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

17 February 2021
Version 3.11

DOCUMENT HISTORY

Ver/ Rev	Date	Revised Pages/Section	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 USA SRR with an unreliable beacon message. Note that PacArea and LantArea are destinations for alerts for USA coded SSAS beacons.
2.0	01 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	06 Jun 2013	4.7	Identify special circumstance in which the RCC only receives missed passes messages starting with the second missed pass.
2.10	03 Jul 2013	2.1.5	Provide special text in SIT 185 message from CMCC to identify 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 USA beacons and beacons with an unreliable ID. Update sample messages, terms of reference.
2.10	23 Jan 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.

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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 USA 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	07, 21 Apr 2015	3.1, Annex 8	Clarify the special message header for SEPIRB special program beacon alerts.
2.12	07 Apr 2015	Annex 7	Add LANTAREA to the list of USA RCCs.
2.12	07 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	08 Jun 2015	Title, 1.2	Indicate that this document applies to the LEOSAR/GEOSAR system.
2.12	08 Jun 2015	2.1.3	Clarify “US SPOC” in first reference in the section.
2.12	08 Jun 2015	2.1.5	Update CMCC distribution of alerts for USA national use beacons.
2.12	11 Jun 2015	3.2.3.4	Add “location” after “Doppler”
2.12	19 Jun 2015	2.1.5.n	Describe special program block registration availability during backup by CMCC.
2.12	23 Jun 2015	3.3.2.2	Describe field values fields ZEROIZE STATUS and TEST MODE.
2.12	24 Jun 2015	3.5.2	Clarify that the transiting MCC and destination MCC are included in the list of message destinations.
2.12	29 Jun 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 USA 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	06 Aug 2015	**various**	Update manual for MEOSAR data.

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3.01	02 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.
3.01	10 Nov 2015	3.3.2	Describe use of PROGRAM field to provide information about beacon tests.
3.01	25 Nov 2015	4.9.2	Make confirmed and elemental position data consistent in sample message.
3.01	27 Nov 2015	Annex 7	Reference Chile RCC for backup of the CHMCC.
3.01	02 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.
3.01	11 Dec 2015	4.3.2	Correct SIT number to 172 and distance threshold to 20 km.
3.01	21 Dec 2015	3.3.2	Clarify that beacon test information is provided for tests that involve a USA coded beacon or a beacon located in the USA SRR.
3.01	18 Feb 2016	3.2.7 2.1.1	Describe distribution of suspect MEOSAR alerts by destination type. 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.
3.01	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.
3.01	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.
3.01	19 Feb 2016	3.2.3.10	Describe distribution procedures for alerts with DOA position.
3.01	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.
3.02	08 Mar 2016	2.1.1	Indicate that missed detection (SIT 176) and detection update (SIT 177) messages are provided based on a 30 minute period not a 1 hour period. . Indicate that a position update message (SIT 172) is sent when a Doppler position is determined to be an image.
3.02	11 Mar 2016	3.2.3.2 Table 1	Provide the expected horizontal error in nautical miles (nm).
3.02	11 Mar 2016	3.2.3.4.a	Provide information on encoded position resolution in nautical miles (NM).
3.02	11 Mar 2016	3.2.7	Indicate that suspect MEOSAR alerts are sent if USA coded beacon in USA RGDB.
3.02	23 Mar 2016	3.2.4	Note that the Hawaii beacon simulator transmits at frequency 406.040 MHz when it is not used for MEOSAR D&E testing.
3.02	01 Apr 2016	2.1.1	Add reference to distribution procedures for DOA position to SIT 171 description.

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3.02	07 Apr 2016	3.2.5.1 3.2.5.2	Describe indicators for Doppler location accuracy when technical parameters are poor and when accuracy is impacted by a satellite maneuver. Describe indicator for Doppler location accuracy when the location is outside the satellite footprint. Describe indicator for DOA location accuracy when the location is outside the satellite footprint.
3.02	07 Apr 2016	3.3.2	Describe distribution of alerts by LGM capable MCCs after position confirmation.
3.02	09 Apr 2016	3.2.7	Indicate that suspect MEOSAR alerts with encoded position are sent to USA RCCs for non-USA-coded beacons; provide samples.
3.02	09 Apr 2016	Annex 10	Indicate how MEOSAR alert data will be incorporated into SARMaster format.
3.02	09 Apr 2016	Annex 9	Indicate how DOA and Doppler satellite footprint information will be provided for (proposed) nationally defined MEOSAR messages.
3.02	11 Apr 2016	Annex 9	Add (proposed) nationally defined MEOSAR messages to Table 9.2.
3.02	11 Apr 2016	3.2.3.7	Modify field “NUM” to report number of detections (LEOSAR, GEOSAR, MEOSAR) rather than number of satellites (MEOSAR only). . Describe suspect alerts. Change field NUM in examples.
3.02	14 Apr 2016	3.5.3	Change maximum number of previous messages reported from 4 to 5. Indicate how multiple solutions may be reported for a previous message.
3.02	15 Apr 2016	3.2.3.1 3.2.3.7	Describe fields “NUM” and “PROB” on Doppler alerts with 2 LEOSAR detections.
3.02	18 Apr 2016	Annex 10	Add example for MEOSAR alert data in SARMaster format.
3.02	18 Apr 2016	2.2.1 4.7, 4.7.1	Change the missed detection site close time from 2 to 6 hours (SIT 176), when the beacon was not detected by a MEOSAR or USA GEOSAR satellite.
3.02	25 Apr 2016	3.2.4 Annex 1	Update DETECTION FREQUENCY to indicate NOT AVAILABLE when the frequency is not available or reliable. Note that the frequency is provided from a previous solution if it is not available in the new solution.
3.02	03 May 2016	Various	Remove references to the pre-operational MEOSAR system.
3.02	03 May 2016	3.3.2	Note that the DURATION takes into account the time of the last beacon burst for a MEOSAR alert.
3.03	05 May 2016	3.2.3.4.a	Clarify that Table 3.2.6 applies to Standard and National Location protocol and that additional values are possible for USA National User protocols, which have precision of 2 seconds.
3.03	09 May 2016	5.3	Clarify the header information provided for non-USA coded beacon registration (SIT 952) and updated sample message.
3.03	10 May 2016	3.3.2.1	Indicate that two time fields in the beacon decode for Naval Sub beacons have a value “N/A” if no data is available.
3.03	11 May 2016	4.3.1	Clarify that a Doppler location first update alert could be sent with “A” probability that does not exceed the “A” probability for a previous same pass position conflict by at least 30%.

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3.03	16 May 2016	3.3.1	Add EPIRB, ELT, PLB, TEST and SIMULATED "Return Link" beacon types to Table 3.3.2.
3.03	18 May 2016	2.1.1	SIT 175: clarify that encoded position is compared to previous encoded position (if available) to determine position conflict.
3.03	18 May 2016	2.1.1 3.2.3	Clarify that DOA position is sent after position confirmation based on differences in the time of last burst in the new alert and previous alerts.
3.03	25 May 2016	Table 3.3.2	Add footnote to indicate that user protocol beacons may contain encoded location.
3.03	27 May 2016	4.8	Do not indicate that beacon decode is absent from the SIT 177 message. Provide correct header line (DETECTION TIME AND POSITIONS FOR THE BEACON) in sample SIT 177. Add sample SIT 177 message with confirmed position (section 4.8.2).
3.03	06 Jun 2016	3.3.1 Table 3.3.2	Add references to ICAO documents for Aircraft Operator and Aircraft 24 bit address. Note that Ship Security beacons can only be activated manually.
3.03	13 Jun 2016	Table 3.3.2	Remove reference to simulated RLS beacon type.
3.03	15 Jun 2016	Table 2.1 4.7, 4.7.1	Close an alert site after 2 hours with no detection only if the beacon has been detected by a USA MEOLUT with DOA position or by a USA GEOLUT. Send missed detection (SIT 176) message based on latest message send time not latest data time.
3.03	30 Jun 2016	3.2.3.10	Clarify that position confirmation with two DOA positions requires a time separation of at least 2 seconds.
3.04	25 Aug 2016	4.3.2 4.5 5.1	Change "PREVIOUS PASS" TO "PREVIOUS MESSAGE" in sample SIT 172 and 174 messages. Add slash to start of SIT 950 message.
3.04	25 Aug 2016	3.2.3.5	Correct reference to encoded position to section 3.2.3.4.a.
3.04	25 Aug 2016	Table of Contents	Rename section 4.7.4 to 4.7.5. Insert reference to section 4.7.4.
3.04	12 Sep 2016	3.2.2	Clarify that the MCC merge algorithm is configured to give all DOA and Doppler positions equal weight.
3.04	21 Oct 2016	4.2.1 4.2.2	Update information in sample messages.
3.04	26 Oct 2016	3.2.3.7 Annex 1	Update information on NUM field for GEOSAR alerts. Update sample messages for NUM field.
3.04	01 Nov 2016	3.2.2	Describe the new MCC merge algorithm that weighs DOA and Doppler positions differently based on data quality.
3.04	01 Nov 2016	3.2.5.1	Identify technical parameters used to assess Doppler position accuracy.
3.04	03 Nov 2016	4.8	Added description of SIT 177 message sub-header when position is not confirmed and interim sub-header that will be provided until RCC parsing software can handle the sub-header as designed. Added a sample SIT 177 message with the interim sub-header in section 4.8.3.

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3.04	10 Nov 2016	2.2.1	In SIT 179 description, noted that new encoded position received after position confirmation is compared to previous encoded position not the confirmed position.
3.04	23 Nov 2016	3.2.3.2 various sample messages	For moving beacons, note that the expected error (EE) is not reliable and that the DOA position is less accurate than for static beacons. Note that EE is set to N/A for DOA position data sent to U.S. Coast Guard RCCs. Note: Some sample messages do not reflect that EE is set to N/A for Coast Guard RCCs.
3.04	29 Nov 2016	3.2.3.6 Annex 1	Note that "Detect Time" now refers to the last detect time (not the first detect time) for a MEOSAR solution. Note that the number of detections (NUM) is limited to 99 for MEOSAR data.
3.04	29 Nov 2016	3.2.4.2 Annex 1 Table 3.2.14	Describe new field First Detect Time.
3.04	29 Nov 2016	Table 2.1 Annex 10	Reflect change in "A" probability threshold for distributing updated same pass Doppler solutions from 30% to 15%.
3.04	29 Nov 2016	1.3	Add reference to document C/S G.007 (Handbook on Alert Messages for RCCs and SPOCs).
3.04	29 Nov 2016	3.2.2 3.2	Describe position confirmation, and include new Table 3.2.4. Change references to subsequent tables in section 3.2.
3.04	29 Nov 2016	various	Always use "USA" instead of "US" to refer to the United States.
3.04	02 Dec 2016	3.2.3.4.a	Describe uncertainty of encoded position. Describe encoded position for Return Link Service (RLS) beacons.
3.04	02 Dec 2016	3.2.3.6	Describe the setting of the detect time for an encoded position. Describe how beacons designed to update its encoded position frequently may not update its position.
3.04	06 Dec 2016	3.2.3.6	Describe encoded position update requirements for beacons with an internal navigation device.
3.04	08 Dec 2016	3.2.3.4.a	Clarify that the actual uncertainty of encoded position includes uncertainty in latitude and longitude.
3.04	09 Dec 2016	3.2.3.2	Indicate that the expected error for DOA positions will not be provided to SPOCs.
3.05	16 Dec 2016	Annex 9 Annex 10	Indicate that the MEOSAR data time in nationally defined and SARMaster format messages.
3.05	16 Dec 2016	3.6	Clarify that closed site records are only added to the IHDB every 10 minutes.
3.05	10 Jan 2017	3.2.7	Clarify that receipt of a new alert for an alert site after receipt of a suspect alert means that the alert site and initial alert are no longer considered to be suspect.
3.05	17 Jan 2017	Various	Correct title "BUFR_2" to "BUFF_2" in various sample messages.
3.05	17 Jan 2017	3.2.3.6	Clarify that a change in refined encoded position vs. previous coarse encoded position does not imply that the position encoded in the beacon message has changed.
3.05	18 Jan 2017	2.1	Add definition of beacon burst.
3.05	16 Feb 2017	3.2.2.2.1	Describe modifications to the USMCC computation of the confirmed position – it now includes encoded position and logic

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			that recomputes the confirmed position from new position data if position conflicts consistently occur versus the confirmed position.
3.05	16 Feb 2017	3.2.4.1	Reflect USMCC modification to suppress the detection frequency for MEOSAR solutions with DOA position because the value is not reliable.
3.06	01 Mar 2017	3.2.5.1	Clarify that a warning is provided on the alert message if either the A or B Doppler position is outside the satellite footprint.
3.06	01 Mar 2017	3.2.4.1	Note that the detection frequency can be used to help determine if an alert from an unreliable beacon ID is correlated with an alert from a reliable beacon ID. Provide the location of beacon simulators operated in the USA.
3.06	06 Mar 2017	Annex 7	Add "Trinidad and Tobago" to the list of SPOCs.
3.06	16 Mar 2017	3.2.3.9.1 3.5.2	Describe the distribution of alerts for Return Link Service (RLS) beacons.
3.06	27 Mar 2017	3.2.3.9.1	Clarify that the SRR in the New Alert section is based on the current alert destination(s) only when an unlocated (Detection Update) alert is sent to an RCC or SPOC for a site with unconfirmed position data.
3.06	23 May 2017	Various	Change MID to COUNTRY (and rearrange other beacon decode fields) in Beacon Decode section of sample message (in progress).
3.06	31 May 2017	Various 3.2.2 Table 3.3.3 Tables 3.2.7, 3.3.2 3.4.7 Annex 1 Annex 2	Modify message samples to reflect changes to remove unneeded leading blanks in the Beacon Registration and Supporting Information sections, remove unneeded asterisks in titles, replace "@" with "(AT)" in foreign beacon registration point of contact information, and change field title "DATE REGISTRATION EXPIRES" to "DATE REG EXPIRES". Add section 3.2.2 and Table 3.3.3 to describe new fields reported for RLS beacons (RLS Provider, and RLM Type-1 and Type-2 status). Renumber affected sections 3.2.2 and 3.2.3, and affected Table 3.3.3. Updates Table 3.2.7 and 3.3.2 to reflect the fact that RLS beacons do not have national location protocol. Update Table 3.3.2 to reflect the change of beacon type "RETURN LINK TEST" to "TEST RETURN LINK". Note that the "@" symbol is represented by "(AT)" in the registration EMAIL address for foreign beacons, as required by document C/S A.002 for the distribution of messages from MCCs to SPOCs and MCCs. Update Table 3.4.7 to remove unneeded spaces. Include RLS PROVIDER in Annex 1. Remove decommissioned LUTs CA1 and CA2 from Annex 2
3.07	01 Aug 2017	4.7.5; Annex 6	Correct IHDB feedback header
3.07	05 Sep 2017	3.2.3.6 3.2.5.2	Clarify that the DETECT TIME is truncated to minutes. Describe how the DETECT TIME can be used to determine if a solution is from a single beacon burst. Provide information on DOA position accuracy per MEOLUT commissioning requirements for single burst and multi-burst solutions.

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3.07	09 Jan 2018	Annex 3	Add QAMCC ("not operational"), mark NIMCC as "not operational".
3.07	09 Jan 2018	Table 3.2.10	Add SPOCs with buffers to Table, change title to refer to SPOCs and Canadian RCCs.
3.07	09 Jan 2018	3.2.3.9.1 various	Describe distribution of SSAS alerts for non-USA beacons. Correct references for C/S website.
3.07	09 Jan 2018	Annex 7	Add Haiti to the list of SPOCs.
3.07	18 Jan 2018	3.6	Provide background information on requirements for incident feedback and the distribution of site closure (SIT 176) messages.
3.07	18 Jan 2018	4.7 Annex 6 Annex 12	Describe change in incident feedback format (SIT 176) to fit within the 69-character limit for MCCs (including "TEST-MAINTENANCE") and update sample messages.
3.07	24 Jan 2018	Title	Remove reference to LGM system from title page.
3.07	30 Jan 2018	Annex 13 3.2.3.9.1 c	Add table of SRRs assigned for foreign addresses used in the RGDB.
3.07	30 Jan 2018	3.2.3.9.1 6	Clarify information about the distribution of alerts after position confirmation.
3.07	30 Jan 2018	3.2.2.2.2 various	Correct reference from 3.2.8 to 3.2.3.9. Modify table references to remove duplicate tables 3.2.11.
3.07	06 Feb 2018	Annex 7	Indicate that RCC messages do not identify the SRR for Canadian RCCs when the CMCC is operational.
3.07	09 Feb 2018	3.2.3.9.1 Annex 14	Clarify Alert data distribution procedures: clarify the meaning of "USA-coded beacons," note that unlocated alerts for US coded PLBs are sent to AFRCC, describe NOCR distribution for US coded beacons, and reference new Annex 14. Add Annex 14 to provide the destinations for unlocated alerts, NOCRs and SSAS alerts for foreign (non-USA) countries in the USA service area.
3.07	13 Feb 2018	2.1.5 (h, i) 2.2	Refine the description of alert distribution rules during USMCC backup based on country code and for USA national use beacons. Note that a SIT 950 message may be sent without request to provide system status information.
3.08	09 Mar 2018	Table 3.2.7 3.2.3.4.a	Update Revision History table to combine the Version and Revision into one column. Indicate the start of RLS beacon operational use as mid-2019. Reference available precision for RLS beacons.
3.08	09 Mar 2018	1.2, 2.1.1 1.3	Update references to the LGM and L/G systems. Provide the date LGM operations began. Note that the SIT 170 is only sent prior to position confirmation.
3.08	05 Apr 2018	3.2.7	Clarify that suspect MEO alerts are sent to an RCC for a non-USA beacon if the RCC is receives alerts for the associated country and the encoded position in the US Service Area. Clarify that suspect MEO alerts are not sent to an RCC for a non-USA beacon if the RCC is receives alerts for the associated country and there is no encoded position. Note that the presence or absence of an allocated CSTA # can be used to corroborate a MEO suspect alert.

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3.08	10 Apr 2018	3.4.3	Add Table 3.4.1 to describe beacon registration special status types, to include new status DUPLICATEID. Change existing Table 3.4.1 to Table 3.4.2.
3.08	12 Apr 2018	3.2.7.1	Add section with analysis of suspect MEOSAR alerts.
3.08	06 Jul 2018	3.2.3.9.1	Remove incomplete sentence at the end of paragraph (left over text from previous edit).
3.08	12 Jul 2018	Annex 14	Add 374 to list of country codes allocated to Panama.
3.08	31 Jan 2019	Annex 1 Annex 2 Annex 3 Annex 7 3.2.7 3.4.7	Correct web address for IBRD. Update reference to HI LEOLUTs (for planned transition of HI3 and HI4 to operations). Change title from “Foreign MCCs” to “C/S MCCs,” add MYMCC and USMCC, flag LGM capable MCCs. Update information for Mexican SPOCs, remove reference to US AF SRRs used for testing. Add reference for C2CEN (USMCC) associated with C3CEN. Note a significant decrease in volume of suspect MEOSAR alerts since a MEOLUT problem was fixed in May 2018. Note that a MEOSAR alert is deemed suspect regardless of whether it was detected by multiple antennas. State that USMCC AFTN and TELEPHONE POC info is provided for countries which do not maintain a national registry but include their beacons in the IBRD.
3.08	25 Feb 2019	3.2.2.1	Clarify that the confirmed position computed by the MCC may differ from the actual beacon position as determined by SAR personnel.
3.09	08 Apr 2019	Annex 2	Note that HI3 and HI4 are now operational.
3.09	10 Apr 2019	3.2.3.9.1	Remove redundant text about the distribution of unlocated alerts (item f).
3.09	23 Apr 2019	Annex 2	Note that FL3 and FL4 are now operational.
3.09	31 May 2019	3.2.8	Add information on Beacon Decode Information Derived From a Previous Reliable Beacon Message.
3.09	15 July 2019	3.2.3.9 Annex 1 Annex 2 Annex 3	Clarify information on SRR and BUFFER fields, and implications for SAR responsibility. Add description of the USMCC Geosort (new section 3.2.3.9.1). Renumber section 3.2.3.9.1 to 3.2.3.9.2 and describe the distribution of alerts to the RLSP after a position confirmation alert is sent. Clarify details for designated (vs. 50 km) buffer, the number of SRRs on message, and that Registration information for EPIRBs also applies to SSAS beacons. Modify “SECONDARY SRR” description to include Airport, rather than describe Airport SECONDARY SRR separately. Add LME to the list of USA LUTs. Flag AUMCC and UKMCC as LGM MCCs.
3.09	23 July 2019	3.2.3.9	Clarify how the assignment of buffer SRRs takes into account uncertainties in the assignment of SRRs based on reported location. Delete SWP (121 MHz Sweep) from Annex 1.

