
*****
```

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
/171/CGOP

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

***** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED)
*****
```

Table 3.1.3 Message Header Sample (SSAS beacon)

3.1.1 Distribution of MEOSAR Alert via the Operational USMCC for the Pre-Operational MEOSAR system

Due to limitations in the USMCC communications infrastructure, pre-operational MEOSAR alerts will be distributed from the pre-operational MEOSAR USMCC to U.S. Air Force and Coast Guard RCCs via the operational USMCC. Relative to MEOSAR alerts generated in the operational MEOSAR system, pre-operational MEOSAR alerts contain special header information, as shown in tables 3.1.4 and 3.1.5, respectively. Specifically, pre-operational MEOSAR alerts contain the following special header information:

- a) SIT number is set to “915” (line 2) instead of the SIT number for the MEOSAR alert;
- b) Additional data line 3 identifies the message number received by the operational USMCC from the MEOSAR USMCC (“USMCCMeo”) and the time the message was sent to the operational USMCC; and
- c) The SIT number for the MEOSAR alert is provided on the next line (line 4).

```
89666 00000/3660/15 186 1239
/170/366M

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

Table 3.1.4 Header for MEOSAR Alert –Operational MEOSAR System

```
89666 00000/3660/15 186 1239
/915/366M
/ MESSAGE# 74250 WAS SENT TO THE USMCC BY USMCCMeo AT 15 186 1238
170

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

Table 3.1.5 Header for MEOSAR Alert – Pre-Operational MEOSAR System

Any additional message title (e.g., for an unreliable beacon Id or a ship security alert) follows the special header information for the pre-operational MEOSAR alert.

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 176 messages.
- 2) Confirmed Position Summary: only present when position is confirmed.
- 3) New Alert or Missed Detection/Site Closure Information: always present. Provides the new alert or missed detection/site closure information that caused the message to be generated. Missed Detection/Site Closure information is specific to the SIT 176 message.

BEACON ID: XXXXXX XXXXXX XXXXXX SITE ID: NNNNN [SITE CLOSURE DATA]
[POSITION CONFIRMATION SUMMARY]
[NEW ALERT OR MISSED DETECTION INFORMATION]

Table 3.2.1 Alert Data Block Structure

Table 3.2.2 provides a sample alert data block where position is not confirmed.

BEACON ID: ADCD0 21DDC C2001 SITE ID: 65533
***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE SRR /BUFFER/BUFR_2
53 N/A A 35 25.2N 076 36.4W 27 0937 SEP S13 N/A CMcc AFRCC
47 N/A B 31 42.7N 058 40.0W 27 0937 SEP S13 N/A CMcc LANTAR

Table 3.2.2 Alert Data Block Sample (Position Not Confirmed)

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

BEACON ID: ADCD0 21DDC C0801 SITE ID: 73531
***** CONFIRMED POSITION *****
LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFR_2
38 45.5N 076 56.9W 001.5 HRS AFRCC
***** POSITION CONFIRMED FROM THE FOLLOWING NEW INFORMATION *****
PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE
N/A 780 D 38 43.2N 076 52.3W 17 0545 FEB MEO 004 FL1

Table 3.2.3 Alert Data Block Sample (Position Confirmed)

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 176 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 176 message.

3.2.2 Confirmed Position Summary

This information is only present when position is confirmed. See the sample in Table 3.2.3.

The confirmed LATITUDE (DD MM.T H) is provided in degrees (DD), minutes (MM), tenths of a minute (T) and hemisphere (N=north, S=south). The confirmed 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 confirmed position is a weighted average of multiple independent positions that may be calculated at different times, it may not reflect the current beacon position. The confirmed position is based only on DOA and Doppler positions, it does not include encoded position. The confirmed position only includes recent positions (computed within the last hour, normally), which makes it more likely that the confirmed position will maintain proximity to the position of a moving beacon. ***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 SRR is the primary Search and Rescue Region (SRR) of the first alert associated with the confirmed position. More information on the SRR and BUFFER(s) is provided below in section 3.2.8.

***** POSITION CONFIRMED TO THE FOLLOWING POSITION *****					
LATITUDE	LONGITUDE	DURATION	SRR	/BUFFER/BUFR_2	
38 45.5N	076 56.9W	001.5 HRS	AFRCC		

Table 3.2.3 Sample Confirmed Position Summary

3.2.3 Solution Data Line (New Alert Data)

A data solution line contains information about a DOA position, an “A” side Doppler solution, a “B” side Doppler solution, an encoded location or an unlocated alert, as described below. Solution data lines are provided for new solutions (per the table below) and for previous solutions (see the Previous Message Information section described below). Once position has been confirmed, solution data lines in the Previous Message Information are not provided for an image (incorrect) Doppler location when the associated Doppler location matches the confirmed position.

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****										
PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFR_2	
N/A	606	D	08 29.7N	135 58.9E	18 1302 FEB S11	N/A	VNMcc	MARSEC		

Table 3.2.4.a Sample Solution Data Line (New Solution, with field QF)

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****										
PROB	EE	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFR_2	
N/A	7	D	08 29.2N	135 58.9E	18 1302 FEB S11	N/A	VNMcc	MARSEC		

Table 3.2.4.b Sample Solution Data Line (New Solution, with field EE)

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 DOA Position Expected Horizontal Error (EE) / Quality Factor (QF)

Field expected horizontal error (EE) is only provided in the MEOSAR operational system. Field Quality Factor (QF) is provided in the pre-operational MEOSAR system, in place of message field EE. See samples in Tables 3.2.4.a and 3.2.4.b above.

Field EE provides the expected error (km) of DOA position expected within that amount with probability of 95%, with an uncertainty of +/- 2% (per C/S MEOLUT requirements). The field is set to “N/A” if there is no DOA position, “0” if the value is not available for the DOA position, and “999” if the value for the DOA position is greater than 998.

Field QF provides a quality factor for DOA position. This field is set to a value between 0 and 999, where a higher number indicates that the DOA position is more likely to accurate. The quality factor for some foreign MEOLUT alerts is set to values between 1 and 9, and should be ignored. This field is set to “N/A” if the solution data does not contain a DOA position; e.g., for Doppler alerts.

3.2.3.3 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 “D” (DOA) position, or the “E” position (position encoded in the 406 MHz beacon message). For solutions with no position, SOL is listed as “U” (Unlocated).

3.2.3.4 Latitude

The LATITUDE (DD MM.t H) of the Doppler and DOA 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 3.2.3.4.a.

3.2.3.4.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 that are not national use seldom contain encoded location and only provide encoded location information in PDF-2.

Beacon Protocol	Only PDF-1 usable (Value in “POSITION RESOLUTION” field)	PDF-1 and PDF-2 usable (Value in “POSITION RESOLUTION” field)
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 this table for hundredths of a minute (such as .01, .02 and .03) do not occur in the encoded location.

Encoded Seconds	Hundredths of a Minute
------------------------	-------------------------------

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)**

3.2.3.5 Longitude

The LONGITUDE (DDD MM.t H) of the Doppler and DOA 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.

3.2.3.6 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 the MEOSAR alerts, the DETECT TIME is time that a satellite first detected the beacon for the alert. 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.

3.2.3.7 Satellite (SAT) and Number of Satellites (NUM)

The SATellite field provides information about the satellite(s) that detected the beacon and contains three characters. For MEOSAR alerts, this field is set to “MEO” because MEOSAR alerts are normally generated from detections from multiple satellites.

For LEOSAR and GEOSAR alerts, 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.

Prefix	Satellite Type
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 LEOSAR/GEOSAR Satellite Type Description

For MEOSAR alerts, field NUM is set to the number of satellites for which data was used to generate the alert. A DOA location computed with data from a greater number of satellites is usually more accurate; also see the expected horizontal error (EE) and quality factor (QF). The number of time/frequency measurements (packets) used to compute a DOA location may exceed NUM when multiple beacon bursts are used, since multiple bursts may be received from the same satellite. The field value is “N/A” for LEOSAR and GEOSAR alerts, and for MEOSAR alerts when the number of satellites is not available.

3.2.3.8 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.

3.2.3.9 Search and Rescue Region (SRR) and BUFFER(s)

The SRR, BUFFER and BUFR_2 are only provided on the new data solution line prior to position confirmation. After position confirmation, these fields are provided in the Position Confirmation Summary, not on the new data solution line.

The SRR is the primary Search and Rescue Region (SRR) in which the alert is located. If two or more SRRs apply, then the BUFFER and BUFR_2 are the second and third SRRs in which the alert is located, respectively, which may be either buffers to the primary SRR or overlaps of the primary SRR. Field BUFR_2 is not set for pre-operational MEOSAR alerts.

If an alert is located in the primary or buffer SRR of additional SRRs, these SRRs will not be listed here, but the message will be routed to all SRRs (message destinations) as appropriate. SRR names (primary and alternate) are provided on the data solution line per Annex 7. If the SRR name per Annex 7 exceeds 6 characters, then the value on the data solution line is limited to 6 characters. For alerts located in the Canadian SRR, the SRR name for the associated Canadian RCC is provided. When the CMCC is operational, the USMCC sends all alerts located in the Canadian SRR to the CMCC. During a backup of the CMCC, the USMCC sends alerts located in the Canadian SRR to the associated Canadian RCC. Annex 10 described the SARMaster format used for messages sent by the USMCC to Canadian RCCs.

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. The USMCC assigns a buffer SRR to Canadian RCCs per the following table.

Primary SRR	Buffer SRR	Buffer Distance (km)
Halifax	Quebec City	25
Trenton	Quebec City	25
Trenton	Halifax	50
Trenton	Victoria	50
Halifax	Trenton	50
Victoria	Trenton	50

Table 3.2.8 SRR Buffers Between Canadian RCCs

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 US Coast Guard SRR, then the US Coast Guard SRR is listed as the primary SRR and the AFRCC SRR is removed from the SRR list for that location.

The USMCC will only distribute pre-operational MEOSAR alerts to US RCCs and a limited number of MCCs, not to US special programs, US SPOCs or MCCs not participating in the C/S MEOSAR Demonstration and Evaluation (D & E). The distribution of MEOSAR alerts to other MCCs is intended for D&E purposes. Pre-operational MEOSAR alert messages contain the names for all intended destinations (as if the MEOSAR system were operational) regardless of whether the alert message is actually transmitted to each destination.

3.2.3.9.1 Alert Data Distribution Procedures

The SRR and BUFFER fields are set based on reported position and MCC 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) and PacArea. 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).
In addition, unlocated alerts are distributed for unreliable beacon Ids in the RGDB as if the beacon Id was US coded.
- d) For US unregistered beacons with a craft Id (i.e., with a 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 that are not part of a Special Program, 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”), the following table lists the country/region codes for which beacon registration is maintained in the US Beacon Registration Database.

Code	Country or Region Name
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 3.2.9 US Country and Region Codes

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

1) Due to space limitations on the RCC message, only three 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(s)”. Note that destinations that receive an alert message based on the USMCC “echo” capability are not identified in the Supporting Information section.

2) DOA, Doppler or encoded location are 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. The Message Header section of the RCC message indicates if the beacon type is “Ship Security”. Alerts for ship security beacons normally are only sent to the Competent Authority. As a 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. The Beacon Decode section of the RCC message indicates if a beacon is part of a special program.

4) Notification of Country of Registration (NOCR) alerts are 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 (178) 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 position is confirmed, regardless of location. This allows message destinations to coordinate a SAR response, as needed.
- 6) After position is confirmed, the destination (US RCC or SPOC) in whose area the confirmed position lies will normally receive subsequent alerts for the alert site, regardless of the location of subsequent alerts. However, alerts for US Special Program beacons may be sent to a designated destination regardless of alert location (see item 3 above).
- 7) When the USMCC Controller manually resends an alert message to another RCC due to a request by the RCC, the SRR on the resent 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 the Home Port or Airport in the RGDB.

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

3.2.3.10 Alert Data Distribution Procedures for DOA Position

A DOA (Difference of Arrival) position is computed by a MEOLUT using differences in Time of Arrival (TOA) and/or Frequency of Arrival (FOA) data from multiple MEOSAR satellites. A new alert with DOA location distributed when DOA location is first received. A subsequent (new) alert with DOA location is distributed when one the following conditions is met:

- 1) The new DOA location has improved an expected (Horizontal) error:
 - Less than 150 nm (277.8 km) and
 - At least 2 nm (3.7 km) less than lowest previously sent DOA expected error and
 - At least 50% less than lowest previously sent DOA expected error.
- 2) The new DOA location enables position confirmation. For 2 DOA positions, position confirmation requires:
 - Each DOA alert to include data from one satellite not included on the other alert or
 - At least 30 minute time separation for the two DOA alerts.
 - Position can also be confirmed by DOA position, with Doppler or encoded position.
- 3) Before position confirmation, 5 minutes has expired since previous DOA alert.
- 4) Before position confirmation, the new DOA position is a position conflict (vs. 20 km threshold)
- 5) After position confirmation, the new DOA position matches the confirmed position (vs. 20 km threshold) and 15 minutes has expired since the previous alert with DOA position (excluding position conflict alerts).
- 6) After position confirmation, the new DOA position is a position conflict and 10 minutes has expired since the previous DOA position conflict alert.

