COSPAS-SARSAT
DATA DISTRIBUTION PLAN

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COSPAS SARSAT

COSPAS-SARSAT DATA DISTRIBUTION PLAN

History

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1. INTRODUCTION

1.1 Overview

The purpose of the Cospas-Sarsat 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. The position of the distress and other related information is transmitted to appropriate SAR authorities by the responsible Cospas-Sarsat Mission Control Centre (MCC).

1.2 Document Objective

The Cospas-Sarsat System is operated in accordance with the 1988 International Cospas-Sarsat Programme Agreement (ICSPA) and related documents. The purpose of this document is to:

- establish basic data distribution principles; and
- define the corresponding procedures to be implemented by Cospas-Sarsat MCCs for distributing Cospas-Sarsat alert data and System information.

1.3 Document Organization

The Cospas-Sarsat policy with regards to MCC operations is contained in the text of this Cospas-Sarsat Data Distribution Plan (DDP).

A brief description of the Cospas-Sarsat operational concept is given in section 2. Section 3 describes the basic approach for exchanging System information between MCCs and distributing to Rescue Coordination Centres (RCCs) or other SAR points of contact (SPOCs) alert data and notification of country of beacon registration (NOCR) messages.

The Annexes to this DDP provide:

a) pertinent information needed by MCCs to support daily operational activities (Part I);

b) a description of the Cospas-Sarsat Space and Ground Segments (Part II); and

c) a detailed description of the operational procedures to be applied by MCCs (Part III).

Except for the operational procedures (Part III) which cannot be changed without appropriate coordination with all MCC Operators, other operational information in the Annexes to the Data Distribution Plan (Parts I and II) is subject to change and needs to be kept current between scheduled Cospas-Sarsat Council (CSC) sessions.

1.4 Document Amendments and Updates

Amendments to the main text of the DDP and the operational procedures in Part III of the DDP Annexes, but excluding Parts I and II of the DDP Annexes, shall be approved by the CSC.

Ground Segment status information in Part II of the DDP Annexes can be amended by the responsible Ground Segment Operator, by a System status message sent to other MCCs, with a copy to the Cospas-Sarsat Secretariat for document control and formal amendment. Information provided in Part I of the DDP Annexes can also be updated as necessary by the Secretariat on the basis of official information available. These DDP Annexes will be subject to review at regular Cospas-Sarsat Joint Committee (JC) meetings.

Each page of the document includes in its header an Issue number, a Revision number and the date of the revision. The last revision date of each page of the document is listed in a summary page updated with each new revision.

Users of this Cospas-Sarsat Data Distribution Plan should ensure that their copy of the document includes all the revisions issued by the Cospas-Sarsat Secretariat, as indicated in the History page (i) and the List of Pages (iii) which precede this section.

1.5 Reference Documents

a) C/S A.002 (SID) Cospas-Sarsat Mission Control Centres (MCC) Standard Interface Description.

b) C/S A.003 Cospas-Sarsat System Monitoring and Reporting.

c) C/S A.005 Cospas-Sarsat Mission Control Centre Performance Specification and Design Guidelines.

d) C/S G.004 Cospas-Sarsat Glossary.

e) C/S T.002 Cospas-Sarsat Local User Terminal Performance Specification and Design Guidelines.

f) C/S T.004 Cospas-Sarsat LEOSAR Space Segment Commissioning Standard.

g) C/S P.011 Cospas-Sarsat Programme Management Policy.

- END OF SECTION 1 -

2. GENERAL OPERATIONAL CONCEPT

2.1 General Alert Data Flow

The distribution of Cospas-Sarsat alert data throughout the world is summarized as follows:

- the LUTs receive the beacon signals relayed by the satellites; and
- the signals are processed and alert data is sent to the associated MCC for distribution.

Each MCC distributes alert data according to this Cospas-Sarsat Data Distribution Plan (DDP), and according to its own unique requirements and procedures, to any country within its service area which has agreed to accept such services. Alert data is provided to SPOCs, which are RCCs or other recognized national points of contact that will use the data to enable fast and effective rescue of persons in distress.

Any MCC receiving alert data relating to a distress beacon located outside its service area will relay that information to another MCC in accordance with the principles listed in section 2.2 and the agreed procedures detailed in this DDP.

2.2 Alert Data Distribution Principles

The exchange of alert data between MCCs in the Cospas-Sarsat System and its distribution to RCCs or SPOCs is based on the following principles:

Cospas-Sarsat alert data should be:

- validated at the MCC to ensure the reliability of distress information provided to RCCs and SPOCs;
- distributed in a timely manner to the appropriate RCC or SPOC, as determined by the geographical sorting of the distress location; and
- provided to SPOCs in accordance with the applicable Cospas-Sarsat procedures, or procedures agreed bilaterally between an MCC and the SPOCs in its service area.

In the case of maritime emergencies, any MCC not able to deliver the alert to the responsible SPOC should forward the alert to a RCC in the same country as the MCC.

In the case of aeronautical emergencies, any MCC not able to deliver the alert to the responsible SPOC should deliver the alert to an ARCC in the same country as the MCC, and could also consider contacting the control tower of an international airport in the country concerned.

In addition, MCCs should follow the Cospas-Sarsat agreed procedures to:

- filter out redundant alert messages;
- resolve the ambiguity of distress locations and notify all recipients of incorrect positions after ambiguity has been resolved; and
- ensure through appropriate backup arrangements, the uninterrupted distribution of alert data.

2.3 Service Area of Cospas-Sarsat MCC

An MCC's service area is that part of the world within which a Cospas-Sarsat alert data distribution service is provided by that MCC, in accordance with document C/S P.011 “Cospas-Sarsat Programme Management Policy”.

An MCC service area is defined by the list of SPOCs to which that MCC distributes Cospas-Sarsat alert data. When a SPOC has not been officially designated by the responsible SAR authorities, the DDP lists at Annex I / D “SAR Points of Contact” the SAR contacts that are known for the region or country. The list of countries / regions included in the service area of each MCC is provided at Annex II / C of this DDP.

Nothing in this DDP or other Cospas-Sarsat System documents prevents the parties from adopting other arrangements more suitable for the distribution of Cospas-Sarsat alert data at some future date.

It is essential that MCCs establish appropriate arrangements with all the countries / SPOCs in their service area on communication links to be used for the distribution of alert data, and document these arrangements at Annex I / D. If such arrangements have not been made for a particular country in the MCC service area, the MCC shall notify its own national SAR authorities of any Cospas-Sarsat alert in that country's SRR, for handling in accordance with national SAR procedures.

As new SPOCs are identified, either through agreements with Cospas-Sarsat or via other channels, they will be incorporated into existing MCC service areas by mutual consent of the SPOC national authority and the appropriate MCCs. All MCCs should be notified of new SPOCs. Amendments to the appropriate annex of the DDP will be published in accordance with section 1.4 of this document.

2.4 Data Distribution Regions

A data distribution region (DDR) comprises two or more MCC service areas. Cospas-Sarsat alert data and System information are exchanged between DDRs through a single MCC which acts as the point of contact for that DDR. This MCC is identified as the nodal MCC of the DDR. However, bilateral arrangements can be implemented between adjacent MCC service areas included in different DDRs to facilitate the exchange of alert data in overlapping service areas or adjacent search and rescue regions.

The DDR structure of the Cospas-Sarsat data distribution network is defined at Annex III / A of the DDP, together with the specific arrangements for the exchange of alert data in each DDR.

2.5 General Flow of System Information

System information assists in the operation of the Cospas-Sarsat System. This information includes Cospas-Sarsat satellite ephemeris and time calibration data that affect location processing, messages used for commanding the satellite SAR instruments, and notification messages providing the status of System elements. The flow of System information through the Cospas-Sarsat System is detailed in section 3.5.

- END OF SECTION 2 -

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3. PROCEDURES

3.1 General Procedures for the Distribution of Cospas-Sarsat Alert Data

3.1.1 Introduction

Alert data is the generic term for Cospas-Sarsat alert and location data derived from 406 MHz distress beacon signal processing. Alert data derived from beacon signals may contain beacon position information and other coded information, including the beacon identification.

MCCs receive alert data from their LUTs or from other MCCs and distribute this alert data to the appropriate RCC or SPOC in their service area, or forward the alert data to another MCC. Alert data received from a single satellite pass or in a single MCC message shall be processed in TCA or detection-time order. MCCs should transmit Cospas-Sarsat alert data in accordance with the principles for data distribution listed in section 2.2 of this Cospas-Sarsat Data Distribution Plan (DDP). The corresponding procedures are outlined in Figures 3.1 and 3.2 and in the following sections. These procedures are further detailed at Annex III / B of this DDP."

3.1.2 Geographical Sorting of Alert Data

Alert data are distributed according to the geographical sorting of the available position(s). The geographical distribution of alert data is organized as follows:

a) Beacon position is within an MCC's service area:

An MCC that receives alert data for a beacon position in its own service area forwards the alert data to the appropriate SPOC or national RCC, in accordance with the applicable Cospas-Sarsat or national procedures.

b) Beacon position is within another MCC's service area:

An MCC that receives alert data for a beacon position in another MCC's service area forwards the alert data to the appropriate MCC, in accordance with the applicable Cospas-Sarsat procedures as described in the Annexes III / A and III / B to this DDP.

c) Unlocated alerts:

There will be occasions when a LEOLUT is unable to calculate a location for a beacon or a beacon is detected by a GEOLUT, and the only information available is the beacon message. If this data does not contain an encoded position, the alert is unlocated. In these cases the only information available will be the digital identification contained in the beacon message which includes a country code

designating the country of registration of the beacon. MCCs will transmit this information to the country of registration according to the procedure described in section 3.2.8.

3.1.3 Message Formats

Alert messages are exchanged between MCCs using standard formats which permit automatic processing and retransmission of all data. These message formats are referenced in the Cospas-Sarsat Mission Control Centres Standard Interface Description (C/S A.002). A list of message formats that are implemented at each MCC is provided at Annex II / D of this DDP.

3.1.4 Beacon Identification

MCCs when transmitting narrative messages and making reference to beacon identification should take particular care in providing the identification as 15 contiguous hexadecimal characters comprising bits 26 to 85 of the beacon message. If a location protocol beacon is involved, the coarse position fields must be set to the specified default values.

Figure 3.1: 406 MHz Alert Data Distribution Procedures (1/2)

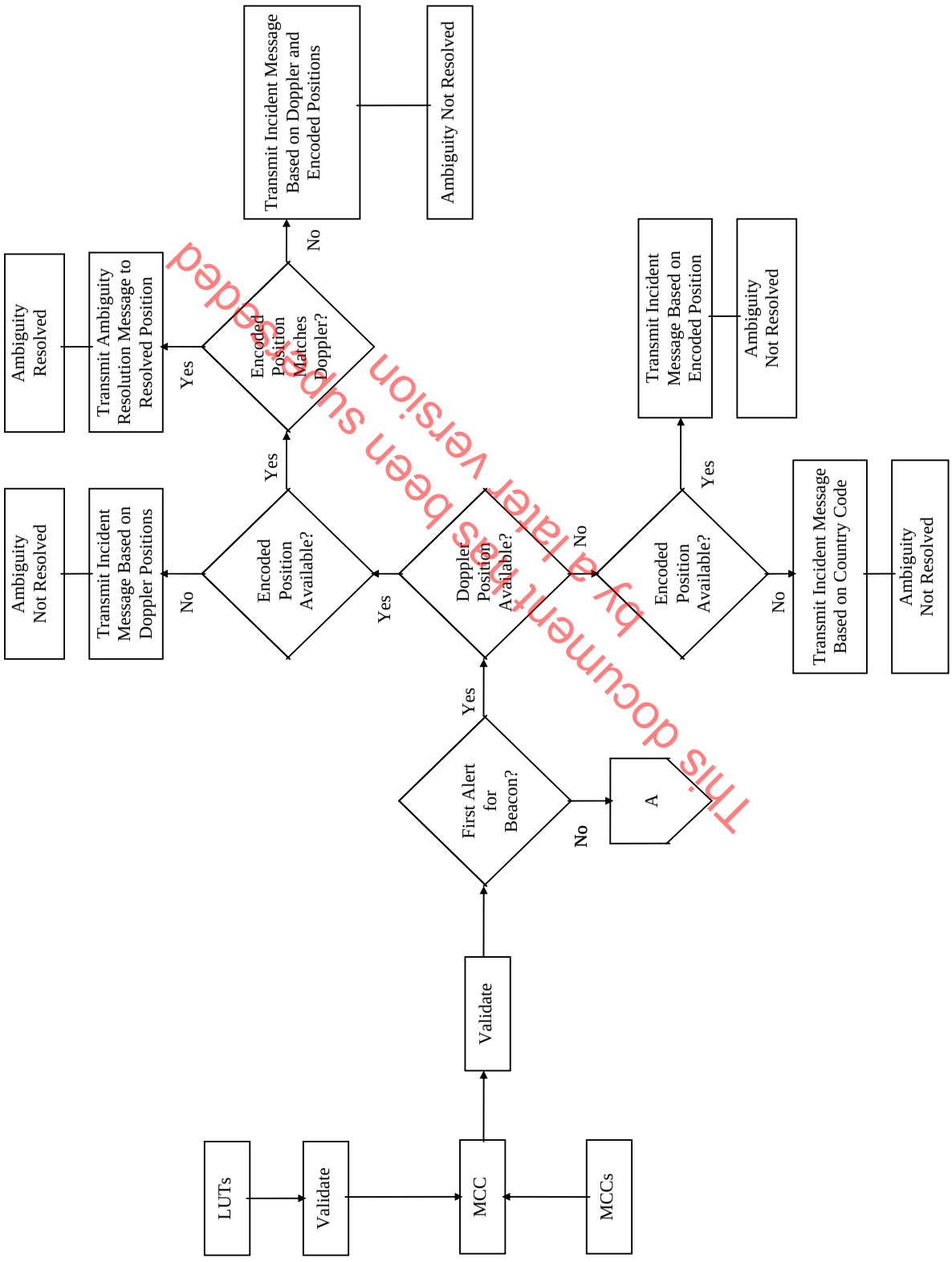
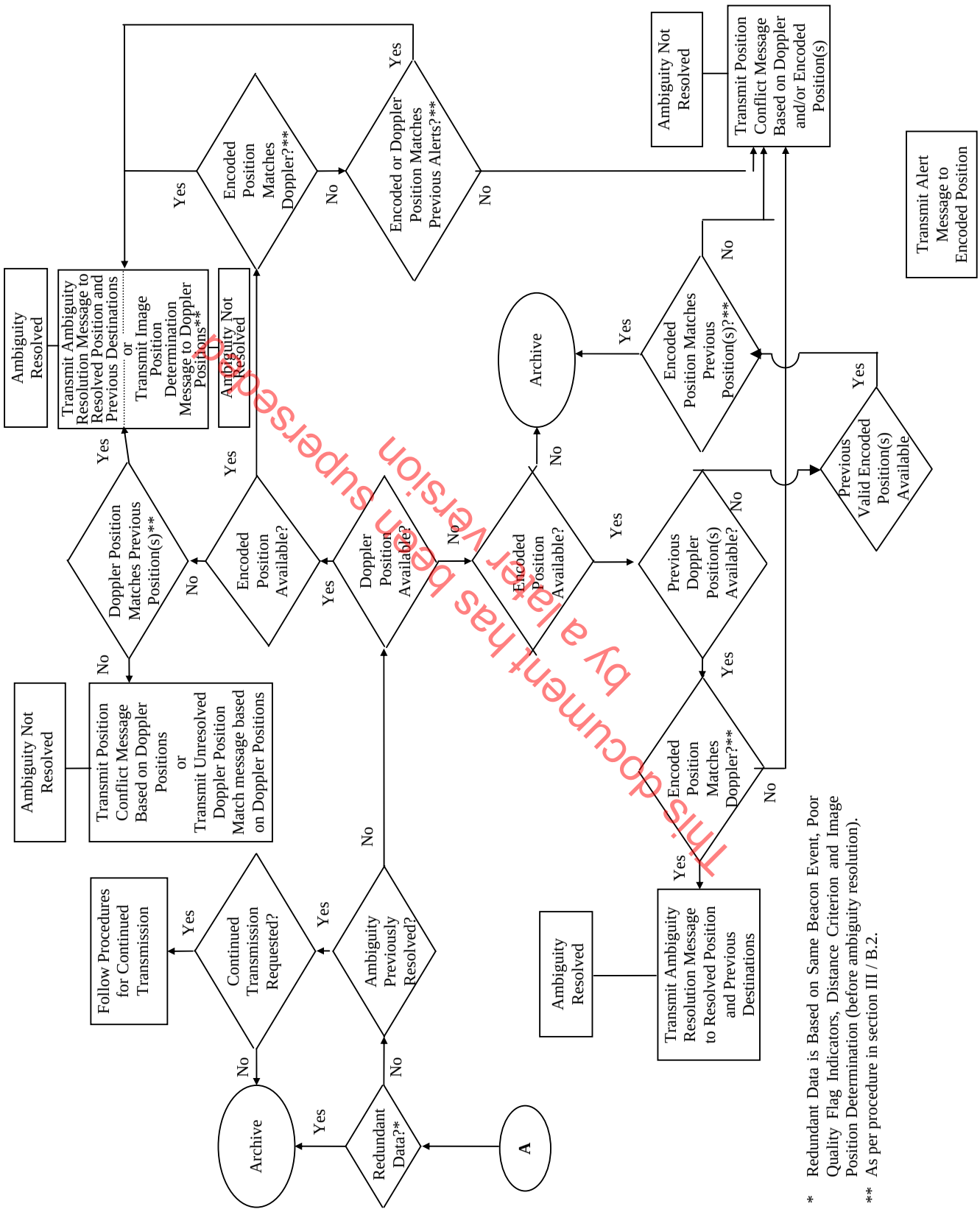


Figure 3.1: 406 MHz Alert Data Distribution Procedures (2/2)



* Redundant Data is Based on Same Beacon Event, Poor Quality Flag Indicators, Distance Criterion and Image Position Determination (before ambiguity resolution).

** As per procedure in section III / B.2.

3.2 406 MHz Alert Data Distribution Procedures

3.2.1 Doppler Locations and Encoded Positions

Position data provided by Doppler processing of 406 MHz signals relayed through Cospas-Sarsat satellites and position data encoded in beacon messages which are relayed through Cospas-Sarsat low earth orbit (LEO) satellites or Cospas-Sarsat geostationary earth orbiting (GEO) satellites, constitute independent sources of beacon position information. Both types of position data are used by MCCs in the filtering and geographical sorting process, and distributed with alerts to RCCs and / or SPOCs, in accordance with the procedures described hereunder.

Location data provided by LEOLUT Doppler processing shall not be removed or altered by a distributing MCC, unless the Doppler location fails Doppler footprint validation.

3.2.2 Validation of Beacon Message Data

Under various circumstances such as interference, weak beacon signals or high noise levels, the LUT processing can produce erroneous alert data (i.e. processing anomalies) which may cause false alerts.

The alert data produced by the LUTs must be validated in accordance with the requirements of document C/S T.002. In addition, to avoid propagating invalid alerts through the Cospas-Sarsat Ground Segment, the procedure for validating alert data described at Annex III / B of this DDP should be implemented at the MCC level to satisfy the requirements of document C/S A.005.

3.2.3 Filtering of Redundant Data

After validation, alert data received by an MCC must be compared to previous information concerning the same beacon identification which has already been processed by that MCC. Alert data produced by LEOLUTs for the same beacon event (i.e. same beacon identification, same spacecraft and same time of closest approach (TCA) $\pm$ 20 minutes) is deemed to be redundant if, using the distance criterion defined at Annex III / B of this DDP, either:

a) the new alert message does not include Doppler position data and the encoded position matches encoded position information received earlier by the MCC; or

b) the new alert message includes Doppler position data, each Doppler position in the new alert matches a Doppler position in an alert received previously for the same beacon event and, either:

- the new alert message does not include encoded position data, or
- the encoded position data in the new alert message matches encoded position information received earlier by the MCC; or

c) an alert with the same beacon ID has already been processed for the same beacon event and the new alert message does not include Doppler position data or encoded position data.

Before ambiguity resolution, data for the same beacon event should not be considered redundant if it contains information on image position determination not previously received (see document C/S A.002, Appendix B.2 to Annex B).

Alert data produced by GEOLUTs for the same beacon identification is deemed to be redundant if:

a) the new alert message does not include encoded position data; or

b) the encoded position data in the new alert message matches encoded position data received in an earlier message, using the distance matching criterion defined at Annex III / B of this DDP.

To minimize redundant message traffic in the Ground Segment, MCCs must not distribute alert data which have been determined as redundant in accordance with the procedure described at Annex III / B of this DDP.

The matching test for new encoded position data shall be performed with all encoded position data previously received and forwarded (i.e. not deemed redundant) for the same ID, without respect to whether the new position is coarse (i.e. without usable encoded position in the second protected field of the beacon message) or refined (i.e. with usable encoded position in the second protected field of the beacon message). However, the matching test for a coarse encoded position shall also be performed with the position derived from the first protected field of previous non-redundant messages: a coarse encoded position will be deemed redundant if it matches the position encoded in the first protected field of a previous beacon message.

Data deemed to be redundant shall not be used to determine whether subsequent data is redundant.

3.2.4 Ambiguity Resolution of 406 MHz Positions

The objective of the ambiguity resolution process is to confirm the position of a beacon on the basis of information provided by two independent sources.

A Doppler location always includes two sets of position data, the ‘true’ and the ‘image’ solutions which are symmetrical relative to the trace of the orbit. Each solution is associated with a probability which is generally sufficient to resolve the Doppler ambiguity. However, the actual characteristics of the 406 MHz transmission are not known by the receiving LUT and reliable ambiguity resolution of the Doppler solutions can only be achieved with a set of Doppler positions from two different beacon events, or using an external source of data such as position data encoded in the beacon message.

A beacon message with encoded position data provides a unique position which may be very accurate in most circumstances. However, since the source of that position data is not under the control of Cospas-Sarsat, errors could remain undetected and confirmation of the encoded position via an independent source is also desirable. As several alert messages from the same beacon received through different satellites and/or different LUTs can all originate from the same beacon transmission and, therefore, from the same navigational data, confirmation of encoded position data can only be provided by a Doppler solution matching the encoded position.

Therefore, independent position information will consist of either a:

a) Doppler positions obtained from two different beacon events; or

b) Doppler position and encoded position data.

The beacon position ambiguity is resolved only if two independent sets of position data match the distance criterion specified at Annex III / B of this DDP.

Alert data for beacons located outside an MCC's service area will be forwarded until ambiguity is resolved. Once ambiguity is resolved, an ambiguity resolution message shall be transmitted to each MCC and/or SPOC that has the resolved position or a previous image position in its MCC service area, or its SAR Region(s), respectively.

3.2.5 Continued Transmission after Ambiguity Resolution

If necessary, continued transmission of alert data after ambiguity resolution may be requested by an MCC.

Alert data transmitted after ambiguity resolution should not be geographically sorted according to the received position, but sent to the same MCC, SPOC or RCC which received the alert for the confirmed beacon position or requested the continued transmission.

In satisfying a request for continued transmission of alert data for a specified beacon identification, the same method of filtering redundant data used before ambiguity resolution should also be used after ambiguity resolution.

3.2.6 Exchange of Ship Security Alerts

Ship security alerts are initiated and transmitted by vessels whose security is threatened and who need to notify a competent authority designated by the flag state. The transmission of ship security alerts is based on the country code contained in the beacon identification, which is then used to route the alert to the appropriate MCC or competent authority.

MCCs will exchange ship security alerts using the formats specified in the document C/S A.002 and according to the ship security alert distribution procedures described in Annex III / B of this DDP.

An MCC will transmit a ship security alert only to the MCC or competent authority associated with the country code. An MCC will not transmit a ship security alert to the RCC or SPOC associated with the location of the alert.

3.2.7 Requesting Transmission of Alerts

MCCs, SPOCs or RCCs may request transmission of alerts by geographical area or 15 hexadecimal beacon identifier.

If the request is by geographical area, then the request should specify the area for which new alerts would be provided, either as a radius in nautical miles around a position or as a rectangle defined by two opposing corner positions.

The request should indicate the MCCs that would receive alerts for that area in real time. A nodal MCC that receives a request for transmission should forward the request to the appropriate MCCs, to ensure that the requested alerts are sent.

The requesting agency should indicate when transmissions are to be discontinued.

3.2.8 Exchange of Unlocated Alerts

When a LEOLUT is unable to calculate a location for a beacon, or a beacon message is detected by a GEOLUT, the only information available is the beacon message. If this data does not contain an encoded position, the alert is unlocated. An unlocated alert shall be distributed using the country code in the beacon identification for routing to the appropriate MCC or SPOC. Unlocated alerts shall be validated at LUT and MCC level in accordance with the applicable procedure.

MCCs will exchange unlocated alert messages using the format specified in the document C/S A.002 and according to the alert distribution procedures described in Annex III / A of this DDP.

An MCC will transmit an unlocated alert message only if no position information has been received previously for the same beacon identification. To increase the probability of Image Position Determination (as defined in C/S A.002, Appendix B.2 to Annex B), multiple unlocated alert messages may be transmitted for a beacon, provided that:

a) only one unlocated alert message is sent per GEO satellite, and

b) only one unlocated alert message is sent per LEO satellite beacon event.

3.2.9 Combined LEO/GEO Processing

For the purposes of alert data distribution procedures, solutions derived from combined LEO/GEO processing shall be treated as LEOSAR alerts.

3.3 Notification of Country of Beacon Registration (NOCR) Service

The NOCR service provides notification to the SPOC of a country when an alert is located outside of that country's SRR for a beacon registered to the country. The NOCR service ensues that a country is notified whenever one of its beacons is activated. The NOCR service is especially beneficial when a distress alert is located in an area of the world where suitable search and rescue resources are not available to perform the SAR mission. This service provides the parties responsible for the vessel, aircraft, or persons in distress an opportunity to assist the SAR services in their response to the emergency situation.

An NOCR message should not be interpreted as a request for information. If necessary, requests for information regarding the vehicle carrying a particular beacon should be made to the beacon registry.

The detailed procedure for the NOCR service is described in Annex III / B, section B.7.

3.4 Exchange of Beacon Registration Information

It is essential that every country using beacons maintain a register where SAR agencies can obtain vital information at any time. The maintenance of such a register is a national responsibility and the release of information is subject to national regulations.

Each country using beacons should make appropriate arrangements to ensure 24-hour access to their national register(s) by SAR services and inform Cospas-Sarsat of their point of contact for inclusion at Annex I / F of this DDP. Cospas-Sarsat Participants should also make appropriate arrangements with the associated MCC listed in Annex I / D of this DDP, to ensure fast and easy access to its national register via the associated MCC.

IMO Assembly Resolution A.887(21) concerning registration databases of satellite EPIRBs requires the EPIRB identification code to be included in the database amongst other SAR related information. It is possible that the only means to query a database would be through the beacon ID and thus it is imperative that the correct beacon ID usage be applied. The beacon ID, as described in the Cospas-Sarsat Glossary (C/S G.004), should be used whenever requests for beacon registration information are made or provided.

3.5 System Information

System information messages include: ephemeris or orbit vector messages, time and frequency calibration messages, spacecraft telemetry and commands, Ground Segment elements and spacecraft operational status, and narrative messages. Figure III / A.8 shows the network structure for System information distribution and indicates the senders and receivers of each type of System information. Orbitography beacons also provide System information. MCCs shall send orbitography and reference beacon data to the associated nodal MCC to satisfy the Cospas-Sarsat Quality Management System (QMS) continuous monitoring and objective assessment process described in section 2 of document C/S A.003. Information on orbitography beacons is contained in Annex II / E of this DDP.

The CMC and the USMCC distribute orbit ephemeris data for the Cospas and Sarsat spacecraft daily. They automatically receive, process, confirm by their own calculations and transmit the ephemeris data to the other MCCs and their own LUTs.

SARR frequency calibration offset data for a given LEO satellite is used by those LEOLUTs which perform combined LEO/GEO processing to adjust the SARR frequency measurements obtained from that LEO satellite. SARR frequency calibration offset information is computed at the CMCC using a reference beacon. The CMCC automatically sends SARR frequency calibration offset messages to other MCCs once per week. SARR frequency calibration offset will be computed and distributed by the CMCC for all satellites which have an operational SARR channel.

Time calibration data is used to convert the Sarsat Search and Rescue Processor (SARP) time code to universal time (UTC). Time information provided for each 406 MHz data point must be corrected for computing the beacon location. Time and frequency calibration information for the Sarsat SARP is computed at the FMCC using signals from a time calibration platform relayed through Sarsat spacecraft. The FMCC automatically sends time calibration messages to other MCCs once per week. Time calibration is not required for processing SAR incident data from Cospas spacecraft and only Sarsat time calibration is distributed.

Sarsat payload commands requested by the CMCC (for the Search and Rescue Repeater (SARR)), the FMCC (for the SARP), or the USMCC are co-ordinated, validated and then automatically forwarded by the USMCC to the NOAA Satellite Operations Control Center (SOCC) for transmission to the NOAA spacecraft. Verification of command execution is sent from the NOAA SOCC to the USMCC for transmission to the FMCC or CMCC. The Cospas payload commands are generated by the CMC.

Narrative and coordination messages are exchanged between the MCCs. Requests for retransmissions of messages will be addressed to the appropriate MCC. System information will be archived until it is updated, and retrieved and transmitted when requested.