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3.09	30 July 2019	3.2.3.7 3.2.7 3.2.7.1	Expand description of suspect (single detection) LEOSAR and GEOSAR alerts, and provide guidance on assessing their validity. Note the significant decrease in the number of suspect MEOSAR alerts since late May 2018.
3.09	07 Aug 2019	Annex 9	Clarify that the HHR ID is right padded with blanks.
3.09	29 Oct 2019	3.2.3.9.2	Clarify that special routing for USA-coded beacons takes precedence over normal alert routing (e.g., unlocated alerts for unregistered USA beacons without a craft ID are sent, if special routing is defined).
3.09	12 Nov 2019	Annex 3	Update Annex 3 to identify QAMCC and CYMCC as LGM capable.
3.09	19 Nov 2019	3.2.7	Add "(Uncorroborated MEOSAR Detections)" to the section title "Suspect MEOSAR Alerts" to better reflect updated C/S terminology.
3.09	17 Dec 2019	All	Add page numbers and header; adjust pagination; move table captions to above tables instead of below.
3.09	03 Jan 2020	3.2.2.2.1	Note that the algorithm to re-establish the confirmed position is only designed to handle slow-moving beacons.
3.09	12 Feb 2020	Many	Edit for consistency and redundancy (e.g., acronym spellouts), sectional formatting.
3.09	19 Feb 2020	3.2.3.9.2	Add a note for the case in which a MEOSAR alert is sent as an NOCR and the responsible RCC is serviced by a LEOSAR/GEOSAR only MCC.
3.09	19 Feb 2020	Annex 3	Add information on nodal MCCs and link to relevant C/S web address.
3.09	20 Feb 2020	Table 3.3.2	Add beacon type EPIRB MMSI RETURN LINK.
3.09	20 Feb 2020	Annex 14	Update SRR information for Haiti.
3.09	21 Feb 2020	Annex 3	Update information on HI1, HI2, FL1 and FL2.
3.09	02 Mar 2020	Annex 12	Update description of IHDB interface.
3.09	02 Mar 2020	3.2.3.6.1 1.3	Update information on encoded position update frequency. Add reference to document C/S T.018.
3.10	12 Mar 2020	3.5.3	Describe the case where the initial alert used to confirm position is not provided in the PREVIOUS MESSAGE INFORMATION.
3.10	24 Mar 2020	1.3	Add references for documents C/S A.005, A.006, T.002, T.009, and T.010.
3.10	25 Mar 2020	Tables 3.3.2 and 3.2.7 Annex 2	Add information about the ELT(DT) beacon type and associated encoded position uncertainty. Add information on AK3 and AK4. Add the C/S ID per LUT.
3.10	21 Apr 2020	3.1 3.2.7 3.2.4.3 3.2.2.2.1 3.2.11 Table 3.2.12	Describe the copy of the SITE ID after message header. Describe new field DOA altitude, add Table 3.2.14 with sample text, adjust numbering for subsequent Tables 3.2.*. Describe a new field that identifies when the confirmed position is re-established based only on new data. Add details about the logic used to re-establish the confirmed position. Add Table 3.2.12 with a sample message. Adjust numbering for subsequent Tables 3.2.*.

Ver/ Rev	Date	Revised Pages/Section	Comments
3.10	21 Apr 2020	Annex 9.2	Clarify that SIT number 169 applies to beacon message rotating fields updates, in addition to encoded position updates.
3.10	23 Apr 2020	Annex 3	Update Annex 3 to identify SIMCC and JAMCC as LGM capable.
3.10	28 Apr 2020	2.1.4	Correct a reference to section 3.3.4 (Beacon Decode Information for Unreliable Beacon Messages). Clarify that a new alert will be sent using beacon message information in the previous reliable beacon message, if the new alert contains an unreliable beacon message but a previous alert for the beacon contained a reliable beacon message.
3.10	28 Apr 2020	3.2.3.4.a	Indicate that information about encoded position in Tables 3.2.7 and 3.2.8 applies to RLS and ELT(DT) beacons.
3.10	12 May 2020	Annex 3 Annex 14	Update Annex 3 to identify ALMCC as LGM capable. Correct Annex 14 to not say that alerts for VZMCC are copied to SANJN. Add Curaçao as the name for the former Netherlands Antilles.
3.10	15 May 2020	3.2.3.9	Note that Bermuda, COCESNA, and the Dominican Republic are SPOCs.
3.10	26 May 2020	Table 3.2.7	Update sample message text that describes an uncorroborated MEOSAR alert.
3.10	01 June 2020	Table 3.2.16	Document the distribution of uncorroborated MEOSAR alerts: a) from MEOLUTs that have met commissioning requirements for processing anomalies, and b) to SPOCs for USA-registered beacons.
3.10	03 June 2020	4.1.3 Annex 1 3.3.3	Updated sample message to refer to an uncorroborated MEOSAR alert rather than a suspect MEOSAR alert. Corrected reference for field SAT to refer to Table 3.2.9. Corrected reference from Table 3.2.9 to Table 3.2.11.
3.10	04 June 2020	Table 3.2.7 3.3.1 3.3.1	Clarify information on the operational use of RLS beacons. Update link to C/S website information on type approved beacons. Remove unnecessary link to ITU website.
3.10	05 June 2020	Annex 1 Annex 9	Correct references for encoded position uncertainty to section 3.2.3.4.a for Latitude and Longitude in Annex 1 and Encoded Position Quality Indicator in Annex 9.
3.11	12 August 2020	Table 2.1 4.3.1	Document the new distribution of SIT 185 Position Update messages to SPOCs when there is a significant improvement in the Doppler “A” position probability. Correct text to say that the required “A” position probability improvement is “15%” not “30%”.
3.11	12 August 2020	4.6.1, 4.3.2, 4.4 Annex 7, 1.2	Make minor editorial changes. Identify the SPOCs that receive RCC formatted messages and add a reference in Section 1.2.
3.11	21 Dec 2020	Annex 3	Update Annex 3 to identify CHMCC and TRMCC as LGM capable.
3.11	07 Jan 2021	4.7, 4.7.2	Clarify that SIT 176 messages reporting a missing detection are sent when no alert has been sent within the last 30 minutes, which does not imply that no alert has been detected within the last 30 minutes.

Ver/ Rev	Date	Revised Pages/Section	Comments
3.11	07 Jan 2021	3.3.1 Table 3.3.2	Add description of Homing values for Second Generation Beacons. Editorial corrections for ELT(DT)s and EPIRB MMSI RETURN LINK.
3.11	08 Jan 2021	2.1.1, 3.2.3.7 Annex 10 (Table 10.2)	Update text for suspect MEOSAR alerts to refer to uncorroborated MEOSAR alerts.
3.11	01 Feb 2021	4.7.2	Clarify that the generation of SIT 176 messages due to a lack of detections may be delayed beyond 30 minutes when the USMCC processes a steady stream of alert data.
3.11	17 Feb 2021	Annex 7 Annex 14	Add echoed destinations for RCCs/SPOCs. Add a cross-reference to Annex 14 and Annex 7.

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LIST OF ANNEXES

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.

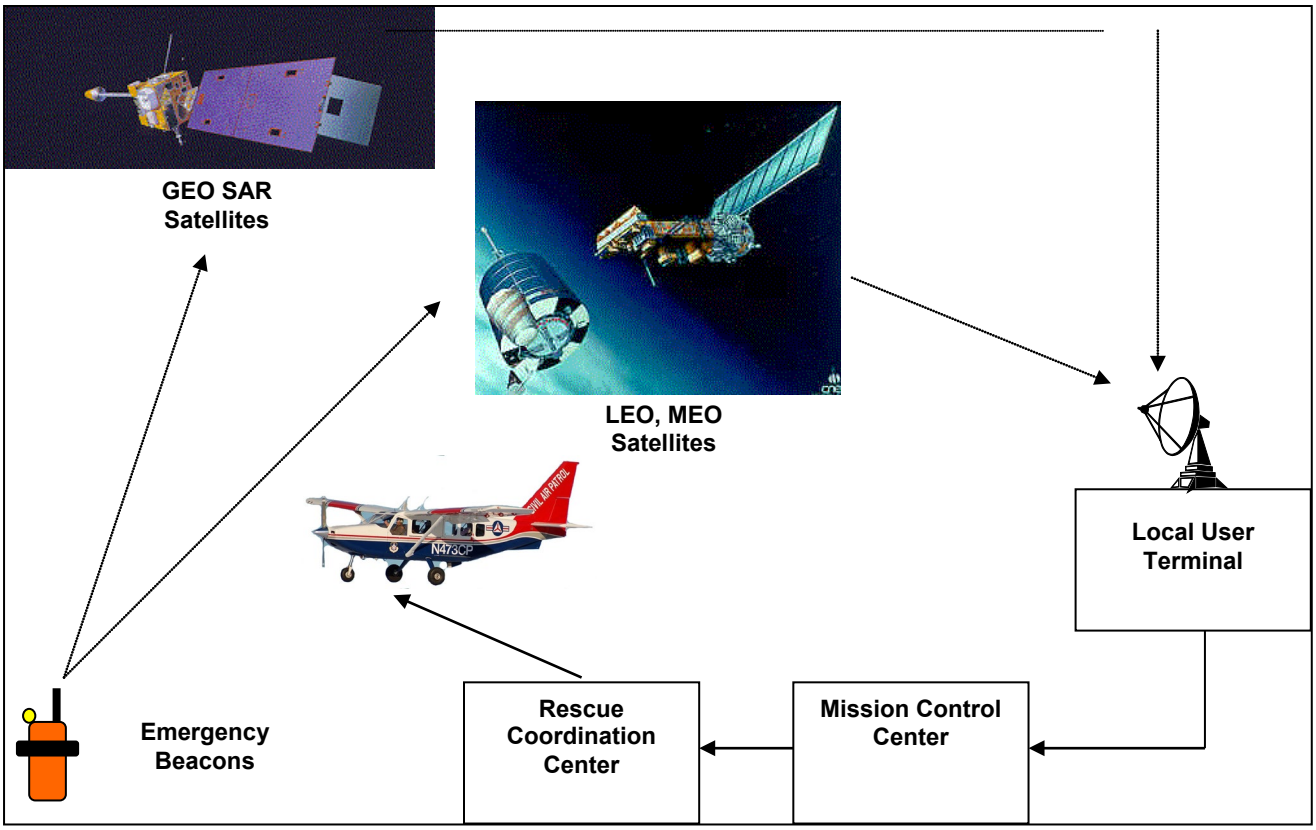

Figure 1.1: Overview of Cospas-Sarsat

1.2 Document Objective

This document describes messages that are transmitted by the USMCC to national RCCs and SPOCs for the LEOSAR/GEOSAR/MEOSAR (LGM) system, which began operations on 13 December 2016. Prior to this date, the USMCC sent messages for the LEOSAR/GEOSAR (L/G) system. National SAR authorities should use this document to respond to alerts generated by 406 MHz distress beacons. This document only describes USA (nationally formatted) messages, unless otherwise noted. USA nationally formatted messages are sent to all USA RCCs and some USA SPOCs (that is, some foreign

SPOCs within the United States service area). The SPOCs that receive nationally (RCC) formatted messages are identified in Annex 7.

Other USA SPOCs (that is, SPOCs that do not receive the nationally formatted messages sent to all USA RCCs) are sent SIT 185 messages as described in document C/S A.002. USA 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 the alert message data elements and components of the SARSAT system can be found in the following documents:

a) LEOSAR/GEOSAR/MEOSAR (LGM) Capable United States Mission Control Center Data Structures
b) International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual and the corresponding National SAR Supplement
c) C/S A.001, Cospas-Sarsat Data Distribution Plan
d) C/S A.002, Cospas-Sarsat Mission Control Centres Standard Interface Description
e) C/S A.003, Cospas-Sarsat System Monitoring and Reporting
f) C/S A.005, Cospas-Sarsat Mission Control Centre (MCC) Performance Specification and Design Guidelines
g) C/S A.006, Cospas-Sarsat Mission Control Centre Commissioning Standard
h) C/S G.007, Cospas-Sarsat Handbook on Distress Alert Messages for Rescue Coordination Centres (RCCs), Search and Rescue Points of Contact (SPOCs) and IMO Ship Security Competent Authorities
i) C/S P.011, Cospas-Sarsat Programme Management Policy
j) C/S R.018, Cospas-Sarsat Demonstration and Evaluation Plan for the 406 MHz MEOSAR System
k) C/S T.001, Cospas-Sarsat 406 MHz Beacon Specification
l) C/S T.002, Cospas-Sarsat LEOLUT Performance Specification and Design Guidelines
m) C/S T.005, Cospas-Sarsat LEOLUT Commissioning Standard
n) C/S T.009, Cospas-Sarsat GEOLUT Performance Specification and Design Guidelines
o) C/S T.010, Cospas-Sarsat GEOLUT Commissioning Standard
p) C/S T.012, Cospas-Sarsat 406 MHz Frequency Management Plan
q) C/S T.015, Cospas-Sarsat Specification and Type Approval Standard for 406 MHz Ship Security Alert (SSAS) Beacons
r) C/S T.018 Cospas-Sarsat Specification for Second-Generation Cospas-Sarsat 406-MHz Distress Beacons
s) C/S T.019, Cospas-Sarsat MEOLUT Performance Specification and Design Guidelines
t) C/S T.020, Cospas-Sarsat MEOLUT Commissioning Standard

C/S documents (e.g., C/S A.001) are available on the System Documents page of the C/S website and are typically updated on an annual basis between October and December.

This document (USMCC National RCC and SPOC Alert and Support Messages) is available online via the NOAA SARSAT Program and System Documentation page.

2 SUMMARY OF MESSAGES

The USMCC sends alert messages and support messages to USA RCCs, as described below. Uppercase letters (e.g., SAT) are 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 (TCA) (Doppler location only) or time of detection;
- satellite identifier(s);
- frequency of transmitter;
- number of detections (beacon bursts for LEOSAR and GEOSAR data*);
- duration of Doppler curve (Doppler location only);
- probability of the "A" solution being correct (Doppler location only);
- error ellipse;
- confidence factor;
- expected horizontal error [Difference of Arrival (DOA)location only];
- cross-track angle (Doppler location only); and
- data residuals.

**A burst is a transmitted beacon message. Per document C/S T.001, bursts for operational beacons are transmitted with a period randomized around a mean value of 50 seconds, so that time intervals are randomly transmitted on the interval 47.5 to 52.5 seconds.*

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 for RCCs. The message name is shown in uppercase letters, 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 in Table 2.1 are comparable to the SIT 160 – 169 messages that were previously generated in

the LEOSAR/GEOSAR system; for example, the SIT 170 message is comparable to the previous SIT 160 message.

The phrase "(POSITION UNCONFIRMED)" or "(POSITION CONFIRMED)" in the Message Name refers to the status of the alert site (beacon activation), not the status of the new alert information.

Table 2.1: Description of Alert Messages

SIT	Message Name/Comments
170	**406 BEACON UNLOCATED FIRST ALERT** 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 3.2.3.9.2 describes distribution procedures for unlocated alerts. This message is sent only before position is confirmed.
171	**406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED)** This message is sent when a 406 MHz beacon is first detected with encoded, DOA, or Doppler position information available, but the position is not confirmed. Section 3.2.3.9.2 describes distribution procedures for alerts with DOA position.
172 1) * 2) 3) 4)	**406 BEACON LOCATED FIRST ALERT UPDATE (POSITION UNCONFIRMED)** This message is sent prior to position confirmation when: 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 15% higher than the "A" side probability in all previously sent same pass solutions; Note: a SIT 185 Position Update message is sent to a SPOC that receives C/S standard SIT 185 messages,. 2) the new Doppler alert indicates that one Doppler position is an image (incorrect); 3) the new DOA position is "better quality" based on the Expected Horizontal Error; 4) the latest data time of a new DOA position is more than 5 minutes after the latest data time of all previously sent alerts with DOA position.
172	**406 BEACON DOPPLER POSITION MATCH (POSITION UNCONFIRMED)** 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.
173	**406 BEACON POSITION CONFLICT ALERT (POSITION UNCONFIRMED)** 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.
174	**406 BEACON NOTIFICATION OF POSITION CONFIRMATION** 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.

SIT	Message Name/Comments
175	**406 BEACON POSITION CONFIRMATION UPDATE** This message is sent after position confirmation when the new Doppler or DOA position is within 20 kilometers of the previous confirmed position. A subsequent alert with DOA position is sent based on a difference of at least 15 minutes in the time of the latest bursts in the new alert vs. the previously sent alerts with DOA position or the new DOA position is "better quality" based on the Expected Horizontal Error; see section 3.2.3 for details. **406 BEACON CONFIRMATION UPDATE WITH POSITION CONFLICT** This message is sent after position confirmation when: 1) the new Doppler or DOA positions differ by more than 20 kilometers from the confirmed position; 2) the new encoded position differs by more than 20 kilometers from the confirmed position, if there is no previous encoded position for the alert site; 3) the new encoded position differs by more than 20 kilometers from previous encoded position, if there is previous encoded position for the alert site.
176*	**406 BEACON SITE STATUS REPORT** This message is sent when no message has been sent for a beacon within 30 minutes, or when an alert site closes due to age out or USMCC Operator action. An alert site closes if the beacon is not detected within 2 hours, if the beacon was detected by a USA MEOLUT with DOA position or a USA GEOLUT, or 6 hours otherwise. An alert site also closes if it has been open for 72 hours. This message may be sent before or after position is confirmed.
177*	**406 BEACON DETECTION UPDATE** This message is sent when a 406 MHz alert is received with the (last) detect time at least 30 minutes later than the most recent detect time sent to the RCC for the alert site, or when a new alert is received and an uncorroborated 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.
178	**NOTIFICATION OF COUNTRY OF REGISTRATION** 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 USA RCC when a USA-coded beacon is detected outside the USA SRR. It is also sent to the USA 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 USA RCC based on the home port or airport for a registered USA beacon, based on the beacon type for an unregistered USA beacon or based on country code for a non-USA beacon. It may be sent when Doppler and encoded position (or DOA and encoded position) from the same alert confirm position.
179	**406 BEACON ENCODED POSITION UPDATE (POSITION UNCONFIRMED)** **406 BEACON ENCODED POSITION UPDATE (POSITION CONFIRMED)** 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 the first refined (more precise) encoded position is received after a coarse encoded position is received. It may be sent before or after position is confirmed. If the encoded position is received after position confirmation, then the new encoded position is compared to the previous encoded position (if available), not the confirmed position. 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. 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.

*****_This is a USA national message only; it is not specified by Cospas-Sarsat._

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 parentheses. Sample alert messages are provided in section 4.

Table 2.2: Alert Message Structure 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-USA 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)

A detailed description of these message sections is provided in section 3. Other conditions pertinent to alert message content and distribution are described in sections 2.1.3 through 2.1.6.

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, T.015, A.001, and A.002 for more information).

If the Competent Authority (message destination) for a SSAS alert is a USA RCC or a USA SPOC (i.e., a country in the USA Service Area but not in the USA 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 stating “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 USA SPOCs that are not sent alert messages in RCC format, the USMCC sends SSAS alert messages in SIT 185 format, as specified in document C/S A.002.

2.1.4 Alert Messages With an Unreliable 406 MHz Beacon Message

The 406 MHz beacon transmits 144 bits every 50 seconds ± 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.

A 406 MHz beacon message is determined to be unreliable when it fails a validation check specified in document C/S A.001; 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 DOA location or LEOLUT-computed Doppler location (if available), or
b) Data in the USA 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 USA 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 USA SRR are sent to a USA RCC based on the location. In addition, these alerts are sent to the US Coast Guard (USCG) Atlantic Area (LantArea) and USCG Pacific Area (PacArea), the USA Competent Authorities for 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 3.3.4.

If the MCC receives a new alert with an unreliable beacon message after it receives an alert with a reliable beacon message for the same beacon (based on a match of the 15-digit hexadecimal beacon ID), then the new alert will be sent using beacon message information in the reliable beacon message.