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 3.2.10. 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 3.2.11. In MEOSAR alerts, the value “406.1250” indicates that the frequency is not available. This field is not present on the Missed Detection (SIT 176) message.

```

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
PROB QF SOL  LATITUDE  LONGITUDE  DETECT TIME  SAT NUM  SOURCE  SRR  /BUFFER/BUFR_2
61  N/A  A   01 22.2N  103 59.9E  18 1302 FEB S10 N/A VNMcc SIMCC
39  N/A  B   08 29.5N  135 58.9E  18 1302 FEB S10 N/A VNMcc MARSEC

DETECTION FREQUENCY: 406.0281 MHZ
HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM

```

Table 3.2.10 Sample Solution Data with actual Detection Frequency and Information on Doppler Position Data Accuracy

```

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
PROB QF SOL  LATITUDE  LONGITUDE  DETECT TIME  SAT NUM  SOURCE  SRR  /BUFFER/BUFR_2
N/A  N/A  U   N/A           18 1237 JAN S12 N/A SPMcc AKRCC

DETECTION FREQUENCY: FREQUENCY IS UNRELIABLE

```

Table 3.2.11 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 position confirmation.

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 20 km to an independent DOA, Doppler or encoded position, regardless of image position determination.

```

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE SRR /BUFFER/BUFR_2
55 N/A A 08 29.5N 135 58.9E 15 1302 JAN S13 N/A ARMcc MARSEC
45 N/A B 01 22.2N 103 59.9E 15 1302 JAN S13 N/A 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

3.2.7 Suspect MEOSAR Alerts

To date, MEOLUTs have generated a significant number of “suspect” alerts; i.e., alerts generated based on a single burst detected by one satellite through one antenna, with no corroborating detections. A significant portion of suspect alerts (perhaps 80%) appear to be system generated anomalies.

A MEOSAR alert is identified as “Suspect” when the alert is based on a single satellite detection and no previous alert was generated for the alert site (beacon activation), per the sample in Table 3.2.13. In the pre-operational MEOSAR system only, a MEOSAR alert is also identified as “Suspect” the synchronization bits (1-24) of the 406 MHz beacon message (that precedes the beacon ID used by RCCs and MCCs) is not standard and the alert does not have DOA position, per the sample in Table 3.2.14.

In the pre-operational MEOSAR system, suspect alerts are distribution without condition. In the operational MEOSAR system, suspect alerts are distributed as follows:

Table 3.2.13: General Rules for the Distribution of Suspect MEOSAR Alerts

Destination Type	Distribute Alert?
LEOSAR/GEOSAR/MEOSAR capable MCC	Yes
LEOSAR/GEOSAR only capable MCC	No
SPOC	No
RCC – beacon registered*	Yes
RCC – beacon not registered	No

* That is, in the US RGDB, having vessel/aircraft Id encoded in beacon Id or in a US Special Program.

For a suspect alert with encoded position, the destination for the suspect alert with encoded position based on encoded location may differ from the NOCR destination. As a result, the “Alert Distribution Action” could be “Yes” for one destination and “No” for another destination. When this discrepancy occurs, the alert will be distributed to both destinations, so that all relevant destinations have information about the alert. For example, if a suspect alert for an unregistered US ELT has encoded position in the FMCC service area, then the alert will be sent to the LEOSAR/GEOSAR/MEOSAR capable (LGM) FMCC and to the RCC (AFRCC).

When a MEOSAR alert is identified as suspect, RCCs should proceed with caution since the beacon Id and/or associated encoded position may be unreliable.

The validity of suspect alerts can be substantiated by corroborating information, such as beacon registration data for the specific beacon Id, an encoded vessel or aircraft Id (per the Beacon Decode section below), correlation between the reported DETECTION FREQUENCY and detection frequency for the beacon model (associated with the encoded C/S Type Approval (CSTA) number provided in the Beacon Decode section) or another alert for the same beacon Id.

```

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFR_2
N/A  N/A  E   08 29.87N 135 58.93E 15 1302 JUL MEO 001 HI_MEO MARSEC

DETECTION FREQUENCY: 406.0375 MHZ
SUSPECT ALERT: SINGLE UNCORROBORATED DETECTION

```

Table 3.2.14 Sample Single Uncorroborated MEOSAR Detection

```

***** DETECTION TIME AND POSITIONS FOR THE BEACON *****
PROB QF SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFR_2
N/A  N/A  E   08 29.87N 135 58.93E 15 1307 JUL MEO 001 HI_MEO MARSEC

DETECTION FREQUENCY: 406.0375 MHZ
SUSPECT ALERT: NON-STANDARD BIT/FRAME SYNC

```

Table 3.2.15 Sample MEOSAR Detection with Non-Standard Beacon Message Synchronization (pre-operational system only)

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 176.

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

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 NUM. HOMING identifies the frequency and type of homer on the beacon, as follows.

“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. 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		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

	Undefined	MCC (CMCC).
PLB SERIAL	No	
PLB SERIAL (NATIONAL)	National	
PLB SERIAL (STANDARD)	Standard	
SHIP SECURITY	Standard	Contains Standard location protocol. Field CRAFT ID 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. If alerts for the beacon ID are distributed for a test coordinated with the USMCC (i.e., a test that involves a US coded beacon per Table 3.2.9, or a beacon located in the US SRR), PROGRAM is set to “BEACON TEST XXX...”, where “XXX...” describes the specific beacon test. 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 0000000000000001, 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.

Per C/S data distribution procedures, alert messages are only distributed between MCCs based on the confirmed position once the position is confirmed. As a consequence, alerts for US special program beacons will only be distributed after position confirmation when:

- a) the confirmed position is in the US service area, or
- b) the alert is detected by a US LEOLUT, GEOLUT or MEOLUT.

Thus, if LEOSAR satellites with stored data (SARP) capability are no longer operational, then alerts for US special program beacons will not be distributed after position confirmation if the confirmed position is outside the US service area and a US GEOLUT or MEOLUT lacks real-time visibility of the beacon position.

If the Program Block Registration Id is set to a value other than 000000000000001, 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:

- c) DOA or Doppler location (if available), or
- d) Data in the US Registration database (if registered, and DOA or Doppler location not available).

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. This block is provided until position is confirmed, but is not provided on message subsequent to position confirmation.

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, OUTOFERVICE, 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 DOA or 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 MESSAGE INFORMATION: N/A
```

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), the immediate MCC destination (e.g., FMCC) is not listed, only the final MCC destination (e.g., UKMCC) is 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. (If the USMCC sends an alert to the CMCC based on a location in the Canadian SRR, the destination list will include the name of the Canadian RCC and the CMCC.) 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 172, 176 or 177) 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 172 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 for exchange 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.

The USMCC will only distribute pre-operational MEOSAR alerts to US RCCs and a limited number of MCCs, not to US special programs, US SPOCs or MCCs not participating in the C/S MEOSAR Demonstration and Evaluation (D & E). The distribution of MEOSAR alerts to other MCCs is intended for D&E purposes. Pre-operational MEOSAR alert messages contain the names for all intended destinations (as if the MEOSAR system were operational) regardless of whether the alert message is actually transmitted to each destination.

3.5.3 Previous Message Information

PREVIOUS MESSAGE INFORMATION lists solution data for messages previously sent by the USMCC for the site, in descending order by time the messages were received by the USMCC. If more than 4 messages were sent for the site, only the last 4 messages sent are listed.

For pre operational MEOSAR alerts, previous message information is not provided and the value is set to “N/A”.

Solution data fields are provided in the same format as described above in the Alert Data Block. SRR and BUFFER information is only provided in this section before position confirmation. The other solution data fields are always provided.

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 received by an RCC for an alert site may contain previous message information if a previous alert was sent to another destination instead (e.g., due to the country code in the Beacon Id or the DOA, Doppler or encoded location).

Once position is confirmed, if one of two associated Doppler position matches the confirmed position (within 20 km), then the non-matching (i.e., incorrect) Doppler position is not reported in the previous message information.

PREVIOUS MESSAGE INFORMATION:											
PROB	QF	SOL	LATITUDE		LONGITUDE		DETECT TIME		SAT	NUM	SOURCE
85	N/A	A	64	11.4N	151	22.3W	17	1023	FEB	S10	N/A AK1
N/A	866	D	64	11.9N	151	21.9W	17	1025	FEB	MEO 004	CMCC
N/A	825	D	64	11.6N	151	21.8W	17	1020	FEB	MEO 005	FL_MEO
N/A	N/A	U	N/A				17	1019	FEB	G13	N/A MD1

Table 3.5.2 Sample Previous Message Information

3.6 Incident Feedback Request

Feedback on 406 MHz alert sites is used to identify opportunities to improve beacon design, beacon usage, regulation, information processing and alert response. The incident feedback request enables RCCs and SPOCs to provide feedback about a 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 176) 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 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. Sample alert messages are provided per the operational MEOSAR system (i.e., without a special header specific to pre-operational MEOSAR alerts as described in section 3.1.1), except as noted otherwise.

4.1.1 Unlocated First Alert for PLB (SIT 170)

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 00000/3660/15 359 1843
/170/366M

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

BEACON ID: 2DCE6 82200 FFBFF      SITE ID: 54792

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

PROB QF SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR  /BUFFER/BUFR_2
N/A  N/A  U  N/A                24 1842 DEC G13 N/A 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 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 1843 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
CGD07

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

PREVIOUS MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

- Remainder of Page Blank -

4.1.2 Unlocated First Alert for ELT (SIT 170)

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 00000/3660/15 049 1239
/170/366F

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

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

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

PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE SRR /BUFFER/BUFR_2
N/A N/A U N/A 18 1237 FEB MEO 002 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: Smith LLC
P.O. Box 1111 TEL 1: WORK 123456789
Smithtown LA TEL 2:
70601 USA TEL 3:
TEL 4:
EMAIL: JohnSmith@erahelicopters.com

CONTACTS: Operation Supervisor
TEL 1: HOME 123456788 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: N123XX

FIXED SURVIVAL CRAFT DESCRIPTION:

DEPLOYABLE SURVIVAL CRAFT DESCRIPTION:
pop-out floats

AIRPORT PRIMARY SRR: AFRCC SECONDARY SRR:
AIRPORT: LAKE CHARLES REGIONAL LAKE CHARLES LA

MANUFACTURER: ARTEX MODEL NUMBER: C406N-HM

DATE FIRST REGISTERED: 27 MAY 2008 DATE REGISTRATION EXPIRES: 12 MAY 2012
DATE LAST UPDATED: 12 MAY 2010

REMARKS: PRIMARY USAGE IS IN GULF OF MEXICO

SPECIAL STATUS: SPECIAL STATUS DATE:
SPECIAL STATUS INFO:

***** 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 MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

- Remainder of Page Blank -

4.1.3 Unlocated First Alert for EPIRB (SIT 170)

Notes on example: This pre-operational MEOSAR alert message was distributed to the RCC via the operational USMCC and contains a special header (line 3) as described in section 3.1.1. This unlocated alert is identified as "SUSPECT" as described in section 3.2.7.

```
/07852 00000/3680/15 191 1658
/915/CGOP
/ MESSAGE# 74250 WAS SENT TO THE USMCC BY USMCCMeo AT 15 186 1238
170

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

BEACON ID: ADCD0 2170D 44001      SITE ID: 98853

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

PROB QF SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR    /BUFFER/BUFF_2
N/A  N/A  U   N/A              10 1656 JUL MEO 001 MD-MEO

DETECTION FREQUENCY: 406.1250 MHZ
SUSPECT ALERT: NON-STANDARD BIT/FRAME SYNC
SUSPECT ALERT: SINGLE UNCORROBORATED DETECTION

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

COUNTRY      : USA              BEACON TYPE: EPIRB SERIAL CATEGORY I
COUNTRY CODE: 366              CRAFT ID   :                   SPECIFIC BEACON:
MANUFACTURER: ACR              MODEL      : UNKNOWN
SERIAL NUM   : 34243            HOMING     : 121.5 MHZ
POSITION DEVICE: NIL           POSITION RESOLUTION: NONE

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

OWNER: BOB JONES
      111 MAIN AVENUE          TEL 1: OTHR 3051234567
      HOMESTEAD              FL   TEL 2:
      33035      USA          TEL 3:
                                  TEL 4:
      EMAIL:

CONTACTS: FISH INC
      TEL 1: WORK 3052223333    TEL 1: OTHR 7862371310
      TEL 2:
      TEL 3:
      TEL 4:

VESSEL NAME: LITTLE FISH
TYPE: POWER Fishing          LENGTH OVERALL (FT): 42
COLOR: WHITE                 CAPACITY: 4
RADIO CALL SIGN:             REGISTRATION NO:
RADIO EQP: VHF               INMARSAT NUMBER:
CELLULAR NUMBER:

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

HOME PORT PRIMARY SRR: CGD07  SECONDARY SRR:
HOME PORT: NO DATA PROVIDED  STOCK ISLAND      FL

MANUFACTURER: ACR           MODEL NUMBER: RLB-32
ACTIVATION TYPE: CAT1 (MANUAL AND AUTOMATIC)

BEACON CONTAINS SVDR: NO

DATE FIRST REGISTERED: 28 OCT 2008  DATE REGISTRATION EXPIRES: 29 APR 2017
```

DATE LAST UPDATED: 29 APR 2015

REMARKS:

SPECIAL STATUS: OUTFSERVICE SPECIAL STATUS DATE: 29 APR 2015
SPECIAL STATUS INFO:
 BOAT BEING REBUILT

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

USMCC PROCESSING TIME: 10 1658 JUL

THIS ALERT MESSAGE IS BEING SENT TO:
 CGD07

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

PREVIOUS MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

4.2.1 Located First Alert (Position Unconfirmed), Doppler Location (SIT 171)

/74542 00000/3660/15 049 1315
/171/366G

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

BEACON ID: 46683 82668 FFBFF SITE ID: 75102

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

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFR_2
61	N/A	A	01 22.2N	103 59.9E	18 1302 FEB	S13	N/A VNMcc	SIMCC	
39	N/A	B	08 29.5N	135 58.9E	18 1302 FEB	S13	N/A 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,SIMCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
SIMCC

PREVIOUS MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFR_2
N/A	N/A	U	N/A		18 1259 FEB	S11	N/A GU1	SIMCC	

QQQQ
/LASSIT
/ENDMSG

4.2.2 Located First Alert (Position Unconfirmed), Encoded Location (SIT 171)

Notes on example: this unresolved alert with encoded location was detected at "24 1843 DEC" (DETECT TIME) by two MEOSAR satellites, one minute after an unlocated alert was detected from G13 (see PREVIOUS MESSAGE INFORMATION). CGD05 was added to the distribution list for the alert site based on the encoded location.