Changes in the distribution of System information will be subject to review at regular Cospas-Sarsat Council meetings. Changes in orbitography beacon information may be updated by System status messages sent to other MCCs.

3.6 System Status Changes

System status changes are the result of System element and System function failures, scheduled maintenance, integration or testing of new System elements, and the commissioning of new equipment or new capabilities of existing equipment. These changes will impact the operation of the Cospas-Sarsat System and should be notified to appropriate MCCs.

Space Segment Providers will initiate System status messages to all MCCs whenever Space Segment out-of-limit conditions or changes occur, and when changes in the satellite SAR equipment are scheduled. Ground Segment Operators will initiate System status messages for changes of Ground Segment status. All changes of System status will be notified by MCCs in accordance with this section and Annex III / A of this DDP.

3.6.1 Space Segment Status

Space Segment Providers will provide notice to all Ground Segment Operators on the operational status of the spacecraft payloads in accordance with document C/S T.004. Payload status will be declared with a System Status Message as described in Annex II / F. Distribution of satellite ephemeris and SARP time calibration data, which may precede declaration of Initial Operational Capability (IOC) status, shall not itself be understood as a declaration of IOC status.

A satellite that is in IOC status shall be treated as though it were operational except that Ground Segment Operators may at their option elect to not acquire data from it via their LUTs. All Ground Segment Operators must, however, process alerts generated by other MCCs from this satellite data in their MCCs. It is recommended that satellites in IOC status be given lower priority in LUT scheduling.

3.6.2 Changes of Operational Capabilities

Changes of operational capabilities resulting from new equipment or new processing which impact the operation of the Cospas-Sarsat System, should be notified by the responsible MCC in accordance with Table 3.1 and Figure III / A.8.

Changes of System status resulting from the decommissioning of System equipment should be notified by the responsible MCC to all MCCs in accordance with Figure III / A.8.

Failure or Outage	Notification Level
Space Segment	- All MCCs should be notified
MCC .....…	- All MCCs should be notified
LUT	- All MCCs should be notified
Communication Networks	- Only affected MCCs should be notified
Orbitography beacons	- All MCCs should be notified

Table 3.1 : Notification Level for Failure or Outage

3.6.3 System Failures

System status changes resulting from either a failure or outage of a System element or a System function should be reported to the appropriate MCC in accordance with Table 3.1 and the System Information Flow Diagram of Figure III / A.8. In addition, nodal MCCs shall update System element status in the appropriate section of the Cospas-Sarsat System website in accordance with the Cospas-Sarsat Quality Management System (QMS) continuous monitoring and assessment process, as described in section 2 of document C/S A.003.

3.6.4 Scheduled Outages

System status changes for any System element or function which result from scheduled outages for maintenance, integration or testing, should be notified by the responsible MCC to all MCC(s) in accordance with Table 3.1 and Figure III / A.8. The responsible MCC should provide advance notification as early as possible before interrupting operations, including a description of the planned back-up arrangements (see section 3.7 and Annex II / C). Additionally, the responsible MCC should repeat the notification 24 hours prior to the scheduled activity.

3.6.5 Scheduled Satellite Manoeuvres

Some LEOSAR satellites are subject to scheduled manoeuvres periodically, in order to maintain their sun synchronous orbit and thus to increase their useful life. The "Comments" section in Table II / F.2 indicates which satellites are subject to scheduled manoeuvres and whether SAR instruments remain active during the manoeuvre.

A satellite may be manoeuvred in two ways, in-plane or out-of-plane. An in-plane manoeuvre is issued to counteract the effect of drag on the semi-major axis. An in-plane manoeuvre changes satellite position by an amount that increases with each subsequent orbit. An out-of-plane manoeuvre is issued to counteract the effects of Luni-solar pull on inclination. An out-of-plane manoeuvre changes satellite position by an amount that does not increase with subsequent orbits.

A satellite manoeuvre may induce significant Doppler location errors, due to the possible application of incorrect orbit vectors by LEOLUTs. In order to mitigate the impact of planned satellite manoeuvres on Doppler location accuracy, MCCs shall implement the following procedures.

For each satellite that is subject to scheduled manoeuvres, one MCC shall be responsible for notification about its manoeuvres and is designated the responsible MCC. The USMCC is the responsible MCC for the manoeuvres of all satellites with Sarsat payloads.

The responsible MCC shall provide notification to all MCCs of the scheduled satellite manoeuvre. The responsible MCC shall provide notification 5 to 7 days in advance of a scheduled satellite manoeuvre, to allow Ground Segment Providers adequate preparation time. The responsible MCC shall repeat the notification 24 hours prior to the scheduled manoeuvre. The responsible MCC shall provide notification of the execution of the satellite manoeuvre as soon as possible after the manoeuvre is complete. If the maximum expected change in satellite position is more than 2 km in the 24 hours following completion of the manoeuvre, then the responsible MCC shall provide new orbit vectors for the satellite as soon as possible after the manoeuvre is complete. Orbit vectors associated with a satellite manoeuvre shall be provided in a SIT 216 message.

Notification of a satellite manoeuvre shall be provided in a System Status Message as described in Annex II / F, Figure II / F.2 and in accordance with Figure III / A.9. The responsible MCC shall provide information on the magnitude and duration of the expected change in satellite position. The magnitude should be provided for the 24 hour period after the manoeuvre, when possible, since the impact of the change should be negligible after 24 hours.

Based on notification of a satellite manoeuvre, MCCs shall:

a) Treat orbit ephemeris data received in a SIT 216 message within 24 hours after the end of the manoeuvre as valid, if they are within the maximum tolerance specified for the satellite in the associated System Status Message;

b) Use the validated SIT 216 orbit ephemeris data to immediately initialise orbit vectors at the MCC and its associated LUTs; and

c) Notify its RCCs and SPOCs, if the maximum expected error in Doppler location exceeds 10 kilometres within 24 hours of the manoeuvre.

MCC responsibilities for scheduled satellite manoeuvres are outlined in Figure 3.2.

3.6.6 Reactivation of the SARP Instrument

On occasion, the SARP instrument on a satellite with a Sarsat payload is deactivated, due to an unexpected or a scheduled outage. Since accurate SARP time calibration (TCAL) data is required to compute accurate Doppler locations from SARP data, it is

necessary that LEOLUTs be updated with new SARP TCAL data after the SARP instrument is reactivated, prior to computing Doppler solutions from SARP data. In order to mitigate the impact of SARP reactivation on Doppler location accuracy, MCCs shall implement the following procedures.

As the MCC responsible for the SARP instrument on satellites with a Sarsat payload, the FMCC provides notification about the reactivation of the SARP instrument. The FMCC shall provide notification that new SARP TCAL data will be distributed, as far in advance as possible, in order to allow adequate preparation time for each Ground Segment Provider. The notification shall be provided in a System Status message, and should include the time it is expected that new SARP TCAL data will be sent to other MCCs, as available.

The FMCC shall provide new SARP TCAL data (in a SIT 415 or 417 message) as soon as reliable SARP TCAL data is available.

When notification about new SARP TCAL data is received by the MCC, each Ground Segment Provider shall:

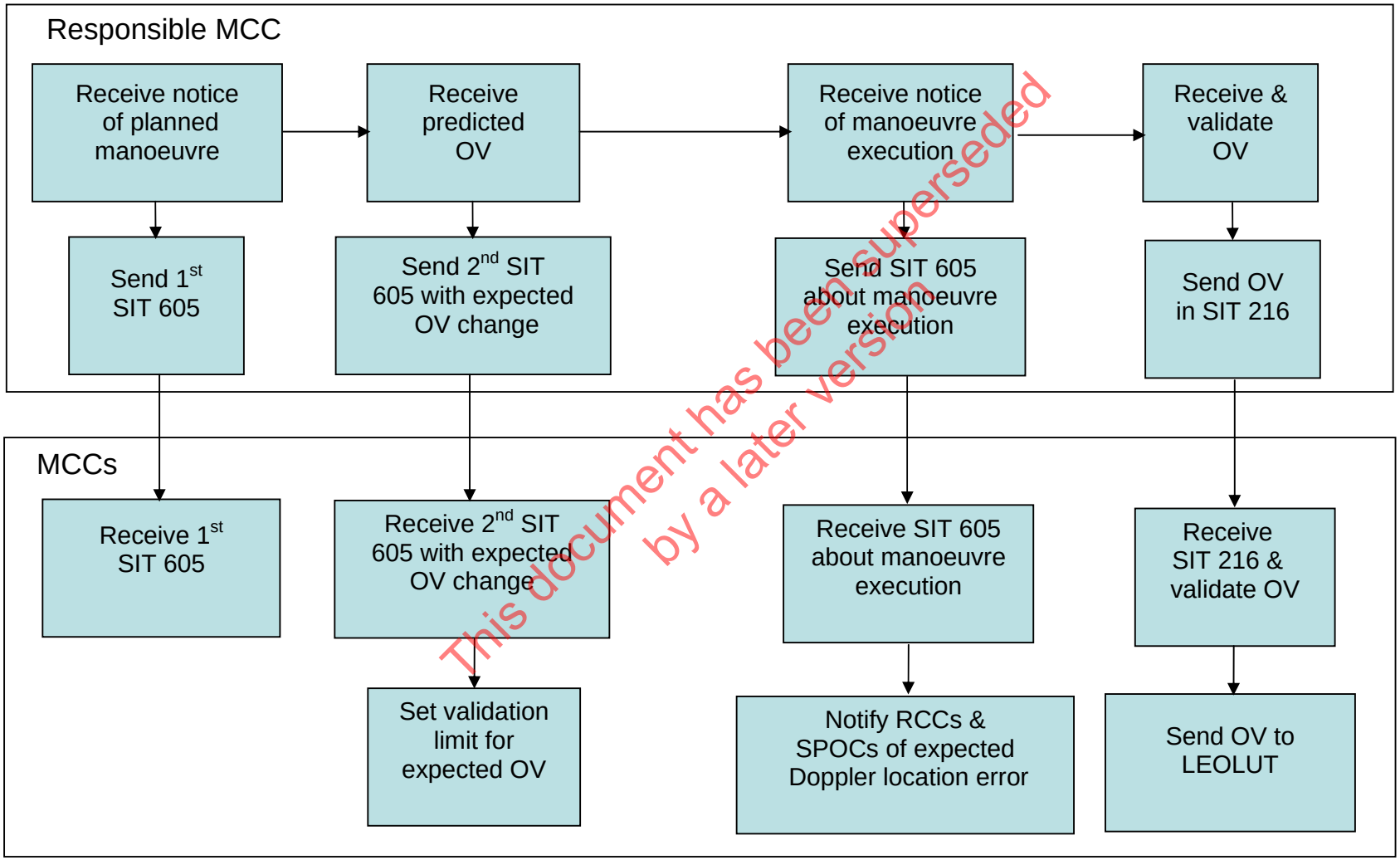
a) Ensure that the calibration time (per document C/S A.002, message field 37) in the new SARP TCAL data is treated as valid in its MCC, without regard to previous SARP TCAL data. The USO frequency (C/S A.002, message field 38) shall be validated per normal procedures.

b) Ensure that the new SARP TCAL data (validated as noted above) is used to initialise the SARP TCAL data in its LEOLUTs, without regard to previous SARP TCAL data.

c) Ensure that all Doppler solutions generated by its LEOLUT(s) that contain SARP data for the associated satellite are filtered, until new SARP TCAL data is loaded into the associated LEOLUT.

Once new SARP TCAL data is processed by MCCs and LUTs, each Ground Segment Provider shall resume normal validation of SARP TCAL data for the satellite, unless contrary notification is received from the FMCC.

Figure 3.2: MCC Processing for Scheduled Satellite Manoeuvres



3.7 Contingency Procedures

In general, each LUT and MCC tests itself and notifies the operator of an improper condition. Should a failure occur, the responsible MCC will notify other MCCs as described in section 3.6 by the best means available. Alternative MCCs and communication links could be designated for routing message traffic and assuming some of the functions of the failed MCC, in accordance with predetermined back-up procedures described in Annex II / C or following direct coordination with other relevant MCCs.

The MCC serving as the back-up facility may support the RCCs/SPOCs of the failed MCC directly, or by routing message traffic to a SAR authority nominated by the failed MCC. Failed MCCs should recognize the additional workload placed on the back-up MCC and provide all possible support when operating in the contingency scenario.

Back-up procedures for the distribution of System information and alert data should be described for each MCC in the relevant section of Annex II / C. Any MCC may also communicate directly with any other MCC and an MCC will respond to direct requests for information.

During back-up conditions MCCs may redirect message traffic to the back-up MCC without effecting any change to the SIT destination, MF#5. Each MCC is to specify their redirection capability in their back-up procedures. MCCs shall not transmit QMS data to the back-up nodal MCC.

Annually, each MCC should arrange to test its back-up procedures. This test should include the exercise of each specific action listed in the back-up procedures and agreements section described in Annex II / C to this DDP. Each MCC should review the results of the testing, and document problems for corrective action. To ensure that the back-up testing does not impact operational activity within a DDR, each nodal MCC should co-ordinate back-up testing within their DDR. Each MCC should also report the back-up test results to the Cospas-Sarsat Secretariat as part of their annual report on System Status and Operations (C/S A.003). In addition, each MCC should perform a quarterly test of all back-up communication methods. Each MCC should review the results of the tests and document problems for corrective action.

The annual back-up test will not be required if the back-up procedure has been operationally exercised during the year prior to the planned annual test, taking care to ensure that no more than one year passes between the tests. The back-up test will take place for at least the minimum time required to ensure the Cospas-Sarsat Quality Management System objectives of providing timely and accurate alert data are met. A specific mention of this operational back-up shall be noted in the annual status report.

The quarterly communication test shall also be considered to be accomplished when the back-up procedure has been exercised during the quarter for a time period which meets the needs of the specific MCC operator.

3.8 Exchange of Test and Exercise Data

3.8.1 Coordination of Beacon Tests

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

3.8.2 Exchange of Test Messages

Test data obtained for beacons coded with operational protocols or test protocols shall be exchanged between MCCs only upon request. Such requests shall contain the 15 hexadecimal characters of the Beacon Identification (bits 26 to 85 of the beacon message include, as appropriate, the default values of position data in location protocols).

3.9 Archived Information

Each LUT and MCC will archive alert data and other messages transmitted. This information will be provided upon request to another MCC, SPOC or RCC, for a specific period of time and for activities in their area of responsibility. It may be also provided to the Cospas-Sarsat Secretariat for the analysis of particular beacon events when such analysis has been requested in accordance with the procedure approved by the Cospas-Sarsat Council.

3.10 Communication Networks

Annex II / A of the DDP contains a list of telex, telephone and facsimile numbers, X.25, AFTN and E-mail addresses and mailing addresses of MCCs. It may be updated in accordance with section 1.4.

Each MCC transfers alert data to other MCCs and SPOCs within its service area as described in Annex II / C, using the communication networks listed at Annex II / A, Table II / A.3 of the DDP.

- END OF SECTION 3 -

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ANNEXES TO THE COSPAS-SARSAT DATA DISTRIBUTION PLAN

PART I: **REFERENCE INFORMATION AND OPERATIONAL DATA**

PART II: **COSPAS-SARSAT SPACE AND GROUND SEGMENT DESCRIPTION**

PART III: **OPERATIONAL PROCEDURES FOR COSPAS-SARSAT MCCs**

C/S A.001 ANNEXES

PART I:

REFERENCE INFORMATION AND OPERATIONAL DATA

ANNEX I / A

LIST OF ACRONYMS USED IN C/S A.001

ACC	area control centre
AFTN	Aeronautical Fixed Telecommunications Network
BIH	Bureau International de l'Heure
Cospas	Cosmicheskaya Sistyema Poiska Avariynich Sudov (space system for the search of vessels in distress)
CSC	Cospas-Sarsat Council
DDP	Cospas-Sarsat Data Distribution Plan (C/S A.001)
DDR	data distribution region
FIC	flight information centre
FOC	full operational capability
GEOLUT	local user terminal in the Cospas-Sarsat GEOSAR system
GEOSAR	Geostationary satellite system for SAR
GMDSS	Global Maritime Distress and Safety System
G-SARP	ground SARP
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IOC	initial operational capability
ITU	International Telecommunication Union
JC	Cospas-Sarsat Joint Committee
km	kilometre
LEOLUT	local user terminal in the Cospas-Sarsat LEOSAR system
LEOSAR	Low Earth Orbit satellite system for SAR
LUT	local user terminal
MCC	mission control centre
AEMCC	United Arab Emirates MCC
ALMCC	Algerian MCC
ARMCC	Argentine MCC
ASMCC	South African MCC
AUMCC	Australian MCC
BRMCC	Brazilian MCC
CHMCC	Chilean MCC
CMC	Cospas Mission Centre
CMCC	Canadian MCC
CNMCC	Chinese MCC
FMCC	French MCC
GRMCC	Greek MCC

HKMCC	Hong Kong MCC
IDMCC	Indonesia MCC
INMCC	Indian MCC
ITMCC	Italian MCC
JAMCC	Japan MCC
KOMCC	Korea MCC
NIMCC	Nigeria MCC
NMCC	Norwegian MCC
PAMCC	Pakistan MCC
PEMCC	Peruvian MCC
SAMCC	Saudi Arabian MCC
SIMCC	Singapore MCC
SPMCC	Spanish MCC
TAMCC	ITDC / Taipei MCC
THMCC	Thailand MCC
TRMCC	Turkey MCC
UKMCC	United Kingdom MCC
USMCC	United States MCC
VNMCC	Vietnam MCC
VZMCC	Venezuela MCC

MID	maritime identification digits
MHz	megahertz
MRCC	maritime RCC
NOCR	notification of country of beacon registration
RCC	rescue co-ordination centre
RSC	rescue subcentre
SAIS	secondary air information station
SAR	search and rescue
SARP	SAR processor
SARR	SAR repeater
Sarsat	Search and Rescue Satellite-Aided Tracking
SID	Cospas-Sarsat Mission Control Centres Standard Interface Description (C/S A.002)
SIT	subject indicator type
SOLAS	Safety of Life at Sea (Convention)
SPOC	SAR point of contact
SRR	search and rescue region
SSAS	ship security alert system
TCA	time of closest approach
UTC	coordinated universal time

- END OF ANNEX I / A -

ANNEX I / B

OTHER INTERNATIONAL REFERENCE MATERIAL

This section includes references to other international agreements which impact on Cospas-Sarsat operations. When new or updated information is received, MCCs shall be notified in accordance with section 1.4.

I / B.1 INTERNATIONAL MARITIME ORGANIZATION

- IMO Assembly Resolution A.662(16): Performance Standards for Float-Free Release and Activation Arrangements for Emergency Radio Equipment.
- IMO Assembly Resolution A.694(17): General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids.
- IMO Assembly Resolution A.696(17): Type Approval of Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating in the Cospas-Sarsat System.
- IMO Assembly Resolution A.810(19): Performance Standards for Float-Free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz, as amended by Resolutions MSC.56(66) and MSC.120(74).
- IMO Assembly Resolution A.814(19): Guidelines for the Avoidance of False Distress Alerts.
- IMO Assembly Resolution A.887(21): Establishment, Updating and Retrieval of the Information Contained in the Registration Databases of the Global Maritime Distress and Safety System (GMDSS).
- MSC/Circ. 861: Measures to Reduce the Number of False Distress Alerts.
- MSC/Circ. 863: Recommendation on Prevention of Harmful Interference to 406 MHz EPIRBs Operating with Cospas-Sarsat System.
- MSC/Circ.1039: Guidelines for Shore-Based Maintenance of Satellite EPIRBs.
- MSC/Circ.1040: Guidelines on Annual Testing of 406 MHz Satellite EPIRBs.
- COMSAR/Circ.29: Guidelines for the voluntary use of standardized questionnaire and formats for reporting false alerts in collecting data on false alerts.
- International Convention for the Safety of Life at Sea, 1974, as amended.

- Resolution MSC.147(77): Adoption of the Revised Performance Standards for a Ship Security Alert System.

I / B.2 INTERNATIONAL CIVIL AVIATION ORGANIZATION

- Annexes to the Convention on International Civil Aviation:
  - Annex 6: Operation of Aircraft.
  - Annex 10: Aeronautical Telecommunications.
  - Annex 12: Search and Rescue.

- International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual.

- Regional Air Navigation Plans.

I / B.3 INTERNATIONAL TELECOMMUNICATION UNION

- Recommendation ITU-R M.633-3: Transmission Characteristics of a Satellite Emergency Position-Indicating Radio Beacon (Satellite EPIRB) System Operating through a Satellite System in the 406 MHz Band.

- END OF ANNEX I / B -

ANNEX I / C

LIST OF COUNTRY CODES (1)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
100-200	**			
201	Albania (Republic of)	ALB	ALBANIA	
202	Andorra (Principality of)	AND	ANDORRA	
203	Austria	AUT	AUSTRIA	2009
204	Azores	AZC	AZORES	
205	Belgium	BEL	BELGIUM	
206	Belarus (Republic of)	BLR	BELARUS	
207	Bulgaria (Republic of)	BUL	BULGARIA	
208	Vatican City State	VAT	VATICAN	
209	Cyprus (Republic of)	CYP	CYPRUS	
210	Cyprus (Republic of)	CYP	CYPRUS	
211	Germany (Federal Republic of)	GER	GERMANY	
212	Cyprus (Republic of)	CYP	CYPRUS	
213	Georgia (Republic of)	GOG	GEORGIA	
214	Moldova (Republic of)	MOL	MOLDOVA	
215	Malta	MAL	MALTA	
216	Armenia (Republic of)	ARM	ARMENIA	2005
217	*			
218	Germany (Federal Republic of)	GER	GERMANY	
219	Denmark	DEN	DENMARK	
220	Denmark	DEN	DENMARK	
221-223	*			
224	Spain	SPA	SPAIN	
225	Spain	SPA	SPAIN	
226	France	FRA	FRANCE	
227	France	FRA	FRANCE	
228	France	FRA	FRANCE	
229	*			
230	Finland	FIN	FINLAND	
231	Faroe Islands	FAR	FAROE ISLE	
232	United Kingdom of Great Britain and Northern Ireland	UKM	G BRITAIN	
233	United Kingdom of Great Britain and Northern Ireland	UKM	G BRITAIN	
234	United Kingdom of Great Britain and Northern Ireland	UKM	G BRITAIN	
235	United Kingdom of Great Britain and Northern Ireland	UKM	G BRITAIN	
236	Gibraltar	GIB	GIBRALTAR	
237	Greece	GRE	GREECE	
238	Croatia (Republic of)	CRT	CROATIA	
239	Greece	GRE	GREECE	
240	Greece	GRE	GREECE	
241	Greece	GRE	GREECE	2009
242	Morocco (Kingdom of)	MOR	MOROCCO	

(1) The country code is a 3-digit decimal number allocated to each country by the International Telecommunication Union (ITU) and listed as Maritime Identification Digits (MIDs) in Appendix 43 of the ITU Radio Regulations.

* Not allocated. ** Not available for allocation at this stage.

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
243	Hungary (Republic of)	HUN	HUNGARY	
244	Netherlands (Kingdom of the)	NET	NETHERLAND	
245	Netherlands (Kingdom of the)	NET	NETHERLAND	
246	Netherlands (Kingdom of the)	NET	NETHERLAND	
247	Italy	ITA	ITALY	
248	Malta	MAL	MALTA	
249	Malta	MAL	MALTA	
250	Ireland	IRE	IRELAND	
251	Iceland	ICE	ICELAND	
252	Liechtenstein (Principality of)	LIE	LIECHTEN	
253	Luxembourg	LUX	LUXEMBOURG	
254	Monaco (Principality of)	MON	MONACO	
255	Madeira	MAE	MADEIRA	
256	Malta	MAL	MALTA	
257	Norway	NOR	NORWAY	
258	Norway	NOR	NORWAY	
259	Norway	NOR	NORWAY	
260	*			
261	Poland (Republic of)	POL	POLAND	
262	Montenegro	MNT	MONTENEGRO	2007
263	Portugal	POR	PORTUGAL	
264	Romania	ROM	ROMANIA	
265	Sweden	SWE	SWEDEN	
266	Sweden	SWE	SWEDEN	
267	Slovak Republic	SLV	SLOVAKIA	
268	San Marino (Republic of)	SAN	SAN MARINO	
269	Switzerland (Confederation of)	SWT	SWISS	
270	Czech Republic	CZH	CZECH REP	
271	Turkey	TUR	TURKEY	
272	Ukraine	UKR	UKRAINE	
273	Russian Federation	RUS	RUSSIA	
274	The Former Yugoslav Republic of Macedonia	MCD	MACEDONIA	
275	Latvia (Republic of)	LAT	LATVIA	
276	Estonia (Republic of)	EST	ESTONIA	
277	Lithuania (Republic of)	LIT	LITHUANIA	
278	Slovenia (Republic of)	SVN	SLOVENIA	
279	Serbia	SER	SERBIA	2007
280-300	**			
301	Anguilla	ANA	ANGUILLA	
302	*			
303	Alaska (State of)	ALA	ALASKA	
304	Antigua and Barbuda	ANT	ANTIGUA	
305	Antigua and Barbuda	ANT	ANTIGUA	2007
306	Netherlands Antilles	NEA	N ANTILLES	
307	Aruba	ARU	ARUBA	
308	Bahamas (Commonwealth of the)	BAA	BAHAMAS	
309	Bahamas (Commonwealth of the)	BAA	BAHAMAS	
310	Bermuda	BER	BERMUDA	
311	Bahamas (Commonwealth of the)	BAA	BAHAMAS	
312	Belize	BEZ	BELIZE	

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
313	*			
314	Barbados	BAR	BARBADOS	
315	*			
316	Canada	CAN	CANADA	
317-318	*			
319	Cayman Islands	CAY	CAYMAN IS	
320	*			
321	Costa Rica	COS	COSTA RICA	
322	*			
323	Cuba	CUB	CUBA	
324	*			
325	Dominica (Commonwealth of)	DOM	DOMINICA	
326	*			
327	Dominican Republic	DOR	DOMINICAN	
328	*			
329	Guadeloupe (French Department of)	GUA	GUADELOUPE	
330	Grenada	GRA	GRENADA	
331	Greenland	GRN	GREENLAND	
332	Guatemala (Republic of)	GUT	GUATEMALA	
333	*			
334	Honduras (Republic of)	HON	HONDURAS	
335	*			
336	Haiti (Republic of)	HAI	HAITI	
337	*			
338	United States of America	USA	USA	
339	Jamaica	JAM	JAMAICA	
340	*			
341	Saint Kitts and Nevis	SKN	ST KITTS	
342	*			
343	Saint Lucia	SLU	ST LUCIA	
344	*			
345	Mexico	MEX	MEXICO	
346	*			
347	Martinique (French Department of)	MTQ	MARTINIQUE	
348	Montserrat	MOT	MONTSERRAT	
349	*			
350	Nicaragua	NIC	NICARAGUA	
351	Panama (Republic of)	PAN	PANAMA	
352	Panama (Republic of)	PAN	PANAMA	
353	Panama (Republic of)	PAN	PANAMA	
354	Panama (Republic of)	PAN	PANAMA	
355	Panama (Republic of)	PAN	PANAMA	
356	Panama (Republic of)	PAN	PANAMA	
357	Panama (Republic of)	PAN	PANAMA	
358	Puerto Rico	PUE	PUERTORICO	
359	El Salvador (Republic of)	ELS	ELSALVADOR	
360	*			
361	Saint Pierre and Miquelon (Territorial Collectivity of)	SPI	ST PIERRE	
362	Trinidad and Tobago	TAT	TRINIDAD	
363	*			

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
364	Turks and Caicos Islands	TUK	CAICOS IS	
365	*			
366	United States of America	USA	USA	
367	United States of America	USA	USA	
368	United States of America	USA	USA	
369	United States of America	USA	USA	
370	Panama (Republic of)	PAN	PANAMA	2008
371	Panama (Republic of)	PAN	PANAMA	
372	Panama (Republic of)	PAN	PANAMA	
373-374	*			
375	Saint Vincent and the Grenadines	SVG	ST VINCENT	
376	Saint Vincent and the Grenadines	SVG	ST VINCENT	
377	Saint Vincent and the Grenadines	SVG	ST VINCENT	
378	British Virgin Islands	BVI	VIRGIN GB	
379	United States Virgin Islands	USV	VIRGIN US	
380-400	**			
401	Afghanistan (Islamic State of)	AFG	AFGHAN	
402	*			
403	Saudi Arabia (Kingdom of)	SAU	SAUDI	
404	*			
405	Bangladesh (People's Republic of)	BAN	BANGLADESH	
406-407	*			
408	Bahrain (State of)	BAH	BAHRAIN	
409	*			
410	Bhutan (Kingdom of)	BHU	BHUTAN	
411	*			
412	China (People's Republic of)	CHN	CHINA	
413	China (People's Republic of)	CHN	CHINA	
414-415	*			
416	Chinese Taipei	TAI	TAIPEI	
417	Sri Lanka (Democratic Socialist Republic of)	SRI	SRI LANKA	
418	*			
419	India (Republic of)	IND	INDIA	
420-421	*			
422	Iran (Islamic Republic of)	IRN	IRAN	
423	Azerbaijani Republic	AZR	AZERBAIJAN	
424	*			
425	Iraq (Republic of)	IRQ	IRAQ	
426-427	*			
428	Israel (State of)	ISR	ISRAEL	
429-430	*			
431	Japan	JPN	JAPAN	
432	Japan	JPN	JAPAN	
433	*			
434	Turkmenistan	TKM	TURKMENIST	
435	*			
436	Kazakhstan (Republic of)	KAZ	KAZAKHSTAN	
437	Uzbekistan	UZB	UZBEKISTAN	
438	Jordan (Hashemite Kingdom of)	JOR	JORDAN	
439	*			
440	Korea (Republic of)	KOR	KOREA SOU	
441	Korea (Republic of)	KOR	KOREA SOU	
442	*			