2.1.5 Alert Messages Sent During USMCC Backup

If the USMCC is unavailable, the Canadian MCC (CMCC) will provide alert data to USA RCCs and SPOCs in Cospas-Sarsat standard format SIT 185, as described in document C/S A.002. Some important differences between alert (SIT 185) messages sent by the CMCC and alert (SIT 170 to 179) messages sent

by the USMCC are noted below (listing a through o). **Note: this section has not been updated for the LGM CMCC.**

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, 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 cannot close alert sites.

c) SIT 185 messages sent by the CMCC do not contain registration data for USA 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 USA RCC should query the USMCC RGDB manually for registration information about USA 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 USA beacons. In contrast, the USMCC sends unlocated alerts for serialized USA beacons only if the beacon is registered or contained in a USA special program.

e) The CMCC sends all SIT 185 unlocated alerts for USA 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"). Alert messages sent by the USMCC do not provide next pass information.

g) The CMCC specially routes all alerts for USA-coded "national use" beacons to the AFRCC in addition to routing the alerts based on location, whereas the USMCC specially routes USA-coded "national use" beacons that are allocated to USA government "special programs" to specific destinations per special program (based on agreements made by NOAA/USMCC with other USA government agencies). In this context, the CMCC defines a USA country code to be in the range of 366 to 369, whereas the USMCC may perform special routing based on any USA country code listed in Table 3.2.11.

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

```
16. REMARKS:  USA CODED NATIONAL USE BEACON
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h) The CMCC distributes unlocated alerts, Notifications of Country of Registration (NOCRs), and SSAS alerts for country codes for countries in the US service area per Annex 14, except that the CMCC send NOCRs and unlocated alerts to the AFRCC where “US RCC” is listed in Table 3.2.11.

i) The CMCC sends a maximum of 4 missed LEOSAR satellite missed pass messages per reported beacon location. The USMCC does not send missed pass messages but sends missed detection messages.

j) 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.

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

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

m) The CMCC Operator cannot remove one destination (RCC) from the distribution list for an alert site without removing all destinations. This means if 2 RCCs are receiving data for a site and one of the RCCs wants their messages suppressed for the site, the CMCC Operator will not be able to suppress messages for the one RCC without suppressing the messages for the other RCC.

n) 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”.

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

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

2.1.6 Nationally Defined Alert Messages Designed for Automated Processing

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

2.2 Support Messages

Support messages are often sent in response to specific requests by an RCC, SPOC or MCC. The SIT 950 message may be sent without request, to provide information on system status.

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 uppercase letters, as it appears on the message.

Table 2.3: Description of Support Messages

SIT	Message Name/Comments
950	**NARRATIVE MESSAGE** This message is used to transmit narrative text to the RCCs. This may provide information on system status.
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 USA-coded or non-USA-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 USA 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 USA LEOLUT and a specified location.

2.2.2 Support Message Structure

Table 2.4 describes the structure of alert message created by the USMCC, with a list of key fields provided in parentheses. Sample support messages are presented in section 4.

Table 2.4: Support Message Structure

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)

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 their unique components.

Note: Brackets [] are used to indicate that a message component is not present on all messages.

3.1 Message Header

As shown in Table 3.1.1, 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.

Messages sent to US Air Force (USAF) RCCs (including the AFRCC and the AKRCC) contain an additional line after Line 2 of the message header that contains the Site ID (format SITE ID: NNNNN, as described in section 3.2.1.2); this additional line is provided to allow the Site ID to be identified by USAF personnel when the message is received via AFTN/AISR without having to open the message.

Message Title Special Information is only included when the 406 MHz beacon message is unreliable (see section 2.1.4), when the beacon type is Ship Security (see section 2.1.3) 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.

Table 3.1.1: Message Header Format

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

In the following example (Table 3.1.2), message 17127 was sent by the USMCC to the AFRCC (Dest= 366S) at 0939 UTC on 27 September 2019. The message type is a "406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED)," otherwise known as a SIT 171.

Table 3.1.2: Message Header Sample (Non-SSAS Beacon)

/17127 00000/3660/19 270 0939 /171/366S **** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED) ****

The following example (Table 3.1.3) contains an additional message title that indicates that an SSAS beacon was activated.

Table 3.1.3: Message Header Sample (SSAS Beacon)

/17111 00000/3660/12 070 1239 /171/CGOP !!! SHIP SECURITY ALERT !!!!!!!!!! **** 406 BEACON LOCATED FIRST ALERT (POSITION UNCONFIRMED) ****

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 is always present. Information on Site Closure is only present on SIT 176 messages.
2) Confirmed Position Summary is only present when position is confirmed.
3) New Alert or Missed Detection/Site Closure Information is always present. It 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.

Table 3.2.1: Alert Data Block Structure

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

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

Table 3.2.2: Alert Data Block Sample (Position Not Confirmed)

```
BEACON ID: ADCD0 21DDC C2001      SITE ID: 65533

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
53   N/A A  35 25.2N  076 36.4W  27 0937 SEP S13 006 CMcc   AFRCC
47   N/A B  31 42.7N  058 40.0W  27 0937 SEP S13 006 CMcc   LANTAR
```

Table 3.2.3 provides a sample alert data block where position is confirmed.

Table 3.2.3: Alert Data Block Sample (Position Confirmed)

```
BEACON ID: ADCD0 21DDC C0801      SITE ID: 73531

**** CONFIRMED POSITION ****

LATITUDE LONGITUDE  DURATION   SRR   /BUFFER/BUFF_2
38 45.5N 076 56.9W  001.5 HRS  AFRCC

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  011 D  38 43.2N  076 52.3W  17 0545 FEB MEO 004 FL1
```

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 (that 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 another SAR agency, especially when the other SAR agency does not receive alert messages from the USMCC since the SITE ID (see section 3.2.1.2) 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 may be used to discuss the beacon activation with personnel at the USMCC or with other USA RCCs or USA 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 in section 4.7.

3.2.2 Position Confirmation and Confirmed Position Summary

3.2.2.1 Position Confirmation

Position confirmation is the process by which the MCC attempts to determine the actual beacon position. Position confirmation requires that two positions for a beacon are independent detections and match within 20 kilometers of each other, as specified in document C/S A.001. Two locations are independent if they are two different types of location, or for two Doppler locations or for two DOA locations, if they are derived from different beacon events, as outlined in Table 3.2.4.

Table 3.2.4: Determining if Two Locations for a Beacon are Independent

Location Type	Encoded	Doppler	DOA
Encoded	No	Yes	Yes
Doppler	Yes	Different satellites or time (TCA) difference of at least 20 minutes*	Yes
DOA	Yes	Yes	a) Each satellite set has a unique satellite and there is at least a 2-second time separation in some portion of the time period associated with each DOA position, or b) the last detect time for the two DOA alerts differs by at least 30 minutes

*Two pairs of Doppler locations are not independent if each Doppler location matches a Doppler location in the other solution; see "406 Beacon Doppler Position Match" in Table 2.1.

Note that the independence of two encoded locations cannot be determined as the two encoded locations come from the same source, i.e., the Global Navigation Satellite System (GNSS) unit on or attached to the beacon.

The "confirmed position" provided by the MCC is the best estimate of the actual beacon position based on data available to the MCC, and should not be assumed to provide the actual beacon position. While the confirmed position computed by the MCC generally corresponds to the actual beacon location within 20 km, the actual beacon position (as determined by SAR personnel) may differ from the confirmed

position reported by the MCC, due to matching poor location data being provided to the MCC or because the beacon moved significantly after position data was provided to the MCC.

3.2.2.2 Confirmed Position Summary

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

3.2.2.2.1 Confirmed Position

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 positions that may be calculated at different times, it may not reflect the current beacon position.

The USMCC computes the confirmed position using matching encoded, DOA, and Doppler position data, and weighs this position data based on various quality factors. A refined encoded position is given more weight than a coarse encoded position. The weight of a DOA position is based on the expected horizontal error computed by the MEOLUT (described in section 3.2.3.2) if this value is available; if the expected horizontal error is not available, the weight of a DOA position is based on associated factors that include the number of beacon bursts, the number of satellites that detected the beacon, and satellite geometry (a large spread of satellite positions is better). The weight of a Doppler position is based on the number of beacon bursts, satellite geometry, the reliability of beacon frequency measurements, and the impact of recent satellite maneuvers, consistent with how these factors are used to determine that a Doppler position may be inaccurate or suspect (see section 3.2.5.1).

The confirmed position only includes recent positions (detect time within the last hour, normally), which makes it more likely that the confirmed position will maintain proximity to the position of a moving beacon. If the USMCC determines that new positions are consistently in conflict with the previously computed confirmed position and the confirmed position stops getting updated, then the USMCC will attempt to re-compute (re-establish) the confirmed position based on recent matching position data. Note that the algorithm to re-establish the confirmed position is only designed to handle slow-moving beacons (e.g., beacons drifting in the ocean), not fast-moving beacons (e.g., aircraft in flight). When a new solution is used to re-establish the confirmed position, the distance between matching positions may exceed 20 km; the 20-km threshold is otherwise used to determine if positions match or are in conflict, both before and after position confirmation. ***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.***

When the USMCC re-establishes the confirmed position, as described above, a warning is provided in the SIT 175 alert message, as described in section 3.2.3.11.

3.2.2.2.2 Duration, SRR, and BUFFER

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 DURATION takes into account the time of the last beacon burst for a MEOSAR alert, which may differ from the time of the first beacon burst. The SRR is the primary SRR of the first alert associated with the confirmed position (see Table 3.2.5). More information on the SRR and BUFFER(s) is provided in section 3.2.3.9.

Table 3.2.5: Sample Confirmed Position Summary

```
**** POSITION CONFIRMED TO THE FOLLOWING POSITION ****

LATITUDE LONGITUDE  DURATION   SRR   /BUFFER/BUFF_2
38 45.5N 076 56.9W  001.5 HRS  AFRCC
```

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, and an encoded location or an unlocated alert, as described in this section. Solution data lines are provided for new solutions (per Table 3.2.6) and for previous solutions (see section 3.5.3). 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.

Table 3.2.6: Sample Solution Data Line (New Solution)

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  007 D  08 29.2N  135 58.9E  18 1302 FEB MEO 004 VNMcc  MARSEC
```

3.2.3.1 Probability (PROB)

The PROB field 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.

If the Doppler location is computed using two LEOSAR detections (bursts) and GEOSAR frequency data, then field PROB is set to 50 and field NUM is set to 2.

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)

The Expected Horizontal Error is the radius of the circle that is centered on the estimated DOA location and contains the true location with a probability of 95 ± 2 %, per document C/S T.019 (MEOLUT Performance Requirements). The expected horizontal error is a value between 000.00 and 999.99 km (reported by MEOLUT in kilometers, but displayed on the RCC message in nautical miles) and provides an indication of the accuracy of the DOA location. The EE field on the RCC message provides the expected horizontal error of the DOA position in nautical miles (NM). If the expected horizontal error has the default value of 000.00, the accuracy is UNKNOWN. If the expected horizontal error is greater than 277.8 km (150 NM), the accuracy is shown as "999.99," which means OVER 150 NM.

In the USMCC, the EE field is currently set to "N/A" for DOA position data sent to USCG RCCs and US SPOCs. This configuration was implemented because analysis has shown that the value is often unreliable (i.e., too small relative to the actual DOA position error) when the beacon is moving. Analysis also indicates that the DOA position is not as accurate for moving beacons as it is for static beacons. The USA and other C/S participants are working to improve the DOA position accuracy and expected error reliability for moving beacons.

3.2.3.3 Solution (SOL)

The SOL field 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, Resolution, and Uncertainty

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 3.2.7 provides the resolution and the uncertainty 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.

The uncertainty of the encoded position is the maximum difference between the GNSS position processed by the beacon (per the requirements in document C/S T.001) and the encoded position transmitted to the RCC. All beacons are required to round off (i.e., not truncate) latitude and longitude data to the available resolution. As a result, if both PDF-1 and PDF-2 are usable, then the uncertainty of the encoded position is half the resolution, as shown in Table 3.2.7. The encoded position uncertainty for Return Link Service (RLS) beacons with only PDF-1 usable is half the resolution available in PDF-1, because all available resolution is provided in PDF-1.

However, some standard and national location protocol beacons are coded using an older methodology, in which:

a) the encoded position value in PDF-1 remains the same as long as it is possible for the refined encoded position (which contains an encoded position offset in PDF-2) to be precise within 2 seconds, and
b) the encoded position offset provided in PDF-2 may exceed the resolution in PDF-1.

When only PDF-1 is usable for beacons employing this older methodology, the encoded position uncertainty is greater than the resolution available in PDF-1, as shown in Table 3.2.7. If it is known that a standard or national location protocol beacon is coded with a newer methodology in which all bits available in PDF-1 are always set to be as close as possible to the actual position, then the actual uncertainty is 7 minutes 30 seconds or 1 minute, respectively.

The encoded position uncertainty reported in Table 3.2.7 is for one component (latitude or longitude) and does not take into account that the actual uncertainty includes the uncertainty of both latitude and longitude. For a beacon located at the equator (where a degree of latitude and a degree of longitude each correspond to a distance of about 111 km), the maximum uncertainty is about 1.41 times the uncertainty reported in the table. In general:

Maximum Uncertainty = SquareRoot of ((LatitudeUncertainty* LatitudeUncertainty) + (LongitudeUncertainty * LongitudeUncertainty)).

For standard, national location, Return Link Service, and ELT(DT) 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 Table 3.2.7. This means that a refined encoded location for these protocols 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 Table 3.2.8. Values not included in this table for hundredths of a minute (such as .01, .02, and .03) do not occur in the encoded location for the standard and national location protocols. Additional values are possible for USA National User (CSEL and SEPIRB) protocols, which have precision of 2 seconds.

Table 3.2.7: Resolution and Uncertainty of Encoded Location Based on Beacon Protocol and Beacon Message Reliability

Beacon Protocol	Only PDF-1 usable (Value in "POSITION RESOLUTION" field) Uncertainty*	PDF-1 & PDF-2 usable (Value in "POSITION RESOLUTION" field) Uncertainty*
Standard Location	15 minutes (at 45 degrees latitude, equals 10.6 nm longitude and 15.0 nm latitude) (15 MINUTES) Uncertainty: 30 minutes (7 minutes 30 seconds if newer coding methodology used)	4 seconds (4 SECONDS) Uncertainty: 2 seconds
National Location	2 minutes (at 45 degrees latitude, equals 1.4 nm longitude and 2.0 nm latitude) (2 MINUTES) Uncertainty: 4 minutes (1 minute if newer coding methodology used)	4 seconds (4 SECONDS) Uncertainty: 2 seconds
Return Link Service** and ELT(DT)***	30 minutes (at 45 degrees latitude, equals 21.2 nm longitude and 30.0 nm latitude) (30 MINUTES) Uncertainty: 15 minutes	4 seconds (4 SECONDS) Uncertainty: 2 seconds
User (not National)	Encoded location not available (NONE)	4 minutes (4 MINUTES) Uncertainty: 2 minutes
User – National (CSEL)	1 degree latitude, 15 degrees longitude (1 DEG LAT, 15 DEG LONG)	2 seconds (2 SECONDS) Uncertainty: 1 second
User – National (SEPIRB)	1 degree (1 DEGREE)	2 seconds (2 SECONDS) Uncertainty: 1 second

**The uncertainty is reported for either latitude or longitude. Taking into account latitude and longitude together, the maximum uncertainty is about 1.41 the value reported in the table.*
***Return Link Service (RLS) beacons provide return link information from ground stations via satellites to the beacon. Operational use is permitted for specific RLS beacon models approved for operational use, as documented at https://www.cospas-sarsat.int/en/beacons-pro/experts-beacon-information/approved-beacon-models-tacs.*
****Distress Tracking ELTs (ELT(DT)s) are expected to become operational in early 2023.*

Table 3.2.8: Possible Values for the Encoded Location in Standard, National, RLS, and ELT(DT) Location Protocol Beacons (4-second interval vs. hundredths of a minute)

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

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 3.2.3.4.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. The DETECT TIME is truncated at minutes, so the number of seconds could range from 0 to 59 within a given minute.

For MEOSAR alerts, the DETECT TIME is the time that a satellite last detected the beacon for the alert; the first detect time for MEOSAR alerts is provided in field FIRST DETECT TIME (per section 3.2.4.2) and is earlier than the time that a satellite last detected the beacon in a MEOSAR alert derived from multiple beacon bursts. If the (last) DETECT TIME matches the FIRST DETECT TIME, it is likely that the solution is from a single beacon burst. However, it is possible for the alert message to show the same (truncated) first and last detect times but to be generated from different beacon bursts; e.g., the first detect time is "1301" (HHMM) + 2 seconds and the last detect time is "1301" + 52 seconds. (Per document C/S T.001, the beacon repetition rate is 50 seconds plus or minus 2.5 seconds.) Note that the first DOA location provided for an alert site is usually from a single burst, since the MEOLUT and MCC are required to report usable DOA positions as soon as it is available. Information on the accuracy of DOA positions for single burst and multiple burst solutions is provided in section 3.2.5.2.

For Doppler solutions, the DETECT TIME is the 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 for a rapidly moving beacon (e.g., in the event of an aircraft crash).

3.2.3.6.1 Detect Time and Encoded Position Updates

The DETECT TIME for encoded position is the time associated with the satellite detection, as described in section 3.2.3.6. It does not directly indicate the time that the encoded position was updated in the beacon; however, a change in the refined encoded position indicates that the update occurred since the detect time for the previous refined encoded position. Note that a change in a refined encoded position compared to a previous coarse encoded position does not imply that the position encoded in the beacon message has been updated, but may merely mean that the satellite and LUT have now succeeded in decoding all position data in the beacon message. In accordance with document C/S T.001:

1) the encoded position may be updated as frequently as every 5 minutes and
2) the encoded position should be cleared if it is not updated within 4 hours.

A beacon that is designed to update its encoded position frequently (e.g., every 5 or 20 minutes) may fail to update the position to precisely reflect the new beacon position because the beacon is unable to obtain sufficient satellite data to compute a new position. This may occur because the beacon's view of the sky is obstructed (e.g., by its associated vessel, tree cover, or a canyon wall). *Note that next generation beacons, described in document C/S T.018, will provide the time that the encoded position was computed.*

Newer beacons (i.e., beacons first submitted for C/S type approval after 1 November 2015) with an internal navigation device may provide encoded position updates less frequently as time passes after beacon activation; e.g., only every 60 minutes once the beacon has been active for 6 hours, per document C/S T.001 (Issue 4, Rev. 4), section 4.5.5.4. This means that the encoded position may not keep up with the actual position in a timely manner. The rationale for less frequent updates over time is to preserve battery life in case SAR is not complete soon after beacon activation.

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

The satellite field (SAT) 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 3.2.9. 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 LEOSAR (polar-orbiting) satellites, because too few usable beacon bursts were detected.

Table 3.2.9: LEOSAR/GEOSAR Satellite Type Description

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

For MEOSAR alerts, field NUM is set to the number of detections (packets) for which data was used to generate the alert, where each beacon burst received through one antenna is counted as a separate detection or packet. (For example, if two beacon bursts are each received from two antennas, the number of detections is 4.) The field is set to "N/A" for MEOSAR alerts when no data is available. If the number of detections exceeds 99, then NUM is reported as 99.

For LEOSAR and GEOSAR alerts, field NUM is usually set to the number of detections (beacon bursts) used to generate the alert. However, for some GEOLUTs, NUM may include bursts processed with previous alerts and may be as high as 121.

If NUM is 1 for the first alert for an alert site, then the alert may be suspect (i.e., not correspond to a transmission from the beacon with the reported beacon ID). The USMCC identifies a suspect (i.e., "uncorroborated") MEOSAR alert based on a single detection, as described in section 3.2.7.

While a LEOSAR or GEOSAR alert with a single detection (i.e., NUM = 1) may also be suspect (i.e., not correspond to a transmission from the beacon with the reported beacon ID), the USMCC does not have rules to identify LEOSAR or GEOSAR alert as suspect ("uncorroborated") based on a single detection. However, as is the case for MEOSAR single detection alerts, corroborating information can be used to investigate single detection LEOSAR and GEOSAR alert, as described in section 3.2.7.

If NUM is 2 on a Doppler alert, then the Doppler location was computed using two LEOSAR bursts and GEOSAR frequency data, and the probability (PROB) is set to 50 (50%).

3.2.3.8 Data Source (SOURCE)

The SOURCE indicates the ground station or LUT that ingested the satellite data. If the source is a USA LUT, then the LUT name is provided per Annex 2. If the source is not a USA 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 BUFF_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.