/24212 00000/3660/15 359 1844
/171/366M

***** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED) *****

BEACON ID: 2DCE6 82200 FFBFF SITE ID: 54792

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

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFR_2
N/A	N/A	E	36 30.00N	072 30.00W	24 1843 DEC	MEO 002	SPMcc	CGD05	

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

CONTACTS: Jack Smith		TEL 1:
TEL 1: CELL 9541112222		TEL 2:
TEL 2: HOME 9540124567		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 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 MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFR_2
N/A	N/A	U	N/A		24 1842 DEC	G13	N/A	MD1	CGD07	

QQQQ
/LASSIT
/ENDMSG

4.2.3 Located First Alert (Position Unconfirmed), Unreliable Beacon Message (SIT 171)

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. 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 00000/3660/15 358 1745
/171/366B

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

***** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED) *****

BEACON ID: D4EB2 A9A69 A68B6 SITE ID: 20000

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

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
61	N/A	A	42 57.8N	058 18.8W	24	1807	DEC	S7	N/A	SPMcc	CGD01
39	N/A	B	53 21.9N	000 59.0W	24	1807	DEC	S7	N/A	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 MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

4.2.4 Located DOA First Alert (Position Unconfirmed) (SIT 171)

Notes on example: pre-operational MEOSAR alert being sent to CGD13 based on DOA position after an unlocated alert was sent to the AFRCC for an USA coded ELT. The Previous Message information is "N/A" for this pre-operational MEOSAR alert as noted in section 3.5.3.

```
/04422 00000/3660/15 191 0202
/915/366E
/ MESSAGE# 74250 WAS SENT TO THE USMCC BY USMCCMeo AT 15 191 0202
171

***** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED) *****

BEACON ID: ADCC5 20B90 0020D      SITE ID: 98692

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

PROB QF SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  892 D  47 06.8N  122 27.9W  10 0201 JUL MEO 004 HI-MEO CGD13

DETECTION FREQUENCY: 406.0276 MHZ

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

COUNTRY      : USA              BEACON TYPE: ELT SERIAL AVIATION
COUNTRY CODE: 366              CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: CSTA# 131        MODEL      :
SERIAL NUM   : 295652           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: 10 0202 JUL

THIS ALERT MESSAGE IS BEING SENT TO:
      AFRCC,CGD13

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

PREVIOUS MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG
```

4.3.1 Located First Alert Update (Position Unconfirmed) (SIT 172)

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 the RCC more information about the true location, but location data from an independent pass is still required to confirm the beacon position. 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 00000/3660/15 359 1817
/172/366B

***** 406 BEACON LOCATED FIRST ALERT UPDATE (POSITION UNCONFIRMED) *****

BEACON ID: ADC64 99D71 CBBE1 SITE ID: 54789

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

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
86	N/A	A	53 17.2N	000 53.6W	24 1807	DEC	S7	N/A	CMcc	UKMCC	
14	N/A	B	42 21.4N	058 13.8W	24 1807	DEC	S7	N/A	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 MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
50	N/A	A	42 57.4N	058 18.8W	24 1807	DEC	S7	N/A	SPMcc	CGD01	
50	N/A	B	53 21.2N	000 58.6W	24 1807	DEC	S7	N/A	SPMcc	UKMCC	

QQQQ
/LASSIT
/ENDMSG

4.3.2 Doppler Position Match (Ambiguity Unresolved) (SIT 172)

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 20 km. While ambiguity is normally resolved (or position is confirmed) when a new location matches a previous location from an independent source within 20 km, when both new Doppler positions match previous Doppler positions, the MCC cannot 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
/172/366M

***** 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 (Position Unconfirmed) (SIT 173)

Notes on example: this position conflict alert was sent because neither new Doppler position matches the DOA position from a previous message within 20 km (20 km is the match position for the MEOSAR operational system). The new alert is sent to CGD07 (SRR) due to its Doppler positions. Because the previous DOA 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 their SAR response.

/49264 00000/3660/15 190 1746
/173/366M

***** 406 BEACON POSITION CONFLICT (POSITION UNCONFIRMED) *****

BEACON ID: B388A 28D29 970D1 SITE ID: 98583

***** POSITION DIFFERENCES OF MORE THAN 20 KMS EXIST FOR THIS BEACON *****
***** DETECTION TIME AND POSITIONS FOR THE BEACON *****

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
52	N/A	A	26 40.3N	078 56.6W	24 1838	DEC	S12	N/A	PEMcc	CGD07
48	N/A	B	27 22.3N	077 52.6W	24 1838	DEC	S12	N/A	PEMcc	CGD07

DETECTION FREQUENCY: 406.0400 MHZ

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

COUNTRY	: CHINA	BEACON TYPE:	EPIRB MARITIME USER
COUNTRY CODE:	412	CRAFT ID	: 440427 SPECIFIC BEACON: 0
MANUFACTURER:		MODEL	:
SERIAL NUM	:	HOMING	: 121.5 MHZ
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE

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

REGISTRATION INFORMATION AT

CNMCC
TELEX:
AFTN: ZBBBZSZX
TELEPHONE: 86 10-65292221
FACSIMILE: 86 10-65293296
EMAIL: cnmcc@mail.eastnet.com.cn
WEB:

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

USMCC PROCESSING TIME: 09 1746 JUL

THIS ALERT MESSAGE IS BEING SENT TO:
CGD07,CGD08,CNMCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
CGD08,CNMCC

PREVIOUS MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
N/A	554	D	29 32.60N	095 02.5W	09 1735	JUL	MEO	001	BRMCC	CGD08

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
CGD08

QQQQ
/LASSIT
/ENDMSG

4.5 Notification of Position Confirmation (SIT 174)

Notes on example: this alert was sent because the new DOA and encoded position match within 20 km (the match threshold for the operational LEOSAR/GEOSAR/MEOSAR system), thereby confirming the beacon position. Since this was the first alert for the site, there is no previous message information and the site duration is 0.0 hours.

/25601 00000/3660/15 190 1652
/174/366B

***** 406 BEACON NOTIFICATION OF POSITION CONFIRMATION *****

BEACON ID: 2DD43 92E3F 81FE0 SITE ID: 98609

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
40 49.0N 073 05.3W 000.0 HRS CGD01

***** POSITION CONFIRMED FROM THE FOLLOWING NEW INFORMATION *****

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE
N/A	883	D	40 49.0N	073 05.3W	09	1650	JUL	MEO 003	FMCC
N/A	N/A	E	40 48.00N	073 00.27W	09	1650	JUL	MEO 003	FMCC

DETECTION FREQUENCY: 406.0275 MHZ

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

COUNTRY	:	USA	BEACON TYPE:	EPIRB SERIAL (NATIONAL)	
COUNTRY CODE:	:	366	CRAFT ID	:	SPECIFIC BEACON:
MANUFACTURER:	:		MODEL	:	
SERIAL NUM	:	29276	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: 24 1833 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
CGD01

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

PREVIOUS PASS INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

4.6 Confirmed Position Updates (SIT 175)

4.6.1 Confirmed Position Update (SIT 175)

Notes on example: this alert was sent because the DOA position for a new beacon event matched the confirmed position within 20 km (the match threshold for the LGM operational system).

/25603 00000/3660/15 190 2216
/175/366B

***** 406 BEACON CONFIRMATION POSITION UPDATE *****

BEACON ID: 2DD42 EA43F 81FE0 SITE ID: 98592

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
43 49.0N 069 52.1W 000.4 HRS CGD01

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

PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE
N/A 836 D 43 49.0N 069 52.1W 09 2221 JUL MEO 003 HI-MEO

DETECTION FREQUENCY: 406.0277 MHZ

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

COUNTRY : USA BEACON TYPE: EPIRB SERIAL (NATIONAL)
COUNTRY CODE: 366 CRAFT ID : SPECIFIC BEACON:
MANUFACTURER: MODEL :
SERIAL NUM : 23880 HOMING : 121.5 MHZ
POSITION DEVICE: INTERNAL POSITION RESOLUTION: NONE

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

USMCC PROCESSING TIME: 09 2216 JUL

THIS ALERT MESSAGE IS BEING SENT TO:
CGD01

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
CGD01,CGD05

PREVIOUS MESSAGE INFORMATION:

PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE
N/A 557 D 43 49.1N 069 52.0W 09 2154 JUL MEO 003 FL-MEO
69 N/A A 43 49.6N 069 52.4W 09 2156 JUL S11 N/A AUMCC

QQQQ
/LASSIT
/ENDMSG

4.6.2 Confirmed Update with Position Conflict (SIT 175)

Notes on example: this alert was sent because the DOA position for a new beacon event did not match the confirmed position within 10 km (the match threshold for the pre-operational MEOSAR system). Position conflict may be due to an inaccurate computed position or a moving beacon. Repeated position conflicts for an alert site (without a Confirmed Position Update) may indicate that the beacon is moving. Examine new location data from different alert messages to determine if the beacon is moving.

58304 00000/3660/15 190 1846
/175/366J

***** 406 BEACON CONFIRMATION UPDATE WITH POSITION CONFLICT *****

BEACON ID: ADCD0 21885 43401 SITE ID: 98620

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
53 54.9N 162 53.8W 000.5 HRS CGD17

*** CONFIRMED POSITION DIFFERS BY MORE THAN 10 KM FROM THE FOLLOWING ALERT ***

PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE
N/A 856 D 53 43.5N 164 04.0W 09 1844 JUL MEO 004 HI-MEO

DETECTION FREQUENCY: 406.0276 MHZ

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

COUNTRY	: USA	BEACON TYPE:	EPIRB	SERIAL	CATEGORY I
COUNTRY CODE:	366	CRAFT ID	:	SPECIFIC BEACON:	
MANUFACTURER:	ACR	MODEL	:	UNKNOWN	
SERIAL NUM	: 34337	HOMING	:	121.5 MHZ	
POSITION DEVICE:	NIL	POSITION RESOLUTION:	NONE		

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

USMCC PROCESSING TIME: 09 1846 JUL

THIS ALERT MESSAGE IS BEING SENT TO:
CGD17

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
CGD13,CGD17

PREVIOUS MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

4.7 No Detection/Site Status Report (SIT 176)

This message is not generated for the pre-operational MEOSAR system. The sample message formats below are subject to change as the LGM operational system is developed.

The Beacon Id/Site Id Header Line in the SIT 176 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 – NO DETECTION)" indicates that the site is still open and no detection has occurred in the last [60] minutes,
- 2) "(CLOSED - TIMEOUT)" indicates that the site closed because the beacon has not been detected in 2 hours (for the LGM operational system; for the pre-operational MEOSAR system the threshold is 12 hours),
- 3) "(CLOSED – 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) "(CLOSED – TIME_OPEN)" indicates that the site closed because it was open for 72 hours.

Closing an MCC site 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 176 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 position is confirmed, the SIT 176 message provides a Position Confirmation Summary, per section 3.2.2. The SIT 176 message does not contain Beacon Decode or Beacon Registration information.

4.7.1 No Detection/Site Status Report (SIT 176) – Site Closure due to Timeout

The following message indicates that the alert site closed due to time; that is, the beacon was not detected for more than 2 hours.

/52520 00000/3660/15 358 0118
/176/366S

***** 406 BEACON NO DETECTION/SITE STATUS REPORT *****

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

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
31 07.3N 066 32.9E 000.9 HRS AFRCC

***** 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 MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	NUM	SOURCE
89	N/A	A	31 07.1N	066 32.8E	23 2317 DEC	S10	NUM	AK1
N/A	667	D	31 07.3N	066 33.6E	23 2247 DEC	MEO	008	TRMCC
N/A	817	D	31 07.5N	066 33.1E	23 2225 DEC	MEO	006	TRMCC

QQQQ
/LASSIT
/ENDMSG

4.7.2 No Detection/Site Status Report (SIT 176) – No Detection

The following message was sent because the beacon was not detected for 60 minutes.