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
443	Palestine	PAA	PALESTINE	2008
444	*			
445	Democratic People's Republic of Korea	KDR	KOREA NOR	
446	*			
447	Kuwait (State of)	KUW	KUWAIT	
448-449	*			
450	Lebanon	LEB	LEBANON	
451	Kyrgyz Republic	KYR	KYRGYZIA	
452	*			
453	Macao, China	MAC	MACAO	
454	*			
455	Maldives (Republic of)	MAV	MALDIVES	
456	*			
457	Mongolia	MNG	MONGOLIA	
458	*			
459	Nepal	NEP	NEPAL	
460	*			
461	Oman (Sultanate of)	OMN	OMAN	
462	*			
463	Pakistan (Islamic Republic of)	PAK	PAKISTAN	
464-465	*			
466	Qatar (State of)	QAT	QATAR	
467	*			
468	Syrian Arab Republic	SYR	SYRIA	
469	*			
470	United Arab Emirates	UAE	UAE	
471-472	*			
473	Yemen (Republic of)	YEM	YEMEN	
474	*			
475	Yemen (Republic of)	YEM	YEMEN	
476	*			
477	Hong Kong, China	HKG	HONG KONG	
478	Bosnia and Herzegovina	BOS	BOSNIAHERZ	
479	*			
480-500	**			
501	Adelie Land	ADE	ADELIELAND	
502	*			
503	Australia	AUS	AUSTRALIA	
504-505	*			
506	Myanmar (Union of)	BUR	BURMA	
507	*			
508	Brunei Darussalam	BRU	BRUNEI	
509	*			
510	Micronesia (Federated States of)	MIC	MICRONESIA	
511	Palau (Republic of)	PAL	PALAU	
512	New Zealand	NZL	NEWZEALAND	
513	*			
514	Cambodia (Kingdom of)	CMB	CAMBODIA	
515	Cambodia (Kingdom of)	CMB	CAMBODIA	
516	Christmas Islands (Indian Ocean)	CHR	CHRISTMAS	
517	*			
518	Cook Islands	COO	COOK ISLES	

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
519	*			
520	Fiji (Republic of)	FIJ	FIJI	
521-522	*			
523	Cocos (Keeling) Islands	COC	COCOS ISLE	
524	*			
525	Indonesia (Republic of)	INO	INDONESIA	
526-528	*			
529	Kiribati (Republic of)	KIR	KIRIBATI	
530	*			
531	Lao People's Democratic Republic	LAO	LAO	
532	*			
533	Malaysia	MLY	MALAYSIA	
534-535	*			
536	Northern Mariana Islands (Commonwealth of the)	MAI	MARIANA IS	
537	*			
538	Marshall Islands (Republic of the)	MAR	MARSHALL I	
539	*			
540	New Caledonia	NCA	CALEDONIA	
541	*			
542	Niue	NIU	NIUE ISLE	
543	*			
544	Nauru (Republic of)	NAU	NAURU	
545	*			
546	French Polynesia	PLY	POLYNESIA	
547	*			
548	Philippines (Republic of the)	PHI	PHILIPPINE	
549-552	*			
553	Papua New Guinea	PAP	PAPUA NG	
554	*			
555	Pitcairn Island	PIT	PITCAIRN I	
556	*			
557	Solomon Islands	SOL	SOLOMON IS	
558	*			
559	American Samoa	ASA	SAMOA USA	
560	*			
561	Samoa (Independent State of)	WSA	WEST SAMOA	
562	*			
563	Singapore (Republic of)	SIN	SINGAPORE	
564	Singapore (Republic of)	SIN	SINGAPORE	
565	Singapore (Republic of)	SIN	SINGAPORE	
566	*			
567	Thailand	THA	THAILAND	
568-569	*			
570	Tonga (Kingdom of)	TON	TONGA	
571	*			
572	Tuvalu	TUV	TUVALU IS	
573	*			
574	Vietnam (Socialist Republic of)	VIE	VIETNAM	
575	*			
576	Vanuatu (Republic of)	VAN	VANUATU	
577	*			
578	Wallis and Futuna	WAL	WALLIS IS	

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
579	*			
580-600	**			
601	South Africa (Republic of)	SAF	SO AFRICA	
602	*			
603	Angola (Republic of)	ANG	ANGOLA	
604	*			
605	Algeria (People's Democratic Republic of)	ALG	ALGERIA	
606	*			
607	Saint Paul and Amsterdam Islands	SPL	ST PAUL	
608	Ascension Island	ASC	ASCENSION	
609	Burundi (Republic of)	BUI	BURUNDI	
610	Benin (Republic of)	BEN	BENIN	
611	Botswana (Republic of)	BOT	BOTSWANA	
612	Central African Republic	CAR	CENAFR REP	
613	Cameroon (Republic of)	CAM	CAMEROON	
614	*			
615	Congo (Republic of the)	CON	CONGO	
616	Comoros (Islamic Federal Republic of the)	COM	COMOROS	
617	Cape Verde (Republic of)	CAP	CAPE VERDE	
618	Crozet Archipelago	CRO	CROZET	
619	Côte d'Ivoire (Republic of)	IVO	IVORYCOAST	
620	*			
621	Djibouti (Republic of)	DJI	DJIBOUTI	
622	Egypt (Arab Republic of)	EGY	EGYPT	
623	*			
624	Ethiopia (Federal Democratic Republic of)	ETH	ETHIOPIA	
625	Eritrea	ERT	ERITREA	
626	Gabonese Republic	GAB	GABON REP	
627	Ghana	GHA	GHANA	
628	*			
629	Gambia (Republic of the)	GAM	GAMBIA	
630	Guinea-Bissau (Republic of)	GUB	GUINEA BIS	
631	Equatorial Guinea (Republic of)	EQG	EQ GUINEA	
632	Guinea (Republic of)	GUN	GUINEA REP	
633	Burkina Faso	BUF	BURKINA FS	
634	Kenya (Republic of)	KEN	KENYA	
635	Kerguelen Islands	KER	KERGUELEN	
636	Liberia (Republic of)	LIB	LIBERIA	
637	Liberia (Republic of)	LIB	LIBERIA	
638-641	*			
642	Libya (Socialist People's Libyan Arab Jamahiriya)	LBY	LIBYA	
643	*			
644	Lesotho (Kingdom of)	LES	LESOTHO	
645	Mauritius (Republic of)	MAU	MAURITIUS	
646	*			
647	Madagascar (Republic of)	MAD	MADAGASCAR	
648	*			
649	Mali (Republic of)	MLI	MALI	
650	Mozambique (Republic of)	MOZ	MOZAMBIQUE	
651-653	*			
654	Mauritania (Islamic Republic of)	MAA	MAURITANIA	

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
655	Malawi	MAW	MALAWI	
656	Niger (Republic of the)	NIG	NIGER	
657	Nigeria (Federal Republic of)	NIA	NIGERIA	
658	*			
659	Namibia (Republic of)	NAM	NAMIBIA	
660	Reunion (French Department of) and Mayotte	REU	REUNION	
661	Rwandese Republic	RWA	RWANDA	
662	Sudan (Republic of the)	SUD	SUDAN	
663	Senegal (Republic of)	SEN	SENEGAL	
664	Seychelles (Republic of)	SEY	SEYCHELLE	
665	Saint Helena	SHE	ST HELENA	
666	Somali Democratic Republic	SOM	SOMALI	
667	Sierra Leone	SIL	SIERRA LEO	
668	Sao Tome and Principe (Democratic Rep. of)	SAO	SAO TOME	
669	Swaziland (Kingdom of)	SWA	SWAZILAND	
670	Chad (Republic of)	CHA	CHAD	
671	Togolese Republic	TOG	TOGO	
672	Tunisia	TUN	TUNISIA	
673	*			
674	Tanzania (United Republic of)	TAN	TANZANIA	
675	Uganda (Republic of)	UGA	UGANDA	
676	Democratic Republic of the Congo	ZAI	ZAIRE	
677	Tanzania (United Republic of)	TAN	TANZANIA	
678	Zambia (Republic of)	ZAM	ZAMBIA	
679	Zimbabwe (Republic of)	ZIM	ZIMBABWE	
680-700	**			
701	Argentine Republic	ARG	ARGENTINE	
702-709	*			
710	Brazil (Federative Republic of)	BRA	BRAZIL	
711-719	*			
720	Bolivia (Republic of)	BOL	BOLIVIA	
721-724	*			
725	Chile	CHI	CHILE	
726-729	*			
730	Colombia (Republic of)	COL	COLOMBIA	
731-734	*			
735	Ecuador	ECU	ECUADOR	
736-739	*			
740	Falkland Islands (Malvinas)	FAL	FALKLAND I	
741-744	*			
745	Guiana (French Department of)	GUI	GUIANA	
746-749	*			
750	Guyana	GUY	GUYANA	
751-754	*			
755	Paraguay (Republic of)	PAR	PARAGUAY	
756-759	*			
760	Peru	PER	PERU	
761-764	*			
765	Surinam (Republic of)	SUR	SURINAME	
766-769	*			

LIST OF COUNTRY CODES (Cont.)

COUNTRY or REGION CODE	ALLOCATED TO	ABBREVIATIONS 3 LTRS	ABBREVIATIONS 10 LETTERS	LATEST REVISION
770	Uruguay (Eastern Republic of)	URU	URUGUAY	
771-774	*			
775	Venezuela (Bolivarian Republic of)	VEN	VENEZUELA	
776-779	*			
780-999	*			

- END OF ANNEX I / C -

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ANNEX I / D

SAR POINTS OF CONTACT

SAR points of contact (SPOCs) are established either through direct agreement between Cospas-Sarsat Participants, or through efforts of international institutions. IMO and ICAO have requested their Member States to identify a single SAR point of contact which could serve as the national point to which Cospas-Sarsat alert data is delivered. As new information on SPOCs becomes available, it will be reviewed by the Cospas-Sarsat Joint Committee and a servicing MCC will be identified. Detailed SPOC information is shown on the following pages.

The country codes used to identify each country are similar to the Maritime Identification Digits (MIDs) assigned by ITU and given in Radio Regulations Appendix 43 (see also Annex I / C of this document).

Note 1: Telephone numbers in the table are given according to the following format applicable to international dialling:

(CCC.AAA)
NNNNN...

With: CCC: Country code (international dialling)
AAA: Area code (where applicable)
NNNNN...: Local number

Note 2: The attached table reflects the actual situation of operational MCCs as listed in section II / A.1 of Annex II / A. New MCCs will be listed in column "Associated MCC" as serving their designated SPOCs only after the Full Operational Capability of the new MCC has been confirmed by its nodal MCC.

Note 3: Where SPOCs have not been formally designated, several possible contacts may be listed, as requested by the associated MCC. These "points of contact" are printed in *italics*.

Note 4: The List of Primary Air Information Stations (PAIS) and Secondary Air Information Stations (SAIS), which can be used as points of contact in Antarctica, is given for information as Appendix 1 to this Annex I / D.

Note 5: The associated MCC indicated in the last column of the attached table is the destination MCC for all alert data except when indicated otherwise.

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
501	Adelie Land	RCC Australia	(71) 62349 MRCCAUS AA62349	(61.2) 62306868	YSARYCYX rccaus@amsa. gov.au	(61.2) 62306820	AusSAR, Australian Maritime Safety Authority, GPO Box 2181, Canberra City ACT 2601, Australia	AUMCC (FMCC for NOCR)
401	Afghanistan	CENTAF-AUAB CAOC JSRC	T.B.D.	(974) 4327382	T.B.D.	(974) 4503452 4364193	T.B.D.	TRMCC
303	Alaska (State of)	USMCC	-	(1.301) 8174568	KZDCZSZA usmcc@noaa.gov	(1.301) 8174576	USMCC, E/SP3 NSOF, NOAA 4231 Suitland Road, Suitland MD 20746-4303, USA	USMCC
201	Albania	Rinas Tirana International Airport	-	-	LATIZRZX LATIYCYX	-	-	ITMCC
605	Algeria	ALMCC	(936) 65550_ MCCDZ	(213.2) 1495112	DAALZSZX mcc_alger@mdn.dz	(213.2) 1495102	Service SAR, 123, rue de Tripoli BP428, Hussein-Dey, Algiers Algeria	ALMCC X.25
559	American Samoa	Coast Guard Marine Safety Detachment American Samoa	-	-	-	(684) 2587001, 2587002 2587003, 2587004	-	AUMCC New Zealand SRR
202	Andorra	FMCC	-	(33) 561274878	LFIAZSZX fmcc@cnes.fr	(33) 561254382	Cospas-Sarsat - FMCC CNES - Centre Spatial de Toulouse BPI 903 - 18, avenue Edouard Belin, 31401 Toulouse Cedex 9, France	FMCC
603	Angola	Luanda RCC	-	-	FNLUYFYX	-	-	ASMCC
301	Anguilla	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@ developpement- durable.gouv.fr mrcc.fortdefrance@ wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
304 305	Antigua and Barbuda	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@developpement-durable.gouv.fr mrcc.fortdefrance@wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC
701	Argentina	ARMCC	-	(54.11) 44802486	SAEZZSZX armcc@sass.gov.ar	(54.11) 44802486 47512935	ARMCC, GRUPO III Comunicaciones, Fuerza Aérea Argentina I Brigada Aérea, Av. Matienzo e Itacumbú S/N, El Palomar (CP 1684) Buenos Aires, Argentina	ARMCC
216	Armenia	RCC	-	(374.1) 283429	UDDDZXZX cds@armats.com	(374.1) 593016	Armaeronavigacia, a/p Zvartnots 375042 Yerevan, Republic of Armenia	CMC
307	Aruba	JRCC Curaçao	(93) 1506	(5999) 4637950	rcc.curacao@gmail.com rcc.curacao@mnavy.mindef.nl	(5999) 4637700	Coastguard Netherlands Antilles & Aruba Nightingaleweg, Curaçao Netherlands Antilles	USMCC
608	Ascension	Ascension Island Air Operations (06:00-14:00)	-	(247) 6780 3304	FHAWYWYO ops.ascension@atlantis.co.ac	(247) 3315 3316	Ascension Air Operations BFPO 677 Mill Hill, London NW7 1PX, UK	BRMCC Ascension SRR
503	Australia	RCC Australia	-	(61.2) 62306868	YSARYCYX rccaus@amsa.gov.au	(61.2) 62306820	AusSAR, Australian Maritime Safety Authority, G.P.O.Box 2181 Canberra, City ACT 2601 Australia	AUMCC Australia SRR
203	Austria	RCC Vienna	114276	(43.1) 7979876 (43) 5170376	LOWWYCYX	(43.1) 7988380	Federal Office of Civil Aviation RCC, Schnirchgasse 11 A-1030 Vienna, Austria	FMCC
423	Azerbaijan	Radiocommunication Centre	(784) 142102 MRF AI	(994.12) 935339	gkmp@caspar.baku.az	(994.12) 934506	Caspian Shipping Company 5 M.Rasulzade Street Baku 370005 Azerbaijan	CMC

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
204	Azores	MRCC Lisboa	(04404) 60747 MRCCP	(351.21) 4401954 4423423	-	(351.21) 4416581 4401919	MRCC Lisboa Redute Gomes Freire, Estrada da Mendosa, MRCC L 2780-070 OEIRAS Portugal	FMCC
308 309 311	Bahamas	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District, 909 South East, First St. Miami, FL 33131-3050, USA	USMCC
408	Bahrain	RCC ATC Bahrain	-	(973) 17321029	OBBISARX	(973) 17321081 17321158	RCC Directorate General of Civil Aviation P.O.Box 144, Bahrain	SAMCC
405	Bangladesh	Civil Aviation Authorities	(780) 632210 CAAB BJ	(880) 2893322	VGZRYCYX VGHQYAYS	(880) 891125 894705-8 894735-6	Director (ATS) Aero CAAB Headquarters Kurmitola Dhaka 1229, Bangladesh	INMCC
314	Barbados	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District 909 South East, First Street Miami, FL 33131-3050, USA	USMCC
206	Belarus	RCC	-	(375.17) 2192961	UMMVYCYX rcc@ban.by	(375.17) 2192988	-	CMC
205	Belgium	RCC Bruxelles	-	(32.2) 7524201	EBMIYCYX rcc@mil.be	(32.2) 7524477 7524452	RCC Bruxelles, CANAC MIL J. Gorislaan, 1 B-1820 Seenokkerzeel Belgique	FMCC
		ACC Bruxelles	-	-	EBBUZRZX	-	-	

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
312	Belize	COCESNA	-	(504) 2342488	jroyuela@ cocesna.hn	(504) 2342507	Director ACNA COCESNA P.O. Box 660 Tegucigalpa Honduras	USMCC
610	Benin	Cotonou Airport (06:00-14:00)	-	(229.21) 300839	DBBBZPZX asecna.dbca@ intnet.bj	(229.21) 304119 301413 307635 (24H)	ASECNA 01, BP 96 Cotonou, Benin	SPMCC Accra SRR
310	Bermuda	Bermuda RCC	-	(1.441) 2971530	operations@ rccbermuda.bm	(1.441) 2971010 2970686	RCC Bermuda 9 Fort George Hill St. Georges GE02 Bermuda	USMCC
410	Bhutan	Department of Civil Aviation	-	(975.8) 27911	-	(975.8) 271909 271910	Department of Civil Aviation Paro, Bhutan	INMCC
720	Bolivia	La Paz RCC	-	(591.2) 2642088	SLLPZRZX rcclapaz@yahoo.es	(591.2) 2642053	COMANGRALFAB Avda Monte N° 734 La Paz, Bolivia	CHMCC
478	Bosnia and Herzegovina	Banja Luka RCC	-	(387.51) 830482	sar-rcc@pttrs.net	(387.51) 830541 832361 830608	Airport Traffic Control Banja Luka RCC 78250 Laktasi Bosnia and Herzegovina	ITMCC
611	Botswana	MRCC Cape Town	(95) 521037	(27.21) 9383309	mrcc.ct@samsa. org.za	(27.21) 9383300	MRCC Cape Town, P.O.Box 532 Parow 7499, South Africa	ASMCC
710	Brazil	BRMCC	-	(55.61) 33652964 33651212	SBBRZSZX brmcc@cindacta1. aer.mil.br www.brmcc.aer.mil.br	(55.61) 33652964	CINDACTA1 / BRMCC SHIS QI 05 Lago Sul - Area Especial 12, CEP - 71615-600 Brasilia-DF, Brazil	BRMCC

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
378	British Virgin Islands	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan, U.S. Coast Guard Base, Box S 2029, San Juan, Puerto Rico 00903-2029	USMCC
508	Brunei	-	-	-	*WMFCYCYX* *	-	-	SIMCC * Malaysia FIR
207	Bulgaria	MRCC Varna	(865) 06777486	(359.52) 603265	LBWNMSKC mrcc_vn@ marad.bg	(359.52) 603268	MRCC- Varna, Directorate Search and Rescue, 5, Primorski Blvd. Varna 9000, Republic of Bulgaria	CMC
633	Burkina Faso	RSC Ouagadougou	-	-	DFHVYCYX	(226) 306515/16 310639/40	DFFD, Airport of Ouagadougou P.O. Box 75 Ouagadougou Burkina Faso	ALMCC/ Inside Niger SRR
609	Burundi	MRCC Cape Town	(95) 521037	(27.21) 9383309	mrcc.ct@ samsa.org.za	(27.21) 9383310	MRCC Cape Town, P.O.Box 532 Parow 7499, South Africa	ASMCC
514 515	Cambodia	-	064411469	(855.23) 890192 224259	VDPPYAYC VDPPYFYX	-	-	VNMCC
613	Cameroon	RSC Douala	-	(237) 3423139	FKKDYCYX	(237) 3423975 3421539	Centre Secondaire de Recherche et de Sauvetage BP 945, Douala, Cameroun	SPMCC Brazzaville SRR
316	Canada	CMCC	-	(1.613) 9657494	CYTRYCYT cmcc2@ sarnet.dnd.ca	(1.613) 9657265 (1.800) 2118107	CMCC 8 Wing Trenton P.O.Box 1000 Stn. Forces, Astra Ontario, KOK 3W0, Canada	CMCC (Co-located with RCC Trenton)
617	Cape Verde	RCC Sal (24H)	-	(238.2) 411219	GVACFDPX	(238.2) 411970	Rescue and Coordination Centre Control Regional (ATC), Amilcar Cabral Airport, Sal, Cape Verde	SPMCC Sal Oceanic SRR
319	Cayman Islands	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District, 909 South East, First St. Miami, FL 33131-3050, USA	USMCC

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
612	Central African Republic	RSC Bangui	-	(236.21) 614918	FEFFYCYX asecnafe@intnet.cf	(236.21) 613380	-	SPMCC Brazzaville SRR
670	Chad	*FIC N'Djamena* *RCC N'Djamena*	- -	- -	*FTTTZIZX* *FTTJYCYX*	- *(235) 3600*	- *Centre de Coordination de Recherche et de Sauvetage Etat Major de l'Armée Nationale BP 444 N'Djamena, Tchad*	FMCC
725	Chile	CHMCC	-	(56.2) 5305972	SCTIZSZX chmcc@fach.cl	(56.2) 5305941	Casilla 40, Cerrillos Santiago, Chile	CHMCC
412 413	China (P.R.of)	CNMCC	-	(86.10) 65293296	ZBBBZSZX cnmcc@mail.eastnet.com.cn	(86.10) 65293298 65292221	CNMCC China Maritime Search and Rescue Centre 11 Jianguomennei Avenue Beijing, China (P.R.of) 100736	CNMCC
416	Chinese Taipei	TAMCC	-	(886.2) 25450234	RCTPRESX tamcc@ms23.hinet.net	(886.2) 87703661 25450214	Taipei Mission Control Centre 362 Pin-Kiang Street, Taipei	TAMCC X.25
516	Christmas Island	RCC Australia	(71) 62349 MRCCAUS AA62349	(61.2) 62306868	YSARYCYX	(61.2) 62306820	AusSAR, Australian Maritime Safety Authority G.P.O.Box 2181, Canberra City ACT 2601, Australia	AUMCC Indonesia SRR
523	Cocos (Keeling) Island	RCC Australia	(71) 62349 MRCCAUS AA62349	(61.2) 62306868	YSARYCYX	(61.2) 62306820	AusSAR, Australian Maritime Safety Authority G.P.O.Box 2181, Canberra City ACT 2601, Australia	AUMCC Australia SRR

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730	Colombia	Oficino Grupo Busqueda y Rescate	(396) 44620 DAAC CO 44840 DAAC CO	(57.1) 4139324	SKBOYAYX	(57.1) 4139324	Aeropuerto Internacional El Dorado, A.A. (P.O.Box) 12307 Sante Fe de Bogota, D.C., Colombia	USMCC
616	Comoros	MRCC La Reunion	(961) 916140	(262) 711595	reunion@mrccfr.eu crossru@wanadoo.fr	(262) 434343 711468	Cross La Reunion Rond Point de la Glacière - BP 80061 - 97822, Le Port Cedex Reunion	FMCC
615	Congo	ACC Brazzaville	-	-	FCCCZRZX	(242) 811010 Ext 1517	Centre de Coordination de Recherche et de Sauvetage BP 218 Brazzaville, Congo	SPMCC Brazzaville SRR
518	Cook Islands	RCC New Zealand	-	(64.4) 9148388	NZWNYCYX rccnz@msa.govt.nz	(64.4) 9148380	RCC New Zealand, P.O.Box 30050 Lower Hutt, New Zealand	AUMCC New Zealand SRR
321	Costa Rica	COCESNA	-	(504) 2342488	jroyuela@ cocesna.hn	(504) 2342507	Director ACNA COCESNA P.O.Box 660 Tegucigalpa, Honduras	USMCC
619	Côte d'Ivoire	ARCC Abidjan	-	-	DIIIZIZX DIAPZRZX	(225) 367171	Centre de Coordination de Recherche et de Sauvetage, BP 7010, Abidjan Aviation, Côte d'Ivoire	SPMCC Abidjan SRR
238	Croatia	MRCC Rijeka	-	(385.51) 312254	LDZOZGZX ZAGABRIA mrcc@pomorstvo.hr	(385.51) 312253 312255	MRCC Reject, 51000 Rijeka, Senjsko Pristaniste 3, Croatia	ITMCC
618	Crozet Archipelago	MRCC La Reunion	(961) 916140	(262) 711595	reunion@mrccfr.eu crossru@wanadoo.fr	(262) 434343 711468	Cross La Reunion Rond Point de la Glacière - BP 80061 - 97822, Le Port Cedex Reunion	FMCC

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323	Cuba	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District, 909 South East First St., Miami FL 33131-3050, USA	USMCC
209 210 212	Cyprus	JRCC Larnaca	-	(357.24) 643254	LCLKYCYX jrcc_cyp@ cytanet.com.cy	(357.24) 304723 304737	JRCC Larnaca Larnaca International Airport 7130 Larnaca, Cyprus P.O.Box 43048	ITMCC
270	Czech Republic	Air Navigation Services	-	(420) 220372701	LKPRYCYX rccpraha@ans.cz	(420) 220372752 220374452 220560254	Air Navigation Services of the CR Rescue Coordination Centre Navigační 787, 252 61 Jeneč 16008 Praha 6, Czech Republic	CMC
445	Democratic People's Republic of Korea	-	*5471* *JSKP*	-	*ZKKKZGZX*	-	-	KOMCC
676	Democratic Republic of the Congo	Kinshasa RCC	-	-	FZAZYCYX FZAAYCYX jeaukitambala2005@ yahoo.fr	(243.999) 925964	Avenue Roi Baudeuin No.44 Commune de la Gombe, Kinshasa Republic Democratic du Congo	ASMCC
219 220	Denmark	JRCC Denmark	-	(45) 89433230	EKMCYCYX * jrcc@sok.dk	(45) 89433206	Flag Officer Denmark Soedalsparken 20, Post Box 1483 DK - 8220, Brabrand, Denmark	NMCC * EKZZYCYX to be used for alert messages
621	Djibouti	RSC Djibouti	5889 DJ	-	HDAMYDYD	(253) 341646	-	FMCC
325	Dominica	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@ developpement- durable.gouv.fr mrcc.fortdefrance@ wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC

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327	Dominican Republic	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan U.S. Coast Guard Base Box S 2029, San Juan Puerto Rico 00903-2029	USMCC
-	East Timor	EUNMISET RCC (Civil Aviation Division)	6703317111	-	WPDLZTZX comeroatsc@ hotmail.com	(670) 3317110	Civil Aviation Dividion Ministry of Transport and Communications, East Timor	IDMCC
735	Ecuador	Fuerza Aerea Ecuatoriana	-	(593.4) 2294131	coaala22@ fae.ffaa.mil.ec	(593.4) 2692741	Fuerza Aerea Ecuatoriana Quito, Ecuador	USMCC
622	Egypt	SAR Centre	(91) 21095 RCCC RUN	(202) 24184531 24184537	HECCYCYX mmc@saregypt.net jrcc136@afmic.com	(202) 24184537 24184531	SAR Centre Almaza Air Base Heliopolis, Cairo, Egypt	ALMCC
359	El Salvador	COCESNA	-	(504) 2342488	jroyuela@ cocesna.hn	(504) 2342507	Director ACNA COCESNA P.O.Box 660, Tegucigalpa, Honduras	USMCC
631	Equatorial Guinea	RSC Bata	-	-	FGBTYCYX	-	-	SPMCC Brazzaville SRR
625	Eritrea	RCC Asmara/ ACC Asmara	-	(291.1) 181520	HHAAYAYX	(291.1) 181424 189833	Director General Civil Aviation Authority Eghrimekel Avenue Street No.759 P.O.Box 252, Asmara, Eritrea	ITMCC
276	Estonia	JRCC Tallinn	(537) 173341 PIIR EE	(372.6) 922501	ncc_estonia@ pohja.pv.ee	(372.6) 922222	Estonian Board of Border Guard Coast Guard Department Susta 15, 11712 Tallinn, Estonia	NMCC
624	Ethiopia	Addis Ababa RCC	-	(251.11) 6650281	HAAAZQZX Caa.airnav@ ethionet.et	(251.11) 6650217	-	ITMCC

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740	Falkland Islands	FIRCC	2427 CBFFI FK	(500) 32164	-	(500) 74210	Commander British Forces Theatre Operations Centre HQ BFFI, BFPO 655, Falkland Islands	ARMCC
231	Faroe Islands	JRCC Denmark	-	(45) 89433230	EKMCYCYX * jrcc@sok.dk	(45) 89433206	Flag Officer Denmark Soedalsparken 20, Post Box 1483 DK - 8220, Brabrand, Denmark	NMCC * EKZZYCYX to be used for alert messages
520	Fiji	RCC Nadi	7015251	(679) 6790325 (20:00-04:30Z Mon-Fri) 6790190 (After Hours/ Prefix with Pass to RCC Nadi) 6724600 (Nadi ACC)	NFFNYCYX	(679) 6722500 Ext 4515	Civil Aviation Authority of Fiji Private Mail Bag (NAP0354) Nadi Airport Fiji Islands	AUMCC Fiji SRR
230	Finland	MRCC Turku	-	(358.2) 2500950	mrcc@raja.fi	(358) 718727010	West Finland Coast Guard MRCC Turku P.O.Box 16 20101 Turku, Finland	NMCC
226 227 228	France	FMCC	-	(33) 561274878	LFIAZSZX fmcc@cnes.fr	(33) 561254382	CNES - Centre Spatial de Toulouse Cospas-Sarsat FMCC – bpi 903 18 avenue Edouard Belin 31401 Toulouse Cedex 9 France	FMCC
		MRCC Gris Nez (back-up)	(042) 130680	(33) 321877855	LFINZPZX cross-gris-nez@ equipement.gouv.fr	(33) 321872187	MRCC Gris Nez 62179 WISSANT France	FMCC
546	French Polynesia	RCC Tahiti	-	(33) 689861049	NTAAYCYX	(689) 820901	-	FMCC