Collectively, these fields provide information about which SRRs are responsible for the SAR response. While the order of SRRs (when there is more than one SRR) provides some technical information, as described in this section, the order of the listed SRRs does not indicate which SRR has the lead role in coordinating the SAR response, and all message destinations should coordinate to ensure that a proper SAR response occurs.

For a located alert, the SRR is the primary SRR in which the alert is located, based on USMCC Geosort configuration for the location reported in the alert message. The USMCC Geosort is further described in section 3.2.3.9.1. If two or more SRRs apply, then the BUFFER and BUFF_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.

The assignment of buffer SRRs (further described below in this section) helps to ensure that the responsible SRR is notified of the distress alert, and takes into account the following uncertainties in the assignment of SRRs:

a) the Geosort configured in the USMCC may not precisely align with the actual SRR border when the border is defined by a geographical boundary (e.g., a jagged coast line) and the reported location is near a SRR boundary, and

b) the location reported in the alert message contains an inherent error that may cause the assigned SRR to differ from the SRR of the actual beacon location in cases where the reported location is near a SRR boundary (e.g., the reported location is in a bay that is a few kilometers from land).

If an alert is located in the primary or buffer SRR of additional (i.e., more than three) SRRs, these additional 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. The USMCC sends messages to Canadian RCCs in SARMaster format, as described in Annex 10.

If an alert is located outside of the SRR of the Canadian MCC (CMCC), the Bermuda SPOC, the COCESNA SPOC, the Dominican Republic SPOC, or any USA RCC, but within 50 km of its SRR boundary, then the USMCC designates the alert to be in the buffer for that SRR. In addition, the USMCC assigns a buffer SRR for other USA SPOCs and Canadian RCCs per Table 3.2.10. Note that the 348-km buffer distance for SPOCs with USA RCCs is based on the 200-nautical mile U.S. exclusive economic zone (EEZ). Otherwise, buffer SRRs are not designated for MCCs or SPOCs.

Table 3.2.10: SRR Buffers for Other USA SPOCs and Canadian RCCs

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
Belize	CGD07	348
Costa Rica	CGD07	348
Guatemala	CGD07	348
Guatemala	PacArea	348
Honduras	CGD07	348
Mexico SPOC	PacArea	348
Mexico SPOC	Mexico Telecom.	50
Mexico Telecom.	Mexico SPOC	50
Nicaragua	CGD07	348
Nicaragua	PacArea	348
Panama	CGD07	348
Panama	PacArea	348
El Salvador	PacArea	348

As agreed by the USAF and USCG, if an alert for an EPIRB is located in the AFRCC SRR and in the 50-km buffer of a USCG SRR, then the USCG SRR is listed as the primary SRR and the AFRCC SRR is removed from the SRR list for that location.

3.2.3.9.1 USMCC Geosort

The USMCC Geosort is a collection of geographical SRRs configured in the USMCC that is used to distribute alerts to US RCCs, US SPOCs and other MCCs based on geographical location.

The USMCC Geosort for MCCs is based on SRR information provided by the C/S Secretariat, as declared by national administrations that operate C/S MCCs that distribute alerts to SPOCs within their respective service areas (i.e., SRRs). As described in document C/S P.011, if adjacent MCCs do not agree on common boundaries for their respective service areas, then overlapping service areas are implemented by national administrations.

For US RCCs and US SPOCs (i.e., for SRRs in the USMCC service area), the USMCC Geosort is based on boundaries specified by (and coordinated by) the USCG, the USAF, and US SPOCs.
SRR boundaries specified in the USMCC and in other MCCs are ultimately based on boundaries defined and coordinated by the International Maritime Organization (IMO) and/or the International Civil Aviation Organization (ICAO). While boundaries defined by IMO and ICAO generally align, when this is not true, nations usually implement overlapping SRRs to help ensure that an adequate SAR response occurs for all located distress alerts.

3.2.3.9.2 Alert Data Distribution Procedures

The SRR and BUFFER fields are set based on reported position, the country or region coded in the 406 MHz beacon message, and USMCC alert data distribution procedures. USMCC alert data distribution procedures are described below.

As referenced in the alert data distribution procedures in this section, a beacon is USA coded if beacon registration information is maintained by the USA for the associated country or region coded in the 406 MHz beacon message. Table 3.2.11 lists the country/region codes for which beacon registration is maintained in the RGDB, as provided on the C/S Contact Lists website (select “406 MHz Beacon Registers”). This table also lists destinations for unlocated alerts, NOCRs, and SSAS alerts for USA-coded beacons.

During a backup of the USMCC, the CMCC distributes corresponding alerts to the destination(s) as listed below, except that the CMCC send NOCRs and unlocated alerts to the AFRCC where “US RCC” is listed.

Table 3.2.11: USA Country/Region Codes and Associated Alert Data Destinations

Code (RCC Message Field "Country Code")	**Country/Region Name**	**10 Digit Name** (RCC Message Field "Country")	**SRR for NOCRs and Unlocated Alerts***	**SRRs for SSAS Beacon Alerts**
303	Alaska	ALASKA	AKRCC	LantArea PacArea
559	American Samoa	SAMOA US	AUMCC	AUMCC
338	Hawaii	USA	US RCC**	LantArea PacArea
536	Northern Mariana Islands	MARIANA IS	MARSEC	LantArea PacArea
358	Puerto Rico	PUERTORICO	SANJN	LantArea PacArea
379	US Virgin Islands	VIRGIN US	SANJN	LantArea PacArea
366	USA	USA	US RCC**	LantArea PacArea
367	USA	USA	US RCC**	LantArea PacArea
368	USA	USA	US RCC**	LantArea PacArea
369	USA	USA	US RCC**	LantArea PacArea

** Excludes unlocated alerts for SSAS beacons.*

*** Distribution is based on RGDB information and beacon type, as described below. When the CMCC backs up the USMCC, the CMCC sends NOCRs and unlocated alerts for this country code to the AFRCC. See section 2.1.5 for more information about alert messages sent during USMCC backup.*

a) All alerts for SSAS beacons are routed to a designated Competent Authority per country, which usually differs from the destination per country for non-SSAS alerts. SSAS alerts are not distributed based on location. Contact information for designated Competent Authorities is maintained by the associated MCC based on information provided by IMO and is not provided on the C/S website. The destination for SSAS alerts for non-USA-coded beacons associated with countries in the USA service area is provided in Annex 14.

b) For USA-coded SSAS beacons, all alerts are sent solely to the destinations (SRRs) as specified in Table 3.2.11. See section 2.1.3.

c) For USA-coded beacons with special routing defined (e.g., USA special program beacons), all alerts are sent based on special routing configuration in the USMCC, where the special routing either replaces normal routing or adds to normal routing. Alerts for certain USA special program beacons are routed specially to the AFRCC based on agreement between the USAF and the associated special program. When special routing is defined, this routing takes precedence over normal alert routing, as described below in section d.

d) For normal alert routing (i.e., for non-SSAS beacons and beacons that are not part of USA special programs with replacement routing):
    1. alert distribution is based primarily on beacon location
    2. additional alert distribution rules are described in sections e-k below.

e) For USA-coded beacons, unlocated alerts and NOCRs are distributed per Table 3.2.11. Where this table lists "US RCC" for the country code, distribution is based on RGDB information and beacon type, as described below in section f.

f) For USA-coded beacons registered in the RGDB (where Table 3.2.11 indicates "US RCC" for the country code), the destination and SRR for unlocated alerts are 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 the relevant port or home address for a USA-registered beacon is not in the USA, then the SRR is determined per Annex 13. 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 f). In addition, unlocated alerts for unreliable beacon IDs registered in the RGDB are distributed as if the beacon ID was USA coded.

g) For USA-coded unregistered beacons (where Table 3.2.11 indicates "US RCC" for the country code) with a craft ID (i.e., with a vessel or aircraft ID encoded in the beacon message), the destination and SRR for unlocated alerts is based on the beacon type: AFRCC for ELTs and PLBs, and PacArea for EPIRBs.

h) For USA-coded beacons (where Table 3.2.11 indicates "US RCC" for the country code) that are registered in the RGDB or are unregistered with a craft ID, the destination for a NOCR (associated with a located alert) follows the same rules as for an unlocated alert, per items f and g.

i) For USA-coded unregistered beacons without a craft ID that are not part of a USA special program with special routing, an unlocated alert is not distributed and no SRR is assigned.

j) For USA-coded unregistered beacons without a craft ID, the destination for a NOCR (associated with a located alert) is based on beacon type, per item g.

k) For non-USA-coded beacons, the destination (and SRR) for unlocated alerts and the destination for NOCRs is based on the country code of the beacon ID. Related contact information is provided on the C/S Contact Lists website (select "SPOC") for non-SSAS beacons. The destination for unlocated alerts and NOCRs for non-USA-coded beacons associated with countries in the USA service area is provided in Annex 14.

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. The Supporting Information section of the RCC message may list 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. Alerts for USA ship security beacons may be sent to other RCCs, if requested by the USA Competent Authority.

3) Alerts are routed specially for USA 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) 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.

Caution: if an NOCR is sent for a MEOSAR alert and the location is serviced by an L/G only capable MCC, then the alert may not be sent to the responsible RCC, since it requires manual effort for an L/G only capable MCC to distribute a MEOSAR alert to an RCC. In such a case, the USA RCC receiving the NOCR may need to take additional action to ensure that the responsible RCC has received the alert for a USA-coded beacon. A list of MCCs, including information on MCC capability is provided in Annex 3.

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 in whose area the confirmed position lies will normally receive subsequent alerts for the alert site, regardless of the location of subsequent alerts (i.e., alerts sent after the alert used to confirm the beacon position). If the confirmed position is not in the SRR for the alert site, then that destination is normally removed from the distribution list after position is confirmed, unless distribution is not based on location, as occurs for SSAS beacons (per item 2) and some USA special program beacons may be sent to a designated destination regardless of alert location (per item 3).

If a destination is removed from the distribution list (as evidenced by the SRR and BUFFER fields associated with the Confirmed Position on a Position Confirmation alert), it may request the USMCC Controller to add it to the distribution list for subsequent alert. For example, being added to the distribution list after position confirmation may be valuable for an USA RCC that wants to help coordinate the SAR response for a USA beacon with a confirmed position outside of the USA SRR.

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, Airport, or Home Address in the RGDB.

9) When position is confirmed for an RLS beacon, the confirmed alert is sent to the MCC associated with the RLS Provider (RLSP) for the beacon, in addition to normal distribution. As indicated in document

C/S A.001, the FMCC is the associated MCC for RLS beacons that use the Galileo (EUMETSAT) satellite constellation to send return link information to beacons. After position confirmation, an alert is also sent to the MCC associated with the RLSP when:

a) the beacon message indicates that the beacon has received an acknowledgement from the RLSP, or

b) the beacon message indicates that the beacon has not received an acknowledgement from the RLSP (after receipt of an acknowledgement from the RLSP).

10) When an unlocated alert is sent as a Detection Update (SIT 177) to an RCC or SPOC for a site with unconfirmed position data, the SRR in the New Alert section is based only on the destinations for the current alert, not the previous message destinations; the Supporting Information section contains the previous message destinations.

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 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 is distributed when DOA location is first received. A subsequent (new) alert with DOA location is distributed when one of the following conditions is met:

1) Before or after position confirmation, 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. As noted in section 3.2.2.1, position confirmation for 2 DOA positions requires:
   - Each DOA alert to include data from one satellite not included on the other alert and there is at least a 2-second time separation in some portion of time period associated with each DOA position or
   - The last detect time for the two DOA alerts differs by at least 30 minutes.

   Position can also be confirmed by DOA position, with Doppler or encoded position, as described in section 3.2.2.1.
3) Before position confirmation, 5 minutes has expired since previous DOA alert and the time of the latest beacon burst used to compute the new DOA position is more than 5 minutes after the time of the latest beacon burst used to compute all previously sent DOA positions.
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 the time of the latest burst used to compute the new DOA position is at least 15 minutes from the time of the latest beacon burst used to compute each previously sent DOA position that matched the confirmed position.

6) After position confirmation, the new DOA position is a position conflict and the time of the latest burst used to compute the new DOA position is at least 10 minutes from the time of the latest beacon burst used to compute each previously sent DOA position conflict alert.

3.2.3.11 Warning When the Confirmed Position is Re-Established

When the USMCC re-establishes the confirmed position, as described in section 3.2.2.2.1, a warning is provided in the associated SIT 175 alert message, immediately after the new solution, as shown in Table 3.2.12. This warning indicates that the confirmed position computed by the USMCC has changed significantly (probably by more than 20 km), which means that the RCC SAR plan may need to be altered.

Table 3.2.12: Sample SIT 175 Alert Message (extracted portion) Sent When the Confirmed Position is Re-Established

```
**** 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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A D  43 49.0N  069 52.1W  09 2212 APR MEO 012 FMCC

WARNING: CONFIRMED POSITION RE-ESTABLISHED USING ONLY NEW DATA
DETECTION FREQUENCY: 406.0277 MHZ
```

3.2.4 Detection Frequency, First Detect Time, and DOA Altitude

3.2.4.1 Detection Frequency

The DETECTION FREQUENCY format is 406.nnnn MHz and provides the detected frequency of the transmitting 406 MHz beacon to a precision of tenths of a Hz (nnnn), as shown in Table 3.2.13. It is provided for the new solution, if available, or a previous solution, if the data is not available in the new solution. The value “NOT AVAILABLE” is reported when the frequency is not available in the new or a previous solution (see Table 3.2.14). The frequency may be unavailable because:

a) it was not provided by the reporting LUT or MCC, or

b) the solution was from a LEOSAR satellite without Doppler location or one/multiple MEOSAR satellites without DOA location, in which case the reported frequency is unreliable since it includes a Doppler shift of unknown magnitude.

This field is not present on the Missed Detection (SIT 176) message.

Table 3.2.13: Sample Solution Data with actual Detection Frequency and Information on Doppler Position Data Accuracy

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

PROB EE SOL  LATITUDE  LONGITUDE DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
61   N/A A   01 22.2N  103 59.9E 18 1302 FEB S10 006 VNMcc  SIMCC
39   N/A B   08 29.5N  135 58.9E 18 1302 FEB S10 006 VNMcc  MARSEC

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

Table 3.2.14: Sample Solution Data without Detection Frequency

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                 18 1237 JAN S12 002 SPMcc  AKRCC

DETECTION FREQUENCY: NOT AVAILABLE
```

Per Table H.2 in document C/S T.012, the frequencies in the range of 406.025 to 406.040 MHz are assigned for C/S operational beacons. There is a 3 KHz separation between allocated frequency bands (e.g., 406.025 MHz, 406.028 MHz, 406.031 MHz are allocated) to help prevent beacon signals from being lost due too many beacons operating in the same frequency band. Frequency 406.022 MHz is reserved for C/S system reference (non-operational) beacons. Per document C/S R.018, frequencies 406.061 MHz and 406.064 MHz are used for MEOSAR Development and Evaluation (D&E) tests, to avoid conflict with the C/S operational system.

The Detection Frequency can be used to help determine whether an alert originated from an operational beacon. While controlled tests (including MEOSAR D&E tests) are normally conducted using test-coded beacons (for which alerts are automatically filtered from operational distribution), rapid transmission through the SARP-3 on satellites S11, S12, and S13 may 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. Note that the Hawaii beacon simulator transmits at frequency 406.040 MHz in normal mode; that is, when it is not used for controlled tests. The USA operates beacon simulators in Hawaii, Florida, and Maryland.

The Detection Frequency can also be used to help correlate an alert site for an unreliable beacon ID with another alert site with a reliable beacon ID in the same vicinity. If the two detection frequencies are within the same 3 KHz band (e.g., near 406.037 MHz plus or minus 1.5 KHz), then it is more likely that the two alert sites in the same vicinity are from the same beacon than if the frequencies are in different 3 KHz bands (e.g., 406.0312 MHz and 406.0375).

3.2.4.2 First Detect Time

The first DETECT TIME for a MEOSAR solution. The first detect time is not provided for LEOSAR or GEOSAR solutions or in the Previous Message section. See the sample message in Table 3.2.15.

3.2.4.3 DOA Altitude

The MEOLUT normally computes an altitude when it computes the DOA position. When available, the altitude associated with the DOA position is provided in meters from mean sea level, as shown in Table 3.2.15. The DOA altitude is currently provided only on alert messages sent to USAF RCCs (including the AFRCC and the AKRCC). The altitude is provided with a note saying "CAUTION: NOT VALIDATED," because it is auxiliary information that is not verified as part of MEOLUT commissioning.

Table 3.2.15: Sample First Detect Time and DOA Altitude

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  006 D  08 29.87N 135 58.93E 15 1902 JUL MEO 004 HI_MEO MARSEC

DETECTION FREQUENCY: 406.0373 MHZ
FIRST DETECT TIME: 15 1902 JUL
ALTITUDE OF DOA POSITION: 45 METRES.  CAUTION: NOT VALIDATED
```

3.2.5 Information on Doppler/DOA Position Data Accuracy

3.2.5.1 Information on Doppler Position Data Accuracy

The statement HIGH PROBABILIY 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 roughly means that there is a 95% probability that the new Doppler position is accurate within 5 km, based on the requirement (per document C/S T.005) that nominal Doppler solutions are accurate within 5 km in 95% of cases.

The statement NEW DOPPLER POSITION ERROR MAY EXCEED 5 KM DUE TO TECHNICAL PARAMETERS is provided when any associated technical parameter is not nominal, as described above. These technical parameters include the number of beacon bursts, satellite geometry, and the reliability of beacon frequency measurements.

The statement NEW DOPPLER POSITION ERROR MAY EXCEED 10 KM DUE TO SATELLITE MANEUVER is provided when the maximum expected error in Doppler location exceeds 10 kilometers during the 24 hour period after a satellite maneuver; when this statement is provided, no information is provided about whether the associated technical parameters are nominal.

The statement NEW DOPPLER POSITION DATA SUSPECT – OUTSIDE REPORTING SATELLITE FOOTPRINT is provided if the USMCC determines that either the A or B Doppler position is outside the footprint of the reporting satellite for the solution at the reported detect time (TCA).

Table 3.2.16 provides a sample that includes information on Doppler position data accuracy.

3.2.5.2 Information on DOA Position Data Accuracy

The statement NEW DOA POSITION DATA SUSPECT – OUTSIDE REPORTING SATELLITE FOOTPRINT is provided if the USMCC determines that the DOA position is outside the footprint of any reporting satellite for the solution. Field EE (Expected Horizontal Error) also provides information on the DOA position accuracy, as described in section 3.2.3.2.

Per the MEOLUT commissioning specification (document C/S T.020), the current MEOLUT location accuracy requirements (i.e., requirements for Early Operational Capability) are:

- Single burst: 70% within 5 km; and 90% within 10 km
- Multiple burst: 95% < 5 km and 98% < 10 km, within 20 minutes.

Section 3.2.3.6 contains information on single burst and multiple burst solutions.

To date, MEOLUT commissioning for location accuracy has been based on transmissions from stationary beacons. Analysis performed by the USA and others indicates that the DOA position is not as accurate for moving beacons as it is for static beacons, including beacons moving in the ocean due to waves or currents. As noted in section 3.2.3.2, the USA and other C/S participants are working to improve the DOA position accuracy and expected error reliability for moving beacons.

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 a LEOSAR or GEOSAR 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.