/52520 00000/3660/15 358 0018
/176/366S

***** 406 BEACON NO DETECTION/SITE STATUS REPORT *****

BEACON ID: 2DD78 ED9BF 81FE0 SITE ID: 54750 (OPEN - NO DETECTION)

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
31 07.3N 066 32.9E 000.9 HRS AFRCC

***** 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 MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE
89	N/A	A	31 07.1N	066 32.8E	23	2317	DEC	S10	NUM AK1
N/A	667	D	31 07.3N	066 33.6E	23	2247	DEC	MEO 008	TRMCC
N/A	817	D	31 07.5N	066 33.1E	23	2225	DEC	MEO 006	TRMCC

QQQQ
/LASSIT
/ENDMSG

4.7.3 No Detection/Site Status Report (SIT 176) – 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 closes an alert site when requested to do so by the RCC Controller, provided that the 406 MHz beacon has been secured.

/52520 00000/3660/15 358 0002
/176/366A

***** 406 BEACON NO DETECTION/SITE STATUS REPORT *****

BEACON ID: 2DD78 ED9BF 81FE0 SITE ID: 54750 (CLOSED - BY MCC OPERATOR)

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

USMCC PROCESSING TIME: 24 1801 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
AKRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
AKRCC

PREVIOUS MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
N/A	717	D	64 11.9N	152 11.9W	23 2325 DEC	MEO	006	FL-MEO	AKRCC	

QQQQ
/LASSIT
/ENDMSG

4.7.4 No Detection/Site Status Report (SIT 176) – Site Closed Due to Time Site Open

The following message indicates that the alert site was closed because the alert site was open for 32 hours.

/52520 00000/3660/15 358 0110
/176/366S

***** 406 BEACON NO DETECTION/SITE STATUS REPORT *****

BEACON ID: 2DD78 ED9BF 81FE0 SITE ID: 54751 (CLOSED - TIME_OPEN)

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
31 07.3N 066 32.9E 032.0 HRS AFRCC

***** 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 MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE
89	N/A	A	31 07.1N	066 32.8E	23	2317	DEC	S10	NUM AK1
N/A	667	D	31 07.3N	066 33.6E	23	2247	DEC	MEO 008	TRMCC
N/A	817	D	31 07.5N	066 33.1E	23	2225	DEC	MEO 006	NMCC
N/A	742	D	31 07.6N	066 33.3E	23	2209	DEC	MEO 005	HI-MEO

QQQQ
/LASSIT
/ENDMSG

4.7.5 Site Status Report (SIT 176) – Sent to a US SPOC that receives SIT 185 messages

The following message indicates that the alert site was closed based on timeout 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 00000/3660/16 017 2043
/176/3450

***** 406 BEACON NO DETECTION/SITE STATUS REPORT *****

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

***** 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 177)

The SIT 177 message does not contain Beacon Decode or Beacon Registration information. Position confirmation information is provided if the position is confirmed.

/03934 00000/3660/15 357 0330
/177/366E

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

BEACON ID: 2DCE6 DD3BE FFBFF SITE ID: 54645

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

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFF_2
N/A	N/A	U	N/A		22 0319 DEC	S11	N/A AK1	AFRCC	

DETECTION FREQUENCY: FREQUENCY IS UNRELIABLE

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

USMCC PROCESSING TIME: 22 0330 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
AFRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
AFRCC

PREVIOUS MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT TIME	SAT NUM	SOURCE	SRR	/BUFFER/BUFF_2
54	N/A	A	34 04.4S	031 07.0E	22 0023 DEC	S12	N/A AUMCC	AFRCC	/SAMCC
46	N/A	B	30 22.4S	051 35.0E	22 0023 DEC	S12	N/A AUMCC	AFRCC	/SAMCC

QQQQ
/LASSIT
/ENDMSG

4.9.1 Notification of Country of Registration (SIT 178) – Position Unconfirmed

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 assist the SAR response for its citizens.

/24223 00000/3660/15 359 1944
/178/366M

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

BEACON ID: A6E8D 40D28 D34D1 SITE ID: 54796

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

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFF_2
N/A	347	D	57 27.9N	024 11.3E	24	1940	DEC	MEO	006	CMCC	NMCC

DETECTION FREQUENCY: 406.0251 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: N/A

PREVIOUS MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

4.9.2 Notification of Country of Registration (SIT 178) – Position Confirmed

When position is confirmed, the Alert Data block in the associated Notification of Country of Registration (NOCR) contains the same information about position confirmation as the SIT 174 (Position Confirmation) message contains.

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 noted 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 00000/3660/15 355 2131
/178/366H

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

BEACON ID: 2DCC3 F91DE FFBFF SITE ID: 19548

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE DURATION SRR /BUFFER/BUFF_2
09 04.4N 108 15.8E 000.0 HRS SIMCC /VNMCC

***** POSITION CONFIRMED FROM THE FOLLOWING NEW INFORMATION *****

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE
N/A	732	D	09 04.1N	108 25.6E	10	0929	JUL	MEO 003	BRMCC
N/A	N/A	E	09 04.53N	108 25.87W	10	0929	JUL	MEO 003	BRMCC

DETECTION FREQUENCY: 406.0274 MHZ

***** 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:	

CONTACTS: JOSEPH SMITH	JACK JOHNSON
TEL 1: HOME 7141111111	TEL 1: HOME 3101234567
TEL 2:	TEL 2:
TEL 3:	TEL 3:
TEL 4:	TEL 4:

VESSEL NAME: SAILON	
TYPE: SAIL ??? Masts	LENGTH OVERALL (FT): 47
COLOR: WHITE	CAPACITY: 8
RADIO CALL SIGN:	REGISTRATION NO: 911111
RADIO EQP: VHF	INMARSAT NUMBER:
CELLULAR NUMBER:	

NUMBER OF LIFE BOATS: 0 NUMBER OF LIFE RAFTS: 0
HOME PORT PRIMARY SRR: CGD14 SECONDARY SRR:
HOME PORT: ALA WAI MARINA HONOLULU HI
MANUFACTURER: ACR MODEL NUMBER: 406
ACTIVATION TYPE: CAT2 (MANUAL)

BEACON CONTAINS SVDR: NO

DATE FIRST REGISTERED: 10 FEB 2010 DATE REGISTRATION EXPIRES: 21 OCT 2014
DATE LAST UPDATED: 21 OCT 2012

REMARKS:

SPECIAL STATUS: SPECIAL STATUS DATE:
SPECIAL STATUS INFO:

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

USMCC PROCESSING TIME: 20 2131 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
CGD14, SIMCC, VNMCC, AUMCC, JAMCC

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

PREVIOUS MESSAGE INFORMATION: N/A

QQQQ
/LASSIT
/ENDMSG

4.10.1 Encoded Position Update (SIT 179) – Position Unconfirmed

Note: an Encoded Position Update message may contain Doppler or DOA position data when the Doppler or DOA position data is redundant (i.e., a message for same beacon event was already sent) but the encoded position has changed by more than 3 km.

/62659 00000/3660/15 340 0424
/179/3660

***** 406 BEACON ENCODED POSITION UPDATE (POSITION UNCONFIRMED) *****

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

***** NEW ALERT INFORMATION *****

PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE SRR /BUFFER/BUFF_2
N/A N/A E 29 32.93N 095 02.87W 05 0421 DEC G13 N/A 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 MESSAGE INFORMATION:

PROB QF SOL LATITUDE LONGITUDE DETECT TIME SAT NUM SOURCE SRR /BUFFER/BUFF_2
N/A N/A E 29 32.00N 095 01.00W 05 0420 DEC MEO 002 BRMcc CGD08