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626	Gabon	RSC Libreville	-	-	FOOLYCYX	(241) 732475	Centre Secondaire de Recherche et de Sauvetage BP 10070 Libreville Gabon	SPMCC Brazzaville SRR
629	Gambia	RSC Banjul	-	(220.4) 472190 (Ops Direction) 472896 (General Direction)	GBYDYCYX dggcaa@qanet.gm	(220) 9911404 4472831	-	SPMCC Dakar SRR
213	Georgia	MRCC Georgia	-	(995.222) 73905	UGGGYCYX mrccgeorgia@ iberiapac.ge	(995.222) 73913	MRCC Georgia 4 Shavsheti Street Batumi 384517 Georgia	CMC
211 218	Germany	RCC Münster	-	(49.251) 135759	ETRAYCYX Ltkdosar@ bundeswehr.org	(49.251) 135757	SAR Leitstelle Münster Manfred-von-Richthofen 8 D-48145 Münster Germany	FMCC * Telex sent Attn. SAR
627	Ghana	NADMO (National Management Organization) (08:00-17:00)	-	(233.21) 772926	nadmo@ africaonline.com.gh	(233.21) 781941 780221	NADMO(National Management Organization) P.O. Box CT 3994 Cantonments, Accra Ghana	SPMCC Accra SRR
236	Gibraltar	FMCC	-	(33) 561274878	LFIAZSZX fmcc@cnes.fr	(33) 561254382	Cospas-Sarsat - FMCC CNES - Centre Spatial de Toulouse BPI 903 – 18 avenue Edouard Belin 31401 Toulouse Cedex 9 France	FMCC

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237 239 240 241	Greece	JRCC Piraeus	(601) 212239 YEN GR 212273 YEN GR 213594 YEN GR 211588 RCC GR 211254 RCC GR	(30.210) 4224417 4132398 4115798 4191561 4117801 4220466	LGGGYCYX jrccpgr@yen.gr	(30.210) 4112500 4220772 4191126 4191325 4191369	JRCC Piraeus Hellenic Ministry of Mercantile Marine, Aegean & Island Policy Akti Vassiliadi St., Gate E2 Piraeus 18510, Greece	GRMCC
331	Greenland	JRCC Denmark	-	(45) 89433230	EKMCYCYX * jrcc@sok.dk	(45) 89433206	Flag Officer Denmark Soedalsparken 20, Post Box 1483 DK - 8220, Brabrand, Denmark	NMCC * EKZZYCYX to be used for alert messages
330	Grenada	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan, US Coast Guard Base, Box S 2029, San Juan Puerto Rico 00903-2029	USMCC
329	Guadeloupe	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@developpement-durable.gouv.fr mrcc.fortdefrance@wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC
332	Guatemala	COCESNA	-	(504) 2342488	jroyuela@cocesna.hn	(504) 2342507	Director ACNA, COCESNA P.O.Box 660, Tegucigalpa, Honduras	USMCC
745	Guiana (French Dept. of)	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@developpement-durable.gouv.fr mrcc.fortdefrance@wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC
632	Guinea	RCC Conakry	-	-	GUCYYCYX	-	-	SPMCC Roberts SRR
630	Guinea-Bissau	RSC Bissau	-	-	GGOVYCYX	-	-	SPMCC Dakar SRR

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750	Guyana	Civil Aviation Department	-	(592.2) 612279	-	(592.2) 613011 612573 612245	Director of Civil Aviation Civil Aviation Department Wight's Lane, Kingston Georgetown, Guyana	USMCC
336	Haiti	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District, 909 South East, First St. Miami, FL 33131-3050, USA	USMCC
334	Honduras	COCESNA	-	(504) 2342488	jroyuela@ cocesna.hn	(504) 2342507	Director ACNA COCESNA, P.O.Box 660 Tegucigalpa Honduras	USMCC
477	Hong Kong, China	HKMCC	-	(852) 25417714	VHHHZSZX hkmrcc@mardep. gov.hk	(852) 22337999	Marine Department Search and Rescue Section G.P.O.Box 4155 Hong Kong, China	HKMCC
243	Hungary	Budapest Air Traffic Control Centre (ATCC)	-	(361) 2969152	LHBPYCYX	(361) 2969122 2916252	-	CMC
251	Iceland	Icelandic Coast Guard MRCC	-	(354) 5452001	BIRKICGT sar@lhg.is	(354) 5452100	Icelandic Coast Guard - MRCC Skógarhlíð 14 105 Reykjavik, Iceland	NMCC
419	India	INMCC	-	(91.80) 28371857	VOBGYCYS inmcc@istrac.org	(91.80) 28094546 28371857	ISTRAC/ISRO Department of Space Plot No.12, Peenya Industrial Estate Bangalore-560058 India	INMCC
525	Indonesia	IDMCC	-	(62.21) 5501513	WIIIYCYL indonesia_mcc@ yahoo.com	(62.21) 5501449	National SAR Agency (Badan SAR National) JL. Medan Merdeka Timur 5 Jakarta 10110 Indonesia	IDMCC

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422	Iran	RCC Tehran	-	(98.21) 44544117 44544168	OIIIZRZX IRAN-SAR@ airport.ir IRAN-SAR@cao.ir	(98.21) 44544107 44544116 44544060	Civil Aviation Organization SAR Coordination Centre Mehrabad Airport, Tehran Iran	TRMCC
425	Iraq	CENTAF-AUAB CAOC JSRC	T.B.D.	(974) 4327382	T.B.D.	(974) 4503452 4364193	T.B.D.	TRMCC
250	Ireland	Irish Coastguard	-	(353.1) 6620795 6785951	EIDWIMES mrccdublin@ irishcoastguard.ie	(353.1) 6620922 6620923	Irish Coastguard Leeson Lane Dublin 2 Ireland	UKMCC
428	Israel	Tel Aviv Bengurion Airport	(606) 31127	(972.3) 9710595 9721819	LLBGYDYX LLTAZRZX LLADYAYX	-	-	ITMCC
247	Italy	ITMRCC	614156 611172 614103	(39.06) 5922737 59084793	cgcp3rep4@ infrastrutture- transporti.it	(39.06) 5923569 5924145 59084697 59084409	Italian Maritime Rescue Coordination Centre, Headquarters of Italian Coast Guard Via dell' Arte 16 – 00144 Rome, Italy	ITMCC
339	Jamaica	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District, 909 South East, First St. Miami, FL 33131-3050 USA	USMCC
431 432	Japan	JAMCC	-	(81.3) 35916107	RJTTYKYY jamcc@kaiho.mlit. go.jp	(81.3) 35916106	Japan Coast Guard (JCG), Operation Centre – JAMCC, 2-1-3 Kasumiga- Seki, Chiyodaku, Tokyo 100-8989 Japan	JAMCC
438	Jordan	RCC ATC Amman	-	(962.6) 4451667	OJACZQZX	(962.6) 79957329 776260505	RCC, Civil Aviation Authority Amman Airport Hashemite Kingdom of Jordan	SAMCC

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436	Kazakhstan	-	-	-	-	-	-	CMC
634	Kenya	Nairobi RCC	(987) 25239	(254.2) 827002	HKNAZQZX HKNCYAYX	(254.2) 827100 Ext 46150	Nairobi RCC P.O.Box 00501, Nairobi, Kenya	ITMCC
635	Kerguelen Islands	MRCC La Reunion	(961) 916140	(262) 711595	reunion@mrccfr.eu crossru@wanadoo.fr	(262) 434343 711468	Cross La Reunion Rond Point de la Glacière - BP 80061 - 97822, Le Port Cedex Reunion	FMCC
529	Kiribati	Marine Guard	-	(686) 26468	dom@mid.gov.ki	(686) 26512 26468 (Director of Marine)	-	AUMCC Nadi SRR
440 441	Korea (Rep.of)	KOMCC	(801) 45502 KOMCC	(82.32) 8352895 8352952	komcc2@ kornet.net komcc1@ kornet.net	(82.32) 8352594 8352252 8352694	Search and Rescue Division Guard and Rescue Bureau Korea Coast Guard / KOMCC 3-8, SongDo-Dong, YeonSu-Gu Incheon City, Republic of Korea	KOMCC
447	Kuwait	RCC ATC Kuwait	-	(965) 4310981	OKBKZQZX	(965) 9571755 4711054	Rescue Co-ordination Centre Directorate General of Civil Aviation, Kuwait International Airport, P.O.Box 17, Kuwait	SAMCC
451	Kyrgyz Republic	Avalon LLC	-	(996.312) 514772	UAFMZDZW avalon_54@mail.ru spoc@avalon.kg	(996.312) 514772 (Bishkek) (971.6) 5576016 (UAE, Branch)	Avalon LLC 156 Matrosova Street Bishkek, Kyrgyz Republic	CMC
531	Laos	-	-	(856) 21512216	VLVTZRZX	-	-	VNMCC
275	Latvia	MRCC Riga	-	(371) 67320100	sar@mrcc.lv	(371) 67323103 67082070	MRCC Riga Meldru Iela 5a Riga, LV-1015, Latvia	NMCC

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450	Lebanon	RCC Beirut	-	(961.1) 629023 628186	OLBIZQZX	(961.1) 629026 628189	-	SAMCC
644	Lesotho	MRCC Cape Town	(95) 521037	(27.21) 9383309	mrcc.ct@ samsa.org.za	(27.21) 9383300	MRCC Cape Town, P.O.Box 532 Parow 7499, South Africa	ASMCC
636 637	Liberia	RCC Roberts	-	(224.63) 404987 431004	GLRBZQZX robertsfir@yahoo. com	(224.63) 404360 404391	RCC, P.O.Box 30, Roberts International Airport, Liberia	SPMCC Roberts SRR
642	Libya	-	-	-	*HLLTYCYX*	*(218.21) 30734*	-	ALMCC
252	Liechtenstein	RCC Zurich	-	(41.44) 6543587	LSARYCYX ops@rega.ch	(41.44) 6543538	RCC Zurich REGA, Box 14 14 CH-8058, Zurich-Airport, Switzerland	FMCC
277	Lithuania	ARCC Vilnius	-	(370.52) 194589	EYVCYCYX	(370.52) 194590	ST "Oro Navigacija", ARCC Vilnius Rodunios Kelias-2, LT-02188 Lithuania	NMCC
253	Luxembourg	RSC Luxembourg	-	-	ELLXZPZX	(352) 432078	-	FMCC/Inside Belgium SRR
453	Macao, China	Macao Marine Department	88424	(853) 511986	-	(853) 559922	-	HKMCC
647	Madagascar	RCC Antananarivo	(983) 22286 ASEMAD MG	(261.20) 2245909	FMMIYCYX acm@acm.mg	(261.20) 2244410 2245909	Centre de Coordination Recherches et Sauvetage, P.O.Box 46, Antananarivo Ivato 105, Madagascar	FMCC
255	Madeira	MRCC Lisboa	(0404) 60747 MRCCP	(351.21) 4401954 4423423	mrcc.lisboa@ marinha.pt	(351.21) 4416581 4401919	MRCC Lisboa, Redute Gomes Freire Estrada da Mendosa 2780-070 OEIRAS Portugal	FMCC
655	Malawi	Lilonwe RCC	-	-	FWKIYCYX FWHQYCYX	(265.1) 700266 701013	K/A, P.O.Box 44, Lumbadzi Malawi	ASMCC

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533	Malaysia	Kuala Lumpur RCC	-	(603) 78466839 78464376 78473592	WMFCYCYX	(603) 78465859 78465860 78465233	-	SIMCC
455	Maldives	Maldives Airports Autority	(896) 66034 CIVAV	(960) 313258	VRMMYCYX atcc@airport. com.mv	(960) 322071 313258	Male Rescue Co-ordination Sub-Centre, Maldives Airports Authority, Republic of Maldives	INMCC
649	Mali	RSC Bamako	-	-	GABSZPZX	(223) 22658	CCRS, Etat Major des Forces Armées, BP 10, CEM Bamako Mali	SPMCC Dakar SRR
215 248 249 256	Malta	Malta RCC	(406) 1489 ARMFOR	(356) 809860 241001 (office hours only)	LMMLYCYX LMMLYCYC	(356) 809279 824212 (after office hours) 824214 (after office hours)	Armed Forces of Malta (AFM) Operations Centre, Malta	ITMCC
538	Marshall Islands	Honolulu RCC	230392401(808) CG14UD	- 5412123	(808) Fourteenth U.S. Coast Guard	5412500	USMCC District, PGKK Federal Building 300 Ala Moana Boulevard Honolulu, HI 96850-4982, USA	
347	Martinique	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@ developpement- durable.gouv.fr mrcc.fortdefrance@ wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC
654	Mauritania	Civil Aviation Nouakchott (ASECNA)	-	(222) 5293210	GQNNZPZX	(222) 5253850 5253518	-	SPMCC Dakar SRR
645	Mauritius	RCC Mauritius	9664880 IW	(230) 2122757 2122770	FIMPYCYX	(230) 2122747 2122770	MRCC Naurutius Port Williams Lous Mauritius	FMCC

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
660	Mayotte	MRCC La Reunion	(961) 916140	(262) 711595	reunion@mrccfr.eu crossru@wanadoo.fr	(262) 434343 711468	Cross La Reunion Rond Point de la Glacière - BP 80061 - 97822, Le Port Cedex	FMCC
345	Mexico	Mexican Navy	(383) 1764427 XBRAME 1764486 XBRAME 1771266	(52.5) 6770453	-	(52.5) 6246599	Mexican Navy, Seccion de Operaciones, Eje 2 Oriente Tramo H. Escuela Naval #861 Colonia los Cipresces, Delegacion Coyoacan, Codigo Postal 04 830 Mexico, D.F., Mexico	USMCC
510	Micronesia	Honolulu RCC	230392401 CG14UD	(808) 5412123	-	(808) 5412500	Fourteenth U.S. Coast Guard District, PGKK Federal Building 300 Ala Moana Boulevard Honolulu, HI 96850-4982, USA	USMCC
214	Moldova	Civil Aviation Administration of the Republic of Moldova Airport	-	(373.22) 529118	zidu@caa.md	(373.22) 525044	Senior Deputy Director General Civil Aviation Administration of the Republic of Moldova Airport MD2026 Chisinau, Republic of Moldova	CMC
254	Monaco	MRCC Gris Nez	130680	(33) 321877855	LFINZPZX cross-griz-nez@ equipement.gouv.fr	(33) 321872187	MRCC Gris Nez 62179 WISSANT France	FMCC Inside France SRR
457	Mongolia	ARCC Mongolia	-	(976.1) 1981154 1379980	ZMUBYCYX ub-rcc@mcaa.gov. mn	(976.1) 1981622	ATS Division, Buyant-Ukhaa International Airport Ulaan Bataar-34, Mongolia	CMC
262	Montenegro	-	-	-	-	-	-	ITMCC
348	Montserrat	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@ developpement- durable.gouv.fr mrcc.fortdefrance@ wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC

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242	Morocco	RCC Casablanca	-	(212.2) 2538691	GMMMYCYX	(212.2) 2539220	Centre de Coordination de Recherche et de Sauvetage, BP 21, Noasseur, Maroc	FMCC
		ACC Casablanca	-	-	GMMMZRZX GMMNYHSA GMMMZRZX	(212.2) 2539012	-	
650	Mozambique	Maputo MRCC	-	(258.21) 494396	inamar@tzcabo.co.mz	(258.21) 494396	P.O. Box 4317, Marques de Pombal Maputo, Mozambique	ASMCC
506	Myanmar	-	08321228	-	VYYYYAYX	-	-	SIMCC
659	Namibia	NAMSAR	-	(264.64) 2082325	vladimir@namport.com.na	(264.64) 2082263/4/5	NAMSAR, P.O. Box 361 Walvis Bay, Namibia	ASMCC
544	Nauru	RCC Nauru	-	(674) 3177	ANAUYFYX rfshief@yahoo.com	(674) 3500	Airport Rescue Fire Service Central Pacific Republic of Nauru	AUMCC Fiji SRR
459	Nepal	Department of Civil Aviation	(891) 2553 DCA NP	(977) 1222416	VNKTYAYX	(977) 1227287	Director General of Department of Civil Aviation Babar Mahal, Kothamandu, Nepal	INMCC
244 245 246	Netherlands (The)	The Netherlands Coast Guard JRCC Den Helder	(044) 71088 KUSTW NL	(31.223) 658358	ccc@kustwacht.nl	(31.223) 542300	The Netherlands Coast Guard P.O.Box 10000, 1780 CA Den Helder, The Netherlands	FMCC
306	Netherlands Antilles	JRCC Curaçao	(93) 1506	(5999) 4637950	rcc.curacao@gmail.com rcc.curacao@rnnavy.mindef.nl	(5999) 4637700	Coastguard Netherlands Antilles & Aruba Nightingaleweg, Curaçao Netherlands Antilles	USMCC
540	New Caledonia	RSC Tontouta	-	(687) 239658	NWWWYCYX	(687) 352435	RSC Tontouta, Civil Aviation Tontouta Airport, ~~P.O.Box 37~~ P.O.Box 37, Tontouta New Caledonia	AUMCC New Caledonia SRR
		MRCC Noumea	-	(687) 292303	mrcc.nc@lagoon.nc	(687) 292332 264772	MRCC Noumea BP Q1 98851 Nouvelle Caledonia	(FMCC for NOCR)

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512	New Zealand	RCC New Zealand	-	(64.4) 9148388	NZWNYCYX rccnz@maritimenz.govt.nz	(64.4) 9148380	RCCNZ P.O.Box 30050 Lower Hutt, New Zealand	AUMCC New Zealand SRR
350	Nicaragua	COCESNA	-	(504) 2342488	jroyuela@cocesna.hn	(504) 2342507	Director ACNA COCESNA P.O.Box 660, Tegucigalpa, Honduras	USMCC
656	Niger	RCC Niamey	-	-	DRRVYCYX	(227) 20722511	Centre de Coordination de Recherche et de Sauvetage BP 230, Niamey, Niger	ALMCC
		ACC Niamey	-	-	*DRRRZRZX*	-	-	
657	Nigeria	NIMCC	-	(234.9) 4131749	DNAAZXFX mcc@nema.gov.ng abdsalaam76@yahoo.co.uk	(234.9) 4134341	NEMA (The Presidency) Plot 8, Ademola Adetokunbo Crescent, Maitama, P.M.B. 357 Garki, Abuja, Nigeria	NIMCC
542	Niue	RCC New Zealand	-	(64.4) 6834010	NZWNYCYX rccnz@maritimenz.govt.nz	(64.4) 6834000	Telecom Niue P.O.Box 37 Alofi, Niue	AUMCC New Zealand SRR
536	Northern Mariana Islands	Honolulu RCC	230392401(808) CG14UD	- 5412123	(808) Fourteenth U.S. Coast Guard District	5412500	PGKK Federal Building, 300 Ala Moana Boulevard, Honolulu, HI 96850-4982, USA	USMCC
257 258 259	Norway	NMCC	-	(47) 75524200	ENBOYCYS mailto@jrcc-bodoe.no	(47) 75559000	HOVEDREDNINGS-SENTRALEN, NORD-NORGE Box 1016, 8001 Bodoe, Norway	NMCC X.25
		JRCC Stavanger	-	(47) 51652334	ENZVYCYX	(47) 51646000	JRCC Southern Norway Flyplassveien 90, 4050 Sola, Norway	NMCC X.25
461	Oman	RCC Muscat Air Force	-	(968) 24334776	OOMSYAYX	(968) 24334211 84519215	RCC, HQ RAFO P.O.Box 730 Central Post Office Muscat International Airport Sultanat of Oman	SAMCC

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463	Pakistan	PAMCC	-	(92.21) 34690795 34690797	OPKCZSZX sckhi@suparco.gov.pk pamcc@suparco.gov.pk	(92.21) 34690793 34690840	SUPARCO P.O.Box 8402, Sector 28 Gulzar-e-Hijri, Off University Road Karachi-75270, Pakistan	PAMCC
511	Palau	Honolulu RCC	230392401 CG14UD	(808) 5412123	-	(808) 5412500	Fourteenth U.S. Coast Guard District PGKK Federal Building, 300 Ala Moana Boulevard, Honolulu, HI 96850-4982, USA	USMCC
443	Palestine	-	-	-	-	-	-	ITMCC
351 352 353 354 355 356 357 370 371 372	Panama	Air Navigation Department	-	(507) 5019849	MPLBYCYX	(507) 5019847 (office hours only) 5019807 (24 hours)	Air Navigation Department Search and Rescue Unit P.O.Box 0843-02086 Balboa, Ancon, Panama Rep. of Panama	USMCC
553	Papua New Guinea	RCC Port Moresby	70322137 (ARCC-24Hrs)	(675) 254094 (ARCC-24Hrs)	AYPYYCYX (ARCC-24Hrs)	(675) 256885	Civil Aviation Authority Papua New Guinea P.O.Box 684, Boroko N.C.D. Papua New Guinea	AUMCC
755	Paraguay	Asuncion RCC	-	(595.21) 645600 Ext 2160	SGASSAR sar@dinac.gov.py	(595.21) 645600	RCC ASU, Aeropuerto Internacional Silvio Petirossi, Luque, Paraguay	CHMCC
760	Peru	PEMCC	26042 PE 59655 PE	(51.1) 4291547 4299798	SPIMZSZX pemcc@dicapi.mil.pe	(51.1) 4202020	Direccion General de Capitanias y Guardacostas Calle Constitucion 150 Callao 1, Peru	PEMCC

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548	Philippines	Manila RCC	-	(63.2) 7599503	RPLLYCYX	(63.2) 8323013 8321961 Ext 3030	Air Transportation Office Domestic Airport Pasay City, Philippines	HKMCC
555	Pitcairn Island	Pitcairn Police	-	(00872) 762941161	mop.pitcairn@ gtnet.gov.uk	(00872) 762854699	-	FMCC
261	Poland	SPOC Poland	-	(48.22) 5745539	EPWWZQZX EPWWYGYC	(48.22) 5745542 8460733	Polish Air Navigation Services Agency, 8 Wiezowa Street 02-147 Warsaw, Poland	CMC
263	Portugal	MRCC Lisboa	(0404) 60747 MRCCP	(351.21) 4401954 4423423	mrcc.lisboa@ marinha.pt	(351.21) 4416581 4401919	MRCC Lisboa, Redute Gomes Freire Estrada da Mendosa 2780-070 OEIRAS Portugal	FMCC
358	Puerto Rico	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan US Coast Guard Base Box S 2029, San Juan Puerto Rico 00903-2029	USMCC
466	Qatar	RCC ATC	-	(974) 4652826	OTBDZTZX	(974) 4651001	-	SAMCC
660	Reunion	MRCC La Reunion	(961) 916140	(262) 711595	reunion@mrccfr.eu crossru@wanadoo.fr	(262) 434343 711468	Cross La Reunion Rond Point de la Glacière - BP 80061 - 97822, Le Port Cedex	FMCC
264	Romania	CAA Bucharest	-	(40.21) 2083261	LRBBZQZQ	(40.21) 2332678 2083150	10 Ion Ionescu de la Brad Blvd Sector 1 - 013813, PO Box 18-19 Bucharest, Romania	CMC
273	Russia	CMC	(871) 113934 MKVC RU	(7.495) 6269375 6261460	UUUUYCYX cmc@morflot.ru cmc@marsat.ru	(7.495) 6261215 4233200 6261516	1 Building, 1 Rozhdestvenka St. Moscow 109012 Russia	CMC

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661	Rwanda	Kigali RCC	-	-	HRYRYCYX HRYRYTYX	-	-	ASMCC
665	Saint Helena	-	-	-	-	-	-	ASMCC
341	Saint Kitts and Nevis	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@developpement-durable.gouv.fr mrcc.fortdefrance@wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC
343	Saint Lucia	MRCC Fort de France	(298) 912008 COSMA-A	(596) 632450 735730	fortdefrance.mrcc@developpement-durable.gouv.fr mrcc.fortdefrance@wanadoo.fr	(596) 719292 632450	MRCC Fort de France BP 621, 97261 Fort de France Cedex Martinique FWI	FMCC
607	Saint Paul and Amsterdam	RCC Australia	(71) 62349 MRCCAUS AA62349	(61.2) 62306868	YSARYCYX rccaus@amsa.gov.au	(61.2) 62306820	AusSAR, Australian Maritime Safety Authority GPO Box 2181, Canberra City ACT 2601, Australia	AUMCC Australia SRR (FMCC for NOCR)
361	Saint Pierre and Miquelon	JRCC Halifax	(584) 331699943	(1.902) 4272114	CYHZYCYX JRCCHalifax@Sarnet.DND.ca	(1.902) 4272100	Officer in Charge, Joint Rescue Coordination Centre, P.O.Box 99000 Stn Forces, Halifax, Nova Scotia B3K 5X5, Canada	CMCC Inside Canada SRR (FMCC for NOCR)
375 376 377	Saint Vincent and the Grenadines	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan, US Coast Guard Base Box S 2029, San Juan Puerto Rico 00903-2029	USMCC
561	Samoa	Samoa National Surveillance Centre	-	(685) 20848	NSFAZTZX (Faleolo ATC Control Tower)	(685) 22222 24957	Police Headquarters P.O.Box 53 Apia, Samoa	AUMCC New Zealand SRR
268	San Marino	ITMRCC	614156 611172 614103	(39.06) 5922737 59084793	cgcp3rep4@infrastrutture-transporti.it	(39.06) 5923569 5924145 59084697	Italian Maritime Rescue Coordination Centre, Headquarters of Italian Coast Guard, Via dell' Arte 16 - 00144, Rome, Italy	ITMCC

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668	Sao Tome and Principe	-	-	-	-	-	-	SPMCC Brazzaville SRR
403	Saudi Arabia	SAMCC	-	(966.2) 6150171	OEJNJSAR sar-samcc@ gaca.gov.sa	(966.2) 6150170 6853812	GACA-SED P.O. Box 929, Jeddah 21421 Saudi Arabia	SAMCC
663	Senegal	RCC Dakar	-	(221.8) 603326	GOOVYCYX ccs_dakar@yahoo.fr	(221.8) 604787	Centre de Coordination de Recherche et de Sauvetage, État Major Général BP 4042, Dakar, Senegal	SPMCC Dakar SRR
279	Serbia	RCC Belgrade	-	(381.11) 2286198 2286432	LYBAZQZX LYBNYCYX sar-rcc@cad.gov.rs	(381.11) 2286415	Civil Aviation Directorate of Serbia Airport Nikola Tesla Belgrade Belgrade 59, 11080 Belgrade, Serbia	ITMCC
664	Seychelles	Seychelles RCC	(965) 2239 DCA SZ	(248) 373222 384032 384009	FSIAYCYX FSSSZQZX dcaops@seychelles. net	(248) 373001 384053 384052 722205 722203	Directorate of Civil Aviation Operations and Aviation Safety P.O.Box 181, Victoria Seychelles	INMCC
667	Sierra Leone	RSC Freetown	-	(233.22) 228488	GFLLYAYX	(233.22) 222106 025307	RSC, Department of Civil Aviation Ministry of Transport, Ministerial Bld. George Street, Freetown, Sierra Leone	SPMCC Roberts SRR
563 564 565	Singapore	SIMCC	-	(65) 65422548	WSSSZSZX CAAS_RCC@ caas.gov.sg	(65) 65425024 65412668	MCC Singapore, Singapore Air Traffic Control Centre (SATCC) Biggin Hill Road, Singapore 509950 Republic of Singapore	SIMCC
267	Slovakia	Bratislava RCC	093217	-	LZBBYCYX	(42.7) 292409	M.R. Stefanik Aerodrom, SAR 823 07 Bratislava 21, Slovakia	CMC
278	Slovenia	MRCC Koper	-	(386.5) 6632102 6632110	LJLAYLYX ursp.box@gov.si	(386.5) 6632100 6632108	Ukmarjev trg 2 Sl-6000 Koper Slovenia	ITMCC