Table 3.2.16: Sample Solution Data with Likely Image Position

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
55   N/A A  08 29.5N  135 58.9E  15 1302 JAN S13 009 ARMcc  MARSEC
45   N/A B  01 22.2N  103 59.9E  15 1302 JAN S13 009 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
```

3.2.7 Uncorroborated (Suspect) MEOSAR Alerts

On occasion, MEOLUTs generate "suspect" alerts; that is, alerts generated based on a single beacon burst detected by one satellite with no corroborating detections; note that receipt of the same burst from the same satellite via multiple antennas is not considered to be corroboration. A significant portion of uncorroborated MEOSAR alerts appear to be system-generated anomalies; that is, the alert does not correspond to a transmission from a beacon with the reported beacon ID. Section 3.2.7.1 provides analysis of uncorroborated MEOSAR alerts. The occurrence of uncorroborated MEOSAR alerts has decreased significantly since a problem with data shared ("networked") between USA MEOLUTs was fixed in late May 2018.

The USMCC distributes uncorroborated MEOSAR alerts as shown in Table 3.2.17. A MEOSAR alert is identified as "uncorroborated" 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 3.2.18.

Table 3.2.17: Rules for the Distribution of Uncorroborated MEOSAR Alerts

Destination Type (Beacon Country - Registration Status)	Distribute Alert?
LEOSAR/GEOSAR/MEOSAR capable MCC	Yes
LEOSAR/GEOSAR only capable MCC	No*
RCC and SPOC (USA beacon - registered**)	Yes
RCC and SPOC (USA beacon - not registered**)	No*
RCC (non-USA beacon with encoded position in the USA SRR or a non-USA SRR for which an RCC receives alerts))	Yes
RCC (non-USA beacon with no encoded position)	No*

**Regardless of other criteria, the USMCC distributes uncorroborated MEOSAR alerts if the source MEOLUT has met commissioning requirements for processing anomalies, i.e., if the MEOLUT generates an acceptably low rate of anomalous alerts.*

***A beacon is "registered" if it is in the USA RGDB and or in a USA special program.*

The destination for a MEOSAR uncorroborated alert with encoded position based on the encoded position may differ from the NOCR destination. As a result, the "Alert Distribution Action" could be "Yes" for one destination and "No" for another destination. Two examples follow:

1) An uncorroborated alert is received (from a MEOLUT that has not met commissioning requirements for processing anomalies) for an unregistered USA-coded beacon with encoded position in the service area of the LGM capable FMCC. The alert will be sent to the FMCC but not sent to a USA RCC. The USMCC or USA RCC could provide the registration status if requested.
2) An uncorroborated alert is received (from a MEOLUT that has not met commissioning requirements for processing anomalies) for a Mexico-coded beacon with encoded position in the CGD07 SRR. The alert will be sent to CGD07 but not sent to the Mexico SPOC. In this case, CGD07 may contact the Mexico SPOC to request beacon registration information.

When a MEOSAR alert is identified as uncorroborated (per the sample in Table 3.2.18), RCCs should proceed with caution since the beacon ID and/or associated encoded position may be unreliable.

The validity of uncorroborated MEOSAR alerts can be substantiated by the presence of corroborating information, such as:

a) another alert for the same beacon ID
b) beacon registration data for the specific beacon ID
c) an encoded vessel or aircraft ID (per the Beacon Decode section below)
d) the allocation of the encoded C/S Type Approval (CSTA) number, if an encoded CSTA number is provided in the Beacon Decode section (see section 3.2.7.1) or
e) correlation between the reported DETECTION FREQUENCY (if available) and the detection frequency for the beacon model (associated with the encoded CSTA number provided in the Beacon Decode section).

For an alert site previously identified as uncorroborated (per the sample in Table 3.2.18), if a new alert is sent, then the alert site is no longer considered to be uncorroborated, since the initial alert has been corroborated.

While uncorroborated LEOSAR or GEOSAR alerts with a single detection (i.e., NUM = 1) are not identified as "uncorroborated" in the alert message, the validity of these single detection alerts can also be substantiated by the presence of corroborating information, as detailed above. However, with respect to item a), the USMCC does not distribute a new alert after a single-detection LEOSAR or GEOSAR alert is sent simply to corroborate the first alert, but the RCC may contact the USMCC to determine if another alert was received for the same beacon ID that was not distributed. In addition, the DETECTION FREQUENCY is never provided for LEOSAR alerts without Doppler location, as described in section 3.2.4.1.

Table 3.2.18: Sample Uncorroborated MEOSAR Alert

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_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
FIRST DETECT TIME: 15 1302 JUL
UNCORROBORATED MEOSAR ALERT
```

3.2.7.1 Analysis of Uncorroborated MEOSAR Alerts

The USMCC analyzed alert sites for USA-coded beacons closed from March 2017 through March 2018 where a uncorroborated MEOSAR alert was never corroborated by receipt of another alert for that beacon ID in the associated alert site, independent of whether alerts were distributed for the site. For these MEOSAR uncorroborated alert sites, 0 of 1461 (0.0%) sites where the USA-coded beacon ID contained an unallocated CSTA number were registered (i.e., in the USA RGDB), whereas the registration rate for all USA-coded beacons is about 70%. Thus, it is very unlikely that an uncorroborated MEOSAR alert associated with an unallocated CSTA number corresponds to a transmission from a beacon with the reported beacon ID.

For the same set of MEOSAR uncorroborated alert sites, 178 of 1899 (9.4%) sites where the USA-coded beacon ID contained an allocated CSTA number were registered. Since the registration rate for all USA-coded beacons is about 70%, this suggests that there is about a 13% probability that an uncorroborated MEOSAR alert (never corroborated by other alert data) associated with an allocated CSTA number is not a system generated anomaly. (That is, 1899 total sites * 0.70 expected registration rate = 1329 expected registrations. 178 actual registrations/1329 expected registrations = 13.4% of the expected registration rate, which suggests a system anomaly rate of 86.6%.)

From March 2017 through March 2018, the USMCC sent uncorroborated MEOSAR alerts for 13,634 sites (to RCCs and LGM capable MCCs). The USMCC sent a subsequent alert that corroborated the uncorroborated MEOSAR alert for 1,495 (11.0%) of these sites, indicating that a significant number of uncorroborated MEOSAR alerts correspond to real activations of the associated beacon ID. For example, these single detection (“suspect”) uncorroborated alerts may occur for real beacon activations when the beacon is on the fringe of visibility to the MEOLUT (i.e., only one satellite with visibility to the beacon is being tracked by the MEOLUT), or the beacon has limited visibility to the sky (e.g., the beacon is located in a canyon or an aircraft hangar).

US RCCs have performed rescues where the only notification about the beacon activation was an uncorroborated MEOSAR alert, including 2 cases in 2017. As noted in section 3.2.7, the number of uncorroborated MEOSAR alerts has decreased significantly since late May 2018.

3.2.8 Beacon Decode Information Derived From a Previous Reliable Beacon Message

If a new alert contains an unreliable beacon message (e.g., due to inconsistencies in its error correcting code) but the portion of the beacon message containing the 15-hex beacon ID matches the 15-hex beacon ID of a previous reliable beacon message, then the new alert is incorporated into the same alert site, and the new (transmitted) alert:

a) includes Beacon Decode information derived from a previous "matching" beacon message;
b) does not include encoded position data; and
c) includes a note stating that the new beacon message is unreliable and that the Beacon Decode information provided is from a previous reliable beacon message (per the sample below).

This note provides a caution to the RCC in the rare chance that the new alert was actually from another beacon and implies that encoded position is not provided for the new alert. Sample text from an alert with Beacon Decode information derived from a previous reliable beacon message is provided in Table 3.2.19.

Table 3.2.19: Sample Beacon Decode Information Derived From a Previous Reliable Beacon Message

```
HIGH PROBABILITY THAT THE NEW DOPPLER POSITION DATA IS ACCURATE WITHIN 5 KM
  DATA DECODED FROM THE BEACON MESSAGE IS NOT RELIABLE. BEACON
  MESSAGE DATA PROVIDED BELOW IS FROM A PREVIOUS RELIABLE BEACON MESSAGE

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

COUNTRY     : USA              BEACON TYPE: EPIRB SERIAL (STANDARD)
COUNTRY CODE: 366              CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: CSTA# 127        MODEL      :
SERIAL NUM  : 11540            HOMING     : 121.5 MHZ
POSITION TYPE: INTERNAL        POSITION RESOLUTION: NONE
```

3.3 Beacon Decode Information

The information in this block (Table 3.3.1) is decoded from the transmitted 406 MHz beacon ID, in accordance with document C/S T.001. For USA beacons, bits in the beacon ID defined for national use in C/S T.001 are decoded per the USA Beacon Coding Guideline. National use information for USA beacons is further described in section 3.3.3. Beacon decode information is provided on all alert messages except the SIT 176 message.

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

```
**** 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  : 34679            HOMING     : 121.5 MHZ
POSITION TYPE: NIL             POSITION RESOLUTION: 4 MINUTES
```

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 USA registered beacons, the registration data is included in most alert messages, as described in Beacon Registration Data below. The C/S website ("Contact Lists," sub-link "406 MHz Beacon Registers") provides Registry 24/7 Points of Contact for non-USA beacons.

The Maritime Identification Digit (MID) CODE is the 3-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 USER). It indicates if the beacon ID contains a serial number, which is contained in field SERIAL NUM (described below). 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)," "NATIONAL" and "(NAT)" 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 in 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 3-digit MID plus the 6-digit ship station ID) or radio call sign can be used to search the ITU maritime registration database using the following link:

https://www.itu.int/mmsapp/ShipStation/list

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 USA country code, as specified in the USA 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 the listing on this C-S page.

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.

The ICAO 24-bit aircraft address is allocated to States to uniquely identify aircraft worldwide. The Appendix to Chapter 9 of the ICAO Annex 10, Aeronautical Communications document provides the worldwide scheme for the allocation, assignment and application of aircraft addresses. The 24-bit address is presented as six hexadecimal characters with the prefix “HEX=”. For USA-coded beacons with a 24-bit address, field CRAFT ID provides the tail number.

HOMING identifies the frequency and type of homer on the beacon. The following values may occur for First Generation Beacons (i.e., FGBs, as specified in document C/S T.001):

“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).

For Second Generation Beacons (SGBs) (as specified in document C/S T.018), the value is either “YES” or “NO”.

The POSITION DEVICE indicates the type of device that the beacon uses to provide the 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 3.2.7 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.

Table 3.3.2: Beacon Types Provided in USA RCC Messages

Beacon Type	Location Protocol	Description/Notes
ELT 24 BIT ADDRESS (STD)	Standard	24 Bit Aircraft Address provides a reference to the aircraft. The tail number is provided in field CRAFT ID for USA-coded beacons with this protocol.
ELT A/C OPERATOR (STD)	Standard	Aircraft Operator is provided in field CRAFT ID. Aircraft operator designators are provided in the ICAO airline designators document published as ICAO document 8585 – Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services. These designators are 3-letter codes like BAW for British Airways or QFA for QANTAS. 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 RETURN LINK	RLS	Field SERIAL NUM provides the serial number. The beacon has return link capability
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 the aircraft. The tail number is provided in field CRAFT ID for USA-coded beacons with this protocol.
ELT SERIAL A/C OPERATOR	No*	Aircraft Operator is provided in field CRAFT ID; see "ELT 24 BIT ADDRESS (STD)" above. Field SERIAL NUM provides the serial number for the aircraft operator.
ELT SERIAL AVIATION	No*	Field SERIAL NUM provides the serial number.
ELTDT A/C ADDRESS A/C DESIGNATOR SERIAL	ELT(DT)	Distress Tracking ELT. If a beacon is coded with the 24 Bit Aircraft Address protocol, this field provides a reference to the aircraft and the tail number provided in field CRAFT ID for USA-coded beacons. If a beacon is coded with Aircraft Designator, then field CRAFT ID provides the 3 character Aircraft Designator. Field SERIAL NUM provides the serial number for an "ELTDT SERIAL" beacon.
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 RETURN LINK MMSI	RLS	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). The beacon has return link capability.
EPIRB RETURN LINK	RLS	Field SERIAL NUM provides the serial number. The beacon has return link capability
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*	The beacon can be activated manually or automatically
EPIRB SERIAL CATEGORY II	No*	The beacon can only be activated manually.
NATIONAL USER	Undefined	Specific information that may be encoded in the beacon ID, such as beacon type and location, is defined nationally. Information defined nationally (i.e., for "national use") will probably not be decoded by foreign MCCs; e.g., national use information in a USA coded beacon will probably not be decoded by the Canadian MCC (CMCC).
PLB RETURN LINK	RLS	Field SERIAL NUM provides the serial number. The beacon has return link capability
PLB SERIAL	No*	
PLB SERIAL (NATIONAL)	National	
PLB SERIAL (STANDARD)	Standard	
TEST RETURN LINK	RLS	Test return link beacon, per document C/S T.001. Per C/S document A.001, alerts for test return link beacons are normally exchanged between MCCs and sent to the Return Link Service Provider (RLSP), but not normally sent to SAR authorities.
SHIP SECURITY	Standard	Contains Standard location protocol. The beacon can only be activated manually. 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.

**User Protocol; may contain encoded location as described in section 3.2.3.4.a.*

3.3.2 Beacon Decode Information for Return Link Service (RLS) Beacons

The RLS provides notification to a 406 MHz beacon that an alert transmitted by the beacon has been detected by a LUT and distributed via the Cospas-Sarsat MCC network to the designated RLSP and to SAR authorities. This service is intended to provide information to persons in distress about the disposition of the SAR effort, and is only available for 406 MHz beacons coded to provide a return link. If a beacon is coded to provide a return link, then this capability is identified in the beacon type, as described in Table 3.3.2.

Per C/S procedures, an alert is not sent to the RLSP until the beacon position is confirmed. In addition, a subsequent alert is sent to the RLSP after position confirmation if the beacon Return Link Message (RLM) receipt status has changed; in particular, when new information in the beacon message indicates that the beacon has received the RLM message

Beacon decode information specific to RLS beacons is provided in the alert message after the general beacon decode information, as shown in the example below. The RLS PROVIDER indicates which satellite constellation that provides the return link service, and is listed as GALILEO, GLONASS or UNKNOWN. GLONASS satellites are provided by Russia.

If the beacon message indicates that the RLS beacon is capable of receiving an automatic acknowledgement from the RLSP, then the alert message includes a line with this format:

"RLM TYPE-1 XXXXXXXX (AUTOMATIC ACKNOWLEDGEMENT)"

where XXXXXXXX is "RECEIVED" if the beacon has received an automatic acknowledgement or "CAPABLE" if the beacon has not received an automatic acknowledgement.

If the beacon message indicates that the RLS beacon is capable of receiving a manual acknowledgement from the RLSP, then the message includes a line with this format:

"RLM TYPE-2 XXXXXXXX (MANUAL ACKNOWLEDGEMENT)"

where XXXXXXXX is "RECEIVED" if the beacon has received a manual acknowledgement or "CAPABLE" if the beacon has not received a manual acknowledgement. To date, Cospas-Sarsat has not agreed to support RLS manual (Type-2) acknowledgements.

Note that if a C/S Type Approval number is provided for an RLS beacon (i.e., in field "CSTA#" in Table 3.3.3), this number is derived by adding a fixed value per beacon type (1000 for EPIRBs, 2000 for ELTs, and 3000 for PLBs) to the numeric value encoded in the beacon message.

Table 3.3.3: Sample Beacon Decode Information for RLS Beacon

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

COUNTRY     : FRANCE           BEACON TYPE: PLB RETURN LINK
COUNTRY CODE: 227              CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: CSTA# 3002       MODEL      :
SERIAL NUM  : 135              HOMING     : 121.5 MHZ
POSITION DEVICE: INTERNAL      POSITION RESOLUTION: 4 SECONDS

RLS PROVIDER: GALILEO
RLM TYPE-1 RECEIVED (AUTOMATIC ACKNOWLEDGEMENT)
```

3.3.3 Beacon Decode Information for Special Programs

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

Table 3.3.4: Sample Beacon Decode Information (Special Program)

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

COUNTRY     : USA              BEACON TYPE: PLB SERIAL (NATIONAL)
COUNTRY 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
```

The name of the special program associated with the beacon ID is provided in PROGRAM, as shown in Table 3.3.4. 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 USA-coded beacon per Table 3.2.11 or a beacon located in the USA 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 000000000000001, then:

1) available registration information for the specific beacon ID in the USMCC 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 USA 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.

By default, alert messages are distributed by LGM capable MCCs to other MCCs based on the confirmed position once the position is confirmed; LEOSAR/GEOSAR (L/G) only capable MCCs may opt out of receiving alerts after position confirmation from LGM capable MCCs. Alert messages are distributed by L/G only capable MCCs to other MCCs only until position is confirmed. As a consequence, alerts for USA special program beacons will only be distributed to the USMCC after position confirmation when:

a) the alert is detected by a USA LEOLUT, GEOLUT, or MEOLUT (where only LEOLUTs have stored/global capability).
b) the alert is detected by a foreign LEOLUT, GEOLUT, or MEOLUT that is associated with an LGM capable MCC.

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 in section 3.4.

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

3.3.3.1 Beacon Decode Information for USA Naval Submarine Program Beacons

The following applies only to the USA 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; the value is "N/A" if data is not available. HOURS ACTIVE contains the number of hours since beacon activation; the value is "N/A" if data is not available. See the sample message in Annex 8.

3.3.3.2 Beacon Decode Information for USA CSEL Program Beacons

The following applies only to the USA 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.*

3.3.4 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:

a) DOA or Doppler location (if available), or
b) data in the USA Registration database (if registered, and DOA or Doppler location not available).

Section 2.1.4 provides further 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-USA-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 USA 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 USA military special program or to another USA 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 SSAS 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 home port 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 REG 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 (including ELTs since 2018). 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 USA RCC or another responding agency. SPECIAL STATUS indicates whether the beacon is in a special status, as noted in Table 3.4.1. 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 USA registered beacons and provide important information that may affect the SAR response.

Table 3.4.1: Beacon Registration Special Status Types

Special Status	Remarks
DESTROYED	The beacon owner reported that the beacon was destroyed
DUPLICATEID	NOAA determined that there are multiple beacons coded with this ID. This means that the associated beacon registration information may not apply when the beacon ID is activated.
LOST	The beacon owner reported that the beacon has been lost
OUTOFSERVICE	The beacon owner reported that the beacon is no longer in service (outage may be temporary or permanent)
RECODED	The beacon owner reported that the beacon has been recoded to another beacon ID (original beacon ID no longer in use by the owner)
REPLACED	The beacon owner reported that the beacon has been replaced by another beacon (owner is no longer using the original beacon)
SOLD	The beacon owner reported that the owner has sold the beacon
STOLEN	The beacon owner reported that the beacon was stolen

3.4.4 Beacon Registration Data for Special Programs

As described in section 3.3.2, a group of 406 MHz beacons with a USA country code may be allocated to a special program based on official agreements between NOAA and USA Government agencies. For certain special programs, USMCC registration information is provided for specific beacon IDs, as described here and in sections 3.3.3 and 3.4.1.

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 field 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 USA 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-USA-Coded Beacons

For non-USA-coded beacons, this block normally contains point of contact information for the associated beacon registry. (In rare cases where a non-USA coded beacon is in the RGDB, RGDB data is provided as described in section 3.4.3.) This point of contact information is provided as shown in Table 3.4.2.
Note that the "@" symbol is represented by "(AT)" in the registration EMAIL address, as required by document C/S A.002 for the distribution of messages from MCCs to SPOCs and MCCs.

Countries that do not maintain a national registry typically include their beacons in the C/S International Registration Database (IBRD). The IBRD is maintained by the C/S Secretariat. Since the C/S Secretariat is not available 24x7, for countries with beacons in the IBRD and no national registry, AFTN and TELEPHONE contact information is provided for the USMCC, since the USMCC is available 24x7.

Table 3.4.2: Beacon Registry Information for Non-USA-Coded Beacons

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

If beacon registry point of contact information is not available for a non-USA 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 (see sample in Table 3.5.1).

Table 3.5.1: Sample Supporting Information

```
**** 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
```

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, USA 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 USA 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.

When position is confirmed for a RLS beacon, the confirmed alert is sent to the MCC associated with the RLS provider, as described in section 3.2.3.9.2. For example, a confirmed alert for a RLS beacon coded to use the Galileo constellation would be sent to the FMCC (and FMCC would be included in the message distribution list), even if an alert was not sent to the FMCC based on beacon location or beacon country code.

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

3.5.3 Previous 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 5 messages were sent for the site, solutions are only provided for the last 5 messages. Up to 3 solutions may be provided per previous message, if the message contains Doppler and encoded position. Two solutions may be provided per previous message, if the message contains DOA and encoded position.

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.

When position data from two different alert messages is used to confirm position (i.e., position data from the current alert and a previously received alert), it is possible that data from the previously received alert would not be sent by the USMCC. This would occur when the previously received alert used to confirm position was redundant at the time it was received (and thus was not sent by the USMCC), but contained data that was subsequently used to confirm position. When this occurs, the initial alert used to confirm position will not be provided in the PREVIOUS MESSAGE INFORMATION, since this initial alert was not sent by the USMCC (see Table 3.5.2).