QQQQ
/LASSIT
/ENDMSG

4.10.2 Encoded Position Update (SIT 179) – Position Confirmed

Note: This pre-operational MEOSAR alert message was distributed to the RCC via the operational USMCC and contains a special header (line 3) as described in section 3.1.1.

```
/22190 00000/3660/15 190 0405
/915/366S
/ MESSAGE# 74250 WAS SENT TO THE USMCC BY USMCCMeo AT 15 190 0405
179
***** 406 BEACON ENCODED POSITION UPDATE (POSITION CONFIRMED) *****

BEACON ID: 2DCE7 03C2C FFBFF      SITE ID: 98457

***** CONFIRMED POSITION *****

LATITUDE LONGITUDE  DURATION  SRR  /BUFFER/BUFF_2
40 36.0N 115 25.4W  001.1 HRS  AFRCC

***** NEW ALERT INFORMATION *****

PROB QF SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A  E  40 34.93N 115 22.87W 09 0403 JUL MEO 002 FL-MEO

DETECTION FREQUENCY: 406.0272 MHZ

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

COUNTRY      : USA              BEACON TYPE: PLB SERIAL (STANDARD)
COUNTRY CODE: 366              CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: CSTA# 224        MODEL      :
SERIAL NUM   : 7702            HOMING     : 121.5 MHZ
POSITION DEVICE: INTERNAL      POSITION RESOLUTION: 4 MINUTES

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

USMCC PROCESSING TIME: 09 0405 JUL

THIS ALERT MESSAGE IS BEING SENT TO:
    AFRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
    AFRCC

PREVIOUS MESSAGE INFORMATION: 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.

This section has not been updated for the MEOSAR system.

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 RECIEPT 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 LEOLUT and a specified location. The Support Data provides predicted the DETECT TIME, SAT (satellite), SOURCE (US LUT) and VISIBILITY.

/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 12 provides Guidance on Providing Incident Feedback to the USMCC.

Term	Alert Message Section	Support Message
	Definition	
ACTIVATION COMMENT	Incident Feedback Request Description of beacon activation.	
ACTIVATION TYPE	Beacon Registration Data Block	Beacon Registration
	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.	
ACTUAL LOCATION	Incident Feedback Request The actual location of the beacon as determined by the SAR forces.	
AFTN	Beacon Registration Data Block AFTN address point of contact for beacon registry for non-US beacon.	
AIRCRAFT MANUFACTURER/ MODEL	Beacon Registration Data Block	Beacon Registration
	Manufacturer and model of the aircraft on which the ELT is carried.	
AIRCRAFT REGISTRATION		Alert Query Report
	Aircraft registration used for the alert query. Can include the 24-bit address, aircraft operator designation, and aircraft registration (or tail number).	
AIRCRAFT USE	Beacon Registration Data Block	Beacon Registration
	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.	
AIRPORT	Beacon Registration Data Block	Beacon Registration
	Home airport (name, city, state) for the aircraft on which the ELT is carried.	
AIRPORT PRIMARY SRR	Beacon Registration Data Block	Beacon Registration
	The primary SRR (RCC, MCC or SPOC) responsible for the home airport of the aircraft on which the ELT is carried.	

Term	Alert Message Section	Support Message
	Definition	
AIRPORT SECONDARY SRR	Beacon Registration Data Block	Beacon Registration
	The secondary SRR (RCC, MCC or SPOC) responsible for the home airport of the aircraft on which the ELT is carried.	
ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO	Support Data Block	
	A list of all destinations that have received messages from the USMCC for this alert site.	
AT	Beacon Registration Data Block	
	Field "REGISTRATION INFORMATION AT" provides the name of the beacon registry point of contact for non-US beacons.	
BEACON CONTAINS SVDR	Beacon Registration Data Block	Beacon Registration
	Indicates whether the EPIRB contains a Simple Voyage Data Recorder. Values are "NO "and "YES. RECOVER IF POSSIBLE".	
BEACON ID	Alert Data Block	Alert Query Report
	Incident Feedback Request	
	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.	
BEACON REGISTRATION ACCURACY	Incident Feedback Request	
	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.	
BEACON REGISTRATION DATA USED TO RESOLVE INCIDENT	Incident Feedback Request	
	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.	
BEACON TYPE	Beacon Decode Data Block	
	The beacon type decoded from the digital message by the USMCC. Valid types are provided in Table 3.3.2. Location protocol beacon are described as standard ("STANDARD" or "(STD)") or national ("NATIONAL"). Alerts are not normally distributed for "Spare" and "Test" protocol beacons.	

Term	Alert Message Section	Support Message
	Definition	
BUFFER	Alert Data Block, Support Data Block	
	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.	
BUFR_2	Alert Data Block, Support Data Block	
	BUFR_2 is the third 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 more than three SRRs, the RCC message will only list two buffer SRRs per location, but the message will be routed to all SRRs as appropriate. See section 3.2.3.8 for more information.	
CAPACITY	Beacon Registration Data Block	Beacon Registration
	The maximum number of people on board the vessel or aircraft on which this EPIRB or ELT is carried.	
CELLULAR NUMBER	Beacon Registration Data Block	Beacon Registration
	Cellular telephone number for the vessel on which the EPIRB is carried.	
CENTER POSITION		Alert Query Report
	The position (latitude and longitude) used to conduct an alert query based on a center point and radius.	
CLOSE TIME	Incident Feedback Request	
	Time that USMCC alert site was closed.	
CLOSED	Alert Data Block	
	Indicates if the USMCC alert site is closed or not, and for a closed site, whether the site closed due to time or action by the USMCC operator. For more information about site closure, see the description of the SIT 176 message.	
COLOR	Beacon Registration Data Block	Beacon Registration
	The color of the vessel or aircraft on which this EPIRB or ELT is carried.	
CONTACTS	Beacon Registration Data Block	Beacon Registration
	Emergency points of contact. Up to 4 primary (left hand column) and 4 alternate (right hand column) telephone numbers are provided. See field "TEL #".	
COUNTRY	Beacon Decode Data Block	
	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.	

Term	Alert Message Section	Support Message
	Definition	
COUNTRY CODE	Alert Query Report	
	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.	
CRAFT ID	Beacon Decode Data Block	
	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.	
DATE FIRST REGISTERED	Beacon Registration Data Block	Beacon Registration
	The date that this beacon was first registered to the current owner.	
DATE LAST UPDATED	Beacon Registration Data Block	Beacon Registration
	The date that registration information for this beacon was last updated.	
DATE REGISTRATION EXPIRES	Beacon Registration Data Block	Beacon Registration
	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.	
DEPLOYABLE SURVIVAL CRAFT DESCRIPTION	Beacon Registration Data Block	Beacon Registration
	Description of the deployable survival equipment on the aircraft on which the ELT is carried.	
DETECT FREQ	Beacon-LUT Mutual Visibility Schedule	
	The frequencies that can be detected by the corresponding satellite.	

Term	Alert Message Section	Support Message
	Definition	
DETECT TIME	<p>Alert Data Block</p> <p>For the MEOSAR alerts, the DETECT TIME is time that a satellite <u>first</u> detected the beacon for the alert.</p> <p>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.</p> <p>For non-Doppler solutions from LEOLUTs, the time that the satellite last received a burst from the 406 MHz beacon. For the MEOSAR alerts, the DETECT TIME is time that a satellite <u>first</u> detected the beacon for the alert. 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.</p>	<p>Alert Query Report</p> <p>Alert Query Report</p>
DETECT TIME	<p>Beacon-LUT Mutual Visibility Schedule</p> <p>The time of the closest approach of the LEOSAR satellite to the reported beacon location.</p>	
DETECTION FREQUENCY	<p>Alert Data Block</p> <p>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". In MEOSAR alerts, the value "406.1250" indicates that the frequency is not available.</p>	
DUR	<p>Alert Site Query</p> <p>The number of hours that this beacon has been active, calculated from the earliest and most recent times that the beacon was detected.</p>	
DURATION	<p>Alert Data Block</p> <p>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 position was confirmed for the alert site.</p>	
EAST BOUNDARY	<p>Alert Query Report</p> <p>The eastern boundary of an alert query based on a search rectangle.</p>	
EMAIL	<p>Beacon Registration Data Block</p> <p>The email address for the beacon owner from US beacon registry (RGDB) for US beacon.</p> <p>Email address point of contact for beacon registry for non-US beacon.</p>	<p>Beacon Registration</p>

Term	Alert Message Section	Support Message
	Definition	
FACSIMILE	Beacon Registration Data Block	
	Facsimile number point of contact for beacon registry for non-US beacon.	
FIRST TCA		Alert Query Report
	The first time that the beacon was detected based on data received by the USMCC; see "Detect Time".	
FIXED SURVIVAL CRAFT DESCRIPTION	Beacon Registration Data Block	Beacon Registration
	Description of fixed survival equipment on the aircraft on which the ELT is carried.	
FREQ		Alert Query Report
	The frequency of a 121.5, 243 or 406 MHz signal presented in MHz. Set to "406" for 406 MHz beacons.	
HOME PORT	Beacon Registration Data Block	Beacon Registration
	Home port (name, city, and state) for the vessel on which the EPIRB is carried.	
HOME PORT PRIMARY SRR	Beacon Registration Data Block	Beacon Registration
	The primary SRR (RCC, MCC or SPOC) responsible for the home port of the vessel on which the EPIRB is carried.	
HOMING	Beacon Decode Data Block	
	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).	
INCIDENT OUTCOME	Incident Feedback Request	
	The outcome of the incident. Values are DISTRESS, NON-DISTRESS and UNDETERMINED.	
INCIDENT TYPE	Incident Feedback Request	
	Type of incident. Values are AVIATION, MARITIME, TERRESTRIAL, OTHER and UNKNOWN.	
INMARSAT NUMBER	Beacon Registration Data Block	Beacon Registration
	INMARSAT contact number for the vessel on which this EPIRB is carried.	
LAST DATA PROCESSED		Alert Query Report
	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.	

Term	Alert Message Section	Support Message
	Definition	
LAST TCA		Alert Query Report
	The last time that the beacon was detected, based on data received by the USMCC; see “Detect Time”.	
LATITUDE	Alert Data Block Support Data Block	Alert Site Query
	The latitude position of the alert. On alert messages, provided in degrees, minutes and tenths of minute for Doppler or DOA location (computed by the LEOLUT or MEOLUT, respectively) 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.	
LEASING AGENT	Beacon Registration Data Block	Beacon Registration
	The leasing agent of the aircraft on which this ELT is carried.	
LENGTH OVERALL (FT)	Beacon Registration Data Block	Beacon Registration
	The length of the vessel or aircraft on which the EPIRB or ELT is carried.	
LIKELY IMAGE POSITION	Alert Data Block	
	<p>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”.</p> <p>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.</p>	
LONGITUDE	Alert Data Block Support Data Block	Alert Site Query
	The longitude position of the alert. On alert messages, provided in degrees, minutes and tenths of minute for Doppler or DOA location (computed by the LEOLUT or MEOLUT, respectively) 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.	
MANUFACTURER	Beacon Decode Data Block	
	The manufacturer of the beacon as decoded from the beacon Id. This information is only available on user protocol US serialized beacons.	
	Beacon Registration Data Block	Beacon Registration
	The manufacturer of the beacon as provided in the beacon registration.	
MESSAGE DESTINATIONS		Alert Query Report
	All destinations that have received alert messages for this site.	

Term	Alert Message Section	Support Message
	Definition	
MMSI	Alert Query Report	
	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.	
MODEL	Beacon Decode Data Block	
	The model name of the beacon as decoded from the beacon Id. This information is only available on user protocol US serialized beacons.	
MODEL NUMBER	Beacon Registration Data Block	Beacon Registration
	The model name/number of the beacon as provided in the beacon registration.	
NORTH BOUNDARY	Alert Query Report	
	The northern boundary of an alert query based on a search rectangle.	
NUM	Alert Data Block	Alert Query Report
	For MEOSAR alerts, field NUM is set to the number of satellites for which data was used to generate the alert. A DOA location computed with data from a greater number of satellites is usually more accurate; also see the quality factor (QF). The number of time/frequency measurements (packets) used to compute a DOA location may exceed NUM when multiple beacon bursts are used, since multiple bursts may be received from the same satellite. The field value is "N/A" for LEOSAR and GEOSAR alerts, and for MEOSAR alerts when the number of satellites is not available.	
NUMBER IN DISTRESS	Incident Feedback Request	
	The number of people in distress during the incident (distress cases only), excludes rescue personnel.	
NUMBER OF LIFE BOATS	Beacon Registration Data Block	Beacon Registration
	The number of life boats on board the vessel on which the EPIRB is carried.	
NUMBER OF LIFE RAFTS	Beacon Registration Data Block	Beacon Registration
	The number of life rafts on board the vessel on which the EPIRB is carried.	
NUMBER RESCUED	Incident Feedback Request	
	The number of people rescued during the incident (distress cases only).	
OWNER	Beacon Registration Data Block	Beacon Registration
	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	
POSITION DEVICE	<p>Beacon Decode Data Block</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>	
POSITION RESOLUTION	<p>Beacon Decode Data Block</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>	
PREVIOUS MESSAGE INFORMATION	<p>Support Data Block</p> <p>Solution data for previous messages for the site, in descending order by time the messages were received by the USMCC. If more than 4 messages were sent for the site, only the last 4 messages sent are listed. For pre operational MEOSAR alerts, previous message information is not provided and the value is set to “N/A”.</p> <p>The “PROB” (probability), “QF” (quality factor), “SOL” (solution), “LATITUDE”, “LONGITUDE”, “DETECT TIME”, “SAT” (satellite), “NUM” (number of satellites) and “SOURCE” are provided, as described separately. SRR, BUFFER and BUFR_2 are only provided on messages generated before position confirmation. Section 3.5.3 further describes Previous Message Information.</p>	
PROB	<p>Alert Data Block Support Data Block</p> <p>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.</p>	
QF	<p>Alert Data Block</p> <p>The quality factor for DOA position. This field is set to a value between 0 and 999, where a higher number indicates that the DOA position is more likely to be accurate. For the pre-operational distribution of MEOSAR alerts, the quality factor for some foreign MEOLUT alerts is set to values between 1 and 9, and should be ignored. This field is set to “N/A” if the solution data does not contain a DOA position; e.g., for Doppler alerts.</p>	
RADIO CALL SIGN	Beacon Registration Data Block	Beacon Registration
	<p>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.</p>	
RADIO EQP	Beacon Registration Data Block	Beacon Registration
	<p>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.</p>	

Term	Alert Message Section	Support Message
	Definition	
RADIUS	Alert Query Report	
	The radius (in kilometers) used to conduct an alert query based on a center point and radius.	
REASON ACTIVATED	Incident Feedback Request	
	Reason that the beacon was activated. See Annex 12 for details.	
REASON CLOSED	Alert Query Report	
	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.	
REGISTRATION NO	Beacon Registration Data Block	Beacon Registration
	The documentation or registration number of the vessel on which the EPIRB is carried.	
REMARKS	Beacon Registration Data Block	Beacon Registration
	Additional remarks or comments provided in the beacon registration. This section may contain information on the new owner of the beacon.	
REPORT END	Alert Query Report	
	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.	
REPORT START	Alert Query Report	
	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.	
SARSAT DATA USED TO RESOLVE INCIDENT	Incident Feedback Request	
	Possible answers are provided below. “YES ONLY NOTIFICATION” “YES FIRST NOTIFICATION” “YES ASSISTED” “NO”	
SAT	Alert Data Block, Support Data Block	Alert Query Report
	The satellite that detected the beacon, identified by three characters. For MEOSAR alerts, the value is “MEO”. For LEOSAR and GEOSAR alerts, the first character identifies the type of satellite, as described in Table 3.2.3.7, and 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.	

Term	Alert Message Section	Support Message
	Definition	
SEARCH FREQ	Alert Query Report	
	Frequency of the signal or beacon included in the search. May contain multiple frequencies. Set to "406" for 406 MHz beacons.	
SECONDARY SRR	Beacon Registration Data Block	Beacon Registration
	The secondary SRR (RCC, MCC or SPOC) responsible for the home port of the vessel on which the EPIRB is carried.	
SERIAL NUM	Beacon Decode Data Block	
	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.	
24 BIT ADDR	Beacon Decode Data Block	
	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=".	
SHIP CALL SIGN	Alert Query Report	
	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.	
SITE CLOSED	Alert Query Report	
	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 age-out time or action by the USMCC Controller.	
SITE CREATED	Alert Query Report	
	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.	
SITE ID	Alert Data Block Incident Feedback Request Support Data Block	Alert Query Report
	The USMCC assigned site identifier consisting of five numeric digits.	
SOL	Alert Data Block Support Data Block	Alert Query Report
	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" (confirmed) position, the DOA position (computed by a MEOLUT), the "E" position (position encoded in the 406 MHz beacon message). For solutions with no position, SOL is listed as "U" (unlocated).	

Term	Alert Message Section	Support Message
	Definition	
SOURCE	Alert Data Block, Support Data Block	Alert Query Report