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557	Solomon Islands	MRCC Honiara	-	(677) 23798	AGGHYCYX	(677) 21609 96099	MRCC Honiara P.O.Box G32 Honiara, Solomon Islands	AUMCC Solomon Islands SRR
666	Somalia	-	-	(254.2) 522340	HCMMYAYX icaosom@ africaonline.co.ke	(254.2) 622785/6/9	c/o ICAOREP P.O.Box 46294 Nairobi, Kenya	ITMCC
601	South Africa	ASMCC	(95) 521850 ASMCC SA	(27.21) 5513760	FACTYCYX maritimeradio@ ixmail.co.za (no attachments accepted)	(27.21) 5529752	ASMCC, Telkom SA Maritime Services, Private Bag XI Milnerton 7435, South Africa	ASMCC
224 225	Spain	SPMCC	-	(34.928) 727107	GCMPZSZX spmcc@inta.es	(34.928) 727104 727105 727106	Cospas-Sarsat / SPMCC INTA, Centro Espacial de Canarias Aptdo. 29, 35100 Maspalomas Las Palmas, Spain	SPMCC X.25
417	Sri Lanka	Colombo RCC	-	(94.1) 635106 431448	VCCCYCYX	(94.1) 635105/6 625555 611572	RCC Colombo Airport Ratmalana, Sri Lanka	INMCC
662	Sudan	-	22650 DGCA SD	(249.1) 1773632 1779125	HSSSYCYX HSSSZQZX	(249.1) 1779125	-	ITMCC
765	Suriname	Department of Civil Aviation	(397) 148 CIVPBM SN	-	SMPBYAYX	(597) 97914 98898	Department of Civil Aviation P.O.Box 1981, Zorg en Hoop Paramaribo-South, Suriname	FMCC
669	Swaziland	RSC Department of Civil Aviation	-	(268) 84084 84356	FDMSZTYX	(268) 5184455	Matsapha International Airport P.O. Box 89, Kwauseni M201, RSC Swaziland	ASMCC
265 266	Sweden	ARCC Sweden	-	(4631) 648110	ESORYCYX arcc@amrcc. sjofartsverket.se	(46.31) 648080	Flygräddningstjänsten ARCC Box 5159 42605 Västra Frölunda, Sweden	NMCC

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269	Switzerland	RCC Zurich	-	(41.44) 6543587	LSARYCYX ops@rega.ch	(41.44) 6543538	RCC Zurich REGA, Box 1414 CH-8058, Zurich-Airport, Switzerland	FMCC
468	Syria	RCC ATC	-	(963.11) 3315547	OSDIZQZX	(963.11) 5400540	General Civil Aviation Authority	SAMCC
-	Tajikistan	-	-	-	-	-	-	CMC
674 677	Tanzania	Dar es Salaam RCC	-	(255.22) 2110264 2124914	HTDCYCYX tcaadia@tcaa.go.tz	(255.22) 2110223/4 2110254	Tanzanian Civil Aviation Authority P.O.Box 15001, Dar es Salaam Tanzania	INMCC
567	Thailand	THMCC	-	(66.2) 2873186 2855452	VTBAYCYX bkkrcc@aviation.go.th	(66) 2860506 2860594	Flight Standards Bureau, Department of Civil Aviation, Tung Mahemek Bangkok 10120, Thailand	THMCC
274	The Former Yugoslav Republic of Macedonia	-	-	(389) 91112026	LWSKYCYX LWSKYEYX LWSKYAYX	(389) 91711209	-	ITMCC
671	Togo	RSC Lome	-	-	DXXXYCYX	-	-	SPMCC Accra SRR
570	Tonga	Tonga Defence Services (TDS)	-	(676) 23934 (TDS HQ) 23150 (MSA)	NFTFYSYX	(676) 23099, 24696 (TDS HQ-24Hrs) 23119 (MSA)	Tonga Defence Services P.O.Box 72 Nuku'Alofa, Tonga	AUMCC New Zealand SRR
362	Trinidad and Tobago	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan, U.S. Coast Guard Base, Box S 2029, San Juan Puerto Rico 00903-2029	USMCC
672	Tunisia	Tunis - ACC	-	(216.1) 783126	DTTCZRZS	(216.1) 783126	Centre de Controle Regional, Office de l'Aviation Civile et des Aeroports B.P. 137-147, 1080 Tunis Cedex – Tunisia	FMCC
271	Turkey	TRMCC	-	(90.312) 2312902	LTACZSZX	(90.312) 2313374	TRMCC, Denizcilik Mustesarligi G.M.K. Bul No: 128/A, Maltepe Ankara, Turkey	TRMCC X.25

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434	Turkmenistan	-	-	-	-	-	-	CMC
364	Turks and Caicos Islands	Miami RCC	62076733	(305) 5365643	-	(305) 5365611	Seventh U.S. Coast Guard District, 909 South East, First St. Miami, FL 33131-3050, USA	USMCC
572	Tuvalu	ARCC Funafuti	-	(688) 20159 20148	NGFUYFYX	(688) 20726 20157	Tuvalu Police HQ- Funafuri, Tuvalu	AUMCC Fiji SRR
675	Uganda	Entebbe RCC	-	(255.41) 320964	HUENYFYX	(256.41) 320486	J. T. Kagoro P.O.Box 5536, Kampala, Uganda	ASMCC
272	Ukraine	Odessa MRCC	-	(380.482) 634243	mrcc@morcom org.ua	(380.482) 7776610 637619	State Department of Maritime and River Transport of Ukraine MRCC, 270058, 29 Shevchenko Avenue, Odessa, Ukraine	CMC
470	United Arab Emirates	AEMCC	-	(971.2) 4496844	OMADYCYX aemcc@uae-jrcc.ae	(971.2) 4056144 4496866	SAR Coordination Center P.O.Box 906, GHQ Armed Forces UAE	SAMCC AEMCC after IOC of AEMCC
232 233 234 235	United Kingdom of Great Britain and Northern Ireland	UKMCC	-	(44.1309) 678309 690717	EGQPZSZX ukmcc@atlas.co.uk	(44.1343) 836015 (44.1309) 690469	UKMCC UKARCC Kinloss, RAF Kinloss Forres, Moray, Scotland IV36 3UH, United Kingdom	UKMCC X.25
		Alternate UKMCC	-	(44.1309) 690923 678309	EGQPZSZX ukmcc@atlas.co.uk	(44.1309) 690469 678304	UKMCC UKARCC Kinloss, RAF Kinloss Forres, Moray, Scotland IV36 3UH, United Kingdom	
338 366 367 368 369	United States of America	USMCC	-	(1.301) 8174568	KZDCZSZA usmcc@noaa.gov	(1.301) 8174576	USMCC, E/SP3, NSOF NOAA, 4231 Suitland Road Suitland, MD 20746-4304, USA	USMCC
		USMCC Back-up Facility	-	(1.301) 7946536	KCDCZSZC	(1.301) 7946535	(same as above)	(same as above)

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379	United States Virgin Islands	San Juan RSC	-	(787) 7296706	-	(787) 7296770	Sector San Juan U.S. Coast Guard Base Box S 2029, San Juan Puerto Rico 00903-2029	USMCC
770	Uruguay	Carrasco RCC	-	(598.2) 6040112	SUMUYCYX ccrfau@adinet com.uy	(598.2) 6040297	RCC Carrasco, Ruta 101, Km 19 Post Code 9101 Uruguay	CHMCC
437	Uzbekistan	-	-	(998) 711404673	occ@airways.uz	(998) 711404657 711404674 711404672	-	CMC
576	Vanuatu	Vanuatu Maritime Authoruty	-	(678) 22949	NVVVYMYX	(678) 23128 23768	P.O.Box 320 Port Vila Vanuatu	AUMCC Fuji SRR/ MRCC Noumea
208	Vatican City	ITMRCC	614156 611172 614103	(39.06) 5922737 59084793	cgcp3rep4@ infrastrutture-transporti.it	(39.06) 5923569 5924145 59084697 59084409	Italian Maritime Rescue Coordination Centre, Headquarters of Italian Coast Guard, Via dell' Arte 16 - 00144 Rome, Italy	ITMCC
775	Venezuela	VZMCC -		(58.212) 3551920	SVMIZSZX sar@inac.gob.ve	(58.212) 3034511	VZMCC, Apartado Postal 68676 Oficina de Ipostel Altamira Avenida Francisco de Miranda Código Postal 1060, Caracas Venezuela	USMCC before IOC of VZMCC VZMCC after IOC of VZMCC
574	Vietnam	VMRCC	-	(84.4) 7683048	-	(84.4) 7683051 7683050	No.8, Pham Hung Cau Giay Hanoi, Vietnam	VNMCC
578	Wallis and Futuna	RCC Nouméa	-	(687) 352428	NWWWYCYX	(687) 352435	RCC Nouméa, Civil Aviation Tontouta Airport, P.O.Box 37 Tontouta, New Caledonia	AUMCC New Caledonia SRR

COUNTRY or REGION CODE	COUNTRY or REGION NAME	NAME OF C/S SAR POINT OF CONTACT	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	MAILING ADDRESS	ASSOCIATED MCC/REMARKS
473 475	Yemen	RCC Sanaa	-	(967) 1345916	OYSNYCYX	(967) 777214088	RCC, Department of Civil Aviation, Sanaa, Yemen	SAMCC
678	Zambia	Lusaka RCC	-	(260.1) 271469	FLFIZQZX aislusaka@lun.aero	(260.1) 271091	National Airports Corporation Ltd. P.O.Box 30175, Lusaka, Zambia	ASMCC
679	Zimbabwe	Harare RCC	-	(263.4) 575163 585100	FVHAYFYX FVHAZQZX	(263.4) 575187 575183	RCC Civic Aviation Authority of Zimbabwe, P.Bag 6002 Harare Airport, Zimbabwe	ASMCC

Appendix 1 to Annex I / D

List of Primary Air Information Stations (PAIS) and Secondary Air Information Stations (SAIS) in the Antarctic

COUNTRY	PAIS / SAIS	LOCATION	TELEPHONE / TELEX / E-MAIL	REMARKS
Argentina	PAIS Marambio Base	64-14 S 056-43 W	54 810 2220330 54 297 4472583 marambio@satlink.com.ar	
Australia	PAIS Casey	66-17 S 110-32 E	672 (0) 128809 (Comms) 672 (0) 128802 (Leader) 873 885053687 (Inmarsat) casey_comms@casey.aad.gov.au	Voice Voice Voice
	PAIS Davis	68-35 S 077-58 E	672 (0) 106609 (Comms) 672 (0) 106602 (Leader) 873 685053732 (Inmarsat) davis_comms@davis.aad.gov.au	Voice Voice Voice
	PAIS Mawson	67-36 S 062-52 E	672 (0) 117709 (Switchboard) 672 (0) 117702 (Leader) mawson_comms@aad.gov.au	Voice Voice
	PAIS Macquarie Island	54-29 S 158-58 E	672 (0) 139909 (Switchboard) 672 (0) 139902 (Leader) 972 685052737 (Inmarsat) macca_comms@aad.gov.au	Voice Voice Voice
	SAIS MV AURORA AUSTRALIS/VNAA		xxx 154 3204 xxx 154 3222	Use IOR or POR Inmarsat satellites
Brazil	PAIS Ship ARY RONGEL (H-44)			
	SAIS Comandante Ferraz	62-05 S 058-23.5 W	581 155 0213	
Chile	SAIS Lt.Rudolho Marsh Base	62-11.5 S 058-59 W		

Appendix 1 to Annex I / D

**List of Primary Air Information Stations (PAIS)
and Secondary Air Information Stations (SAIS) in the Antarctic** (Cont.)

COUNTRY	PAIS / SAIS	LOCATION	TELEPHONE / TELEX / E-MAIL	REMARKS
Germany	PAIS Neumayer	70-36 S 008-22 W	871 112 0171 871 112 0172	Voice Fax
	SAIS Filshner	77-09 S 050-38 W		
Italy	PAIS Terra Nova Bay	74-42 S 164-07 E	872 115 0175 582 115 0175 TBAY X	Voice Telex
South Africa	PAIS Sanae SAIS Sarie Marais	70-18 S 002-25 W 72-01 S 002-48 W	None None	
USA	PAIS McMurdo Station SAIS South Pole Station SAIS USCGC Polar Star or Polar Sea	77-52 S 167-08 E 90-00 S	872 150 3105 None	

- END OF ANNEX I / D -

ANNEX I / E

INFORMATION ON BEACON TYPE APPROVAL CERTIFICATES

A. LIST OF BEACON MANUFACTURERS

AUSTRALIA

ADI Limited	858 Knights Road, Albury New South Wales, 2640, Australia	Tel: 61-2 60251100 Fax: 61-2 60401990
Kinetic Technologies International Pty. Ltd.	1 Kembla Street, Cheltenham East Victoria, 3192, Australia	Tel: 61-3 95839566, Fax: 61-3 95839805 E-mail: info@kti.com.au
Standard Comuni-cations Pty. Ltd.	6 Frank St. Gladesville, North Ryde New South Wales, 2111, Australia	Tel: 61-2 60251100, Fax: 61-2 60401990 E-mail: info@gme.net.au

BULGARIA

Bitova Electronic Co. (no longer manufactures beacons)	Kvartal Cholakovtzi Veliko Turnovo Bulgaria	Tel: 359-62 20038, Tlx: 66551 Fax: 359-62 44868 E-mail: be-ad@vali.bg

CANADA

AlliedSignal Aerospace Canada	(See Honeywell Aerospace - Canada)	
Cobham Tracking and Locating Ltd.	271 Brownlow Avenue Dartmouth, N.S., Canada B3B 1W6	Tel.: 1-902 4683007, Fax: 1-902 4683009 E-mail: psteward@cobhamtl.com
DRS Data and Imaging Systems	115 Emily Street, Carleton Place Ontario, Canada K7C 4J5	Tel: 1-613 2537266, Fax: 1-613 2533033 E-mail: bheuvel@drs.ca
EMS Technologies (EMS Satcom Ltd.)	1725 Woodward Drive Ottawa, Ontario, Canada K2C 0P9	Tel: 1-613 7276277, Fax: 1-613 7271200 E-mail: halka.r@emstechnologies.ca
Honeywell Aerospace Canada	3333 Unity Drive Mississauga, Ontario, Canada 5L5 3S6	Tel: 1-905 6086000, Fax: 1-905 6086189 E-mail: carl.weisser@honeywell.com
MPR Teltech Ltd.	(See Northern Airborne Technology Ltd. - Canada)	
Northern Airborne Technology Ltd.	14-1925 Kirschener Road, Kelowna British Columbia, Canada V1Y 4N7	Tel: 1-250 7632232, Fax: 1-250 7623374 E-mail: steveb@natech.com
PRO-Find Safety, Inc.	(See Cobham Tracking and Locating Ltd. - Canada)	
Seimac Ltd.	(See Cobham Tracking and Locating Ltd. - Canada)	

CHINESE TAIPEI

Becker Electronics Taiwan Ltd.	No.32, Lane 30, Long Yuan Rd. Long-Tan, Taoyuan 32544 Chinese Taipei	Tel: 886-3 4710992 Fax: 886-3 4716437 E-mail: savic@becker.com.tw

FRANCE

Air Precision	5 Avenue Denis Papin 92350 Le Plessis Robinson France	Tel: 33-1 46012124, Fax: 33-1 46318525 E-mail: aerosales@airprecision.com
CEIS TM	(See ELTA SA - France)	
ELTA SA	14, Place Marcel Dassault BP 48, 31702 Blagnac Cedex France	Tel: 33 534361000, Fax: 33 534361001 E-mail: commercial@elta.fr
Kannad	Zone Industrielle des Cinq-Chemins 56520 Guidel France	Tel: 33 297024949 Fax: 33 297650020 E-mail: contact@kannad.fr

A. LIST OF BEACON MANUFACTURERS (Cont.)

FRANCE (Cont.)

Martec Serpe-Iesm	(See Kannad – France)	
SERPE – IESM	(See Kannad – France)	
Socata	(See Air Precision - France)	

GERMANY

Becker Flugfunkwerk GmbH	Baden Airpark B 108 77836 Rheinmunster, Germany	Tel: 49-722 93050, Fax: 49-722 9305217 E-mail: info@becker-avionics.de
navtec GmbH	Flughafen Berlin-Schoenefeld D-12521 Berlin, Germany	Tel:49-30 60918222, Fax: 49-30 60918223 E-mail: info@navtec.de

JAPAN

Japan Radio Co. Ltd.	Mitaka Plant, 1-1 Shimorenjaku 5-chome, Mitaka-shi, Tokyo 181, Japan	Tel: 81-422 459547, Tlx: 2822351 Fax: 81-422 459957 E-mail: j05946@m1.jrc.co.jp
NEC Radio & Electronics Ltd.	(See TAIYO MUSEN Co. Ltd. - Japan)	
TAIYO MUSEN Co. Ltd.	2-11-18, Higashi-Kojiya Ota-ku, Tokyo 144-0033, Japan	Tel: 81-3 57351628, Fax: 81-3 57351678 E-mail: ichimura@taiyomusen.co.jp

KOREA

Samyang Radio Co. Ltd.	(See Saracom Co.Ltd. - Japan)	
Samyung Electronic Co. Ltd.	1123-17, Dongsam-dong Youngdo-Gu, Busan 606-082, Korea	Tel: 82-51 4134445 (Direct), 4165555 (Rep.) Fax: 82-51 4126616 E-mail: ijchoi@samyungenc.co
Saracom Co. Ltd.	141-37, 3Ka Namhang-Dong Youngdo-Ku, Pusan, Korea	Tel: 82-51 4135000, Tlx: K53700 SUNMAX Fax: 82-51 4135002 E-mail: jnpark@saracom.net

NEW ZEALAND

Sea Air & Land Communication Ltd.	120 St. Asaph St., P.O.Box 22-621 Christchurch, New Zealand	Tel: 64-3 3792298 Fax: 64-3 3651580 E-mail: colinm@salcom.co.nz

NORWAY

Jotron Electronics A.S.	P.O. Box 58 3280 Tjodalyng , Norway	Tel: 47-33 139700, Fax: 47-33 126780 E-mail: Salesmar@jotron.com

RUSSIA

FUSE ISDE	53 Aviamotornaya St. Moscow 111250, Russia	Tel: 7-495 6734243, 6734719 Fax: 7-495 6734719 E-mail: fgupniikp@mtu-net.ru
Kolgrim-Don Ltd.	93 Thirteenth Liniya Rostov-on-Don 344019, Russia	Tel: 7-863 2531045, Fax: 7-863 2531045 E-mail: dess@jco.ru
Yaroslavsky Radio Engineering Works	13 Industrialnaya St. Yaroslavl 150010, Russia	Tel: 7-085 2299281, Tlx: 217229 PTB Fax: 7-085 2463552 E-mail: yakbr@yaroslavl.ru

UKRAINE

Musson-Exim Co. (no longer manufactures beacons)	(see Musson Marine Ltd. - Ukraine)	
Musson Marine Ltd.	29/4A Vakulenchuk Street P.O.Box 20, Sevastopol 99053, Ukraine	Tel: 380-692 537628 Fax: 380-692 557123 E-mail: vsb@mussonmarine.com

A. LIST OF BEACON MANUFACTURERS (Cont.)

UKRAINE (Cont.)

Musson-Morsviaz-Servis	29/20 Vakulenchuk Street Sevastopol 99053, Ukraine	Tel: 380-692 230174, Fax: 380-692 233588 E-mail: morsviaz@stel.sebastopol.ua
State Designer's Bureau of Radiocommunication (no longer manufactures beacons)	29 Vakulenchuk Street Sevastopol 335053, Ukraine	Tel: 380-692 243196 Fax: 380-692 553343
Uranis Ltd.	29 Vakulenchuk Street Sevastopol 99053, Ukraine	Tel: 380-692 470922, 380-692 470923 Fax: 380-692 470922 E-mail: info@uranis.net

UNITED KINGDOM

AMS Ltd.	Lyon Way, Frimley, Camberley Surrey GU16 7EX, UK	Tel: 44-1276 696653 Fax: 44-1276 695485 E-mail: peter.d.taylor@amsjv.com
Caledonian Airborne Systems Ltd.	6 Ninian Road Dyce, Aberdeen Airport AB2 0PD Scotland, UK	Tel: 44-1224 722274 Tlx: 73645 CASABZ G Fax: 44-1224 722896
Fernau Aviation Ltd.	President Way, Airport Executive Park Luton, Bedfordshire LU2 9NY, UK	Tel: 44-1582 748631, Fax: 44-1582 484404 E-mail:jeremy.lenevefoster@fernau.com
GEC - Marconi Radar and Defense Systems	(See AMS Ltd. - UK)	
Lokata Ltd.	Models no longer in production but supported by: Sartech Engineering Ltd. 80 Brighton Road, Lower Kingswood Surrey KT20 6SY, UK	 Tel: 44-1737 832237 Fax: 44-1737 833903 E-mail: pforey@sartech.co.uk
McMurdo, a Division of Signature Industries Ltd.	Silver Point, Airport Service Road Portsmouth, Hampshire PO3 5PB, UK	Tel: 44-2392 623900 Fax: 44-2392 623997 E-mail: sales@mcmurdo.co.uk
Nova Marine Systems Ltd.	(See McMurdo, a Division of Signature Industries Ltd. - UK)	
Signature Industries Ltd.	Tom Cribb Road Thamesmead London SE28 0BH, UK	Tel: 44-20 83164477, 83171717 Fax: 44-20 83166218 E-mail: brian.clayton@sarbe.com
Techtest Limited	Street Court, Kingland, Leominster Herefordshire HR6 9QA, UK	Tel: 44-1568 708744 E-mail: stuart@hrsmith.biz
Thales Underwater Systems Ltd.	Ocean House, Templecombe Somerset BA8 0DH, UK	Tel: 44-1963 372362 E-mail:gareth.jenkins@uk.thalesgroup.com

UNITED STATES OF AMERICA

ACR Electronics, Inc.	5757 Ravenswood Road Ft. Lauderdale Florida 33312, USA	Tel: 1-954 9813333, Tlx: 519645 Fax: 1-954 9835087, 1-508 8982427 E-mail: kgreer@acrelectronics.com
Alden Marine	(See Northern Airborne Technology Ltd. - Canada)	
Ameri-King Corporation	17881 Sampson Lane, Huntington Beach California 92646, USA	Tel: 1-714 8428555 Fax: 1-714 8424235 E-mail: ameriking9@aol.com
Artex Aircraft Supplies, Inc.	14405 Keil Road, NE Aurora, Oregon 97002, USA	Tel: 1-503 6787929, Fax: 1-503 6787930 E-mail: info@artex.net
BAE Systems - Ocean Systems	(See Ultra Electronics Ocean Systems - USA)	
DME Corporation	6830 N.W. 16thTerrace Fort Lauderdale, FL 33309-1518, USA	Tel.: 1-954 9752164, Fax: 1-554 9793313 E-mail: margaretbanks@dmecorp.com

A. LIST OF BEACON MANUFACTURERS (Cont.)

USA (Cont.)

Emergency Beacon Corporation	5 River Street, New Rochelle New York 10801, USA	Tel: 1-914 2359400 / 800 3820079 Fax: 1-914 5767075 E-mail: emergencybeacon@sprynet.com
Microwave Monolithics, Inc.	2263 Ward Avenue Simi Valley, California 93065, USA	Tel: 1-805 5846642 Fax: 1-805 5849594
Signal Engineering Inc.	6370 Lusk Blvd., Suite F206 San Diego, California 92121, USA	Tel.: 1-858 5528131 Fax: 1-858 5521429 E-mail: jthompson@sigeng.com
Ultra Electronics Ocean Systems	115 Bay State Driveand the Braintree, Massachusetts 02184, USA	Tel: 1-781 794 3743 Fax: 1 781 843 2153 E-mail: paul.clifford@ultra-os.com

B. LIST OF TYPE APPROVAL CERTIFICATES

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
1	Jotron Electronics	Tron 30S	(Note 1)	7 Jul. 89	
2	Nova Marine (Note 15)	RT 160M	McMurdo RB406	7 Jul. 89	27 Jun. 94
3	CEIS TM	BSU 85		7 Jul. 89	
4	Sextant	SDT 406 M	(Note 1)	7 Jul. 89	
5	SERPE-IESM	Kannad 406	(Note 12)	7 Jul. 89	
6	Sextant	SDT 406 A	(Note 1)	7 Jul. 89	
7	SERPE-IESM	Kannad 406 F	(Note 12)	7 Jul. 89	
8	Caledonian	CPT-600M		7 Jul. 89	
9	CEIS TM	BSP 86		7 Jul. 89	9 Nov. 92
10	Lokata	406 P	(Note 2)	7 Jul. 89	
11	Lokata	406 M	(Note 2)	7 Jul. 89	
12	Lokata	406 H	(Note 2)	7 Jul. 89	9 Nov. 92
13	SERPE-IESM	Kannad 406 S	(Note 12)	7 Jul. 89	
14	SERPE-IESM	Kannad 406 F (or P)	(Note 12)	7 Jul. 89	
15	Japan Radio Co.	JQE-2A (Class 1)		7 Jul. 89	
16	CEIS TM	M 02		7 Jul. 89	
17	ACR Electronics	RLB-23		14 Jul. 89	
18	ACR Electronics	RLB-24		14 Jul. 89	
19	The Guest Co., Inc.	948 (Float-free)	(Note 3)	14 Jul. 89	10 Jul. 92
20	CEIS TM	A06, S06		9 Oct. 89	14 Aug. 95
21	Japan Radio Co.	JQE-2A (Class 2)		9 Oct. 89	
22	SERPE-IESM	Kannad 406 S	(Note 12)	9 Oct. 89	
23	SERPE-IESM	Kannad 406 F (or P)	(Note 12)	9 Oct. 89	
24	CEIS TM	M 04		9 Oct. 89	
25	Lokata	406 P(Y)	(Note 2)	9 Oct. 89	
26	Lokata	406 M(Y)	(Note 2)	9 Oct. 89	
27	Lokata	406 H(Y)	(Note 2)	9 Oct. 89	
28	Nova Marine (Note 15)	RT 161M		9 Oct. 89	27 Jun. 94
29	The Guest Co., Inc.	948 (Non float-free)	(Note 3)	9 Oct. 89	10 Jul. 92
30	Japan Radio Co.	JQE-2A (Class 1)		8 Jan. 90	

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
31	Nova Marine (Note 15)	RT 160		16 Feb. 90	27 Jun. 94
32	Nova Marine (Note 15)	RT 161		16 Feb. 90	27 Jun. 94
33	Caledonian	CPT 600N		12 Apr. 90	
34	CEIS TM	MT06		12 Apr. 90	14 Aug. 95
35	SERPE-IESM	Kannad 406 FH (or PH)	(Note 12)	30 Apr. 90	
36	Musson-Exim	ARB-MK	(Note 1)	2 Aug. 90	
37	TOYO Comm.	C-2277	Furuno FSO-400	2 Aug. 90	10 Jul. 92
38	MPR Teltech.	L-1000	(Note 1)	20 Aug. 90	
39	SERPE-IESM	Kannad 406 S (or SW)	Rescuer 406 S (Note 12)	5 Nov. 90	11 Mar. 98
40	SERPE-IESM	Kannad 406 F (or P)	(Note 12)	5 Nov. 90	11 Mar. 98
41	SERPE-IESM	Kannad 406 FH (or PH or WH)	Rescuer 406 P or PW (Note 12)	5 Nov. 90	11 Mar. 98
42	SERPE-IESM	Kannad 406 ATP	(Note 12)	5 Nov. 90	
43	MPR Teltech.	SATFIND-406$_{TM}$ M	Alden SATFIND-406$_{TM}$ M (Note 1)	16 Nov. 90	14 Sep. 95
44	CEIS TM	H-06		14 Mar. 91	
45	Bitova Electronic	SEVT-406	(Note 1)	14 Mar. 91	
46	Yaroslavsky Radio	ARB-PK		14 Mar. 91	
47	Yaroslavsky Radio	ARB-PK1		14 Mar. 91	
48	Yaroslavsky Radio	ARB-PK10		14 Mar. 91	
49	Japan Radio Co.	JQE-2A (Class 1)		5 Apr. 91	
50	Jotron Electronics	Tron 30 S mkII		15 Apr. 91	
51	CEIS TM	P-07		15 Apr. 91	
52	Musson-Exim	ARB-PC	(Note 1)	27 Apr. 91	
53	McMurdo (Note 15)	LDT 61 or LDT 62		30 Sep. 91	26 Mar. 93
54	Lokata	406 PF(Y)	(Note 2)	4 Oct. 91	
55	Lokata	Honeywell ECB	(Note 2)	6 Dec. 91	
56	Taiyo Musen Co. Ltd.	REB-22	Anritsu RJ301A & ZENICAL EP (Note 9)	6 Dec. 91	8 Aug. 01
57	The Guest Co., Inc.	952-02	(Note 3)	6 Dec. 91	19 Apr. 96
58	Aviation and Marine	Avmar M1-406	(Note 1)	6 Feb. 92	
59	Yaroslavsky Radio	ARB-MKS Afalina		6 Feb. 92	
60	Yaroslavsky Radio	ARB-PKE Excom		6 Feb. 92	