Table 3.5.2: Sample Previous Message Information (Position Confirmed)

```
PREVIOUS MESSAGE INFORMATION:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
85   N/A A  64 11.4N  151 22.3W  17 1023 FEB S10 009 AK1
N/A  016 D  64 11.9N  151 21.9W  17 1025 FEB MEO 004 CMCC
N/A  005 D  64 11.6N  151 21.8W  17 1020 FEB MEO 005 FL_MEO
N/A  N/A U  N/A                  17 1019 FEB G16 001 MD1
```

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. This feedback also allows the USMCC to provide information on distress alerts (i.e., SARSAT rescues) to the Cospas-Sarsat Secretariat to meet requirements of document C/S A.003 and to NOAA and other USA agencies to meet national requirements. The incident feedback request enables USA 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 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 USA RCC(s) and SPOCs, and information on the closed site is added to the IHDB. RCC personnel can provide feedback directly in the IHDB once the closed site is added to the IHDB. (Since closed site information is only added to the IHDB every 10 minutes, RCC personnel may need to wait briefly to provide feedback.). 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.

Normally site closure (SIT 176) messages are only sent to USA RCCs and SPOCs. In addition, when the USMCC backs up another MCC (e.g., JAMCC or CHMCC), it will send site closure (SIT 176) messages to a backup destination that receives alert messages in SPOC format. While the header of the Incident Feedback Request in the SIT 176 message requests feedback, the USMCC does not expect to receive incident feedback from other MCCs (e.g., JAMCC) or SPOCs associated with other MCCs (e.g., the Uruguay SPOC associated with the CHMCC), since the USMCC is only responsible for reporting on SAR incidents in the USA service area.

Note that the incident feedback form is designed to fit within the 69 character line limit for MCCs, to address the case when the SIT 176 message is sent to an MCC during a MCC backup.

3.7 Message Trailer

The message trailer consists of three lines of fixed text, as shown in Table 3.7. 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 USA 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.

Table 3.7: Message Trailer

```
QQQQ
/LASSIT
/ENDMSG
```

4 ALERT MESSAGES SAMPLES AND FURTHER DESCRIPTIONS

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

4.1 Unlocated First Alerts

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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                  24 1842 DEC G16 002 MD1    CGD07

DETECTION FREQUENCY: 406.0368 MHZ

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

COUNTRY     : USA              BEACON TYPE: PLB SERIAL (STANDARD)
COUNTRY 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 REG 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 USA aircraft, is provided in hexadecimal (HEX=) in the Beacon Decode section.

```
89666 00000/3660/15 049 1239
/170/366S

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

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

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                  18 1237 FEB MEO 002 SPMcc  AFRCC

DETECTION FREQUENCY: 406.0370 MHZ
FIRST DETECT TIME: 18 1237 FEB

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

COUNTRY     : USA              BEACON TYPE: ELT 24 BIT ADDRESS (STD)
COUNTRY CODE: 366              CRAFT ID   : N203JP         SPECIFIC BEACON:
MANUFACTURER:                  MODEL      :
24 BIT ADDR : HEX=A19DFE       HOMING     : 121.5 MHZ
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: AugustaWestland       / 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 REG 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:
  AFRCC

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 unlocated alert is identified as “UNCORROBORATED” as described in section 3.2.7.

```
/07852 00000/3680/15 191 1658
/170/CGOP

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

BEACON ID: ADCD0 2170D 44001      SITE ID: 98853

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

PROB EE 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
FIRST DETECT TIME: 10 1656 JUL
UNCORROBORATED MEOSAR ALERT

**** 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 2:
  TEL 3:                           TEL 3:
  TEL 4:                           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 REG EXPIRES: 29 APR 2017
DATE LAST UPDATED: 29 APR 2015
```

```
REMARKS:

SPECIAL STATUS:    OUTOFSERVICE      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 Located First Alerts

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

Note that the Registration EMAIL address contains "(AT)", which stands for "@".

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

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

BEACON ID: 46683 82668 FFBFF      SITE ID: 75102

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
61   N/A A  01 22.2N  103 59.9E  18 1302 FEB S13 008 VNMcc  SIMCC
39   N/A B  08 29.5N  135 58.9E  18 1302 FEB S13 008 VNMcc  MARSEC
N/A  N/A E  36 30.00N 072 30.00W 24 1843 DEC MEO 002 SPMcc

DETECTION FREQUENCY: 406.0343 MHZ

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

COUNTRY     : SINGAPORE        BEACON TYPE: ELT SERIAL (STANDARD
COUNTRY CODE: 563              CRAFT ID   :               SPECIFIC BEACON:
MANUFACTURER: CSTA# 112        MODEL      :
SERIAL NUM  : 4916             HOMING     : 121.5 MHZ)
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(AT)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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                  18 1259 FEB S11 001 GU1    SIMCC

QQQQ
/LASSIT
/ENDMSG
```

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

Notes on example: This unconfirmed 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 G16 (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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A E  36 30.00N 072 30.00W 24 1843 DEC MEO 002 SPMcc  CGD05

DETECTION FREQUENCY: 406.0368 MHZ
FIRST DETECT TIME: 14 1843 DEC

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

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

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

OWNER: John Doe
  999 First Street               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 REG 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, CGD05

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
  CGD07

PREVIOUS MESSAGE INFORMATION:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                 24 1842 DEC G16 001 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 EE 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  010 SPMcc  CGD01
39   N/A B  53 21.9N  000 59.0W  24 1807 DEC S7  010 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: MEOSAR alert being sent to CGD13 based on DOA position after an unlocated alert was sent to the AFRCC for an USA coded ELT.

```
/04422 00000/3660/15 191 0202
/171/366E

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

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

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  005 D  47 06.8N  122 27.9W  10 0201 JUL MEO 004 HI-MEO CGD13

DETECTION FREQUENCY: 406.0276 MHZ
FIRST DETECT TIME: 10 0200 JUL

**** 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:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                  24 1842 DEC G16 001 MD1    AFRCC


QQQQ
/LASSIT
/ENDMSG
```

4.3 Updated Located Alerts Prior to Position Confirmation

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

Notes on example: This unconfirmed position update alert was sent because the "A" side probability (86%) is at least 15% higher than the "A" side probability on the previous alert sent for the same pass. The higher probability gives the RCC better information about the true location, but location data from an independent beacon event is still required to confirm the beacon position. Note that if a same pass Doppler position conflict alert is sent with a significantly higher "A" side probability (e.g., 82% vs. 50%), then a Doppler location first alert update could be sent (e.g., 86% vs. 50%) if the first Doppler alert for the pass remains the reference alert, per C/S A.001 rules.

Field THIS ALERT MESSAGE IS BEING SENT TO only lists CGD01, not UKMCC, because this message was distributed based on USA (national) rules, not C/S data distribution procedures. The POSITION DEVICE is NIL because the beacon type (ELT AVIATION USER) is not location protocol.

Note: If a Doppler location for such an alert is in the SRR for a USA SPOC that receives C/S standard SIT 185 messages, then a SIT 185 Position Update message is sent to the SPOC with text in the "OPERATIONAL INFORMATION" field that indicates "IMPROVED PROBABILITY REPORTED FOR THE A POSITION".

```
/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 EE 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  011 CMcc   UKMCC
14   N/A B  42 21.4N  058 13.8W  24 1807 DEC S7  011 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
COUNTRY 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 EE 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  003 SPMcc  CGD01
50   N/A B  53 21.2N  000 58.6W  24 1807 DEC S7  003 SPMcc  UKMCC

QQQQ
/LASSIT
/ENDMSG
```

4.3.2 Doppler Position Match (Position Unconfirmed) (SIT 172)

Notes on example: This unconfirmed alert was sent because each of the new Doppler positions match the Doppler positions from a separate satellite pass within 20 km. While position is normally 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 position confirmation, the "A" and "B" position probabilities of the matching Doppler locations can be used to help determine which location is likely real; in this case, the "A" position probability is 95%.

```
/03324 00000/3660/11 242 1026
/172/366M

**** 406 BEACON DOPPLER POSITION MATCH (POSITION UNCONFIRMED) ****

BEACON ID: ADCD0 22959 44801      SITE ID: 02957

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
95   N/A A  27 05.7N  082 23.1W  30 0959 AUG S10 012 FL2    CGD07
05   N/A B  24 26.0N  069 57.6W  30 0959 AUG S10 012 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
COUNTRY 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 MESSAGE INFORMATION:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A       N/A        30 0901 AUG G16 002 GSE    CGD07
90   N/A A  27 05.7N  082 23.2W  30 0958 AUG S11 007 FL1    CGD07
10   N/A B  24 26.1N  069 57.6W  30 0958 AUG S11 007 FL1    CGD07 /SANJN

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. 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. The CNMCC is in the message distribution list because the USMCC previously sent a NOCR to the CNMCC because the beacon COUNTRY is China.

```
/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 EE 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 003 PEMcc  CGD07
48   N/A B  27 22.3N  077 52.6W  24 1838 DEC S12 003 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(AT)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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  006 D  29 32.60N 095 02.5W  24 1735 DEC MEO 005 BRMCC  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, thereby confirming the beacon position. This is the first alert for the site and the site duration (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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  005 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
FIRST DETECT TIME: 09 1650 JUL

**** 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 MESSAGE 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. Expected Error (EE) = N/A means that information is not available.

```
/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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A D  43 49.0N  069 52.1W  09 2212 JUL MEO 012 FMCC

DETECTION FREQUENCY: 406.0277 MHZ
FIRST DETECT TIME: 09 2210 JUL

**** 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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A 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 006 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 20 km. 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 20 KM FROM THE FOLLOWING ALERT ***

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A D  53 43.5N  164 04.0W  09 1844 JUL MEO 021 HI-MEO

DETECTION FREQUENCY: 406.0276 MHZ
FIRST DETECT TIME: 09 1834 JUL

**** 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:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A D  53 13.5N  163 24.0W  09 1834 JUL MEO 004 NMCC

QQQQ
/LASSIT
/ENDMSG
```

4.7 No Detection/Site Status Report (SIT 176)

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 been sent in the last 30 minutes;
2) "(CLOSED - TIMEOUT)" indicates that the site closed because the beacon has not been detected within 2 hours, if the beacon has been detected by a USA MEOLUT with DOA position or USA GEOLUT, or 6 hours otherwise;
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 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, 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. In this case, the beacon was not previously detected by a USA MEOLUT with DOA position or by a USA GEOSAR satellite, so the alert site closed when it had not been detected for 6 hours.

```
/52520 00000/3660/15 358 0518
/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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
89   N/A A  31 07.1N  066 32.8E  23 2317 DEC S10 012 AK1
N/A  007 D  31 07.3N  066 33.6E  23 2247 DEC MEO 008 TRMCC
N/A  027 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 no alert was sent with a detect time within the last 30 minutes. The distribution of this message does not necessarily mean that the beacon was not detected in the last 30 minutes. For example, an unlocated alert with a detect time 15 minutes later than the detect time of the most recently sent alert would not be transmitted, since the unlocated alert does not meet the 30-minute threshold for sending a (SIT 177) detection update message. The difference between the time that the previous alert was sent and the time that the "no detection" message is generated may exceed 30 minutes when the USMCC processes a steady stream of alert messages, since the USMCC gives priority to processing new alerts over generating "no detection" messages.

```
/52520 00000/3660/15 357 2348
/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: 23 2348 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
  AFRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
  AFRCC

PREVIOUS MESSAGE INFORMATION:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
89   N/A A  31 07.1N  066 32.8E  23 2317 DEC S10 007 AK1
N/A  005 D  31 07.3N  066 33.6E  23 2247 DEC MEO 008 TRMCC
N/A  012 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. The RCC Controller should ensure that the 406 MHz beacon has been secured before requesting the USMCC Operator to close an alert site.

```
/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 0101 DEC

THIS ALERT MESSAGE IS BEING SENT TO:
  AKRCC

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
  AKRCC

PREVIOUS MESSAGE INFORMATION:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  007 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 72 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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
89   N/A A  31 07.1N  066 32.8E  23 2317 DEC S10 011 AK1
N/A  003 D  31 07.3N  066 33.6E  23 2247 DEC MEO 008 TRMCC
N/A  006 D  31 07.5N  066 33.1E  23 2225 DEC MEO 006 NMCC
N/A  009 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 USA 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 USA SPOC that receives SIT 185 messages. As shown below, site closure messages sent to USA 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 00000/3660/18 017 2043
/176/3450

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

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


**** INCIDENT FEEDBACK REPORT. 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 /TEST-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 Registration information. Position confirmation information is provided if the position is confirmed. All SIT messages generated for new alert data when position is not confirmed are constructed to include a sub-header that indicates "DETECTION TIME AND POSITIONS FOR THE BEACON", as does the sample SIT 177 message shown in section 4.8.1. *However, to accommodate a current limitation in RCC alert message parsing software, the sub-header in all SIT 177 messages will indicate "NEW ALERT INFORMATION" per the sample SIT 177 message shown in section 4.8.3 until this limitation is resolved.*

4.8.1 Detection Update (SIT 177) – Position Unconfirmed (Final Version)

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

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

BEACON ID: 2DCE6 DD3BE FFBFF      SITE ID: 54645

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

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                  22 0201 DEC S11 002 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 EE 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 004 AUMCC  AFRCC /SAMCC
46   N/A B  30 22.4S  051 35.0E  22 0023 DEC S12 004 AUMCC  AFRCC /SAMCC

QQQQ
/LASSIT
/ENDMSG
```

4.8.2 Detection Update (SIT 177) – Position Confirmed

```
/21290 00000/3660/16 137 1026
/177/366S

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

BEACON ID: ADCC0 9EF2C 98765      SITE ID: 11003

**** CONFIRMED POSITION ****

LATITUDE LONGITUDE  DURATION   SRR   /BUFFER/BUFF_2
36 56.6N 127 00.9E  004.5 HRS  AFRCC /CENTCO/KOMCC

**** NEW ALERT INFORMATION ****

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  N/A U  N/A                  16 1020 MAY MEO 001 HI-MEO

DETECTION FREQUENCY: 406.1250 MHZ
FIRST DETECT TIME: 16 1020 MAY

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

COUNTRY     : USA              BEACON TYPE: ELT SERIAL AVIATION
COUNTRY CODE: 366              CRAFT ID   :                SPECIFIC BEACON:
MANUFACTURER: UNKNOWN          MODEL      : UNKNOWN
SERIAL NUM  : 162763           HOMING     : 121.5 MHZ
POSITION DEVICE: NIL           POSITION RESOLUTION: NONE

**** SUPPORTING INFORMATION ****

USMCC PROCESSING TIME: 16 1026 MAY

THIS ALERT MESSAGE IS BEING SENT TO:
  AFRCC,CENTCOM

ALERT MESSAGES FOR THIS SIGNAL PREVIOUSLY SENT TO:
  AFRCC,CENTCOM,JAMCC,CGD17

PREVIOUS MESSAGE INFORMATION:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  000 D  36 56.1N  127 01.2E  16 0949 MAY MEO 004 HI-MEO
50   N/A B  36 53.6N  126 56.2E  16 0938 MAY S10 003 GU2
N/A  N/A U  N/A                  16 0928 MAY MEO 001 HI-MEO

QQQQ
/LASSIT
/ENDMSG
```

4.8.3 Detection Update (SIT 177) – Position Unconfirmed (Interim Version)

Note: this section will be removed once the limitation described in section 4.8 is resolved.

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

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

BEACON ID: 2DCE6 DD3BE FFBFF      SITE ID: 54645

**** NEW ALERT INFORMATION ****

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  N/A U  N/A                  22 0201 DEC S11 002 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 EE 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 004 AUMCC  AFRCC /SAMCC
46   N/A B  30 22.4S  051 35.0E  22 0023 DEC S12 004 AUMCC  AFRCC /SAMCC

QQQQ
/LASSIT
/ENDMSG
```

4.9 Notification of Country of Registration (SIT 178)

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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  007 D  57 27.9N  024 11.3E  24 1940 DEC MEO 006 CMCC   NMCC

DETECTION FREQUENCY: 406.0251 MHZ
FIRST DETECT TIME: 24 1939 DEC

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

COUNTRY     : BAHAMAS          BEACON TYPE: EPIRB MARITIME USER
COUNTRY 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 confirmed position 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 3.2.3.9. 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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  002 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
FIRST DETECT TIME: 10 0929 JUL

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

COUNTRY     : USA              BEACON TYPE: EPIRB SERIAL (STANDARD)
COUNTRY 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 REG 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 Encoded Position Update (SIT 179)

4.10.1 Encoded Position Update (SIT 179) – Position Unconfirmed

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 or is refined for the first time.

```
/62659 00000/3660/15 340 0424
/179/366O

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

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

**** NEW ALERT INFORMATION ****

PROB EE 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 G16 001 ARMcc  CGD08

DETECTION FREQUENCY: 406.0278 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  : 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 EE 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

```
/22190 00000/3660/15 190 0405
/179/366S

**** 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  000.3 HRS  AFRCC

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

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

DETECTION FREQUENCY: 406.0272 MHZ
FIRST DETECT TIME: 09 0403 JUL

**** 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:

PROB EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE
N/A  003 D  40 34.9N  115 22.8W  09 0349 JUL MEO 005 FL-MEO
N/A  N/A E  40 34.87N 115 22.93W 09 0349 JUL MEO 005 FL-MEO

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) – not updated for the LGM MCC

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    G16 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 contains 406 MHz beacon registration information. The narrative text shows the BEACON ID, the SITE ID (if applicable), a header line with information about receipt of the associated message from another MCC (if applicable) and the beacon registration information. For USA-coded beacons, the registration information is provided in the same format as in alert messages (see section 3.4). For non-USA-coded beacons, the registration information is provided in the format the information is received from the other MCC.

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. It is also sent automatically when the USMCC receives registration information from a foreign MCC in a SIT 925 message for a non-USA coded beacon; in this case, the USMCC appends a header line to the registration information that provides the USMCC input message number, the sending MCC name and the time the message was sent to the USMCC.