	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.	
SOUTH BOUNDARY		Alert Query Report
	The southern boundary of an alert query based on a search rectangle.	
SPECIAL STATUS	Beacon Registration Data Block	Beacon Registration
	Special status for beacon. Valid values are: LOST, STOLEN, SOLD, REPLACED, DESTROYED, OUTFSERVICE and RECODED.	
SPECIAL STATUS DATE	Beacon Registration Data Block	Beacon Registration
	The date on which the special status became effective.	
SPECIAL STATUS INFO	Beacon Registration Data Block	Beacon Registration
	Information pertinent to the special status; see SPECIAL STATUS.	
SPECIFIC BEACON	Alert Data Block	
	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).	
SPECIFIC USAGE	Beacon Registration Data Block	Beacon Registration
	Information on the specific usage of the PLB.	
SRR	Alert Data Block, Support Data Block	
	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.	
SWP		Alert Query Report
	The presence of sweep (audio modulation) for 121.5/243 MHz signals. Set to "UNK" for 406 MHz beacons.	
THIS ALERT MESSAGE IS BEING SENT TO	Support Data Block	
	Lists all destinations for the current alert message from the USMCC. See section 3.5.2 for more information.	
TAIL NUMBER	Beacon Registration Data Block	Beacon Registration
	The tail number or registration number of the aircraft on which the ELT is carried.	
TELEX	Beacon Registration Data Block	
	Telex number point of contact for beacon registry for non-US beacon.	

Term	Alert Message Section	Support Message
	Definition	
TELEPHONE	Beacon Registration Data Block	
	Telephone number point of contact for beacon registry for non-US beacon.	
TEL #	Beacon Registration Data Block	Beacon Registration
	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.	
TYPE	Beacon Registration Data Block	Beacon Registration
	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).	
USMCC PROCESSING TIME	Support Data Block	
	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 than the USMCC Processing Time, then the message was probably retransmitted by USMCC personnel.	
VEHICLE TYPE	Beacon Registration Data Block	Beacon Registration
	The type of the vehicle on which the PLB is carried.	
VESSEL NAME	Beacon Registration Data Block	Beacon Registration
	The name of the vessel on which the EPIRB is carried.	
VISIBILITY		Alert Query Report Beacon-LUT Mutual Visibility Schedule
	The mutual visibility between the satellite, LUT and beacon position	
WEB	Beacon Registration Data Block	
	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 www.registration.com .	
WEST BOUNDARY		Alert Query Report
	The western boundary of an alert query based on a search rectangle.	

Annex 2 - US LUTs

Name on RCC message	Description	Location
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
FL-MEO	Florida MEOLUT	Miami, Florida
FL1	Florida LEOLUT 1	Miami, Florida
FL2	Florida LEOLUT 2	Miami, Florida
HI-MEO	Hawaii MEOLUT	Wahiawai, Hawaii
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
MD-MEO	Maryland MEOLUT (only planned for use in the pre-operational MEOSAR system)	Greenbelt, 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
CYMCC	Cyprus
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 REGISTRATION 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 REGISTRATION EXPIRES: 31 DEC 2010

REMARKS:

SPECIAL STATUS:
STATUS INFO:

SPECIAL STATUS DATE: SPECIAL

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 REGISTRATION 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 Destination Codes for RCCs and SPOCs
that Receive Alert Messages from the USMCC

RCC	SRR Name	Destination Code
US Air Force RCC	AFRCC	366S (3681*)
US Alaska RCC	AKRCC	366A (3682*)
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
Canada RCC Halifax ¹	HALIFAX	316H
Canada RCC Quebec City ¹	QuebecCity	316Q
Canada RCC Trenton ¹	TRENTON	316T
Canada RCC Victoria ¹	VICTORIA	316V
SPOC		
Bermuda	BERMUDASP	3100
COCESNA (Central American Corporation for Navigation Area Services)	COCESNA	CNAM
Columbia	COLMSP	7300
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
Bolivia ²	BOLSP	7200
Chile RCC ²	ChileRCC	7251
Paraguay ²	PARSP	7550
Uruguay ²	URSP	7770

1 The USMCC distributes alerts to Canada RCCs when the USMCC backs up the CMCC. Alert messages for locations in the Canadian SRR contain the SRR name of the associated Canadian RCC, when the CMCC is operational and when the USMCC backs up the CMCC.

2 The USMCC distributes alerts to these SPOCs when it backs up the CHMCC. Otherwise, the CHMCC distributes alerts to these SPOCs. During backup of the CHMCC, alerts for the Chile SRR are sent to ChileRCC with CHMCC listed as the associated message destination.

* Pre-operational MEOSAR alerts are sent to AFRCC and AKRCC using alternate codes of 3681 and 3682, respectively, to enable MEOSAR alerts to be distributed to a different destination than operational alerts.

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. Some fields that are program specific contain a value of "X"s.

/31419 31418/3660/15 340 2335
/173/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 (POSITION UNCONFIRMED) *****

BEACON ID: XXXXX XXXXX XXXXX SITE ID: 18496

***** POSITION DIFFERENCES OF MORE THAN 20 KMS EXIST FOR THIS BEACON *****
***** DETECTION TIME AND POSITIONS FOR THE BEACON *****

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFR_2
51	N/A	A	39 42.4N	137 56.6E	05	2236	DEC	S12	N/A	PEMcc	JAMCC
49	N/A	B	32 27.1N	113 52.4E	05	2236	DEC	S12	N/A	PEMcc	CNMCC
N/A	N/A	E	41 31.97N	071 18.67W	05	2236	DEC	S12	N/A	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: XXXXXXXXXXXXXXXXX

SEPIRB ID : 40

MINUTES FOR GPS LOC: 2 HOURS ACTIVE: 0

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

OWNER: XXXXXXXXXXXXXXXX

XXXXX

XX

XXXXX XXX

EMAIL:

TEL 1: OTHR (no data provided)

TEL 2:

TEL 3:

TEL 4:

CONTACTS: XX1

TEL 1: WORK XXXXXXXXXXXX

TEL 2:

TEL 3:

TEL 4:

XX2

TEL 1: WORK XXXXXXXXXXXX

TEL 2:

TEL 3:

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 REGISTRATION EXPIRES: 28 OCT 2005

DATE LAST UPDATED: 28 OCT 2003

REMARKS: THIS IS PART OF A GROUP REGISTRATION XXXXXXXXXX

SPECIAL STATUS:

SPECIAL STATUS DATE:

SPECIAL STATUS INFO:

***** 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 MESSAGE INFORMATION:

PROB	QF	SOL	LATITUDE	LONGITUDE	DETECT	TIME	SAT	NUM	SOURCE	SRR	/BUFFER/BUFR_2
N/A	511	D	39 42.4N	137 56.6E	05	2236	DEC	MEO	003	TRMcc	JAMCC

QQQQ

/LASSIT

/ENDMSG

Annex 9

Nationally Defined LEOSAR/GEOSAR Alert Messages Designed for Automated Processing

Note: alert messages for the LEOSAR/GEOSAR/MEOSAR system are TBD.

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		Message Header (Line 1). Matches line 1 of Message Header as described in section 3.1.	/nnnnn nnnnn/3660/yy jjj hhmmss
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 hhmmss (spaces separate Year from Julian Day and Julian Day from time)
2		Message Header (Line 2)	/nnaa/aaaa
2	1	Message Type Id	nnaa (nnn=SIT number per Table 2.1. “a” is the message sub-type per Annex 9- Table 2 below.)
2	2	Destination Id	aaaa
3		Identification Data (Line 3)	/xxxxxxxxxxxxxxxxx/nnnnnnn/nnnnnn/a/a (length 21)/aaaaaaaaaaaaaaaaaaaaaaaa
3	1	Beacon Id. See section 3.2.1.1.	xxxxxxxxxxxxxxxxx
3	2	HHR ID (only set for CSEL beacons, "NA " if non-CSEL). See section 3.3.2.2.	nnnnnnn
3	3	USMCC Alert Site Id. Last 5 digits match Alert Site Id per section 3.2.1.2.	nnnnnn
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.	aaaaaaaaaaaaaaaaaaaaaa (length 21)
3	6	Beacon Type. "Unknown" if "Beacon Id is Reliable" = "N". See Table 3.3.2.	aaaaaaaaaaaaaaaaaaaaaa (length 24)
4		New Alert Data (Line 4)	/yy jjj hhmmss/ann/nnnn
4	1	Detection Time	yy jjj hhmmss
4	2	Associated Satellite. See section 3.2.3.6.	ann
4	3	Associated LUT / Ground Station. The first three digits correspond to the code for the associated country.	nnnn
5		Encoded Position (Line 5)	/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmmss/a

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 hhmmss
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		Doppler "A" Position (Line 6)	/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmmss/nn
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 hhmmss
6	5	Doppler "A" Position Probability (50 - 99; "zz" = no data is available)	nn
7		Doppler "B" Position (Line 7)	/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmmss/nn
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 hhmmss
7	5	Doppler "B" Position Probability (01 - 50; "zz" = no data is available)	nn
8		Resolved Position (Line 8)	/\$nn.nnnn/\$nnn.nnnn/9999.99/yy jjj hhmmss
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 hhmmss

9		End of message identifier (Line 9)	/ENDMSG
		Character	Definition
		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**

Message (SIT) Number	Message Number Subtype	Alert Message Description
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 LEOSAR/GEOSAR 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

Other Alert Messages Designed for Automated Processing (SarMaster)

When the USMCC backs up the CMCC, the USMCC sends alert messages to Canadian RCCs in SARMaster format, a vendor (EMS/Honeywell) defined format that allows (SarMaster) software at an RCC to process alert data received from an MCC. The SarMaster format is based on the SIT message format used by C/S MCCs to exchange alert data (per document C/S A.002), with additional fields (and some modified fields) included in SIT messages.

The SARMaster format is described in Section 12.0 of the “SARMaster System Manager User Guide”, maintained by EMS/Honeywell for the CMCC (as provided by the CMCC to the USMCC per Annex 11). The message format sent by the CMCC to Canadian RCCs is quite similar but not identical to the format described in this document. Messages sent by the USMCC to Canadian RCCs are quite similar in format and content to the messages sent by the CMCC to Canadian RCCs (and described in the SARMaster User Guide), but not identical. In some cases, fields described in the SARMaster User Guide are not available at the USMCC. Key details on messages sent by the USMCC to Canadian RCCs are provided below.

SARMaster formatted messages are based on corresponding C/S SIT alert messages, per table 10.1. All SARMaster SIT alert messages are in one of two formats, one for messages with Doppler location and another for messages without Doppler position.

The USMCC distributes some additional alerts in SarMaster format, relative to C/S data distribution procedures, in accordance with procedures used by the USMCC to distribute alerts to US RCCs; for example:

- a) an updated Doppler alert (SIT 175) is sent prior to ambiguity when the “A” side probability increases by at least 30% in a new, same pass Doppler alert; and
- b) an updated unlocated alert (SIT 172) is sent when a new unlocated alert is received with a detect time at least 2 hours after the most recent detect time on a previously sent alert.

SARMaster SIT Number	C/S SIT Number	Description
172	122	406 Incident (No Doppler)
173	123	406 Position conflict (No Doppler)
174	124	406 Ambiguity resolution (No Doppler)
175	125	406 Incident (Doppler)
176	126	406 Position conflict (Doppler)
177	127	406 Ambiguity resolution (Doppler)
182	132	406 Notification of country of registration (encoded only)
183	133	406 Notification of country of registration (Doppler)

Table 10.1 Corresponding SIT Numbers for SARMaster and C/S Alert Messages

Explanatory notes are provided below. As described in document C/S A.002, a slash (/) precedes each SIT message field on each message line; for example, field “3” is the data that follows the third slash in the associated message line, and continues up to the next slash or the end of the message line.

In all messages, the Send Time (Line 1, field 3) contains the time per C/S SIT message field 3 (in format yy jjj hhmm, where yy is year, jjj is the Julian day, hh is hour of the day, and mm is minutes of the hour) with “.00” (seconds of the minute) added to the end of the field to match the SarMaster

format. Relative to C/S alert messages, alert messages sent by the CMCC to Canadian RCCs contain an extra line with the value “/0000/” just prior to the line that contains “/LASSIT”. This extra line is not defined in the SarMaster User Guide noted above and is not contained in messages sent by the USMCC to Canadian RCCs.

Lines 5 and 6 of “no Doppler alerts” (e.g., SIT 173) and Doppler alerts (e.g., SIT 177) contain the following information. These lines are not included in corresponding C/S SIT messages.

Line #. Field #	Format	Description
5.1	nnnnn	Trailing 5 digits of USMCC Site Number. In SarMaster format, this field is defined as field “1B” (original message number sent by the OCC to the RCC for this beacon).
5.2	nn	Number of satellite passes. The count is incremented by 1 for each GEOSAR satellite that detected the beacon.
5.3	nn	Set to “00”. Defined in SarMaster format as field 671 (number of solutions).
5.4	c	Set to ‘ ’ (blank). Defined in SARMaster format as field 674 for Doppler alerts, not defined for alerts with no Doppler position.
5.5	nnn.nnn	Alert site duration in hours. Defined in SarMaster format as field 668.
5.6	nnnn	Set to ‘0000’. Defined in SARMaster format as field 666.
5.7	nnnn	Set to ‘0000’. Defined in SARMaster format as field 667.
5.8	xx...xx	15 Hexadecimal beacon Id, per C/S message field 22.
5.9	cc...cc	Name of Country encoded in beacon Id. Set to “BEACON MESSAGE IS NOT RELIABLE” if the beacon message is not reliable. Defined in SARMaster format as field 665.
6.1	xx...xx	15 Hexadecimal beacon Id, per C/S message field 22.
6.2	snn.nnn	Encoded position latitude, where “s” is the sign (+’ or ‘-’). The field is only present if the beacon message contains encoded position.
6.3	snnn.nnn	Encoded position longitude, where “s” is the sign (+’ or ‘-’). The field is only present if the beacon message contains encoded position.

Table 10.2 Lines 5 and 6 in SARMaster format alerts as generated by the USMCC

Lines 7 and 9 of Doppler alerts (e.g., SIT 175) are included in corresponding C/S SIT messages, but some fields are set differently by the USMCC, as described below.

Line #. Field #	Format	Description
7.1	fnnn	Sub-field “F”, “position flag 1: ‘+’ in position flags 1 and 2 (ambiguity not resolved), ‘+’ in position flag 1 and ‘-’ in position flag 2 (new Doppler position matches the resolved position), or ‘-’ in position flags 1 and 2 (Doppler position conflict, ambiguity resolved). Sub-field “nnn”: SAR Code for associated location or alert site. Corresponds to C/S message field 24.
7.2	snn.nnn	Latitude of “A” location (if ambiguity not resolved or position conflict alert) or resolved location (if ambiguity resolved and a new Doppler position matches the resolved position). Corresponds to C/S message field 25.
7.3	snnn.nnn	Longitude of “A” location (if ambiguity not resolved or position conflict alert) or resolved location (if ambiguity resolved and a new

		Doppler position matches the resolved position). Corresponds to C/S message field 26.
7.5	nn	Probability of “A” location (if ambiguity not resolved or position conflict alert) or ‘99’ (if ambiguity resolved and a new Doppler position matches the resolved position). Corresponds to C/S message field 28.
7.6	yy jjj hhmm	Time of next pass scheduled for US LEOLUT for “A” location (if ambiguity not resolved) or resolved position (if ambiguity resolved). Corresponds to C/S message field 29.
9.1	fnnn	Sub-field “f”, position flag 2: ‘+’ in position flags 1 and 2 (ambiguity not resolved), ‘+’ in position flag 1 and ‘-’ in position flag 2 (new Doppler position matches the resolved position), or ‘-’ in position flags 1 and 2 (Doppler position conflict, ambiguity resolved). Sub-field “nnn”: SAR Code for associated location or alert site. Corresponds to C/S message field 24.
9.2	snn.nnn	Latitude of “B” location (if ambiguity not resolved or position conflict alert) or new Doppler location matching resolved position (if ambiguity resolved and a new Doppler position matches the resolved position). Corresponds to C/S message field 25.
9.3	snnn.nnn	Longitude of “B” location (if ambiguity not resolved or position conflict alert) or new Doppler location matching resolved position (if ambiguity resolved and a new Doppler position matches the resolved position). Corresponds to C/S message field 26.
9.5	nn	Probability of “B” location (if ambiguity not resolved or position conflict alert) or new Doppler location matching resolved position (if ambiguity resolved and the new Doppler position matches the resolved position). Corresponds to C/S message field 28.
9.6	yy jjj hhmm	Time of next pass scheduled for US LEOLUT for the “B” location (if ambiguity not resolved) or resolved position (if ambiguity resolved). Corresponds to C/S message field 29.

Table 10.3 Lines 7 and 9 in SARMaster format alerts as generated by the USMCC

Lines 8 and 10 of Doppler alerts (e.g., SIT 175) contain the following information. These lines are not included in corresponding C/S SIT messages.

Line #. Field #	Format	Description
8.1	yy jjj hhmm	Time of next pass scheduled for US LEOLUT for the “A” location (if ambiguity not resolved) or resolved location (if ambiguity resolved). Corresponds to C/S message field 29.
8.2	ccc	Satellite for the next pass (per time above). Defined in SARMaster format as field 669.
8.3	nnnnn	Orbit number for the next pass (per time above). Defined in SARMaster format as field 7b.
8.4	ccc	LUT for the next pass (per time above). Defined in SARMaster format as field 673.
8.5	cccccc	Name of SRR for associated location or alert site. For the Canadian SRR, contains the name of the Canadian RCC (first 6 characters).
10.1	yy jjj hhmm	Time of next pass scheduled for US LEOLUT for the “B” location (if ambiguity not resolved) or default value ‘00 000 0000’ (if ambiguity

		resolved). Corresponds to C/S message field 29.
10.2	ccc	Satellite for the next pass (per time above), set to ‘ ‘ if time is set to default value. Defined in SARMaster format as field 669.
10.3	nnnnn	Orbit number for the next pass (per time above), set to ‘00000’ if time is set to default value. Defined in SARMaster format as field 7b.
10.4	ccc	LUT for the next pass (per time above), set to ‘ ‘ if time is set to default value. Defined in SARMaster format as field 673.
10.5	cccccc	Name of SRR for associated location or alert site. For the Canadian SRR, contains the name of the Canadian RCC (first 6 characters).

Table 10.4 Lines 8 and 10 in SARMaster format alerts as generated by the USMCC

A few sample messages generated for Canadian RCCs in SARMaster format are provided below.