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
61	Musson-Exim	ARB-M	(Note 1)	6 Feb. 92	
62	Musson-Exim	Musson-501	(Note 1)	16 Apr. 92	
63	Lokata	406 MH(Y)	(Note 2)	28 May 92	
64	Lokata	406 M(Y)E	(Note 2)	28 May 92	
65	Lokata	406 MH(Y)E	(Note 2)	28 May 92	
66	Jotron Electronics	Tron 30 S mkII		22 Jul. 92	
67	Artex Inc.	ELT 110-406, ELT B406-1		5 Oct. 92	13 Jun. 00
68	Musson-Exim	Cospas-ARB-MK1	(Note 1)	12 Oct. 92	
69	CEIS TM	M-05 Sealife		9 Nov. 92	
70	Nova Marine (Note 15)	RT 260M	Newcom NC-270 & Tellumat PT 280-A & McMurdo MCM 406A	9 Nov. 92	4 Dec. 97
71	Northern Airborne	SATFIND-406$_{TM}$ Pocket PLB	(Note 4)	16 Nov. 92	26 Jul. 96
72	Nova Marine (Note 15)	RT 260	Newcom NC-270 a & Tellumat PT 280-M	20 Nov. 92	4 Dec. 97
73	The Guest Co., Inc.	952-01	(Note 3)	30 Nov. 92	19 Apr. 96
74	Socata	ELT 96, -97, -96 S		9 Dec. 92	15 Sep. 06
75	Lokata	406-2A, -2AH, -2M	(Note 2)	9 Dec. 92	24 Sep.97
76	Litton	952-21, -23, -25		9 Dec. 92	
77	Skanti	TP 2		24 Feb. 93	4 Dec. 95
78	Northern Airborne	SATFIND-406$_{TM}$ Survival EPIRB	(Note 4)	11 Aug. 93	26 Jul. 96
79	CEIS TM	MO56		11 Aug. 93	14 Aug. 95
80	Japan Radio Co.	JQE-3A, JQE-3AJ		3 Dec. 93	21 May 08
81	ENA Telecomunica-ciones SA	ENASAT-406 A or ENASAT-406 M	(Note 1)	31 Jan. 94	
82	ACR Electronics	RLB-23E1		3 May 94	
83	ACR Electronics	RLB-27	Satellite 406	14 Oct. 94	7 Jun. 95
84	ACR Electronics	RLB-28	Satellite 406	14 Oct. 94	7 Jun. 95
85	McMurdo (Note 15)	Locat LDT 61 A	Locat LDT 62 A	16 Nov. 94	
86	Taiyo Musen	REB-23-01 or REB-23-02	Anritsu RJ302A & ZENICALL-F (Note 9)	16 Nov. 94	8 Aug. 01
87	Taiyo Musen	REB-24	(Note 9)	16 Nov. 94	8 Aug. 01

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
88	Honeywell	Rescu 406	(Note 10)	31 May 95	
89	CEIS TM	P076		14 Aug. 95	
90	Caledonian	ADELT CPT 609		17 Oct. 95	
91	SERPE-IESM	Kannad 406 ATP, Kannad 406 ATP-M	(Note 12)	17 Oct. 95	
92	SERPE-IESM	Kannad 406 m	(Note 12)	17 Nov. 95	18 Nov. 02
93	Northern Airborne	SATFIND-406 ELT Model A-1000	(Note 4)	24 Jan. 96	2 Oct. 96
94	Saracom Ltd.	EB-10		2 Sep. 96	24 Jan. 03
95	Jotron Electronics	Tron 40S		11 Feb. 97	
96	State Designer's Bureau of Telecommunication	SM-511, M511MH, SM-511ML	(Note 1)	11 Feb. 97	4 Nov. 03
97	Techtest Ltd.	ELT 503-1, 503-3, 503-11		15 Jul. 97	13 Feb. 06
98	Jotron Electronics	Tron 45 SX		25 Sep. 97	
99	Jotron Electronics	Tron 45 S		29 Oct. 97	
100	AMS Limited	639 SIU	(Note 11)	29 Oct. 97	24 Sep. 04
101	SERPE-IESM	Kannad 406 XS	(Note 12)	5 Jan. 98	
102*	Northern Airborne	SATFIND-406 GPIRB™	(Note 4)	28 Apr. 98	29 Feb. 00
103	Techtest Ltd.	ELT 503-12, ELT 503-2, ELT 503-8, PLB 500-4, PLB 500-20	(Note 5)	6 May 98	29 May 06
104**	Artex, Inc.	ELT 110-406 NAV, 110-406 HM NAV, B406-2 NAV, 110- 406ED NAV		25 May 98	
105	SERPE-IESM	Kannad 406 AP, Kannad 406 AF, Kannad 406 AF-H, Kannad 406 AS	(Note 12)	11 Sep. 98	16 Nov. 06
106	McMurdo (Note 15)	E3m or E3c or E3a	(Note 6) (Note 7) (Note 8)	26 Jan. 99	4 Jul. 02 (Note 13)
107	ACR Electronics	RLB-32		19 Apr. 99	16 Nov. 07
108**	ACR Electronics	RLB-33	Rapid Fix	19 Apr. 99	16 Jul. 02
109**	ACR Electronics	PLB-100 / RLB-100	GyPSI 406	29 Apr. 99	16 Jul. 02
110**	Microwave Monolithics, Inc.	MBT-040600, MBT-040600D, MBT-040600-48, MBT-040600D-48		16 Jun. 99	10 Mar. 08

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
111	Techtest Ltd.	500-12, 500-27, 500-27 PELS		20 Jul. 99	16 Jul. 07
112**	Artex, Inc.	C406-1, C406-2, B406-4, G406-4	C406-1HM, C406-2HM	20 Jul. 99	1 Sep. 03
113	Microwave Monolithics, Inc.	MBT-040600A, MBT-040600A-48		25 Aug. 99	10 Mar. 08
114**	Microwave Monolithics, Inc.	MBT-040600B, MBT-040600E	MBT-040600B-48, MBT-040600E-48	25 Aug. 99	10 Mar. 08
115	Microwave Monolithics, Inc.	MBT-040600C, MBT-040600C-48		25 Aug. 99	10 Mar. 08
116*	BAE Systems	T-1630/SRT Buoy Tx SEPIRB		8 Dec. 99	
117	Samyung Electronics Co. Ltd.	SEP-406		17 Dec. 99	
118	ADI Ltd.	SERB MkII	(Note 1)	3 Mar. 00	
119*	McMurdo (Note 15)	G4a or G4m or G4c	SOS Precision 406a, Sailor GPS 406a SOS Precision 406m, Sailor GPS 406m SOS Precision 406c Sailor GPS 406c	30 Jun. 00	30 Mar. 07 (Note 13)
120**	Northern Airborne	A 1500 SATFIND-406 ELT		27 Sep. 00	
121**	DRS Flight Safety & Communications	BAU-35, BAU-35A		3 Oct. 00	17 Oct. 02
122*	Jotron Electronics	Tron 40 GPS		8 Nov. 00	
123	PRO-Find	PROFind406	(Note 14)	21 Dec. 00	28 Mar. 02
124	Honeywell	Rescue 406AF		19 Feb. 01	13 Mar. 01
125	FUSE ISDE	ARM-406 AC1		30 Mar. 01	
126**	Artex Inc.	G406-1 and G406-2		8 Jun. 01	9 Sep. 01
127*	ACR Electronics	RLB-35		23Jul. 01	16 Jul. 02
128	Signature Industries	SARBE 10-1286		4 Oct. 01	
129*	McMurdo (Note 15)	Fastfind or Fastfind Plus		19 Oct.01	30 Mar. 07 (Note 13)
130	FUSE ISDE	ARM-406 P and ARM-406 P1		28 Mar. 02	2 Aug. 05
131	ELTA S.A.	ADT406 AF/AP		15 Jul. 02	30 Oct. 06
132	Becker Flugfunkwerk	MR 509/1		27 Sep. 02	
133	DME Corporation	SRB-406		3 Feb. 03	15 Sep. 04
134	EMS Technologies	EMS-406-1		25 Apr. 03	
135	Artex Inc.	C-406-N, C406-N HM		28 Apr. 03	19 Jan. 07

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
136*	ACR Electronics	RLB35, RLB35 MC		25 Jun. 03	16 Mar. 06
137	Thales Underwater Systems Ltd.	SEEPIRB 406		14 Jul. 03	
138*	SERPE-IESM	Kannad 406 XS-2 GPS, Kannad 406 XS-2	(Note 12)	21 Oct. 03	28 May 04
139	Standard Communications Pty. Ltd.	MT400, MT401, MT401 FF	MT402, MT403, MT403 FF	18 Nov.03	9 Nov. 07
140	Musson-Morsviaz-Servis	MP-406		11 Dec. 03	
141**	ACR Electronics	RLB-33S		24 Aug. 04	
142***	Signature Industries	BE369/406		12 Nov. 04	
143***	ACR Electronics	PLB 200		24 Nov. 04	
144**	ACR Electronics	PLB 201		24 Nov. 04	
145	Yaroslavsky Radio	ARB M-406		30 Dec. 04	
146**	EMS Technologies Canada	EMC SSAS		7 Feb. 05	
147*	Fernau Avionics	Fernau 2100		8 Mar. 05	30 Jul. 07
148*	Seimac (Note 14)	SLB-1000, SLB-1000-200, SLB-1000-210	SLB 406	17 Mar. 05	11 Jan. 06
149*	SERPE-IESM	Kannad 406 GPS PRO, SVW GPS, SV GPS	(Note 12)	1 Apr. 05	24 Mar. 06
150	Kinetic Technologies	RB6		12 May 05	
151	SERPE-IESM	Kannad 406 PRO, 406 SVW and 406 SV	(Note 12)	11 Jul. 05	24 Mar. 06
152**	Artex Inc.	ME406, ME 406 HM, ME 406 P		1 Aug. 05	5 Feb. 09
153	ELTA S.A.	ADT 406 S		13 Sep. 05	
154	Caledonian	CPT-900		26 Oct. 05	
155*	Jotron Electronics	Tron S-VDR Capsule, L-3 FFSVR		6 Feb. 06	15 Jul. 09
156***	ACR Electronics	PLB 200 (Extension Cert. No.143)		9 Mar. 06	7 Jul. 06
157**	ACR Electronics	PLB 201 (Extension Cert. No.144)		13 Apr. 06	
158	Musson Marine	AVMM ELT S-406		18 Apr. 06	
159*	Signature Industries Ltd.	SARBE G2R ELT	SARBE 8 ELT CSAR+406	8 May 06	
160*	navtec GmbH	navtec global-C , navtec global-C plus		29 May 06	
161	Kolgrim-Don Ltd.	MARLIN-406	MARLIN-406 A2	30 May 06	
162	Martec Serpe-Iesm	Kannad Auto / Auto GPS / Manual / Manual GPS / Manual + / Manual + GPS	SGE406-II, EG50:AsUTO & EG50:MAN, EP50:AUTO & EP50:MAN, A5 Smartfind	4 Jul. 06	

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
163*	McMurdo (* for G5 Smartfind Plus only) (Note 15)	G5 Smartfind Plus and E5 Smartfind		23 Aug. 06	3 Aug. 09
164	Taiyo Musen Co. Ltd.	TEB-700, TEB 720	JQE-103, ZENICALL G	28 Aug. 06	15 Dec. 06
165*	McMurdo (Note 15)	C1 S-VDR Float Free Capsule	VR-3000S Float-Free DRU, VR-3030 VDR-A16 Float-Free, VDR-A16	15 Sep. 06	
166*	Becker Electronics Taiwan Ltd.	MR 109		2 Oct. 06	
167	Martec Serpe-Iesm	Kannad 406 AF-Compact		11 Dec. 06	11 Mar. 08
168	Emergency Beacon Corporation	EBC-406, EBC-406H		13 Dec. 06	
169	ACR Electronics	PLB 300		15 Dec. 06	
170**	Artex Inc.	C406-1, C406-1 HM, C406-2, C406-2 HM, B406-4, G406-4		19 Jan. 07	
171**	Honeywell	Rescu 406 AFN, Rescu 406 SE		20 Mar. 07	20 May 08
172	Uranis Ltd.	PRO-5		16 May 07	
173*	ACR Electronics	RLB 35, RLB 35MC		18 May 07	21 Aug. 07
174***	ACR Electronics	PLB 200		18 May 07	
175*	Signature Industries Ltd.	SARBE 7-406, SARBE 7-406G		30 May 07	22 Jan. 08
176*	Standard Comm. PTY ltd.	MT 410, MT410G		30 May 07	20 Aug. 07
177*	FUSE ISDE	PARM-406		30 Jul. 07	
178	Sea Air & Land Communication Ltd.	MRB 406, MRB 406 GPS		21 Aug. 07	
179**	Ameri-King Corporation	AK-451	AK-451(AF), AK-451 (AP), AK-451(S), AK-451-PLB	24 Sep. 07	
180*	Martec Serpe-Iesm	Kannad 406 XS3-GPS		10 Oct. 07	
181*	ACR Electronics	PLB-300		5 Nov. 07	
182*	Saracom Co. Ltd.	EB-20	EB-20 SVDR Capsule	26 Nov. 07	25 Mar. 08
183**	FUSE-ISDE	ARM-406N1		10 Jan. 08	
184*	Signature Industries Ltd.	Fastfind, Fastfind Plus	Fastfind Max, Fastfind MaxG, Fastfind MaxG(B)	5 Feb. 08	1 May 08
185	Jotron A.S.	Tron 40S MkII, Tron 40 GPS MkII		18 Feb. 08	
186*	Standard Communications PTY Ltd.	MT403, MT403G	MT403 FF, MT403FG	25 Mar. 08	
187*	ACR Electronics	PLB-300		20 Mar. 08	
188**	Artex Inc.	ME406, ME406 HM, ME406P		14 Jul. 08	5 Feb. 09
189*	ACR Electronics	RLB-36, -37, -40		17 Jul. 08	4 Aug. 09

B. LIST OF TYPE APPROVAL CERTIFICATES (Cont.)

C/S Cert. No.	Manufacturer	Model	Additional Model Names/ Comments	First Issued	Last Amended
190*	ACR Electronics	PLB 300 (Extension Cert. No. 169)		15 Dec. 06	27 Aug. 08
191**	Musson-Morsviaz-Service	SAS-406		16 Oct. 08	
192	Air Precision	ELT96-1Std, ELT96-3Std, ELT96-1GPS, ELT96-2GPS, ELT96-3GPS		21 Oct. 08	
193*	FUSE-ISDE	PARM-406M, KS-NAP, PARM-406A		30 Dec. 08	8 Jun 09
194*	Signature Industries Ltd.	Fastfind PLB 210, Fastfind PLB 200	Fastfind PLB 211, Fastfind PLB 201	6 Feb. 09	
195*	Samyung	SEP-500, SEP-500V		5 Apr. 09	
196*	FUSE-ISDE	PARM-406N		28 Apr. 09	
197**	Artex Inc.	ME406, ME406P, ME406 HM		30 Apr. 09	
198*	ACR Electronics	PLB-350A, PLB-350B		15 Jun. 09	
199*	ACR Electronics	PLB 300		14 Jul. 09	
200	McMurdo, a Div. of Signature Industries Ltd.	Fastfind PLB 200/201	Fastfind PLB 210*/ 211*	5 Aug. 09	

Notes:

1. Models no longer in production.
2. Models no longer in production but supported by Kelvin Hughes Ltd.
3. On January 31, 1996 Litton Special Devices (USA) sold the design and production rights for EPIRB Models 948 and 952 (Certificates Nos. 19, 29, 57, 73) to The Guest Company, Inc. (USA).
4. On July 3, 1996 Northern Airborne Technology Ltd. (Canada) purchased the designs from MPR Teltech (Canada) and production from Alden Electronics (USA) for SATFIND-406 $_{TM}$ Pocket PLB (Certificate No.71), SATFIND-406$_{TM}$ Survival EPIRB (Certificate No.78) and SATFIND-406 ELT Model A-1000 (Certificate No.93).
5. These beacons are variants of beacons with Certificate No.97.
6. SOS Rescue 406m, Sea 406m, Sailor 406m.
7. SOS Rescue 406c, Sea 406c, Sailor 406c.
8. SOS Rescue 406a, Sea 406a, Sailor 406a.s
9. On April 1, 2000 NEC Radio Electronics Co. Ltd. (Japan) sold the design and production rights for EPIRB Models REB-22, REB-23-01, REB-23-02 and REB-24 (Certificates Nos. 56, 86 and 87) to Taiyo Musen Co. Ltd (Japan).
10. On 1 January 2000 company name was changed from AlliedSignal Aerospace Canada to Honeywell.
11. On 7 October 2003 company name was changed from GEC-Marconi Radar and Defence Systems to AMS Ltd.
12. In 2006 company name was changed from SERPE-IESM to Martec Serpe-Iesm and in 2007 to Kannad.
13. McMurdo TAC number re-issued to Signature Industries.
14. In 2008 company name was changed from Seimac Ltd. to Cobham Tracking and Locating Ltd.
15. See McMurdo, a Division of Signature Industries Ltd.

* With internal navigation device.

** With external navigation device.

***With internal or external navigation device.

C. LIST OF C/S TYPE APPROVED BEACON MODELS

Manufacturer	Model Names	C/S TAC No. (a)	C/S Class (b)	Application (c)
ACR Electronics, Inc.	RLB-23	17	2	Float-Free EPIRB
	RLB-24	18	2	Non Float-Free EPIRB
	RLB-23E1	82	1	Float-Free EPIRB
	RLB-27 or Satellite 406(see Note d)	83	1 or 2	Float-Free EPIRB
	RLB-28 or Satellite 406(see Note d)	84	1 or 2	Non Float-Free EPIRB
	RLB-32	107	1	Float-Free EPIRB
	RLB-33 (see Note e)	108	1	Float-Free EPIRB
	PLB-100 / RLB-100 (see Note e)	109	1	PLB/Non Float-Free EPIRB
	RLB-35 (see Note n)	127	1	Float-Free EPIRB
	RLB35, RLB 35C (see Note n)	136	1	Float-Free EPIRB
	RLB-33S	141	2	SSAS Beacon
	PLB 200	143, 156	2	PLB
	PLB 201	144, 157	2	PLB
	PLB 300	169	2	PLB
	RLB 35, RLB 35MC	173	1	Float-Free EPIRB
	PLB 200	174	2	PLB
	PLB-300	181	2	PLB
	PLB-300	186	2	PLB
	RLB-36, RLB-37, RLB-40	189	2	Float-Free EPIRB
	PLB 300	190	2	PLB
	PLB-350A, PLB-350B	198	2	PLB
	PLB 300	199	2	PLB
ADI Ltd.	SERB MkII	118	2	Float-Free EPIRB
Air Precision (see Note 1)	ELT 96, ELT 97	74	2	Automatic ELT
	ELT 96 S	74	2	Manual ELT
	ELT96-1Std/-3Std/-1GPS/-2GPS/ -3GPS	192	2	ELT (Auto) / ELT (Portable)
Ameri-King Corporation	AK-451 or AK-451(AF) or AK-451 (AP) or AK-451(S) or AK-451-PLB	179	2	Automatic ELT/Portable ELT/Survival ELT/PLB
AMS Ltd. (see Note 7)	639 SIU	100	2	Float-Free EPIRB
Artex Inc.	ELT 110-406, ELT B406-1	67	2	Automatic ELT
	ELT 110-406 NAV, 110-406 HM NAV, B406-2 NAV, 110-406ED NAV (see Note e)	104	2	Automatic ELT
	C406-1, C406-2, B406-4, G406-4 C406-2HM, (see Note e)	112	2	Automatic ELT
	G406-1, G406-2 (see Note e)	126	2	Automatic ELT
	C406-N or C406-N HM	135	2	Automatic ELT
	ME406/406HM/406P (see Note e)	152	2	Automatic ELT
	C406-1, C406-1 HM, C406-2, C406-2 HM, B40-4, G406-4	170	2	Automatic ELT
	ME406, ME406 HM, ME406P	188	2	ELT(Auto) / ELT(Portable)
	ME406, ME406 HM, ME406P	197	2	ELT(Auto) / ELT(Portable)
Aviation and Marine Techn., Inc.	Avmar M1-406 (see Note f)	58	2	Float-Free EPIRB
Becker Electr. Taiwan Ltd.	MR 19	166	1	PLB
Becker Flugfunkwerk	MR 509/1	132	2	PLB
Bitova Electr. Co.	SEVT-406	45	2	Float-Free EPIRB
Caledonian Airborne Systems Ltd.	CPT-600M (see Note d)	8	1 or 2	Float-Free EPIRB
	CPT-600N	33	2	Float-Free EPIRB
	ADELT CPT 609	90	2	Automatic ELT
	CPT-900	154	2	Automatic ELT
CEIS TM / ELTA	BSU 85	3	2	Non Float-Free EPIRB
	BSP 86	9	2	Float-Free EPIRB
	M 02	16	1	Float-Free EPIRB
	A06	20	2	Automatic ELT
	S06	20	2	Manual ELT
	M 04	24	2	Float-Free EPIRB
	MT06	34	2	Non Float-Free EPIRB
	H-06	44	2	Automatic ELT
	P-07	51	2	PLB
	M05 Sealife (see Note d)	69	1 or 2	Float-Free EPIRB
	MO56	79	2	Float-Free EPIRB
	P076	89	2	PLB
	ADT406 AF/AP	131	2	Automatic ELT

C. LIST OF C/S TYPE APPROVED BEACON MODELS (Cont.)

Manufacturer	Model Names	C/S TAC No. (a)	C/S Class (b)	Application (c)
CEIS TM / ELTA (Cont.)	ADT 406 S	153	2	Automatic ELT
DME Corporation	SRB-406	133	2	Automatic ELT
DRS Data and Imaging Systems (see Note 6)	BAU-35, BAU-35A (see Note e)	121	2	Automatic ELT
Emergency Beacon Corp.	EBC-406	168	2	ELT Auto Fixed/Portable
EMS Technologies (EMS Satcom)	EMS-406-1	134	2	Automatic ELT
	EMS SSAS (see Not e)	146	2	SSAS Beacon
ENA Telecomunicaciones S.A.	ENASAT-406 A	81	2	Float-Free EPIRB
	ENASAT-406 M	81	2	Non Float-Free EPIRB
Fernau Avionics Ltd.	Fernau 2100 and Fernau 2200 (see Note n)	147	2	PLB
FUSE ISDE	ARM-406 AC1	125	1	Manual ELT
	ARM-406 P and ARM-406 P1	130	1	Automatic ELT
	PARM-406	177	2	PLB
	ARM-406N1	183	1	Automatic ELT
	PARM-406M, KS-NAP, PARM-406A	193	1	PLB
	PARM-406N	196	1	PLB
(The) Guest Co., Inc. (see Note z)	948 (see Note g)	19	2	Float-Free EPIRB
	948 (see Note g)	29	2	Non Float-Free EPIRB
	952-01 (see Note g)	57	2	Non Float-Free EPIRB
	952-01 (see Note g)	73	2	Float-Free EPIRB
Honeywell Aerospace Canada (see Note y)	Rescu 406	88	2	Manual ELT
	Rescu 406AF	124	2	Automatic ELT
	Rescu 406 AFN, Rescu 406 SE	171	2	ELT Automatic Fixed
Japan Radio Co. Ltd.	JQE-2A	15, 30	1	Float-Free EPIRB
	JQE-2A	49	1	Float-Free EPIRB
	JQE-2A	21	2	Float-Free EPIRB
	JQE-3A, JQE-2AJ	80	2	Float-Free EPIRB
Jotron Electronics A.S.	Tron 30S (see Note f)	1	2	Float-Free EPIRB
	Tron 30 S mkII	50, 66	2	Float-Free EPIRB
	Tron 40S	95	2	Float-Free EPIRB
	Tron 45 SX	98	2	Non Float-Free EPIRB
	Tron 45 S	99	2	Non Float-Free EPIRB
	Tron 40 GPS (see Note n)	122	2	Float-Free EPIRB
	Tron S-VDR Capsule, L-3 FFSVR	155	2	Float-Free EPIRB
	Tron 40S MkII, Tron 40GPS MkII	ss185	2	Float-Free / Non Float- Free EPIRB
Kannad (see Note 8)	Kannad 406	5	2	Non Float-Free EPIRB
	Kannad 406 S (see Note d)	13	1 or 2	Non Float-Free EPIRB
	Kannad 406 S	22	2	Non Float-Free EPIRB
	Kannad 406 S (or SW) (see Note r)	39	2	Non Float-Free EPIRB
	Kannad 406 F	7	2	Float-Free EPIRB
	Kannad 406 F(or P) (see Note d)	14	1 or 2	Float-Free EPIRB
	Kannad 406 F (or P)	23, 40	2	Float-Free EPIRB
	Kannad 406 FH (or PH)	35	2	Float-Free EPIRB
	Kannad 406 FH (or PH or WH) (see Note s)	41	2	Float-Free EPIRB
	Kannad 406 ATP	42, 91	2	Automatic ELT
	Kannad 406 m	92	1 or 2	PLB/Non Float-Free EPIRB/Manual ELT
	Kannad 406 AP/AF/AF-H/AS	105	2	ELT
	Kannad 406 XS-2 GPS and Kannad 406 XS-2 (see Note n)	138	2	PLB
	Kannad 406 GPS PRO / SVW GPS / 406 SV GPS	149	2	Float-Free EPIRB
	Kannad 406PRO and Kannad 406 SVW and Kannad 406 SV	151	2	Float-Free EPIRB
	Kannad Auto/Auro GPS/Manual/ Manual	162	2	EPIRB
	GPS/Manual+/Manual+GPS	167	2	ELT Auto Fixed
	Kannad 406 AF-Compact	180	2	PLB
	Kannad 406 XS3-GPS			
Kinetic Technologies	RB6	150	2	Non Float-Free EPIRB
Kogrim-Don Ltd.	MARLIN-406	161	2	Float-Free EPIRB

C. LIST OF C/S TYPE APPROVED BEACON MODELS (Cont.)

Manufacturer	Model Names	C/S Type Approval Certificate No. (a)	C/S Class (b)	Application (c)
Litton Special Devices (see Note z)	952-21 or 952-25	76	2	Automatic ELT
	952-23	76	2	Manual ELT
Lokata Ltd. (see Note 2)	406 P (see Note f)	10	2	Non Float-Free EPIRB
	406 M (see Note f)	11	2	Non Float-Free EPIRB
	406 H (see Note f)	12	2	Float-Free EPIRB
	406 P(Y) (see Note f)	25	2	Non Float-Free EPIRB
	406 M (Y) (see Note f)	26	2	Non Float-Free EPIRB
	406 H(Y) (see Note f)	27	2	Float-Free EPIRB
	406 PF(Y) (see Note f)	54	2	Non Float-Free EPIRB
	Honeywell ECB (see Note f)	55	2	Non Float-Free EPIRB
	406 MH(Y) (see Note f)	63	2	Float-Free EPIRB
	406 M(Y)E (see Note f)	64	2	Non Float-Free EPIRB
	406 MH(Y)E (see Note f)	65	2	Float-Free EPIRB
	406-2A or 406-2AH (see Note f)	75	2	Float-Free EPIRB
	406-2M (see Note f)	75	2	Non Float-Free EPIRB
McMurdo Ltd. (Note 13)	Locat LDT 61	53	2	Float-Free EPIRB
	Locat LDT 62	53	2	Non Float-Free EPIRB
	Locat LDT 61A	85	2	Float-Free EPIRB
	Locat LDT 62A	85	2	Non Float-Free EPIRB
	E3m (see Note h)	106	1	Non Float-Free EPIRB
	E3c (see Note i)	106	1	Non-Float-Free EPIRB
	E3a (see Note j)	106	1	Float-Free EPIRB
	G4a (see Notes v and n)	119	2	Float-Free EPIRB
	G4m (see Notes w and n)	119	2	Non-Float-Free EPIRB
	G4c (see Notes x and n)	119	2	Non-Float-Free EPIRB
	Fastfind or Fastfind Plus (see Note n)	129	1 or 2	PLB/Non Float-Free EPIRB (see Note 3)
	G5 Smartfind and E5 Smartfind	163	2	Float-Free/Non Float-Free EPIRB
	C1 S-VDR Float-Free Capsule (see Note 10)	165	1	Float-Free EPIRB
	Fastfind PLB 200/201, Fastfind PLB 210/211	200	2	PLB
Microwave Monolithics, Inc.	MBT-040600, MBT-040600D MBT 040600-48, MBT 040600-48D (see Note e)	110	2	PLB
	MBT-040600A, MBT-040600A-48	113	2	PLB
	MBT-040600B, MBT-040600E (see Note e)	114	2	PLB
	MBT-040600C, MBT-040600C-48	115	2	PLB
MPR Teltech Ltd. (see Note z)	L-1000 (see Note f)	38	1	PLB
	SATFIND-406$_{TM}$ M (see Note f)	43	2	Float-Free EPIRB
Musson-Exim	ARB-MK	36	2	Float-Free EPIRB
	ARB-PC	52	1	PLB
	ARB-M	61	2	Float-Free EPIRB
	Musson-501 (see Note d)	62	1 or 2	Float-Free EPIRB
	Cospas-ARB-MK1	68	2	Float-Free EPIRB
Musson Marine	AVMM ELT S-406	158	2	Manual ELT
Musson-Morsviaz-Servis	MP-406	140	2	Float-Free EPIRB
	SAS-406	191	2	SSAS
navtec GmbH	navtec global-C, navtec global-C plus	160	2	Float-Free EPIRB
Northern Airborne Technology Ltd.	SATFIND-406$_{TM}$ Pocket PLB (see Note m)	71	1	PLB
	SATFIND-406$_{TM}$ Survival EPIRB (see Note m)	78	2	Float-Free/ Non Float-Free EPIRB
	SATFIND-406 ELT Model A-1000 (see Note m)	93	2	Automatic ELT
	SATFIND-46 GPIRB406$_{TM}$ (see Note n)	102	2	Float-Free EPIRB
	A 1500 SATFIND-406 ELT (see Note e)	120	2	Automatic ELT