The example below provides registration information for a French beacon.

```
/58612 00000/3660/15 307 2243
/952/CGOP
/
BEACON ID: 9C690 64D65 034D1      SITE ID: 09033
MESSAGE# 66391 WAS SENT TO THE USMCC BY FMCC AT 15 307 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 LEOSAR satellite passes that have mutual visibility with a USA 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    LSE    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 15hexadecimal 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-USA 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	
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-USA 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.	
BUFFER	**Alert Data Block, Support Data Block** BUFFER is the second SRR in which the alert is located, based on a designated 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 3.2.3.9 for more information.	

Term	Alert Message Section	Support Message
	Definition	
BUFF_2	**Alert Data Block, Support Data Block** BUFF_2 is the third SRR in which the alert is located, based on a designated 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 3.2.3.9 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, SSAS beacon or ELT is carried.	
CELLULAR NUMBER	**Beacon Registration Data Block** **Beacon Registration** Cellular telephone number for the vessel on which the EPIRB or SSAS beacon 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, SSAS beacon, 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 website (sub-links “Contact Lists” / “406 MHz 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 USA 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 "System" / "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 REG 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	**Alert Data Block** **Alert Query Report** For the MEOSAR alerts, the DETECT TIME is time that a satellite last detected the beacon for the alert. For solutions with Doppler location, the TCA of the satellite to the beacon. The TCA is computed at the ground station (LEOLUT) and may differ from the detect time of the individual 406 MHz beacon bursts by 8-10 minutes; for a Doppler solution computed and sent to the MCC in near real-time, it is possible for the RCC to receive the alert message prior to the computed TCA. For non-Doppler solutions from LEOLUTs, the time that the satellite last received a burst from the 406 MHz beacon. For the MEOSAR alerts, the DETECT TIME is time that a satellite first 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 when the beacon is moving rapidly (e.g., in the event of an aircraft crash). **Support Data Block** **Alert Query Report** For PREVIOUS MESSAGE INFORMATION, see description above for "Alert Data Block".	
DETECT TIME	**Beacon-LUT Mutual Visibility Schedule** The time of the closest approach of the LEOSAR satellite to the reported beacon location.	
DETECTION FREQUENCY	**Alert Data Block** The DETECTION FREQUENCY format is 406.nnnn MHz, and provides the detected frequency of the transmitting 406 MHz beacon to a precision of tenths of a Hz (nnnn), as shown in Table 3.2.10. It is provided for the new solution, if available, or a previous solution, if the data is not available in the new solution. The value is reported as "NOT AVAILABLE when the frequency is not available in the new or a previous solution. The frequency may be unavailable because: a) it was not provided by the reporting LUT or MCC, or b) the solution was from a LEOSAR satellite without Doppler location, in which case the reported frequency is unreliable since it includes a Doppler shift of unknown magnitude. In MEOSAR alerts, the value "406.1250" indicates that the frequency is not available.	
DUR	**Alert Site Query** The number of hours that this beacon has been active, calculated from the earliest and most recent times that the beacon was detected.	
DURATION	**Alert Data Block** 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.	
EAST BOUNDARY	**Alert Query Report** The eastern boundary of an alert query based on a search rectangle.	

Term	Alert Message Section	Support Message
	Definition	
EE	**Alert Data Block** The radius of the expected horizontal error for DOA position in nautical miles. The error should be within that radius with 95 % probability with an uncertainty of +- 2%, per C/S MEOLUT requirements. The field is set to "N/A" if there is no DOA position, "000" if the value is not available for the DOA position, and "999" if the value for the DOA position is greater than 150.	
EMAIL	**Beacon Registration Data Block**	**Beacon Registration**
	The email address for the beacon owner from USA beacon registry (RGDB) for USA beacon. Email address point of contact for beacon registry for non-USA beacon. Symbol "@" is represented by "(AT)" in the email address for a non-USA beacon registry.	
FACSIMILE	**Beacon Registration Data Block** Facsimile number point of contact for beacon registry for non-USA beacon.	
FIRST DETECT TIME	**Alert Data Block**	**Alert Query Report**
	The first DETECT TIME for a MEOSAR solution. Provided only for new MEOSAR solutions; not provided for LEOSAR or GEOSAR solutions or for previous messages.	
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 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 or SSAS beacon 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 or SSAS beacon 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).	

Term	Alert Message Section	Support Message
	Definition	
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 or SSAS beacon 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.
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 the description of encoded position precision in section 3.2.3.4.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** When one Doppler position (A or B) in the new alert is determined to be an "image" (that is, not the actual position), then a data line is included in the alert message about the "LIKELY IMAGE POSITION". This data line is only provided when a Doppler position is determined to be an image prior to ambiguity resolution. Possible values are "THE A POSITION" and "THE B POSITION". The image position is determined when a beacon was previously detected as an unlocated alert, and one of the Doppler positions was not visible to the satellite when the unlocated alert was detected, per the "LEOSAR Image Position Determination" algorithm in document C/S A.002 (Appendix B.2 to Annex B). See section 3.2.6 for more details.	

Term	Alert Message Section	Support Message
	Definition	
LONGITUDE	**Alert Data Block** **Alert Site Query** **Support Data Block** 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 the description of encoded position precision in section 3.2.3.4.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 USA 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.	
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 USA 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 detections (packets) for which data was used to generate the alert, where each beacon burst received through one antenna is counted as a detection. (E.g., if two beacon bursts are each received from two antennas, the number of detections is 4.) The field is set to “N/A” for MEOSAR alerts when no data is available. For LEOSAR and GEOSAR alerts, field NUM is usually set to the number of detections (beacon bursts) used to generate the alert. However, for some GEOLUTs, NUM may include bursts processed with previous alerts and may be as high as “121”.	
NUMBER IN DISTRESS	**Incident Feedback Request** The number of people in distress during the incident (distress cases only), excludes rescue personnel.	

Term	Alert Message Section	Support Message
	Definition	
NUMBER OF LIFE BOATS	**Beacon Registration Data Block** **Beacon Registration** The number of life boats on board the vessel on which the EPIRB or SSAS beacon 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 or SSAS beacon 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.	
POSITION DEVICE	**Beacon Decode Data Block** The POSITION DEVICE indicates the type of device that the beacon uses to provide encoded position. Possible values are INTERNAL, EXTERNAL and NIL, as described below: INTERNAL – encoded position is provided by a device internal to the beacon EXTERNAL – encoded position is provided by a device external to the beacon NIL – no information is available. This means that the beacon type is not location protocol or that the information was not reliably provided in the 406 MHz beacon message for this alert.	
POSITION RESOLUTION	**Beacon Decode Data Block** The POSITION RESOLUTION indicates the encoded position resolution. Table 3.2.7 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.	
PREVIOUS MESSAGE INFORMATION	**Support Data Block** Solution data for previous messages for the site, in descending order by time the messages were received by the USMCC. If more than 5 messages were sent for the site, only the last 5 messages sent are listed. The "PROB" (probability), "EE" (expected horizontal error), "SOL" (solution), "LATITUDE", "LONGITUDE", "DETECT TIME", "SAT" (satellite), "NUM" (number of satellites) and "SOURCE" are provided, as described separately. SRR, BUFFER and BUFF_2 are only provided on messages generated before position confirmation. Section 3.5.3 further describes Previous Message Information.	
PROB	**Alert Data Block** **Support Data Block** 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.	

Term	Alert Message Section	Support Message
	Definition	
RADIO CALL SIGN	**Beacon Registration Data Block**	**Beacon Registration**
	The radio call sign of the vessel on which the EPIRB or SSAS beacon is carried. This may be a foreign radio call sign for a foreign flagged vessel.	
RADIO EQP	**Beacon Registration Data Block**	**Beacon Registration**
	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.	
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 period of non-detection, the period the site is open 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 or SSAS beacon 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.	
RLS PROVIDER	**Alert Data Block**	
	Indicates which satellite constellation that provides the return link service, and is listed as GALILEO, GLONASS or UNKNOWN. Only provided when the beacon type is Return Link.	

Term	Alert Message Section	Support Message
	Definition	
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 3.2.9 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.
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 or SSAS beacon is carried or the airport of the aircraft on which the ELT is carried
SERIAL NUM	**Beacon Decode Data Block** The unique serial number of the beacon (serialized beacons only). For user protocol national use USA 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.

Term	Alert Message Section	Support Message
	Definition	
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** **Alert Query Report** **Incident Feedback Request** **Support Data Block** The USMCC assigned site identifier consisting of five numeric digits.	
SOL	**Alert Data Block** **Alert Query Report** **Support Data Block** 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).	
SOURCE	**Alert Data Block, Support Data Block** **Alert Query Report** The ground station or LUT that ingested the satellite data. If the source is a USA LUT, then the LUT name is provided per Annex 2. If the source is not a USA 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, OUTOFSERVICE 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.	

Term	Alert Message Section	Support Message
	Definition	
SRR	**Alert Data Block, Support Data Block** The primary Search and Rescue Region associated with the given position (or beacon activation), based on information available at the USMCC. For USA 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 3.2.3.9 for more information.	
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-USA beacon.	
TELEPHONE	**Beacon Registration Data Block** Telephone number point of contact for beacon registry for non-USA 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, SSAS beacon, 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 within 1 minute of the message transmission time provided in line 1 of the message header. If the transmission time is more than 1 minute later that the USMCC Processing Time, then the message was probably retransmitted by USMCC personnel.	
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 or SSAS beacon is carried.
VISIBILITY		**Alert Query Report** **Beacon-LUT Mutual Visibility Schedule** The mutual visibility between the satellite, LUT and beacon position

Term	Alert Message Section	Support Message
	Definition	
WEB	**Beacon Registration Data Block** Web address point of contact for beacon registry for non-USA beacon. The web address for the C/S International Beacon Registration Database (IBRD) is www.406registration.com.	
WEST BOUNDARY	**Alert Query Report** The western boundary of an alert query based on a search rectangle.	

ANNEX 2 - USA LUTs

Name on RCC Message	C/S ID	Description	Location
AK1	3031	Alaska LEOLUT 1	Fairbanks, Alaska
AK2	3032	Alaska LEOLUT 2	Fairbanks, Alaska
AK3*	3037	Alaska LEOLUT 3	Fairbanks, Alaska
AK4*	3038	Alaska LEOLUT 4	Fairbanks, Alaska
FL-MEO	3669	Florida MEOLUT	Miami, Florida
FL1	3663	Florida LEOLUT 1	Miami, Florida
FL2	3664	Florida LEOLUT 2	Miami, Florida
FL3*	3667	Florida LEOLUT 3	Miami, Florida
FL4*	3668	Florida LEOLUT 4	Miami, Florida
HI-MEO	3384	Hawaii MEOLUT	Wahiawai, Hawaii
HI1	3381	Hawaii LEOLUT 1	Wahiawai, Hawaii
HI2	3382	Hawaii LEOLUT 2	Wahiawai, Hawaii
HI3*	3387	Hawaii LEOLUT 3	Wahiawai, Hawaii
HI4*	3388	Hawaii LEOLUT 4	Wahiawai, Hawaii
GSE	3675	GEOLUT Support Equipment	Suitland, Maryland
GU1	3383	Guam LEOLUT 1	Andersen AFB, Guam
GU2	3384	Guam LEOLUT 2	Andersen AFB, Guam
LME*	3678	LEO/MEO LUT Support Equipment	Suitland, Maryland
LSE	3673	LEOLUT Support Equipment	Suitland, Maryland
MD-MEO	3677	Maryland MEOLUT (not planned for operational use)	Greenbelt, Maryland
MD1	3674	Maryland GEOLUT 1	Suitland, Maryland
MD2	3676	Maryland GEOLUT 2	Suitland, Maryland

**The antennas for these LUTs track a LEOSAR satellite when a LEOSAR satellite is available; otherwise, they track a MEOSAR satellite as part of the associated MEOLUT.*
The FL3 and FL4 antennas are associated with FL-MEO; the other antennas are associated with HI-MEO.

ANNEX 3 – COSPAS/SARSAT MCCs

The following list of COSPAS/SARSAT MCCs includes an indication of whether the MCC is LGM capable; if an MCC is not marked as "LGM" capable then it is "L/G only" capable. This list is updated each time the RCC Message Manual is published. An up to date list of MCCs, including information on MCC capability, is provided on the C/S website at: https://www.cospas-sarsat.int/en/system/meosar-system-status/mcc-configuration**.**

Name	Country	Associated Nodal MCC
AEMCC	United Arab Emirates	SPMCC
ALMCC*	Algeria	SPMCC
ARMCC	Argentina	USMCC
ASMCC	South Africa	AUMCC
AUMCC*	Australia	n/a**
BRMCC	Brazil	USMCC
CHMCC*	Chile	USMCC
CMC	Russia	n/a**
CMCC	Canada	USMCC
CNMCC	China	JAMCC
CYMCC*	Cyprus	FMCC
FMCC*	France	n/a**
GRMCC	Greece	FMCC
HKMCC	Hong Kong	JAMCC
IDMCC	Indonesia	AUMCC
INMCC	India	CMC
ITMCC	Italy	FMCC
JAMCC*	Japan	n/a**
KOMCC	Korea	JAMCC
MYMCC	Malaysia (not operational)	AUMCC
NIMCC	Nigeria (not operational)	SPMCC
NMCC*	Norway	FMCC
PAMCC	Pakistan	CMC
PEMCC	Peru	USMCC
QAMCC*	Qatar	SPMCC
SAMCC	Saudi Arabia	SPMCC
SIMCC*	Singapore	AUMCC
SPMCC*	Spain	n/a**
TAMCC	Taiwan	JAMCC
THMCC	Thailand	AUMCC
TRMCC*	Turkey	FMCC
UKMCC*	United Kingdom	FMCC
USMCC*	United States	n/a**
VNMCC	Vietnam	JAMCC

**MCC is LEOSAR/GEOSAR/MEOSAR (LGM) Capable*

***n/a = not applicable (nodal MCC)*

ANNEX 4 - SAMPLE SIT 185 MESSAGES GENERATED BY THE CMCC

1. Alert Message Sent to USA 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 USA 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 ELT, an EPIRB, and a PLB are presented in this annex.

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 REG 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             TEL 1: HOME 813-934-1111
       TARPON SPRINGS          FL     TEL 2: WORK 813-934-5678
       34689     USA                  TEL 3: CELL 813-934-1234
                                      TEL 4: WORK 813-934-4444
       EMAIL: GULFSHRIMP@AOL.COM

CONTACTS: ROY JONES                   NANCY JONES
        TEL 1: HOME 813-937-3333      TEL 1: HOME 904-827-1234
        TEL 2: WORK 813-934-2222      TEL 2: CELL 904-829-9999
        TEL 3: CELL 813-934-1111      TEL 3:
        TEL 4:                        TEL 4:

VESSEL NAME: PROUD MARY
TYPE: POWER TRAWLER                   LENGTH OVERALL (FT):    75
COLOR: BLUE                           CAPACITY:   9
RADIO CALL SIGN: WAQ1234              REGISTRATION NO: 654321
RADIO EQP: VHF-FM, INMARSAT           INMARSAT NUMBER:
CELLULAR NUMBER:

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

HOME PORT PRIMARY SRR: LANTAREA       SECONDARY SRR:
HOME PORT: RICK'S MARINA              SHALLOTTE               NC

MANUFACTURER: LITTON                  MODEL NUMBER: 948-01
ACTIVATION TYPE: CAT1 (MANUAL AND AUTOMATIC)

BEACON CONTAINS SVDR:  NO

DATE FIRST REGISTERED: 26 JUN 1999    DATE REG EXPIRES: 31 DEC 2010
DATE LAST UPDATED:  11 JAN 2009

REMARKS:

SPECIAL STATUS:                       SPECIAL STATUS DATE:              SPECIAL
STATUS INFO:
```

PLB Beacon Registration Data Block Format

```
*************  USMCC REGISTRATION DATABASE INFORMATION  ************

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

CONTACTS: MILDRED PIERCE                 BILLY BRAY JR
     TEL 1: HOME 2071234567            TEL 1: HOME 2071234567
     TEL 2: WORK 2078765432            TEL 2: CELL 3015555555
     TEL 3: CELL 3014444444            TEL 3:
     TEL 4: CELL 2121111111            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 REG 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. 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 /TEST-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**	**Echoed SRR[5]**
US Air Force RCC	AFRCC	366S	
US Alaska RCC	AKRCC	366A	
US Coast Guard District 1	CGD01	366B	
US Coast Guard District 5	CGD05	366N	
US Coast Guard District 7	CGD07	366M	
US Coast Guard District 8	CGD08	366O	
US Coast Guard District 9	CGD09	366C	
US Coast Guard District 13	CGD13	366E	
US Coast Guard District 14	CGD14	366H	
US Coast Guard District 17	CGD17	366J	
US Coast Guard Atlantic Area	LANTAREA	CGOP	
US Coast Guard Sector Guam	MARSEC	366G	
US Coast Guard Pacific Area	PACAREA	366F	
US Coast Guard Sector San Juan	SANJN	366U	
US Coast Guard Test Site	*C2CEN[3]*	C2CN	
Canada RCC Halifax[1]	HALIFAX	316H	
Canada RCC Quebec City[1]	QUEBECCITY	316Q	HALIFAX
Canada RCC Trenton[1]	TRENTON	316T	
Canada RCC Victoria[1]	VICTORIA	316V	
SPOC	**SRR Name**	**Destination Code**	
Bermuda[4]	BERMUDASP	3100	
COCESNA (Spanish for Central American Corporation for Navigation Area Services)	COCESNA	CNAM	
Colombia	COLMSP	7300	
Dominican Republic[4]	DOMREPSP	3270	SANJN
Ecuador	ECSP	7350	
Guyana	GUYSP	7500	
Haiti	HAITISP	3360	CGD07
Mexico (Mexican Navy)	MEXISP	3450	MEXTEL
Mexico Telecommunications (Mex. Air Force)	MEXTEL	3451	MEXISP
Netherlands Antilles	NANTSP	3060	SANJN
Panama	PANSP	3520	
Trinidad and Tobago	TTSP	3620	SANJN
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 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 Chile RCC with CHMCC listed as the associated message destination.
[3] The USMCC copies alerts sent to US CG RCCs to Test Site "C3CEN", termed "C2CEN" in USMCC configuration.
[4] This SPOC is sent RCC formatted messages.
[5] The echoed SRR destination is not displayed in the Supporting Information section of the RCC message. See also Annex 14.

ANNEX 8 - SAMPLE ALERT MESSAGE FOR A USA NAVAL SUBMARINE PROGRAM BEACON (SEPIRB)

Alert messages sent for USA 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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
51   N/A A  39 42.4N  137 56.6E  05 2236 DEC S12 008 PEMcc  JAMCC
49   N/A B  32 27.1N  113 52.4E  05 2236 DEC S12 008 PEMcc  CNMCC
N/A  N/A E  41 31.97N 071 18.67W 05 2236 DEC S12 003 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
COUNTRY 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: XXXXXXXXXXXXXXX
SEPIRB ID :   40
MINUTES FOR GPS LOC:    2     HOURS ACTIVE:    0

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

OWNER: XXXXXXXXXXXXXX
  XXXXX                       TEL 1: OTHR (no data provided)
  XX                          TEL 2:
  XXXXX     XXX               TEL 3:
                              TEL 4:
  EMAIL:

CONTACTS: XX1                       XX2
  TEL 1: WORK XXXXXXXXXX          TEL 1: WORK XXXXXXXXXX
  TEL 2:                          TEL 2:
  TEL 3:                          TEL 3:
  TEL 4:                          TEL 4:
```

```
RADIO EQP:

VEHICLE TYPE: SUBMARINE
SPECIFIC USAGE: SUBMARINE

MANUFACTURER: MCMURDO (USCG)          MODEL NUMBER: NO DATA PROVIDED

DATE FIRST REGISTERED: 18 JUL 2002    DATE REG EXPIRES: 28 OCT 2005
DATE LAST UPDATED: 28 OCT 2003

REMARKS: THIS IS PART OF A GROUP REGISTRATION XXXXXXXXX



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 EE SOL LATITUDE  LONGITUDE  DETECT TIME SAT NUM SOURCE SRR   /BUFFER/BUFF_2
N/A  065 D  39 02.4N  137 44.6E  05 2236 DEC MEO 003 TRMcc  JAMCC

QQQQ
/LASSIT
/ENDMSG
```

ANNEX 9 - NATIONALLY DEFINED ALERT MESSAGES DESIGNED FOR AUTOMATED PROCESSING

These messages contain 9 lines, as described in Table Annex 9.1 below. Field separators are "/" or " " (blank), as shown in the Character Representation for each data line. Table Annex 9.2 describes the Message Type (per Line 2, Field 1 in table Annex 9.1). Doppler positions are computed by LUTs using LEOSAR satellite data. DOA positions are computed by LUTs using MEOSAR satellite data.

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

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)**	**/nnna/aaaa**
2	1	Message Type ID	nnna (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)**	**/xxxxxxxxxxxxxxx/aaaaaaa/nnnnnn/a /a (length 21)/aaaaaaaaaaaaaaaaaaaaa**
3	1	Beacon ID. See section 3.2.1.1.	xxxxxxxxxxxxxxx
3	2	HHR ID (if HHR ID present, is numeric, up to 7 digits, right padded with blanks as needed; is only set for CSEL beacons, set to "NA " if non-CSEL). See section 3.3.3.2.	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.	aaaaaaaaaaaaaaaaaaaaa (length 21)
3	6	Beacon Type. "Unknown" if "Beacon ID is Reliable" = "N". See Table 3.3.2.	aaaaaaaaaaaaaaaaaaaaaaaa (length 24)
4		**New Alert Data (Line 4)**	**/yy jjj hhmmss/ann/nnnn**
4	1	Detection Time (MEOSAR: is last data time for new solution)	yy jjj hhmmss
4	2	Associated Satellite. See section 3.2.3.6.	Ann (LEOSAR, GEOSAR) *or "W00" (MEOSAR)*

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)	$nnn.nnnn
5	3	Encoded Position Uncertainty Estimate (9999.99 = no information)	9999.99
5	4	Encoded Position Detection Time (same as Time on Line 4; "zz zzz zzzzzz" = no data is available)	yy jjj hhmmss
5	5	Encoded Position Quality Indicator ("R" = refined, "C"= coarse, "G" = gross, "Z"= no data is available). See section 3.2.3.4.a	a
6		**Doppler "A" *or MEOSAR DOA* Position (Line 6)**	**/$nn.nnnn/$nnn.nnnn/nnnn.nn/yy jjj hhmmss/nn**
6	1	Doppler "A" / DOA Position Latitude - ("szz.zzzz" = default when no data is available)	$nn.nnnn
6	2	Doppler "A" / DOA Position Longitude - ("szzz.zzzz" = default when no data is available)	$nnn.nnnn
6	3	Doppler "A" / DOA Position Uncertainty Estimate (expected error of DOA position in km, if available; “0000.00” if Doppler position outside satellite footprint; “0000.01” if Doppler position within satellite footprint; “9999.99” = no information)	nnnn.nn
6	4	Doppler "A" / DOA Position Detection Time (same as Time on Line 4; "zz zzz zzzzzz" = no data is available)	yy jjj hhmmss
6	5	Doppler "A" / DOA Position Probability (50 - 99; “00” = DOA position outside satellite footprint’ “01" = DOA position within satellite footprint; “zz" = no data is available)	nn
7		**Doppler "B" Position (Line 7)**	**/$nn.nnnn/$nnn.nnnn/nnnn.nn/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 (“0000.00” if Doppler position outside satellite footprint; “0000.01” if Doppler	nnnn.nn

		position within satellite footprint; “9999.99” = no information)	
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
		szzz.zzzz	Default for longitude when data is not available

Table Annex 9.2: 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, position unconfirmed (includes Image Determination, which may occur in a subsequent Doppler Position alert)
161	M	First Alert DOA Position, position unconfirmed
161	P	First Alert Encoded Position, position unconfirmed
162	E	Doppler Position Update, position unconfirmed
162	L	Doppler Position Match, position unconfirmed
162	M	DOA Position Update, position unconfirmed
163	E	Doppler Position Conflict, position unconfirmed
163	M	DOA Position Conflict, position unconfirmed
163	P	Encoded Position Conflict, position unconfirmed, no Doppler or DOA Position
164	E	Position Confirmation with Doppler Position
164	M	Position Confirmation with DOA Position
164	P	Position Confirmation with Encoded Position, no Doppler or DOA Position
165	A	Doppler Position Conflict, position confirmed
165	F	Encoded Position Conflict, position confirmed, no Doppler or DOA Position
165	E	Doppler Position Update to Composite (position confirmed)
165	B	DOA Position Conflict, position confirmed
165	M	DOA Position Update to Composite (confirmed) Position
165	P	Encoded Update to Composite (confirmed) Position, no Doppler or DOA Position
167	P	Updated Unlocated Alert
168	E	Notification of Country of Registration (NOCR), Doppler Position
168	M	Notification of Country of Registration (NOCR), DOA Position
168	P	NOCR, Encoded Position, no Doppler or DOA Position
169	F	Encoded Position (or Rotating Field*) Update, position confirmed, no Doppler or DOA Position
169	E	Encoded Position (or Rotating Field)* Update, position unconfirmed, Doppler Position
169	M	Encoded Position (or Rotating Field*) Update, DOA Position
169	P	Encoded Position (or Rotating Field*) Update, position unconfirmed, no Doppler or DOA Position
169	V	Encoded Position (or Rotating Field*) Update, position confirmed, Doppler Position

***** *Second Generation Beacons and ELT(DT)s, which are not yet used operationally, may contain rotating fields in the beacon message.*

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
/LASSIT
/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 or DOA location and another for messages without Doppler or DOA position. Thus MEOSAR data is fit into the formats designed for LEOSAR/GEOSAR data, where the DOA solution data is put into fields designed for Doppler "A" solution data. The LGM capable USMCC does not provide next pass information for USA LEOLUTs in alert messages. The data time (C/S message field 14) is set to the time of the last burst.