```

/00021 00000/3660/15 293 1441.00
/173/3160/215/01
/3675/+12018.4 005.3 +01.12/15 274 2238 31.48/02
/96E736C98F25EF3FE99E370E23BABA
/00000/03/00/ /002.863/0000/0000/2DCE6D931EFFBFF/USA
/2DCE6D931EFFBFF/+37.691/-121.812
/LASSIT
/ENDMSG

```

Sample SIT 173 Message (Position conflict, encoded position only)

```

/00037 00030/3660/15 289 1913.00
/177/3160/012/01
/7601/-4/+02968.7 000.5 -00.08/15 288 2212 35.33/0
/9/03.989/0000/12
/ 53C6F801B1A01D6B50911000000000
/00000/02/00/ /000.421/0000/0000/A78DF00363403AD/CANADA
/A78DF00363403AD
/+366/+48.154/-122.153/000 000.0 000.0/99/15 289 1029/2/002.5 000.8
/15 289 1029/S12/34460/AK2/AFRCC
/-366/+45.881/-133.719/068 000.9 000.5/01/00 000 0000/2/002.5 000.8
/15 289 1029/S12/34460/AK2/AFRCC
/LASSIT
/ENDMSG

```

Sample SIT 177 Message (Ambiguity Resolution, Doppler position)

Annex 11
SARMaster Format –
Extracted from the CMCC “SARMaster System Manager User Guide”
 (Guide Issued 07 Sept 2010, Document Part Number: MN-1066-70001-1)

APPENDIX A - COSPAS-SARSAT MCC TO RCC INTERFACE

A.1 Overview

The information described in this appendix provides an overview of modifications that have been implemented to allow the Mission Control Centre (MCC), using the Operation Control Console (OCC), to transmit beacon alerts to a designated Rescue Coordination Centre (RCC) using SARMaster.

Additional beacon format information can be obtained from either the Cospas-Sarsat Web site located at www.cospas-sarsat.org or contacting EMS Technologies Support.

A.2 Additional Data Message Fields

The data message fields (MFs) are listed by number, name, content, and template.

MF#	NAME	CONTENT	TEMPLATE
665	ELT_INFO	ELT_INFO field as recorded by the OCC in the RAW message data. This field contains either the pair of ELT_ID values for non-406 beacons formatted as [####,####] or a description of the 406 beacon type. A single slash can be embedded in this field – this requirement should be removed in future.	Free form non-fixed length text
666	ELT_ID1	Identifies the A side solution of non-406 beacons with a unique value that an OCC Operator can use to identify the beacon. Internal field sent by the OCC. Not a fixed length.	aaa.....aaaa
667	ELT_ID2	Identifies the B side solution of non-406 beacons with a unique value that an OCC Operator can use to identify the beacon. Internal field sent by the OCC. Not a fixed length.	aaa.....aaaa
668	Duration	Duration of the beacon in hours	nnn.nnn
669	Satellite Name	Text initials for satellite name (i.e. S3)	aaa
670	Number of passes	Number of distinct satellite passes detected. The same pass detected by two or more different LUTs will only be counted once.	nn
671	Number of solutions/Hits	Number of solutions developed. Includes all LUTs and all satellite passes. This counts solutions detected from the same satellite pass but two different LUTs as 2 entries.	nn
672	SRR Name	Name of the SRR which is responsible for the particular solution. No fixed length	aaa...aaaa
673	Next Visibility LUT name	Name of the LUT that will have the next visibility for the solution. Not a fixed length	aaa...aaaa
674	Missed Pass Solution	Indicates which of the A or B solutions is for a missed pass. The entries are as follows: Blank – neither are a missed pass. A – A side (first line) is a missed pass. B – B side (first line) is a missed pass. AB – both are missed passes.	aa

A.3 Modified Data Message Fields

The data message fields (MFs) are listed by number, name, template, and content.

MF#	NAME	CONTENT	TEMPLATE
1B	Original Message Number	The original message number sent by the OCC to the RCC for this beacon.	nnnnn
7B	Next Visibility Orbit	Orbit number for the next visibility of the solution	nnnnn

A.4 SIT Messages

In cases where 2 solutions are available, if MF #24 is

- positive for both, the values are Doppler locations from a pass.
- positive for one and negative for the other, the positive side is the resolved location, and the negative side is the Doppler location from the pass used to create the resolved location (the image Doppler location is not available in this case).

A.4.1 Sample SIT 165

Note: The two Doppler solutions will be the unresolved elemental locations from the pass.

MF #	Sample SIT 165
01, 02, 03	/12738 00000/2320/99 279 1958
04, 05, 06, 08	/165/3660/006/01
11, 12, 13, 14, 15	/3233/+2/-21198.0 006.0 +01.20/99 279 1947 51.15/0
16, 17, 18, 19, 20	/2/12.458/0000/00/000099
1B, 670, 671, -, 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
24, 25, 26, 27, 28, 29, 30, 31	/+366/+39.112/-054.744/081 012.9 005.8/72/99 279 2134/1/016.0 013.0
29, 669, 7B, 673, 672	/99 279 2134/ S3/07858/DEVLUT/SRR
24, 25, 26, 27, 28, 29, 30, 31	/+366/+32.704/-085.182/070 013.4 006.2/28/99 279 2134/1/016.0 013.0
29, 669, 7B, 673, 672	/99 279 2134/ S3/07858/DEVLUT/SRR
	/LASTSIT
	/ENDMSG

Lines 6 and 7 are for the A solution. Lines 8 and 9 are for the B solution.

A.4.2 Sample SIT167

Note: The two Doppler solutions will consist of the resolved composite location (MF #24 field is positive) and the corresponding Doppler location from the satellite pass (MF #24 field is negative).

MF #	Sample SIT 167
01, 02, 03	/12738 00000/2320/99 279 1958
04, 05, 06, 08	/167/3660/006/01
11, 12, 13, 14, 15	/3233/+2/-21198.0 006.0 +01.20/99 279 1947 51.15/0
16, 17, 18, 19, 20	/2/12.458/0000/00/000099
1B, 670, 671, -, 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
24, 25, 26, 27, 28, 29, 30, 31	/+366/+39.112/-054.744/081 012.9 005.8/72/99 279 2134/1/016.0 013.0
29, 669, 7B, 673, 672	/99 279 2134/ S3/07858/DEV LUT/SRR
24, 25, 26, 27, 28, 29, 30, 31	/-366/+32.704/-085.182/070 013.4 006.2/28/99 279 2134/1/016.0 013.0
29, 669, 7B, 673, 672	/99 279 2134/ S3/07858/DEV LUT/SRR
	/LASTSIT
	/ENDMSG

Lines 6 and 7 are for the composite solution. Lines 8 and 9 are for the corresponding doppler elemental solution.

A.4.3 Sample SIT170

Note: MF #674 indicates which of the solutions was missed during an expected pass. The solutions given are the last valid solution for the Doppler A and B side. Only the solutions specified in #674 will be valid in the message.

MF #	Sample SIT 170
01, 02, 03	/12739 00000/2320/99 279 1958
04, 05, 06, 08	/170/3660/004/01
11, 12, 13, 14, 15	/3233/+1/-05689.0 017.0 +13.20/99 279 1515 03.56/0
16, 17, 18	/2/06.671/0000
1B, 670, 671, 674, 668, 666, 667, 22, 665	/12439/01/01/AB/000.000/1234/1235/12ABC12ABC12ABC/1234,1235
24, 25, 26, 27, 28, 29, 30, 31	/+366/+27.684/-089.899/002 013.1 0009.9/55/99 279 2016/1/016.0 013.0
29, 669, 7B, 673, 672	/99 279 2016/ C8/04115/DEV LUT/SRRName
24, 25, 26, 27, 28, 29, 30, 31	/+366/+24.462/-075.291/024 013.5 010.1/45/99 279 2016/1/017.0 013.0
29, 669, 7B, 673, 672	/99 279 2016/ C8/04115/DEV LUT/SRRName
	/LASTSIT
	/ENDMSG

Lines 6 and 7 are for the A solution (if present). Lines 8 and 9 are for the B solution (if present).

A.4.4 SampleSIT172

MF #	Sample SIT 172
01, 02, 03	/00125 00000/2320/99 280 0954
04, 05, 06, 08	/172/2270/208/01
11, 13, 14, 21	/4444/+00176.5 000.0 +00.00/99 280 0954 01.29/01
23	/4E340BAA8681A68F613BC000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/9C6817550D034D1
	/LASTSIT
	/ENDMSG

A.4.5 SampleSIT173

MF #	Sample SIT 173
01, 02, 03	/00125 00000/2320/99 280 0954
04, 05, 06, 08	/173/2270/208/01
11, 13, 14, 21	/4444/+00176.5 000.0 +00.00/99 280 0954 01.29/01
23	/4E340BAA8681A68F613BC000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/9C6817550D034D1
	/LASTSIT
	/ENDMSG

A.4.6 SampleSIT174

MF #	Sample SIT 174
01, 02, 03	/00125 00000/2320/99 280 0954
04, 05, 06, 08	/174/2270/208/01
11, 13, 14, 21	/4444/+00176.5 000.0 +00.00/99 280 0954 01.29/01
23	/4E340BAA8681A68F613BC000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/9C6817550D034D1
	/LASTSIT
	/ENDMSG

A.4.7 Sample SIT 175

Note: The two Doppler solutions will be the unresolved elemental locations from the pass.

MF #	Sample SIT 175
01, 02, 03	/00130 00000/2320/99 280 1506
04, 05, 06, 08	/175/2270/004/01
11, 12, 13, 14, 15	/3233/-4/+00015.0 000.0 +00.00/99 280 1131 21.95/0
16, 17, 18, 21	/9/16.209/0000/07
23	/56EE000000000000477BEAC0000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/ADDC00000000000008
24, 25, 26, 27, 28, 29, 30, 31	/+366/+43.556/+001.482/115 000.7 000.3/99/00 000 0000/4/001.0 000.0
29, 669, 7B, 673, 672	/00 000 0000/ /00000/ /SRR
24, 25, 26, 27, 28, 29, 30, 31	/+366/+52.449/-044.581/095 002.1 000.6/01/99 280 1804/4/001.0 000.0
29, 669, 7B, 673, 672	/99 280 1804/ S6/24583/DEV LUT/SRR
	/LASTSIT
	/ENDMSG

Lines 8 and 9 are for the A solution. Lines 10 and 11 are for the B solution.

A.4.8 Sample SIT 176

Note: The two Doppler solutions will be the unresolved elemental locations from the pass.

MF #	Sample SIT 176
01, 02, 03	/00130 00000/2320/99 280 1506
04, 05, 06, 08	/176/2270/004/01
11, 12, 13, 14, 15	/3233/-4/+00015.0 000.0 +00.00/99 280 1131 21.95/0
16, 17, 18, 21	/9/16.209/0000/07
23	/56EE000000000000477BEAC0000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/ADDC00000000000008
24, 25, 26, 27, 28, 29, 30, 31	/+366/+43.556/+001.482/115 000.7 000.3/99/00 000 0000/4/001.0 000.0
29, 669, 7B, 673, 672	/00 000 0000/ /00000/ /SRR
24, 25, 26, 27, 28, 29, 30, 31	/+366/+52.449/-044.581/095 002.1 000.6/01/99 280 1804/4/001.0 000.0
29, 669, 7B, 673, 672	/99 280 1804/ S6/24583/DEV LUT/SRR
	/LASTSIT
	/ENDMSG

Lines 8 and 9 are for the A solution. Lines 10 and 11 are for the B solution.

A.4.9 SampleSIT177

Note: The two Doppler solutions will consist of the resolved composite location (MF #24 field is positive) and the corresponding Doppler location from the satellite pass (MF #24 field is negative).

MF #	Sample SIT 177
01, 02, 03	/00130 00000/2320/99 280 1506
04, 05, 06, 08	/177/2270/004/01
11, 12, 13, 14, 15	/3233/-4/+00015.0 000.0 +00.00/99 280 1131 21.95/0
16, 17, 18, 21	/9/16.209/0000/07
23	/56EE000000000000477BEAC0000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/ADDC00000000000008
24, 25, 26, 27, 28, 29, 30, 31	/+366/+43.556/+001.482/115 000.7 000.3/99/00 000 0000/4/001.0 000.0
29, 669, 7B, 673, 672	/00 000 0000/ /00000/ /SRR
24, 25, 26, 27, 28, 29, 30, 31	/+366/+52.449/-044.581/095 002.1 000.6/01/99 280 1804/4/001.0 000.0
29, 669, 7B, 673, 672	/99 280 1804/ S6/24583/DEV LUT/SRR
	/LASTSIT
	/ENDMSG