C. LIST OF C/S TYPE APPROVED BEACON MODELS (Cont.)

Manufacturer	Model Names	C/S Type Approval Certificate No. (a)	C/S Class (b)	Application (c)
Nova Marine Systems Ltd. (see Note 13)	RT 160M (see Note o)	2	1	Float-Free EPIRB
	RT 161M	28	2	Float-Free EPIRB
	RT160	31	1	Non Float-Free EPIRB
	RT 161	32	2	Non Float-Free EPIRB
	RT 260M (see Note p)	70	2	Float-Free EPIRB
	RT 260 (see Note q)	72	2	Non Float-Free EPIRB
Samyung	SEP-406	117	2	Float-Free EPIRB
	SEP-500, SEP-500V	195	2	Float-Free EPIRB
Saracom Co., Ltd. (see Note 5)	EB-10	94	2	Float-Free EPIRB
	EB-20, EB-20 SVDR Capsule	182	2	Float-Free EPIRB
Sea Air & Land Comm.	MRB 406, MRB 406 GPS	178	2	Non Float-Free EPIRB
Seimac Ltd. (see Note 12)	PROFind 406 or Satfind 406™ PRO (see Note 4)	123	1	Float-Free EPIRB
	SLB-1000, SLB-1000-200, SLB-1000-210	148	1	Automatic ELT / PLB
Sextant	SDT 406 M (see Note f)	4	2	Non Float-Free EPIRB
	SDT 406 A (see Note f)	6	2	Automatic ELT
Signature Industries Ltd.	SARBRE10-I286	128	2	Non Float-Free EPIRB
	BE369/406	142	2	Float-Free EPIRB
	SARBE G2R ELT	159	2	Automatic ELT
	SARBE 7-406G, SARBE 7-406	175	2	PLB
	Fastfind, Fastfind Plus	184	2	PLB
	Fastfind PLB 210, Fastfind PLB 200	194	2	PLB
Skanti (see Note z)	TP 2	77	1	Float-Free EPIRB
Standard Communications Pty. Ltd.	MT400, MT401, MT410 FF	139	2	Non Float-Free EPIRB
	MT 410G, MT 410	176	2	PLB
	MT403G, MT403FG	186	2	Float-Free / Non Float-Free EPIRB
State Designer's Bureau of Radiocommunication	SM-511, SM-511MH, SM-511ML	96	2	Float-Free EPIRB
Taiyo Musen Co., Ltd. (see Note u)	REB-22 (see Note k)	56	2	Float-Free EPIRB
	REB-23-01 (see Note l)	86	2	Float-Free EPIRB
	REB-23-02	86	2	Non Float-Free EPIRB
	REB-24	87	2	Non Float-Free EPIRB
	TEB-700, TEB-720 (see Note 9)	164	1	Float-Free EPIRB
Techtest Limited	ELT 503-1	97	1	Manual ELT
	ELT 503-3	97	1	Automatic ELT
	ELT 503-11	97	1	Automatic ELT
	ELT 503-2, ELT 503-8	103	1	Automatic ELT
	ELT 503-12	103	1	Manual ELT
	PLB 500-4, PLB 500-20	103	1	PLB
	500-12, 500-27	111	2	Automatic ELT or PLB
TOYO Comm. Eq. Co. Ltd. (see Note z)	C-2277 (see Note t)	37	2	Float-Free EPIRB
Thales Underwater Sys. Ltd.	SEEPIRB 406	137	2	Float-Free EPIRB
Ultra Electronics Ocean Systems (see Note 11)	T-1630/SRT Buoy, Radio Transmitting SEPIRB (see Note n)	116	2	Non Float-Free EPIRB
Uranis Ltd.	PRO-5	172	2	Float-Free EPIRB
Yaroslavsky Radio Engineering Works	ARB-PK	46	2	PLB
	ARB-PK1	47	1	PLB
	ARB-PK10	48	1	PLB
	ARB-MKS Afalina	59	1	Float-Free EPIRB
	ARB-PKE Excom	60	1	PLB
	ARB M-406	145	2	Float-Free EPIRB

Notes:

(a) Cospas-Sarsat Type Approval is a confirmation of compatibility with equipment in the Cospas-Sarsat System. It does not affect the manufacturer's obligations to obtain national type acceptance and/or relevant authorizations from national Administrations regarding registration and use of 406 MHz distress beacons.
(b) Cospas-Sarsat Classes (operating temperature range): Class 1: -40°C to +55°C;
Class 2: -20°C to +55°C.
(c) As stated by manufacturer. Installation characteristics are not addressed in Cospas-Sarsat specification and type approval testing.
(d) Class of the beacon (1 or 2) is dependent on type of battery installed.
(e) With external navigation device.
(f) Models no longer in production.
(g) On January 31, 1996 Litton Special Devices (USA) sold the design and production rights for EPIRB Models 948 and 952 (Certificates Nos. 19, 29, 57, 73) to The Guest Company, Inc. (USA).
(h) Also sold as SOS Rescue 406m, Sea 406m, Sailor 406m (Certificate No.119).
(i) Also sold as SOS Rescue 406c, Sea 406c, Sailor 406c (Certificate No.119).
(j) Also sold as Rescue 406a, Sea 406a, Sailor 406a (Certificate No.119).
(k) Also sold as Anritsu RJ301A and ZENICALL EP (Certificate No.56).
(l) Also sold as Anritsu RJ302A and ZENICALL-F (Certificate No.86).
(m) On July 3, 1996 Northern Airborne Technology Ltd. (Canada) purchased the designs from MPR Teltech (Canada) and production from Alden Electronics (USA) for SATFIND-406 TM Pocket PLB (Certificate No.71), SATFIND-406 TM Survival EPIRB (Certificate No.78) and SATFIND-406 ELT Model A-1000 (Certificate No.93).
(n) With internal navigation device.
(o) Also sold as Mc Murdo RB406 (Certificate No.2).
(p) Also sold as Newcom NC-270, Tellumat PT 280-A and McMurdo MCM 406A (Certificate No.70).
(q) Also sold as Newcom NC-270a, Tellumat PT 280-M and McMurdo MCM 406M (Certificate No.72).
(r) Also sold as Rescuer 406 S (Certificate No.39).
(s) Also sold as Rescuer 406 P and as Rescuer PW (Certificate No.41).
(t) Also sold as Furuno FSO-400 (Certificate No.37).
(u) On April 1, 2000 NEC Radio Electronics Co. Ltd. (Japan) sold the design and production rights for EPIRB Models REB-22, REB-23-01, REB-23-02 and REB-24 (Certificates Nos. 56, 86 and 87) to TAIYO MUSEN Co. Ltd (Japan).
(v) Also sold as SOS Precision 406a, Sailor GPS 406a (see Note n) (Certificate No.119).
(w) Also sold as SOS Precision 406m, Sailor GPS 406m (see Note n) (Certificate No.119).
(x) Also sold as SOS Precision 406c, Sailor GPS 406c (see Note n) (Certificate No.119).
(y) On January 1, 2000 company name was changed from AlliedSignal Aerospace Canada to Honeywell Aerospace.
(z) Stopped beacon manufacturing.
(1) In July 2000, Sogra (France) sold the design and production rights for ELT models ELT 96, ELT 96 S and ELT 97 (Certif. No.74) to Air Precision (France).
(2) Models no longer in production, but supported by Sartech Engineering.
(3) Non Float-Free EPIRB – Class 2.
(4) Beacon is produced by Seimac Ltd., but marketed by Northern Airborne Technology Ltd.
(5) Company name was changed from Samyang Radio Co. Ltd. to Saracom Co., Ltd.
(6) In July 2004 company name was changed from DRS Flight Safety and Communications to DRS Data and Imaging Systems.
(7) On 7 October 2003 company name was changed from GEC-Marconi Radar and Defence Systems to AMS Ltd.
(8) In 2006 company name was changed from SERPE-IESM to Martec Serpe-Iesm and in 2007 to Kannad.
(9) Also sold as JQE-103, ZENICALL G (Certificate No.164).
(10) Also sold as VR-3000S Float-Free DRU, Model VR-3030; VDR A16 Float-Free CSM, Model VDR-A16 (Certificate No.165).
(11) In 2004 company name was changed from BAE Systems - Ocean Systems to Ultra Electronics Ocean Systems.
(12) In 2008 company name was changed from Seimac Ltd. to Cobham Tracking and Locating Ltd.
(13) See McMurdo, a Division of Signature Industries Ltd.

D. LIST OF SPECIAL USE BEACONS

C/S Ref. No.	Model	Manufacturer	C/S Class	Application	Effective Date
701	MR 509	Becker Flugfunkwerk GmbH*	2	PLB	10 Jul. 98
702	AF/PRC-807 "Warrendi"	BAE Systems Australia Ltd.**	2	PLB	24 Sep. 98
703	AN-PRC-149	Tadiran Spectralink Ltd.	2	PLB	15 Dec. 99
704	AF/PRC-807A "Warrendi"	BAE Systems Australia Ltd.**	2	PLB	7 Sep. 00
705	AN/URT-140	Tadiran Spectralink Ltd.	2	ELT (Auto) / PLB	17 Jul. 02
706	SARBE G2R	Signature Industries	2	PLB	16 Aug. 04
707	NH90 RBA	EADS Deutschland GmbH	1	ELT (Auto)	13 Sep. 05
708	AN/PRC-112G	General Dynamics C4 Systems	2	PLB	15 May 06
709	SARBE 6-406G SARBE 6-406	Signature Industries	2	PLB	18 Sep. 06
710	PRC-434G/CS	Tadiran Spectralink Ltd.	2	PLB	13 Feb. 08
711	SLB-2000-100	Cobham Tracking and Locating Ltd.	2	PLB	17 Jul. 08
712	AAPLB (AN-URT-XX)	Digital Angel Corporation	2	PLB	17 Jul. 08
713	SEIPLB-25 (AN-URT-44)	Signal Engineering, Inc.	2	PLB	25 Nov. 08
714	R-855A1M	Yaroslavsky Radio Engineering Works	2	ELT (Manual) - Survival	22 Jan. 09

Notes: * Former Becker Avionics Systems.
** Former British Aerospace Australia.

BAE Systems Australia Ltd.	40-52 Talavera Rd, North Ryde New South Wales 2113, Australia	Tel: 61-2 98558905, Fax: 61-298558930 E-mail: david.j.abbott@baesystems.com
Becker Flugfunkwerk GmbH	Baden Airpark B 108 77836 Rheinmunster, Germany	Tel: 49-722 93050, Fax: 49-722 9305217 E-mail: info@becker-avionics.de
Cobham Tracking & Locating Ltd.	271 Brownlow Ave. Dartmouth NS, B3B 1W6, Canada	Tel: 1-902 4683007, Fax: 1-902 4683009 E-mail:psteward@cobhamtl.com
Digital Angel Corporation	490 Villaume Ave., South St. Paul MN 55075-2443, USA	Tel: 1-651 4551621, Fax: 1-651 4550413 E-mail: customerservice@digitalangelcorp.com
EADS Deutschland GmbH	EADS-FN, MSE4 Claude-Dornier-Strasse 88039 Friedrichshafen, Germany	Tel: 49-7229 3050 Fax: 49 7229 305217 E-mail: de@eads.com
General Dynamics C4 Systems	8220 East Roosevelt St., MD R3160, Scottsdale AZ 85257, USA	Tel: 1-480 4416157 E-mail: Jim.Warthman@gdc4s.com
KDC TechSolutions	6540 Lusk Blvd., Suite C-135 San Diego CA 92121, USA	Tel: 1-858 6250979, Fax: 1-858 6259023 E-mail: dcoates@kdcsolutions.com
Signal Engineering, Inc.	6370 Lusk Blvd, Suite F206 Dan Diego, California 92121 USA	Tel: 1-858 552 8131 Fax: 1-858 552 1429 Web: www.sigeng.com
Signature Industries Ltd.	Tom Cribb Road Thamesmead, London SE28 0BH, UK	Tel: 44-20 83164477, 83171717 Fax: 44-20 83166218 E-mail: brian.clayton@sarbe.com
Tadiran Spectralink Ltd.	29 Hamerkava Street, P.O.Box 150 Holon 58101, Israel (see also KDC TechSolutions who provides services for Tadiran Spectralink Ltd)	Tel: 972-3 5573186, Fax: 972-3 5577405 E-mail: itzikmor@tadspec.com

- END OF ANNEX I / E -

ANNEX I / F

POINTS OF CONTACT FOR BEACON REGISTERS

Administrations authorizing the use of 406 MHz beacons identified according to the serial coding protocol which is described in document C/S T.001 "Specification for Cospas-Sarsat 406 MHz Distress Beacons", should maintain a national 406 MHz beacon register, that is accessible 24 hours a day, 7 days a week.

This register should associate the beacon identification code with the identification of the mobile carrier and should include such information on the mobile carrier as may be required by SAR forces to assist in processing a distress alert.

The following table provides detailed information on national points of contact for accessing national 406 MHz beacon registers.

New information on points of contact for national 406 MHz beacon registers or updates to existing information should be forwarded to the Cospas-Sarsat Secretariat.

Note: Telephone numbers in the table are given according to the following format applicable to international dialling:

(CCC.AAA)
NNNNN...

With: CCC: Country code (international dialling)
AAA: Area code (where applicable)
NNNNN...: Local number

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
501	Adelie Land	-	-	-	-	-	AUMCC	see France (226, 227, 228)
401	Afghanistan*	-	-	-	-	-	-	-
303	Alaska (State of)	-	-	-	-	-	USMCC	see USA (366, 367, 368,369)
201	Albania*	-	-	-	-	-	-	-
605	Algeria*	ALMCC	(936) 65550_ MCCDZ	(213.2) 1495112	DAALZSZX mcc_alger@mdn.dz	(213.2) 1495102	ALMCC	ALMCC
559	American Samoa	-	-	-	-	-	-	see USA (366, 367, 368,369)
202	Andorra*	-	-	-	-	-	-	-
603	Angola	-	-	(242) 339848	-	(242) 390034	-	-
301	Anguilla*	-	-	-	-	-	-	-
304 305	Antigua and Barbuda*	-	-	(596) 632450	mrcc.fortdefrance@ wanadoo.fr	(596) 709292	-	-
701	Argentina*	ARMCC (EPIRBs, ELTs, PLBs)	-	(54.11) 44802486	SAEZZSZX armcc@sass.gov.ar	(54.11) 44802486	ARMCC	ARMCC
216	Armenia*	-	-	-	-	-	-	-
307	Aruba	JRCC Curaçao	(93) 1506	(5999) 4637950	kw.rcc@czmcarib.an cgcuracao@ hotmail.com	(5999) 4637700	JRCC Curaçao	Coastguard Netherlands Antilles & Aruba, Nightingaleweg Curaçao, Netherlands Antilles
608	Ascension*	-	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
503	Australia	RCC Australia (EPIRBs, ELTs, PLBs)	-	(61.2) 62306868	YSARYCYX rccaus@amsa.gov.au	(61.2) 62306820	AUMCC	AusSAR, Australian Maritime Safety Authority, GPO Box 2181, Canberra City, ACT 2601, Australia
203	Austria	Monitoring Station Vienna (EPIRBs, PLBs)	-	(43.1) 3201051 Ext 36	fmb.wien@bmvit.gv.at	(43.1) 3201051	RCC Vienna	-
		RCC Vienna (ELTs)	114276	(43.5) 17032176	LOWWYCYX rcc.vienna@austrocontrol.at	(43.1) 7988380	RCC Vienna	-
423	Azerbaijan	Radiocommunication Centre (EPIRBs, PLBs)	(784) 142102 MRF AI	(994.12) 935339	gkmp@caspar.baku.az	(994.12) 934506	-	-
204	Azores*	-	-	-	-	-	-	-
308 309 311	Bahamas	MRCC Falmouth (EPIRBs)	45560 FALMCG G	(44.1326) 318342 319264	ckemp@pucbahamas.gov.bs	(44.1326) 317575 211569	-	London Bahamas Office (Tel. 44.20 7264 2550)
408	Bahrain*	-	-	-	-	-	-	-
405	Bangladesh*	-	-	-	-	-	-	-
314	Barbados*	-	-	-	-	-	-	-
206	Belarus*	-	-	-	-	-	CMC	-
205	Belgium*	BMR (EPIRBs)	-	(32.2) 2268840	bmr@bipt.be	(32.2) 2268856	-	-
		Aeronautical Services (ELTs) IBRD for PLBs only	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
312	Belize*	-	-	-	-	-	-	-
610	Benin*	-	-	-	-	-	-	-
310	Bermuda	Bermuda RCC (EPIRBs, ELTs, PLBs)	(581) 431010110 RCCB X	(1.441) 2971530	operations@ rccbermuda.bm	(1.441) 2971010	USMCC	Bermuda RCC
410	Bhutan*	-	-	-	-	-	-	-
720	Bolivia*	La Paz RCC	-	(591.2) 2642088	SLLPZRZX rcclapaz@yahoo.es	(591.2) 2642053	CHMCC	RCC La Paz
478	Bosnia and Herzegovina*	-	-	-	-	-	-	-
611	Botswana*	-	-	-	-	-	Civil Aviation Rescue Centre, Johannesburg	-
710	Brazil	BRMCC (EPIRBs, ELTs, PLBs)	-	(55.61) 33652964 33651212	SBBRZSZX brmcc@cindacta1.aer.mil.br www.brmcc.aer.mil.br	(55.61) 33652964	BRMCC/ RCC Brasilia	CINDACTA1 / BRMCC SHIS QI 05 Lago Sul, Brasilia-DF C.E.P. - 71615-600, Brazil
378	British Virgin Islands*	MRCC Falmouth (EPIRBs)	-	(44.1326) 319264 318342	epirb@mcga.gov.uk	(44.1326) 211569 317575	UKMCC	MRCC Falmouth, Pendennis Point Castle Drive, Falmouth, Cornwall TR11 4WZ, United Kingdom
508	Brunei*	-	-	-	-	-	-	-
207	Bulgaria*	MRCC Varna (EPIRBs)	(865) 06777486	(359.52) 603265	mrcc_vn@marad.bg	(359.52) 603268	-	Port Control Tower, MRCC Varna 9000, Bulgaria
633	Burkina Faso*	-	-	-	-	-	-	-
609	Burundi*	-	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
514 515	Cambodia*	-	-	-	-	-	-	-
613	Cameroon*	-	-	-	-	-	-	-
316	Canada	CBR (EPIRBs, ELTs, PLBs)	-	(1.877) 4063298	http://canadianbeaconregistry.forces.gc.ca	(1.613) 9653716 (1.877) 4067671	CMCC (Co-located with RCC Trenton)	Canadian Beacon Registry, c/o CMCC 8 Wing Trenton P.O.Box 1000 Stn Forces Astra, Ontario, K0K 3W0, Canada
617	Cape Verde*	-	-	-	-	-	-	-
319	Cayman Islands*	-	-	-	-	-	-	see UK (232, 233, 234, 235) (coded with UK codes)
612	Central African Republic*	-	-	-	-	-	-	-
670	Chad*	-	-	-	-	-	-	-
725	Chile*	CHMCC (EPIRBs, ELTs, PLBs)	-	(56.2) 5305972	SCTIZSZX chmcc@fach.cl	(56.2) 5305941	CHMCC (RCC Santiago)	CHMCC (RCC STGO-SPOC) Casilla 40, Cerrillos, Santiago, Chile
412 413	China (P.R.of)	CNMCC (EPIRBs, ELTs)	-	(86.10) 65293296	ZBBBZSZX cnmcc@mail.eastnet.com.cn	(86.10) 65293298 65292221	CNMCC	-
416	Chinese Taipei*	TAMCC (EPIRBs, ELTs, PLBs)	-	(886.2) 25450234	RCTPRESX tamcc@ms23.hinet.net	(886.2) 87703661 25450214	TAMCC	-
516	Christmas Island	-	-	-	-	-	RCC Australia	see Australia (503)
523	Cocos (Keeling) Islands	-	-	-	-	-	RCC Australia	see Australia (503)

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE ----------	ASSOCIATED MCC or RCC	MAINTAINED BY:
730	Colombia	Aeropuerto El Dorado, Aeronautica Civil, Grupo Busqueda y Rescate (ELTs)	-	(57.1) 4148603	MCBOYADS MCBOYAYC lpaez@aerocivil gov.co	(57.1) 4148103	USMCC	-
616	Comoros*	-	-	-	-	-	-	-
615	Congo*	-	-	-	-	-	-	-
518	Cook Islands	RCC New Zealand	-	(64.4) 9148391	NZWNYCYX rccnz@msa.govt.nz	(64.4) 9148383	AUMCC (New Zealand RCC)	RCC New Zealand, P.O.Box 30050 Lower Hutt, New Zealand
321	Costa Rica	Flight Information Office	-	(506) 4438965	vpiedra@dgac.go.cr	(506) 4438961	-	-
619	Côte d'Ivoire*	-	-	-	-	-	-	-
238	Croatia	Harbour Master's Office (EPIRBs)	-	(385.51) 212696 214031	-	(385.51) 212696 212474	-	Harbour Master's Office 51000 Rijeka, Senjsko Pristaniste 3, Croatia
618	Crozet Archipelago	-	-	-	-	-	FMCC	see France (226, 227, 228)
323	Cuba*	-	-	-	-	-	-	(ELTs may be found also in CMC database)
209 210 212	Cyprus	RCC Larnaca (EPIRBs)	(605) RCC CY	(357.24) 643254	LCLKYCYX	(357.24) 304737 630723	RCC Larnaca	-
270	Czech Republic*	-	-	-	-	-	-	-
445	Democratic People's Republic of Korea*	-	-	-	-	-	-	(ELTs may be found also in CMC database)

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	ASSOCIATED MCC or RCC	MAINTAINED BY:
676	Democratic Republic of the Congo*	-	-	-	-	-	-	-
219 220	Denmark	JRCC Denmark (EPIRBs, ELTs, PLBs)	-	(45) 89433220	EKMCYCYX jrcc@sok.dk	(45) 89433206	NMCC	Flag Officer Denmark Soedalsparken 20, Post Box 1483 DK-8220, Brabrand, Denmark
621	Djibouti*	-	-	-	-	-	-	-
325	Dominica*	-	-	-	-	-	-	-
327	Dominican Republic*	-	-	-	-	-	-	-
735	Ecuador	Ecuador DAC (EPIRBs)	-	-	dirdac@ramt.com	(593.2) 2506592	USMCC	-
622	Egypt*	RCC - Alamaza Air Force Base	(91) 21095 RCCCR UN	(20.2) 4185431	HECCYCYX	(20.2) 4184537 4185431	-	-
359	El Salvador*	-	-	-	-	-	-	-
631	Equatorial Guinea*	-	-	-	-	-	-	-
625	Eritrea*	-	-	-	-	-	-	-
276	Estonia	JRCC Tallinn (EPIRBs, ELTs)	(537) 173341 PIIR EE	(372.6) 922501	ncc_estonia@ pohja.pv.ee	(372.6) 922222	NMCC	Estonian Board of Border Guard Coast Guard Department Susta 15, 11712 Tallinn, Estonia
624	Ethiopia*	-	-	-	-	-	-	-
740	Falkland Islands*	-	-	-	-	-	FIRCC	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
231	Faroe Islands	JRCC Denmark (EPIRBs, ELTs, PLBs)	-	(45) 89433220	EKMCYCYX jrcc@sok.dk	(45) 89433206	NMCC	Flag Officer Denmark Soedalsparken 20, Post Box 1483 DK-8220, Brabrand, Denmark
520	Fiji	Air Safety Department (ELTs)	-	(679) 6725125	sao@caaf.org.fj	(679) 6721555	Air Traffic Control Nadi International Airport	Senior Airworthiness Officer
230	Finland	MRCC Turku (EPIRBs, ELTs, PLBs)	-	(358.71) 8720109	mrcc@raja.fi	(358.71) 8720100	MRCC Turku	Finnish Boarder Guard Headquarters P.O.Box 13, 00131Helsinki Finland
226 227 228	France	FMCC (EPIRBs, ELTs, (PLBs)	-	(33.5) 61274878	LFIAZSZX fmcc@cnes.fr	(33.5) 61254382	FMCC	FMCC
546	French Polynesia	-	-	-	-	-	FMCC	see France (226, 227, 228)
626	Gabon*	-	-	-	-	-	-	-
629	Gambia*	-	-	-	-	-	-	-
213	Georgia*	RCC Georgia (EPIRBs)	-	(995.222) 73905	mrccgeorgia@ maradgeorgia.org	(995.222) 73913	-	Maritime Transport Administration of Georgia
211 218	Germany	RCC Munster (EPIRBs, ELTs)	811885 (First word of text: Att:SAR)	(49.251) 135759	ETRAYCYX Ltkdosarleitstelle@ bundeswehr.org	(49.251) 135757	MRCC Bremen (RCC Glücksburg)	Federal Office of Post and Telecommunication Branch Hamburg
627	Ghana*	-	-	-	-	-	-	-
236	Gibraltar	Gibraltar Port Authority (EPIRBs)	2130 GIBPOR GK	(350) 40434	-	(350) 78134 77272 77615	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	ASSOCIATED MCC or RCC	MAINTAINED BY:
237 239 240 241	Greece	JRCC Piraeus (EPIRBs, ELTs)	(601) 212239 YEN GR 212273 YEN GR 213594 YEN GR 211588 RCC GR 211254 RCC GR	(30.210) 4224417 4132398 4115798 4191561 4117801 4220466	LGGGYCYX jrccpgr@yen,gr	(30.210) 4112500 4220772 4191126 4191325 4191369	GRMCC	JRCC Piraeus Hellenic Ministry of Mercantile Marine, Aegean & Island Policy Akti Vassiliadi St. Gate E2, Piraeus 18510 Greece
331	Greenland	JRCC Denmark (EPIRBs, ELTs, PLBs)	-	(45) 89433220	EKMCYCYX jrcc@sok.dk	(45) 89433206	NMCC	Flag Officer Denmark Soedalsparken 20,Post Box 1483 DK-8220, Brabrand Denmark
330	Grenada*	-	-	-	-	-	-	-
329	Guadeloupe	-	-	-	-	-	FMCC	see France (226, 227, 228)
332	Guatemala*	-	-	-	-	-	-	-
745	Guiana (French Dep.of)	-	-	-	-	-	FMCC	see France (226, 227, 228)
632	Guinea*	-	-	-	-	-	-	-
630	Guinea-Bissau*	-	-	-	-	-	-	-
750	Guyana*	-	-	-	-	-	-	-
336	Haiti*	-	-	-	-	-	-	-
338	Hawaii	-	-	-	-	-	-	see USA (366, 367, 368, 369)
334	Honduras	Aeroporto Toncontin (ELTs)	-	(504) 2331104 2333683 (office hours only)	-	(504) 2338487 (office hours only)	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
477	Hong Kong, China*	HKMCC (EPIRBs, ELTs)	-	(852) 25417714	VHHHZSZX hkmrcc@mardep.gov.hk	(852) 22337999	HKMCC	Marine Department Search and Rescue Section, P.G.O. Box 4155, Hong Kong, China
243	Hungary*	-	-	-	-	-	-	-
251	Iceland	Icelandic Coast Guarad MRCC	-	(354) 5452001	BIRKICGT sar@lhg.is	(354) 5452100	NMCC	Icelandic Coast Guard - MRCC Skógarhlíð 14, 105 Reykjavik, Iceland
419	India	INMCC (EPIRBs, ELTs, PLBs)	-	(91.80) 28371857	VOBGYCYS imcc@istrac.org	(91.80) 28094546 28371857	INMCC	ISTRAC/ISRO Department of Space Plot No. 12, Peenya Industrial Estate, Bangalore-560058, India
525	Indonesia	IDMCC (EPIRBs)	-	(62.21) 5501513	WIIIYCYL indonesia_mcc@yahoo.com	(62.21) 5501449	IDMCC	National SAR Agency (Badan SAR National), JL Medan Merdeka Timur 5, Jakarta 10110, Indonesia
422	Iran*	-	-	-	-	-	-	
425	Iraq*	-	-	-	-	-	-	-
250	Ireland	Irish Coastguard (EPIRBs, ELTs)	-	(353.1) 6620795 6762666	EIDWIMES mrccdublin@irishcoastguard.ie	(353.1) 6620922	UKMCC	Irish Coastguard Leeson Line Dublin 2, Ireland
428	Israel*	-	-	-	-	-	-	-
247	Italy*	ITMCC (EPIRBs, ELTs, PLBs)	-	(39.080) 5342145	LIJCYFYX itmcc247@cospas-sarsat-italy.it director@cospas-sarsat-italy.it	(39.080) 5341571 5344033 5341053	ITMCC	ITMCC, Italian Satellite Station Cospas/Sarsat Lungomare Starita 5 - 70123 Bari, Italy
339	Jamaica*	-	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
431 432	Japan*	JAMCC (EPIRBs, ELTs)	-	(81.3) 35916107	RJTTYKYY jamcc@kaiho.mlit.go.jp	(81.3) 35916106	JAMCC	Japan Coast Guard (JCG) Operation Centre – JAMCC 2-1-3 Kasumigaseki Chiyodaku Tokyo 100-8989, Japan
438	Jordan*	-	-	-	-	-	-	-
436	Kazakhstan*	-	-	-	-	-	-	-
634	Kenya*	Civil Aviation Authority (ELTs)	-	(254.2) 822300 827026	HKNCYAYB HKNAZQZX kcaa@nbnet.co.ke	(254.2) 827100 827870	-	Directorate of Civil Aviation
635	Kerguelen Islands	-	-	-	-	-	FMCC	see France (226, 227, 228)
529	Kiribati*	-	-	-	-	-	-	-
440 441	Korea (Rep.of.)	KOMCC (EPIRBs, ELTs, PLBs)	(801) 45502 KOMCC	(82.32) 8352895 8352952	komcc2@kornet.net komcc1@kornet.net	(82.32) 8352594 8352252 8352694	KOMCC	Search and Rescue Division Guard and Rescue Bureau Korea Coast Guard/KOMCC 3-8, SongDo-Dong, YeonSu-Gu Incheon City, Republic of Korea
447	Kuwait*	-	-	-	-	-	-	-
451	Kyrgyz Republic	Avalon Company LLC	-	(996.312) 514772	spoc@avalonkg.com office@avalonkg.com	(996.312) 514772	CMC	Avalon Company LLC, 166 Matrosova St., Bishkek 720005, Kyrgyz Republic
531	Laos*	-	-	-	-	-	-	-
275	Latvia*	MRCC Riga (EPIRBs, ELTs, PLBs)	-	(371) 67320100	sar@mrcc.lv	(371) 67323103 67082070	NMCC	MRCC Riga Meldru 5A Riga, Latvia LV-1015
450	Lebanon*	-	-	-	-	-	-	-
644	Lesotho*	-	-	-	-	-	-	-