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 USA RCCs; for example:

a) an updated Doppler alert (SIT 175) is sent prior to ambiguity when the "A" side probability increases by at least 15% 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 30 minutes after the most recent detect time on a previously sent alert.

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

SARMaster SIT No.	C/S SIT Number		Description
	L/G	MEO	
172	122	142	Incident (No Doppler/DOA)
173	123	143	Position conflict (No Doppler/DOA)
174	124	144	Position Confirmation (No Doppler/DOA)
175	125	145	Incident (Doppler/DOA)
176	126	146	Position conflict (Doppler/DOA)
177	127	147	Ambiguity resolution (Doppler/DOA)
182	132	136	Notification of country of registration (encoded only)
183	133	137	Notification of country of registration (Doppler/DOA)

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.

C/S data fields in lines 2, 3 and 4 (designed for LEOSAR/GEOSAR alerts) are set specially for MEOSAR alerts as shown in Table 10.2.

Table 10.2: Fields Set Specially in Lines 2, 3 and 4 for MEOSAR Alerts of SARMaster Format as Generated by the USMCC

Line #. Field #	C/S Msg Field*	Format	Description
2.3	06	nnn	Set to "300". Satellite Identifier.
3.6	21**	nn	**No DOA only.** Number of Packets per C/S message field 88. If value = 01 for the first alert for an alert site, then the MEOSAR alert may be uncorroborated.
3.2.a	12.a	c	**DOA only.** Set to "+". Global Data Flag
3.2.b	12.b	c	**DOA only.** Set to "8". Frequency Band
3.5	15	n	**DOA only.** DOA position in satellite footprint (0=Yes, 8=Unknown, 9=No); corresponding C/S field contains TCA Window Flag.
4.1	16	n	**DOA only.** Set to "0". Number of Iterations
4.2	17	nn.nnn	**DOA only.** Set to "00.000". CTA
4.3	18	nnnn	**DOA only.** Expected Horizontal Error (nm) rounded up, 0000= not available, 0999= more than 150 nms.

**C/S Message field number for LEOSAR/GEOSAR alert data*

***C/S Message field 21 contains number of points.*

Lines 6 and 7 of "no Doppler /DOA alerts" (e.g., SIT 173) and Doppler /DOA alerts (e.g., SIT 177) contain the information shown in Table 10.3. These lines are not included in corresponding C/S SIT messages.

Table 10.3: Lines 6 and 7 in SARMaster Format Alerts as Generated by the USMCC

Line #. Field #	Format	Description
6.1	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).
6.2	nn	Set to "00". Defined as the number of satellite passes.
6.3	nn	Set to "00". Defined in SARMaster format as field 671 (number of solutions).
6.4	c	Set to ' ' (blank). Defined in SARMaster format as field 674 for Doppler alerts, not defined for alerts with no Doppler position.
6.5	nnn.nnn	Alert site duration in hours. Defined in SARMaster format as field 668.
6.6	nnnn	Set to '0000'. Defined in SARMaster format as field 666.
6.7	nnnn	Set to '0000'. Defined in SARMaster format as field 667.
6.8	xx….xx	15-Hexadecimal beacon ID, per C/S message field 22.
6.9	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.
7.1	xx….xx	15-Hexadecimal beacon ID, per C/S message field 22.
7.2	snn.nnn	Encoded position latitude, where "s" is the sign ('+' or '-'). The field is only present if the beacon message contains encoded position.
7.3	snnn.nnn	Encoded position longitude, where "s" is the sign ('+' or '-'). The field is only present if the beacon message contains encoded position.

Lines 8 and 10 of Doppler /DOA alerts (e.g., SIT 175) are included in corresponding C/S SIT messages, but some fields are set differently by the USMCC, as described in Table 10.4.

Table 10.4: Lines 8 and 10 in SARMaster Format Alerts as Generated by the USMCC

Line #. Field #	Format	Description
8.1	fnnn	Sub-field "f", "position flag 1: '+' in position flags 1 and 2 (position not confirmed), '+' in position flag 1 and '-' in position flag 2 (new Doppler/DOA position matches the confirmed position), or '-' in position flags 1 and 2 (Doppler/DOA position conflict, position confirmed). Sub-field "nnn": SAR Code for associated location or alert site. Corresponds to C/S message field 24.
8.2	snn.nnn	Latitude of "A" /DOA location (if position not confirmed or position conflict alert) or confirmed location (if position confirmed and a new Doppler /DOA position matches the confirmed position). Corresponds to C/S message field 25.
8.3	snnn.nnn	Longitude of "A" /DOA location (if position not confirmed or position conflict alert) or confirmed location (if position confirmed and a new Doppler /DOA position matches the confirmed position). Corresponds to C/S message field 26.
8.5	nn	Probability of "A" location (if Doppler position not confirmed or Doppler position conflict alert) or '99' (if position confirmed and a

		new Doppler position matches the confirmed position). Set to “00” for DOA position. Corresponds to C/S message field 28.
8.6	yy jjj hhmm	Time of next LEOSAR pass scheduled for “A” location (if position not confirmed) or confirmed position (if position confirmed). Set to “00 000 0000” for MEOSAR alerts. Not provided for USA LEOLUTs. Corresponds to C/S message field 29.
8.7	n	Confidence factor for “A” location (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position), per C/S message field 29. Set to “0” for DOA position.
8.8.a	nnn.n	“A” location data residual standard deviation (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position), per C/S message field 30. Set to “000.0” for DOA position.
8.8.b	nnn.n	“A” location data residual trend (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position), per C/S message field 30. Set to “000.0” for DOA position.
10.1	fnnn	Sub-field “f”, position flag 2: ‘+’ in position flags 1 and 2 (position not confirmed), ‘+’ in position flag 1 and ‘-‘ in position flag 2 (new Doppler /DOA position matches the confirmed position), or ‘-‘ in position flags 1 and 2 (Doppler /DOA position conflict, position confirmed). Sub-field “nnn”: SAR Code for associated location or alert site. Corresponds to C/S message field 24.
10.2	snn.nnn	Latitude of “B” location (if position not confirmed or position conflict alert) or new Doppler /DOA location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position). Set to “+00.000” if new DOA position is present and position not confirmed, or new DOA position does not match confirmed position. Corresponds to C/S message field 25.
10.3	snnn.nnn	Longitude of “B” location (if position not confirmed or position conflict alert) or new Doppler /DOA location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position). Set to “+000.000” if new DOA position is present and position not confirmed, or new DOA position does not match confirmed position. Corresponds to C/S message field 26.
10.5	nn	Probability of “B” location (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position). Set to “00” for DOA position. Corresponds to C/S message field 28.
10.6	yy jjj hhmm	Time of next LEOSAR pass scheduled for “B” location (if position not confirmed) or confirmed position (if position confirmed). Set to “00 000 0000” for MEOSAR alerts. Not provided for USA LEOLUTs. Corresponds to C/S message field 29.

10.7	n	Confidence factor for "B" location (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position), per C/S message field 29. Set to "0" for DOA position.
10.8.a	nnn.n	"B" location data residual standard deviation (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position), per C/S message field 30. Set to "000.0" for DOA position.
10.8.b	nnn.n	"B" location data residual trend (if Doppler position not confirmed or Doppler position conflict alert) or new Doppler location matching confirmed position (if position confirmed and a new Doppler position matches the confirmed position), per C/S message field 30. Set to "000.0" for DOA position.

Lines 9 and 11 of Doppler alerts (e.g., SIT 175) contain the information shown in Table 10.5. These lines are not included in corresponding C/S SIT messages.

Table 10.5: Lines 9 and 11 in SARMaster Format Alerts as Generated by the USMCC

Line #. Field #	Format	Description
9.1	yy jjj hhmm	Time of next LEOSAR pass scheduled for the "A" location (if position not confirmed) or confirmed location (if position confirmed). Set to "00 000 0000" for MEOSAR alerts. Not provided for USA LEOLUTs. Corresponds to C/S message field 29.
9.2	ccc	Satellite for the next pass (per time above), always set to ' '. Defined in SARMaster format as field 669.
9.3	nnnnn	Orbit number for the next pass (per time above), always set to '00000'. Defined in SARMaster format as field 7b.
9.4	ccc	LUT for the next pass (per time above), always set to ' '. Defined in SARMaster format as field 673.
9.5	cccccc	Name of SRR for associated location or alert site. For the Canadian SRR, contains the name of the Canadian RCC (first 6 characters).
11.1	yy jjj hhmm	Time of next LEOSAR pass scheduled for the "B" location (if position not confirmed) or default value '00 000 0000' (if position confirmed). Set to "00 000 0000" for MEOSAR alerts. Not provided for USA LEOLUTs. Corresponds to C/S message field 29.
11.2	ccc	Satellite for the next pass (per time above), always set to ' '. Defined in SARMaster format as field 669.
11.3	nnnnn	Orbit number for the next pass (per time above), always set to '00000'. Defined in SARMaster format as field 7b.
11.4	ccc	LUT for the next pass (per time above), always set to ' '. Defined in SARMaster format as field 673.
11.5	cccccc	Name of SRR for associated location or alert site. For the Canadian SRR, contains the name of the Canadian RCC (first 6 characters). Always set to blanks for DOA position.

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

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

```
/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 175 Message (DOA position, position not confirmed)

```
/58192 00000/3660/16 109 1813.00
/175/3160/300/01
/3669/+8/+02968.7 000.5 -00.08/16 109 1812 35.33/0
/0/00.000/0013/04
/53C6F801B1A01D6B50911000000000
/06347/00/00/ /000.421/0000/0000/A78DF00363403AD/CANADA
/A78DF00363403AD
/+316/+54.345/-130.357/337 012.1 083.8/00/00 000 0000/0/000.0 000.0
/00 000 0000/000/00000/   /TRENTO
/+000/+00.000/+000.000/000 000.0 000.0/00/00 000 0000/0/000.0 000.0
/00 000 0000/000/00000/   /
/LASSIT
/ENDMSG
```

Sample SIT 177 Message (Position Confirmation, Doppler position)

```
/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
/06346/02/00/ /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
/00 000 0000/000/00000/   /
/-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
```

ANNEX 11 - SARMASTER FORMAT

Extracted from the CMCC "SARMaster System Manager User 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	/2/12.458/0000/00/0000 99
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 SIT 167

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	/2/12.458/0000/00/0000 99
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 composite solution. Lines 8 and 9 are for the corresponding doppler elemental solution.

A.4.3 Sample SIT 170

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/DEVLUT/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/DEVLUT/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 Sample SIT 172

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 Sample SIT 173

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 Sample SIT 174

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	/ADDC0000000000008
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/DEVLUT/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	/ADDC0000000000008
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/DEVLUT/SRR
	/LASTSIT
	/ENDMSG

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

A.4.9 Sample SIT 177

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	/ADDC0000000000008
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/DEVLUT/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 Sample SIT 182

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	/4E340BAA8681A68F613BC000000000
1B, 670, 671, - , 668, 666, 667, 22, 665	/00000/01/01/ /0000.000/1234/1235/12ABC12ABC12ABC/1234,1235
22	/9C6817550D034D1
	/LASTSIT
	/ENDMSG

A.4.11 Sample SIT 183

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	/ADDC0000000000008
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/DEVLUT/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 COPSAS-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 RCC and USA SPOC that was an active message destination for the alert site at the time of the site closure. The Site Closure message that is sent to USA SPOCs 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), 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. USA RCCs are requested to log into the IHDB and provide feedback in the online IHDB.

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. • 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: • 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. • 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 INCIDENT:	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 was not available or did not help resolve the incident.

BEACON REGISTRATION ACCURACY	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: • OWNER INFORMATION, • EMERGENCY CONTACT INFO, and • VESSEL/AIRCRAFT INFO. 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.
SARSAT DATA USED TO RESOLVE INCIDENT:	Select one of the following choices. • 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:	Number of people rescued in the incident (only set if INCIDENT OUTCOME is DISTRESS).
NUMBER IN DISTRESS:	Number of people who were in distress in the incident (only set if INCIDENT OUTCOME is DISTRESS). Does not include rescue personnel.
REASON ACTIVATED:	REASON ACTIVATED must be consistent with INCIDENT OUTCOME. The following descriptions are based on information provided in document C/S A.003. If INCIDENT OUTCOME is DISTRESS, select one of the following. • DISTRESS – AUTOMATIC (distress, automatic beacon activation) • DISTRESS – MANUAL (distress, manual beacon activation) • DISTRESS – ACTIVATION METHOD UNKNOWN If INCIDENT OUTCOME is NON-DISTRESS, select one of the following. BEACON MISHANDLING – INSTALLATION • 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 Note: the IHDB drop down list contains "TESTING-MAINTENANCE", the site closure (SIT 176) message contains "TEST-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 INSTRUSION • 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 • Strap failure, mounting bolts sheared, retainer pin broken, beacon fell out of bracket. BEACON MOUNTING – HYDROSTATIC RELEASE • Hydrostatic release failure. BEACON MOUNTING – MAGNET • Faulty mounting magnet for externally mounted ELT • Switch magnets not effective. OTHER FALSE ALERT – ENVIRONMENTAL CONDITIONS • Extreme weather conditions • Hurricane/cyclone conditions, vessel knocked down, aircraft overturned, heavy seas, ice build-up. • Beacon activated normally, non-distress situation OTHER FALSE ALERT – REASON UNKNOWN If INCIDENT OUTCOME is NON-DISTRESS, select the following: UNKNOWN-INCONCLUSIVE
ACTIVATION COMMENT:	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.

ANNEX 13 - SRRS FOR NON-USA ADDRESSES ASSIGNED IN THE USA REGISTRATION DATABASE (RGDB)

SRRs are assigned for USA-coded beacons with a non-USA home port or airport (primary) or the beacon owner's home address (secondary) in the RGDB as follows.

State/Country Abbreviation	State/Country Name	EPIRB SRR 01	EPIRB SRR 02	ELT SRR 01	PLB SRR 01
AN	Antigua	SANJN		AFRCC	AFRCC
BH	Bahamas	CGD07		AFRCC	AFRCC
BL	Belize	CGD07		AFRCC	AFRCC
BR	Bermuda	CGD05		AFRCC	AFRCC
CI	Cayman Islands	CGD07		AFRCC	AFRCC
CR	Costa Rica	PacArea		AFRCC	AFRCC
DR	Dominican Republic	SANJN		SANJN	SANJN
ES	El Salvador	PacArea		AFRCC	AFRCC
GT	Guatemala	PacArea		AFRCC	AFRCC
HN	Honduras	CGD07		AFRCC	AFRCC
JA	Jamaica	CGD07		AFRCC	AFRCC
MR	Marshall Island	CGD14	`	CGD14	CGD14
NA	Netherlands Antilles	SANJN		SANJN	SANJN
NI	Nicaragua	CGD07		AFRCC	AFRCC
PR	Puerto Rico	SANJN		SANJN	SANJN
RP	Panama	CGD07		AFRCC	AFRCC
SV	Saint Vincent	SANJN		SANJN	SANJN
VI	Virgin Islands	SANJN		SANJN	SANJN

ANNEX 14 - DISTRIBUTION OF ALERTS BY COUNTRY CODE FOR NON-USA COUNTRIES IN THE USA SERVICE AREA

SRRs are assigned for NOCRs, unlocated alerts and SSAS alerts for non-USA countries (i.e., countries with codes for which beacons cannot be registered in the RGDB) in the USA service area as follows.

Country Code(s) (RCC Message field "Country Code")	**Country/Region Name**	**10 Digit Name** (RCC Message Field "Country")	**SRR for NOCRs and Unlocated Alerts**	**SRR for SSAS Alerts**
306	Curaçao (Former Netherlands Antilles)	FORMERNANT	NANTSP*	NANTSS
307	Aruba	ARUBA	NANTSP*	ARUBSS
308, 309	Bahamas	BAHAMAS	CGD07	BHAMSS
310	Bermuda	BERMUDA	BERMUDASP	BERMSS
311	Bahamas	BAHAMAS	CGD07	BHAMSS
312	Belize	BELIZE	COCESNA	BELZSS
314	Barbados	BARBADOS	SANJN	BARBSS
319	Cayman Islands	CAYMAN IS	CGD07	CAYMSS
321	Costa Rica	COSTA RICA	COCESNA	COCESNA
323	Cuba	CUBA	CGD07	CUBASS
327	Dominican Republic	DOMINICAN	DOMREPSP*	LANTAREA
330	Grenada	GRENADA	SANJN	GRENSS
332	Guatemala	GUATEMALA	COCESNA	GUATSS
334	Honduras	HONDURAS	COCESNA	HONDSS
336	Haiti	HAITI	HAITISP**	HAITSS
339	Jamaica	JAMAICA	CGD07	JAMASS
345	Mexico	MEXICO	MEXISP	MEXISP
350	Nicaragua	NICARAGUA	COCESNA	NICASS
351 – 357	Panama	PANAMA	PANASP	PANSS
359	El Salvador	ELSALVADOR	COCESNA	COCESNA
362	Trinidad and Tobago	TRINIDAD	TTSP*	TRINSS
364	Turks and Caicos Islands	CAICOS IS	CGD07	CAICSS
370 - 374	Panama	PANAMA	PANASP	PANSS
375 - 377	Saint Vincent & the Grenadines	ST VINCENT	SANJN	LANTAREA
378	British Virgin Islands	VIRGIN GB	SANJN	BVISS
510	Micronesia	MICRONESIA	MARSEC***	PACAREA
511	Palau	PALAU	MARSEC***	PALASS
538	Marshall Islands	MARSHALL I	CGD14	MARSHSS
730	Colombia	COLOMBIA	COLMSP	COLMSS
735	Ecuador	ECUADOR	ECSP	ECSS
750	Guyana	GUYANA	GUYSP	GUYSS
775	Venezuela	VENEZUELA	VZMCC	VENZSS

**All alerts, including located alerts, are copied to SANJN. See also Annex 7.*

***All alerts except SSAS alerts are copied to CGD07. See also Annex 7.*

****USMCC destination "MARSEC" corresponds to US Coast Guard Sector Guam.*