Lines 8 and 9 are for the composite solution. Lines 10 and 11 are for the corresponding doppler elemental solution.

A.4.10 SampleSIT182

MF #	Sample SIT 182
01, 02, 03	/00125 00000/2320/99 280 0954
04, 05, 06, 08	/182/2270/208/01
11, 13, 14, 21	/4444/+00176.5 000.0 +00.00/99 280 0954 01.29/01
23	/4E340BAA8681A68F613BC0000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/9C6817550D034D1
	/LASTSIT
	/ENDMSG

A.4.11 Sample SIT183

Note: The two Doppler solutions will be the unresolved elemental locations from the pass.

MF #	Sample SIT 183
01, 02, 03	/00130 00000/2320/99 280 1506
04, 05, 06, 08	/183/2270/004/01
11, 12, 13, 14, 15	/3233/-4/+00015.0 000.0 +00.00/99 280 1131 21.95/0
16, 17, 18, 21	/9/16.209/0000/07
23	/56EE000000000000477BEAC0000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/ADDC00000000000008
24, 25, 26, 27, 28, 29, 30, 31	/+366/+43.556/+001.482/115 000.7 000.3/99/00 000 0000/4/001.0 000.0
29, 669, 7B, 673, 672	/00 000 0000/ /00000/ /SRR
24, 25, 26, 27, 28, 29, 30, 31	/+366/+52.449/-044.581/095 002.1 000.6/01/99 280 1804/4/001.0 000.0
29, 669, 7B, 673, 672	/99 280 1804/ S6/24583/DEV LUT/SRR
	/LASTSIT
	/ENDMSG

Lines 8 and 9 are for the A solution. Lines 10 and 11 are for the B solution.

A.4.12 SIT 185 Messages

The software will recognize/process COSPAS-SARSAT format SIT 185 messages.

All SIT 185 variants described in the *2008 Cospas-Sarsat Mission Control Centres Standard Interface Description (C/S A.002, Issue 4, 2008)* are supported.

In the most recent version of this document (C/S A.002, Issue 5, 2009) this translates to messages with MF#45 (message type) values of:

- DISTRESS COSPAS-SARSAT POSITION RESOLVED ALERT
- DISTRESS COSPAS-SARSAT POSITION RESOLVED UPDATE ALERT
- DISTRESS COSPAS-SARSAT POSITION CONFLICT ALERT
- DISTRESS COSPAS-SARSAT INITIAL ALERT
- DISTRESS COSPAS-SARSAT NOTIFICATION OF COUNTRY OF BEACON REGISTRATION ALERT
- SHIP SECURITY COSPAS-SARSAT POSITION RESOLVED ALERT
- SHIP SECURITY COSPAS-SARSAT POSITION RESOLVED UPDATE ALERT
- SHIP SECURITY COSPAS-SARSAT POSITION CONFLICT ALERT
- SHIP SECURITY COSPAS-SARSAT INITIAL ALERT

Note: The sample shown on page C-13 of the 2009 SID is not supported.

This is the same functionality provided to the AFRCC in their 2009 software.

When one of these messages is received by SARMaster:

- Composite and elemental alert information will be extracted and displayed on the composites and elementals tab in the IMM.
- Narratives will be created based on the contained beacon information and displayed to the user if the system has been configured to do so via the COSPAS-SARSAT Narrative handling options in the IMM and Utilities.
- The SIT message will be visible on the messages tab in the IMM

Note: SIT 185 messages do not have a specified SRR so may be ignored by SARMaster if the system has been configured differentiate between messages which are inside versus outside the current SRR. To ensure that all SIT 185 messages are processed, the administrator must configure the system to process messages with a blank SRR as if they are "inside". A new "Blank SRRs are to be considered to be inside SRR" checkbox has been added to the "Database Output" tab of the ELT Receiver Service configuration dialog to support this. This checkbox must be selected to ensure that all SIT 185 messages are processed.

A.4.13 Sample SIT 605

MF #	Sample SIT 605
01, 02, 03	/00130 00000/2320/99 280 1506
04, 05, 06, 08	/605/2270/004/01
	This is a sample narrative message
	/LASTSIT
	/ENDMSG

A.4.14 Sample SIT 915

MF #	Sample SIT 915
01, 02, 03	/00130 00000/2320/99 280 1506
04, 05, 06, 08	/915/2270/004/01
	This is a sample narrative message
	/LASTSIT
	/ENDMSG

A.5 SIT Message Type Definitions

The following table describes and defines each of the SIT messages that can be received by the SARMaster system located at the RCC. In addition, the table shows the standard SIT number that the message most closely corresponds to in the Cospas-Sarsat Standard Interface Description (SID) documentation that can be obtained from Cospas-Sarsat.

Note: SARMaster SIT messages may contain different information than the C/S equivalent and the specific section for the SARMaster SIT message should be referred to.

Number	Derived from C/S SIT	Description
165	115	121.5/243 Incidents
167	117	121.5/243 Ambiguity resolution
170	N/A	Missed pass notification
172	122	406 Incident (No Doppler)
173	123	406 Position conflict (Encoded Only)
174	124	406 Ambiguity resolution (encoded only)
182	132	406 Notification of country of registration (encoded only)
175	125	406 Incident
176	126	406 Position conflict
177	127	406 Ambiguity resolution
183	133	406 Notification of country of registration

Annex 12
Guidance on Providing Incident Feedback to the USMCC

When an alert site closes, the USMCC will send a Site Closure (SIT 176) 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) 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.

Field	Description
BEACON ID: (Provided by USMCC)	The beacon Id for which feedback is to be provided.
SITE ID: (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.
CLOSE TIME: (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.
ACTUAL LOCATION LAT: LONG:	True location (LATitude, LONGitude) of the beacon, estimated independently of USMCC alert data. Acceptable formats are provided below. <ul style="list-style-type: none"> • LAT: DD MM-SSH, DD MM.mH or sDD.ddd, • LONG: DDD MM-SSH, DDD MM.mH, sDDD.ddd 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).
INCIDENT OUTCOME:	Select one of the following: <ul style="list-style-type: none"> • DISTRESS, • NON-DISTRESS or • UNDETERMINED. The INCIDENT OUTCOME should be consistent with the REASON ACTIVATED (see below).
INCIDENT TYPE:	Select one of the following choices. <ul style="list-style-type: none"> • AVIATION - beacon activated on an aircraft • MARITIME - beacon activated in a maritime area, not on an aircraft • TERRESTRIAL - beacon activated on land, not on an aircraft • OTHER - if selected, provide details in ACTIVATION COMMENT (see below). • UNKNOWN
BEACON REGISTRATION USED TO RESOLVE	Indicates if 406 MHz beacon registration data helped resolve the incident. <ul style="list-style-type: none"> • "PRIMARY MEANS" indicates that beacon registration data was the

INCIDENT:	<p>primary means used to resolve the incident.</p> <ul style="list-style-type: none"> • “CONTRIBUTED” indicates that beacon registration data contributed to incident resolution as a secondary means. • “NOT USED” indicates that beacon registration data was not available or did not help resolve the incident.
BEACON REGISTRATION ACCURACY	<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"> • OWNER INFORMATION, • EMERGENCY CONTACT INFO, and • VESSEL/AIRCRAFT INFO. <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>
SARSAT DATA USED TO RESOLVE INCIDENT:	<p>Select one of the following choices.</p> <ul style="list-style-type: none"> • 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. • 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. • 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. • 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.
NUMBER RESCUED:	<p>Number of people rescued in the incident (only set if INCIDENT OUTCOME is DISTRESS).</p>
NUMBER IN DISTRESS:	<p>Number of people who were in distress in the incident (only set if INCIDENT OUTCOME is DISTRESS). Does not include rescue personnel.</p>
REASON ACTIVATED:	<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"> • DISTRESS – AUTOMATIC (distress, automatic beacon activation) • DISTRESS – MANUAL (distress, manual beacon activation) • DISTRESS – ACTIVATION METHOD UNKNOWN <p>If INCIDENT OUTCOME is NON-DISTRESS, select one of the following.</p> <p>BEACON MISHANDLING – INSTALLATION</p> <ul style="list-style-type: none"> • 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

bracket

BEACON MISHANDLING – TESTING-MAINTENANCE

- 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.
- Repair by owner (usually unauthorized) or authorized facility: causing damage to beacon, activation during battery change, changing of hydrostatic release while servicing beacon.
- Improper removal from bracket: inspection, test, cleaning, or safe keeping without switching off.
- Beacon shipped to / by retailer, owner, repair facility (in transit): shipped while armed, improperly packed, improperly marked, rough handling.
- Maintenance of craft: mechanical, electronic, wash down, painting, winterization.
- Beacon stored improperly: stored while armed.

BEACON MISHANDLING – USAGE

- Illegal activation: hoax, vandalism, theft.
- Accidental activation.
- Demonstration / test not coordinated with Cospas-Sarsat / SAR authorities: training, exercise, product demonstration using on position instead of test.

BEACON MISHANDLING – DISPOSAL

- Beacon sold with craft for scrap, discarded as trash, abandoned.

BEACON MALFUNCTION – SWITCH

- Faulty activation switch, i.e., gravity activated, magnetic, mercury, or crash.
- Hard landing, excessive craft vibration.

BEACON MALFUNCTION – WATER INTRUSION

- Water leakage due to manufacturing defect, cracked casing, faulty seal.

BEACON MALFUNCTION – SELF-TEST

- Transmitted distress signal while in self-test mode.

BEACON MALFUNCTION – ELECTRONICS

- Electronics malfunction
- Non-GPS electronics malfunction.

BEACON MOUNTING – BRACKET FAILURE

- Strap or bracket failure

	<ul style="list-style-type: none"> • Strap failure, mounting bolts sheared, retainer pin broken, beacon fell out of bracket. <p>BEACON MOUNTING – HYDROSTATIC RELEASE</p> <ul style="list-style-type: none"> • Hydrostatic release failure. <p>BEACON MOUNTING – MAGNET</p> <ul style="list-style-type: none"> • Faulty mounting magnet for externally mounted ELT • Switch magnets not effective. <p>OTHER FALSE ALERT – ENVIRONMENTAL CONDITIONS</p> <ul style="list-style-type: none"> • Extreme weather conditions • Hurricane / cyclone conditions, vessel knocked down, aircraft overturned, heavy seas, ice build-up. • Beacon activated normally, non-distress situation <p>OTHER FALSE ALERT – REASON UNKNOWN</p> <p>If INCIDENT OUTCOME is NON-DISTRESS, select the following:</p> <p>UNKNOWN-INCONCLUSIVE</p>
ACTIVATION COMMENT:	<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>