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COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	ASSOCIATED MCC or RCC	MAINTAINED BY:
636 637	Liberia*	Liberian International Ship and Corporate Registry LLC (EPIRBs)	-	(1.703) 7905655	-	(1.703) 7903434	-	-
642	Libya*	-	-	-	-	-	-	-
252	Liechtenstein	-	-	-	-	-	-	see Switzerland (269)
277	Lithuania*	MRCC Klaipeda (EPIRBs)	(877) 278486 SAR LT	(370.6) 499677	mrcc.klaipeda@takas.lt	(370.6) 499670 499669 399502	NMCC	MRCC Klaipeda 24 J. Janonio Street Klaipeda 5800 Lithuania
		ARCC Vilnius (ELTs)	-	(370.52) 194589	EYVCYCYX arcc@ang.lt	(370.52) 194590	NMCC	ST “Oro Navigacija”, ARCC Vilnius Rodunios Kelias-2 LT-02188 Lithuania
253	Luxembourg	Service des Opération Aéronautiques (ELTs)	-	-	ELLXZPZX ais @airport.etat.lu	(352) 47982023 47982024	-	-
453	Macao, China*	-	-	-	-	-	-	-
647	Madagascar	RCC Antananarivo (EPIRBs, ELTs)	(983) 22286 ASEMAD MG	(261.20) 2245909	FMMICYCYX acm@acm.mg	(261.20) 2244410 2245909	FMCC	-
255	Madeira*	-	-	-	-	-	-	-
655	Malawi*	-	-	-	-	-	-	-
533	Malaysia	MRCC Port Klang (EPIRBs)	-	(60.3) 3685020 3671334	-	(60.3) 31670530 31695201	SIMCC	Marine Department Peninsular Malaysia, Safety of Navigation Division, P.O.Box 12 42007 Port Klang, Malaysia

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	ASSOCIATED MCC or RCC	MAINTAINED BY:
455	Maldives	Ministry of Communications, Science and Technology (EPIRBs, ELTs)	-	(960) 320000	arasheed@mcst.gov.mv	(960) 323344	-	-
649	Mali*	-	-	-	-	-	-	-
215 248 249 256	Malta	Malta RCC (EPIRBs)	(406) 1489 ARMFOR	(356) 241001 (office hours only) 809860	LMMLYCYX	(356) 809279 824212 (after office hours) 824214 (after office hours)	-	Dep. of Wireless Telegraphy Evance Bld., Merchants Street Valletta, Malta
538	Marshall Islands	International Registries, Inc. (EPIRBs)	-	(1.703) 4768522	cgeiger@register-iri.com	(1.703) 6204880 6204766 (after working hours)	-	International Registries, Inc. 11495 Commerce Park Drive Reston, Virginia 20191-1507, USA
347	Martinique	-	-	-	-	-	FMCC	see France (226, 227, 228)
654	Mauritania*	-	-	-	-	-	-	-
645	Mauritius*	SSR International Airport	-	(213) 6373164	FIMPYAYX civil-aviation@mail.gov.mu	-	-	-
660	Mayotte	-	-	-	-	-	FMCC	see France (226, 227, 228)
345	Mexico	Mexican Navy (EPIRBs)	(383) 1764427 XBRAME 1764486 XBRAME 1771266	(52.5) 6770453	-	(52.5) 6246599	USMCC	-
510	Micronesia*	-	-	-	-	-	-	-
214	Moldova*	-	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	ASSOCIATED MCC or RCC	MAINTAINED BY:
254	Monaco*	Police Maritime (EPIRBs, ELTs)	-	(377) 93302245	-	(377) 93153016	FMCC	Public Security
457	Mongolia*	-	-	-	-	-	-	-
262	Montenegro*	-	-	-	-	-	-	-
348	Montserrat*	-	-	-	-	-	-	-
242	Morocco*	Direction de Aeronautique Civile (ELTs)	(933) 36772 M	(212) 37773074 37777113	GMMRYAYX civilair@iam.net.ma	(212) 37774578 37773027	RCC Casablanca	-
650	Mozambique	Maputu MRCC (EPIRBs)	-	(258.1) 494396	safmar@zebra.ufm.mz	(258.1) 494396	-	
506	Myanmar*	-	-	-	-	-	-	-
659	Namibia	NAMSAR (EPIRBs)	-	(264.64) 2082325	vladimir@namport.com.na	(264.64) 2082263/4/5	-	Port Captain
544	Nauru*	-	-	-	-	-	-	-
459	Nepal*	-	-	-	-	-	-	-
244 245 246	Netherlands (The)*	The Netherlands Coast Guard (EPIRBs, ELTs, PLBs)	(044) 71088 KUSTW NL	(31.223) 658358	-	(31.223) 542300	JRCC Den Helder	The Netherlands Coast Guard P.O.Box 10000, 1780 CA Den Helder The Netherlands
306	Netherlands Antilles	JRCC Curaçao	(93) 1506	(5999) 4637950	kw.rcc@czmcarib.an cgcuracao@hotmail.com	(5999) 4637700	JRCC Curaçao	Coastguard Netherlands Antilles & Aruba, Nightingaleweg Curaçao, Netherlands Antilles
540	New Caledonia	-	-	-	-	-	AUMCC (RSC Nouméa)	see France (226, 227, 228)

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
512	New Zealand	RCC New Zealand (EPIRBs, ELTs, PLBs)	-	(64.4) 9148388 9148391	NZWNYCYX rccnz@maritimenz.govt.nz	(64.4) 9148383	AUMCC (RCC New Zealand)	RCC, P.O.Box 30050 Lower Hutt New Zealand
350	Nicaragua*	-	-	-	-	-	-	-
656	Niger*	-	-	-	-	-	-	-
657	Nigeria*	Maritime SAR (EPIRBs)	-	(234.1) 5450722 5872670 5870477	-	(234.1) 5870624 5872670 5872671	-	National Maritime Authority 4 Burma Road Apapa – Lagos Nigeria
		NCAA (ELTs)	-	(234.1) 4963489 4930030	-	(234.1) 4931597		Nigerian Civil Aviation Authority MMA, IKEJA
542	Niue	RCC New Zealand (EPIRBs, ELTs, PLBs)	-	(64.4) 9148388	NZWNYCYX rccnz@maritimenz.govt.nz	(64.4) 9148383	AUMCC (RCC New Zealand)	RCC New Zealand, P.O.Box 30050 Lower Hutt New Zealand
536	Northern Mariana Islands	-	-	-	-	-	-	see USA (366, 367, 368,369)
257 258 259	Norway	NMCC (EPIRBs, ELTs, PLBs)	-	(47) 75524200	ENBOYCYS mailto@jrcc-bodoe.no	(47) 75559000	NMCC	Hovedredningssentralen Nord-Norge, Box 1016 8001 Bodoe, Norway
461	Oman*	-	-	-	-	-	-	-
463	Pakistan	SUPARCO	-	(92.21) 34690795 34690797	OPKCZSZX sckhi@suparco.gov.pk pamcc@suparco.gov.pk	(92.21) 34690793 34690840	PAMCC	SUPARCO, P.O.Box 8402 Sector 28, Gulzar-e-Hijri, Off University Road, Karachi-75270 Pakistan

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
511	Palau*	-	-	-	-	-	-	-
443	Palestine*	-	-	-	-	-	-	-
351 352 353 354 355 356 357 370 371 372	Panama*	-	-	-	-	-	-	-
553	Papua New Guinea	ARCC (EPIRBs, ELTs)	-	(675) 3254094 3250749	AYPMYCYX	(675) 3256885 3244491 3244635	ARCC	-
755	Paraguay	Asuncion RCC (EPIRBs, ELTs, PLBs)	-	(595.21) 645600 Ext 2160	SGASSARX sar@dinac.gov.py	(595.21) 645600	CHMCC	RCC Asuncion
760	Peru*	PEMCC (EPIRBs, ELTs, PLBs, SSASs)	26042 PE 59655 PE	(51.1) 4291547 4299798	SPIMZSZX pemcc@dicapi.mil.pe	(51.1) 4202020	PEMCC	Direccion General de Capitanias y Guardacostas Calle Constitucion 150 Callao 1, Peru
548	Philippines	Manila RCC (EPIRBs, ELTs)	-	(63.2) 8323013	RPMMYCYX	(63.2) 8323013 8321961 Ext 3030	HKMCC	-
555	Pitcairn Island	Pitcairn Island Office	-	(64.9) 3660187	admin@pitcairn.gov.pn	(64.9) 2660186	FMCC	Pitcairn Island Office, 17th Floor IAG House, 151 Queen Street, P.O.Box 105696, Auckland, New Zealand

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
261	Poland	ARCC Warsaw	-	(48.22) 6828797	EPWWYCYM arcc_poland@o2.p1	(48.22) 6828911	MRCC Gdynia	Civil Aviation Office, Air Navigation Dept., 2 Marcina, Flisa St. 02-247 Warsaw, Poland
263	Portugal	Institute of Ports and Shipping (IPTM) (EPIRBs, ELTs)	-	(351.21) 3914763	dsm.dns@imarpor.pt jose.maciel@ imarpor.pt	(351.21) 3914627/37	MRCC Lisboa	- -
358	Puerto Rico	-	-	-	-	-	-	see USA (366, 367, 368,369)
466	Qatar*	-	-	-	-	-	-	-
660	Reunion	-	-	-	-	-	FMCC	see France (226, 227, 228)
264	Romania	Romanian Civil Aviation Authority	-	(40.21) 2334077	LRBBYAYA	(40.21) 2081590, 2334076	CMC	-
273	Russia	CMC (EPIRBs, ELTs, PLBs)	(871) 113934 MKVC RU	(7.495) 6269375 6261460	UUUUYCYX cmc@morflot.ru cmc@marsat.ru	(7.495) 6261215 6261460	CMC	CMC 1 Building, 1 Rozhdestvenka St. Moscow 109012 Russia
661	Rwanda*	-	-	-	-	-	-	-
665	Saint Helena*	-	-	-	-	-	-	-
341	Saint Kitts and Nevis*	-	-	-	-	-	-	-
343	Saint Lucia*	-	-	-	-	-	-	-
607	Saint Paul and Amsterdam	-	-	-	-	-	-	see France (226, 227, 228)
361	Saint Pierre and Miquelon	-	-	-	-	-	-	see France (226, 227, 228)

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COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
375 376 377	Saint Vincent and the Grenadines	(EPIRBs)	-	-	monaco@svg-marad.com www.svg-marad.com/epirbs	-	-	-
561	Samoa	RCC New Zealand (EPIRBs, ELTs, PLBs)	-	(64.4) 9148388	NZWNYCYX rccnz@maritimenz.govt.nz	(64.4) 9148383	AUMCC RCC New Zealand	RCC New Zealand, P.O.Box 30050, Lower Hutt New Zealand
268	San Marino*	-	-	-	-	-	-	-
668	Sao Tome and Principe*	-	-	-	-	-	-	-
403	Saudi Arabia*	SAMCC (EPIRBs, ELTs, PLBs)	-	(966.2) 6150171	sar-samcc@gaca.gov.sa OEJNJSAR	(966.2) 6150170	SAMCC	GACA-SED P.O.Box 929, Jeddah 21421 Saudi Arabia
663	Senegal*	-	-	-	-	-	-	-
279	Serbia*	RCC of Serbia	-	(381.11) 2286198 2286432	LYBAZQZX LYBNYCYX sar-rcc@cad.gov.rs	(381.11) 2286415	ITMCC	Civil Aviation Directorate of Serbia Airport Nikola Tesla Belgrade Belgrade 59, 11080 Belgrade, Serbia
664	Seychelles*	Seychelles Coast Guard (EPIRBs)	-	(248) 323288	seycoast@seychelles.net	(248) 224411	-	-
667	Sierra Leone*	-	-	-	-	-	-	-
563 564 565	Singapore*	SIMCC (EPIRBs, ELTs)	-	(65) 65422548	WSSSZSZX CAAS_RCC@caas.gov.sg	(65) 65425024 65412668	SIMCC	MCC Singapore, Singapore Air Traffic Control Centre, Biggin Hill Road, Singapore 509950, Republic of Singapore
267	Slovakia	RCC (EPIRBs, ELTs)	-	(421.2) 48572185	LZIBYCYX karel.bemoc@lps.sk	(421.2) 43292409	-	-

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COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
278	Slovenia*	-	-	-	-	-	-	-
557	Solomon Islands*	-	-	-	-	-	-	-
666	Somalia*	-	-	-	-	-	-	-
601	South Africa*	ASMCC (EPIRBs, ELTs, PLBs)	(95) 521850 ASMCC SA	(27.21) 5513760	FACTYCYX maritimeradio@ ixmail.co.za (no attachments accepted)	(27.21) 5529752	ASMCC	MRCC Cape Town P.O.Box 532 Parow 7499 South Africa
224 225	Spain	SPMCC (EPIRBs, ELTs)	-	(34.928) 727107	GCMPZSZX spmcc@inta.es	(34.928) 727104 727105 727106	SPMCC	Cospas-Sarsat/SPMCC INTA, Centro Espacial de Canarias, Aptdo.29, 35100 Maspalomas, Las Palmas, Spain
417	Sri Lanka*	-	-	-	-	-	-	-
662	Sudan*	-	-	-	-	-	-	-
765	Surinam	Department of Civil Aviation (ELTs)	(397) 148 CIVPBM SN	-	SMPBYAYX	(597) 97914, 98898	FMCC	-
669	Swaziland*	-	-	-	-	-	-	-
265 266	Sweden*	ARCC Sweden (ELTs) IBRD for PLBs only - code 266	-	(46.31) 648110	ESORYCYX arcc@amrcc. sjofartsverket.se	(46.31) 648080	NMCC	Swedish Maritime Administration / ARCC
		MRCC Göteborg (EPIRBs)	20180 MRCCGBG S	(46.31) 648010	mrccgbg@ amrcc.sjofartsverket.se	(46.31) 699080		Swedish Maritime Administration / MRCC
269	Switzerland	RCC Zurich (EPIRBs, ELTs, PLBs)	-	(41.44) 6543587	LSARYCYX ops@rega.ch	(41.44) 6543538	FMCC	Schweizerisches Seeschiffahrtsamt (EPIRBs), Federal Office of Civil Aviation (ELTs), BAKOM (PLBs)

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS					ASSOCIATED MCC or RCC	MAINTAINED BY:
		NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE		
468	Syria*	-	-	-	-	-	-	-
674 677	Tanzania*	-	-	-	-	-	-	-
567	Thailand	THMCC (EPIRBs, ELTs, PLBs)	-	(66.2) 2873186	VTBAYCYX bkrcc@aviation.go.th	(66.2) 2860594 2860506	THMCC	Flight Standards Bureau, Department of Civil Aviation,71 Soi., Ngarmduple Rama IV Rd.,Tungmahamek, Sathorn, Bangkok 10120 Thailand
274	The Former Yugoslav Republic Macedonia *	-	-	-	-	-	-	-
671	Togo*	-	-	-	-	-	-	-
570	Tonga	RCC New Zealand (EPIRBs, ELTs, PLBs)	-	(64.4) 9148388	NZWNYCYX rccnz@maritimenz.govt.nz	(64.4) 9148383	AUMCC (RCC New Zealand)	RCC New Zealand P.O Box 30050 Lower Hutt, New Zealand
362	Trinidad and Tobago*	-	-	-	-	-	-	-
672	Tunisia*	Direction Génerale de l'Aviation Civile	-	(216.71) 794227	-	(216.71) 787675	FMCC	Direction Génerale de l'Aviation Civile, Ministère des Transports B.P.179, 2030 Tunis Cedex Tunisie
271	Turkey*	TRMCC	(607) 44144	(90.312) 2320823	trmcc@denizcilik.gov.tr	(90.312) 2319105 2324783 2313374	TRMCC	TRMCC Denizcilik Mustesarligi G.M.K. Bulvari No:128/A Maltepe, Ankara, Turkey
434	Turkmenistan*	-	-	-	-	-	-	-
364	Turks and Caicos Islands*	-	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE	ASSOCIATED MCC or RCC	MAINTAINED BY:
572	Tuvalu	ARCC Funafuti	-	(688) 20159, 20148	NGFUYFYX	(688) 20726, 20157	-	-
675	Uganda*	-	-	-	-	-	-	-
272	Ukraine	Odessa MRCC (EPIRBs)	-	(380.482) 634243	mrcc@morcom.org.ua	(380.482) 637619	CMC	State Department of Maritime and River Transport, MRCC 270058 29 Shevchenko Av., Odessa, Ukraine
		Aviatechmark Ltd. (ELTs)	-	(380.44) 4507272	UKKKTHXX atm_ukr-mayak@mail.ru	(380.44) 4236414		Aviatechmark Ltd., (ELTs) 4/of I Vernadskogo Av, Kiev, Ukraine
470	United Arab Emirates*	General Civil Aviation Authority (ELTs)	-	(971.2) 5996850	OMAEATCC atc@szc.gcaa.ae atc@gcaa.ae	(971.2) 5996969	SAMCC AEMCC after IOC of AEMCC	General Civil Aviation Authority Air Traffic Control Centre P.O.Box 6558, Abu Dhabi, UAE
232 233 234 235	United Kingdom of Great Britain and Northern Ireland	UKMCC (ELTs)	-	(44.1309) 678308 678309	EGQPZSZX ukmcc@atlas.co.uk	(44.1309) 690469 (44.1343) 836015	UKMCC	UKMCC, ARCC Kinloss RAF Kinloss, Forres Moray IV36 3UH United Kingdom
		406 MHz Distress & Security Registry (EPIRBs, PLBs)	-	(44.1326) 319264 (Beacon Registry) 318342 (Operations Room)	epirb@mcga.gov.uk	(44.1326) 211569 (Beacon Registry) 317575 (Operations Room)	UKMCC	MRCC Falmouth, Pendennis Point Castle Drive, Falmouth, Cornwall TR11 4WZ, United Kingdom
366 367 368 369	United States of America	USMCC (EPIRBs, ELTs, PLBs)	-	(1.301) 8174565 8174568	KZDCZSZA usmcc@noaa.gov beacon.registration@noaa.gov	(1.301) 8174515 8174576	USMCC	Sarsat Beacon Registration, E/SP3 4231 Suitland Road, Suitland MD 20746-4304, USA
	United States Back-up Facility	(same as above)	-	(1.301) 7946536	KZDCZSZC usmcc@noaa.gov	(1.301) 7946535	(same as above)	(same as above)
379	United States Virgin Islands	-	-	-	-	-	-	see USA (366, 367, 368, 369)

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

COUNTRY or REGION CODE	COUNTRY or REGION NAME	SAR USER ACCESS TO 406 MHz BEACON REGISTERS ---------- NAME	TELEX	FACSIMILE	AFTN / E-MAIL	TELEPHONE ----------	ASSOCIATED MCC or RCC	MAINTAINED BY:
770	Uruguay	Carrasco RCC (EPIRBs, ELTs)	-	(5982.2) 6040112	SUMUYCYX ccrfau@adinet.com.uy	(598.2) 6040297	CHMCC	RCC Carrasco
437	Uzbekistan*	-	-	-	-	-	-	-
576	Vanuatu	Vanuatu Maritime Services (EPIRBs)	-	(1.212) 4259652 (1.914) 2762706 (after NY office hours)	email@vanuatuships.com	(1.212) 4259600	AUMCC	Vanuatu Maritime Services 39 Broadway, Suite 2020 New York, NY 10006, USA
208	Vatican City*	-	-	-	-	-	-	-
775	Venezuela*	RCC Maiquetia	-	(58.212) 3551920	SVMIZSZX sar@inac.gob.ve	(58.212) 3551518 3551920	USMCC	-
574	Vietnam*	VNMCC	-	(84.31) 3842979	VVHPZSZX	(84.31) 3822181 3822000	VNMCC	VNMCC
578	Wallis and Futuna	-	-	-	-	-	AUMCC	see France (226, 227, 228)
473 475	Yemen*	-	-	-	-	-	-	-
678	Zambia*	-	-	-	-	-	-	-
679	Zimbabwe*	-	-	-	-	-	-	-

Note: * - Beacons with this country code may be found in the International Beacon Registration Database (www.406registration.com).

- END OF ANNEX I / F -

C/S A.001 ANNEXES

PART II:

COSPAS-SARSAT SPACE AND GROUND SEGMENT DESCRIPTION

ANNEX II / A

STATUS OF GROUND SEGMENT - MCCs

This annex provides the current status of Cospas-Sarsat MCCs.

Table II / A.1 provides details of all existing MCCs. Each MCC Operator is responsible for keeping other MCCs advised of changes in this information.

Table II / A.2 provides a summary status of all MCCs.

Table II / A.3 contains the MCCs contact numbers for automated exchange of SIT messages. These numbers all support the reception and automatic processing of SIT messages at the MCC on a 24-hour basis. It is recommended that MCCs undertake communication tests with each other especially in respect of X.25.

Table II / A.1 : Details of MCCs (1/4)

MCC Name/ Code	Telex	AFTN	Fax	Telephone	X.25
AEMCC* 4700	-	OMADYCYX	(971.2) 4496844	(971.2) 4056144 4496866	-
ALMCC 6050	65550_MCCDZ	DAALZSZX	(213.2) 1495112	(213.2) 1495102	Address provided on a need to know basis
ARMCC 7010	-	SAEZZSZX	(54.11) 44802486	(54.11) 44802486 47512935	-
ASMCC 6010	-	FACTYCYX	(27.21) 5513760	(27.21) 5529752	-
AUMCC 5030	-	YSARYCYX	(61.2) 62306868	(61.2) 62306820	-
BRMCC 7100	-	SBBRZSZX	(55.61) 33652964 33651212	(55.61) 33652964 33648395	-
CHMCC 7250	-	SCTIZSZX	(56.2) 5305972	(56.2) 5305941	-
CMC 2730	-	UUUUYCYX	(7.495) 6269375 6261460	(7.495) 6261215 4233200 6261516	-
CMCC 3160	-	CYTRYCYT	(1.613) 9657494	(1.613) 9657265 (1.800) 2118107	-
CNMCC 4120	-	ZBBBZSZX	(86.10) 65293296	(86.10) 65293298 65292221	-
FMCC 2270	-	LFIAZSZX	(33.5) 61274878	(33.5) 61254382	-
GRMCC 2400	-	LGGGYCYC	(30.210) 4082870	(30.210) 4191395 4082690 4082692	-
HKMCC 4770	-	VHHHZSZX	(852) 25417714	(852) 22337999	-
IDMCC 5250	-	WIIIYCYL	(62.21) 5501513	(62.21) 5501449	-
INMCC 4190	-	VOBGYCYS	(91.80) 28371857	(91.80) 28094546 28371857	-
ITMCC 2470	-	LIJCYFYX	(39.080) 5342145	(39.080) 5341571 5344033 5341053	-
JAMCC 4310	-	RJTTYKYY	(81.3) 35916107	(81.3) 35916106	-

Table II / A.1 : Details of MCCs (2/4)

MCC Name/ Code	Email	Mailing Address
AEMCC* 4700	aemcc@uae-jrcc.ae	SAR Coordination Centre P.O.Box 906, GHQ Armed Forces UNITED ARAB EMIRATES
ALMCC 6050	mcc_alger@mdn.dz	Service SAR 123, rue de Tripoli, BP 428, Hussein-Dey Algiers, ALGERIA
ARMCC 7010	armcc@sass.gov.ar	ARMCC, GRUPO III Comunicaciones, Fuerza Aérea Argentina, I Brigada Aérea, Av. Matienzo e Itacumbú S/N, El Palomar (CP 1684), Buenos Aires ARGENTINA
ASMCC 6010	maritimeradio@ixmail.co.za (no attachments accepted)	ASMCC Telkom SA, Maritime Services Private Bag XI, Milnerton 7435, SOUTH AFRICA
AUMCC 5030	rccaus@amsa.gov.au	AusSAR Australian Maritime Safety Authority GPO Box 2181, Canberra City ACT 2601 , AUSTRALIA
BRMCC 7100	brmcc@cindacta1.aer.mil.br www.brmcc.aer.mil.br	CINDACTA1 / BRMCC SHIS QI 05 Lago Sul – Area Especial 12 CEP - 71615-600, Brasilia – DF, BRAZIL
CHMCC 7250	chmcc@fach.cl	CHMCC, Casilla 40, Cerrillos Santiago, CHILE
CMC 2730	cmc@morflot.ru cmc@marsat.ru	1/4 Rozhdestvenka St. Moscow 103759 RUSSIA
CMCC 3160	cmcc2@sarnet.dnd.ca	CMCC, 8 Wing Trenton, P.O.Box 1000 Stn. Forces Astra, Ontario, K0K 3W0 CANADA
CNMCC 4120	cnmcc@mail.eastnet.com.cn	CNMCC, China Maritime, Search and Rescue Centre 11 Jianguomennei Avenue Beijing, CHINA (P.R.of) 100736
FMCC 2270	fmcc@cnes.fr	CNES - Centre Spatial de Toulouse Cospas-Sarsat FMCC - bpi 903 18 avenue Edouard Belin 31401 Toulouse Cedex 9, FRANCE
GRMCC 2400	grmcc@yen.gr	Ministry of Mercantile Marine, Aegean & Island Policy Akti Vassiliadi St. Gate E2, Piraeus 18510 GREECE
HKMCC 4770	hkmrcc@mardep.gov.hk	Marine Department, Search and Rescue Section G.P.O.Box 4155, Hong Kong, CHINA
IDMCC 5250	indonesia_mcc@yahoo.com	National SAR Agency (Badan SAR National) JL. Medan Merdeka Timur 5 Jakarta 10110, INDONESIA
INMCC 4190	inmcc@istrac.org	ISTRAC / ISRO Department of Space, Plot No.12 Peenya Industrial Estate Peenya Bangalore-560058, INDIA
ITMCC 2470	itmcc247@cospas-sarsat-italy.it itmccvicedir@cospas-sarsat-italy.it director@cospas-sarsat-italy.it	ITMCC, Italian Satellite Station Cospas/Sarsat, Lungomare Starita - 5 - 70123 Bari ITALY
JAMCC 4310	jamcc@kaiho.mlit.go.jp	Japan Coast Guard (JCG) Operation Centre - JAMCC 2-1-3 Kasumigaseki Chiyodaku Tokyo 100-8989, JAPAN

Table II / A.1 : Details of MCCs (3/4)

MCC Name/ Code	Telex	AFTN	Fax	Telephone	X.25
KOMCC 4400	(801) 45502 KOMCC	-	(82.32) 8352895 8352952	(82.32) 8352594 8352252 8352694	-
NIMCC 6570	-	DNAAZXFX	(234) 94131749	(234) 94134341	-
NMCC 2570	-	ENBOYCYS	(47) 75524200	(47) 75559000	Address provided on a need to know basis
PAMCC* 4630	-	OPKCZSZX	(92.21) 34690795 34690797	(92.21) 34690793 34690840	-
PEMCC 7600	26042 PE 59655 PE	SPIMZSZX	(51.1) 4291547	(51.1) 4202020	-
SAMCC 4030	-	OEJNJSAR	(966.2) 6150171	(966.2) 6150170 6855812	-
SIMCC 5630	-	WSSSZSZX	(65) 65422548	(65) 65425024 65412668	-
SPMCC 2240	-	GCMPZSZX	(34.928) 727107	(34.928) 727104 727105 727106	Address provided on a need to know basis
TAMCC 4160	-	RCTPRESX	(886.2) 25450234	(886.2) 87703661 25450214	0487 622 591
THMCC 5670	-	VTBAYCYX	(66.2) 2873186 2855452	(66.2) 2860506 2860594	-
TRMCC 2710	-	LTACZSZX	(90.312) 2312902	(90.312) 2313374	028634112107124
UKMCC 2320	-	EGQPZSZX	(44.1309) 678309 690717	(44.1343) 836015 (44.1309) 690469 678304	Address provided on a need to know basis
Alternate Facility	-	EGQPZSZX	(44.1309) 678309 690923	(44.1309) 678304 690469	-
USMCC 3660	-	KZDCZSZA	(1.301) 8174568	(1.301) 8174576	-
Back-up Facility	-	KZDCZSZC	(1.301) 7946535	(1.301) 7946536	-
VNMCC 5740	-	VVHPZSZX	(84.31) 3842979	(84.31) 3822181	-
VZMCC* 7750	-	T.B.D.	(58.212) 3551920	(58.212) 3034511	T.B.D.

Table II / A.1 : Details of MCCs (4/4)

MCC Name/ Code	E-mail	Mailing Address
KOMCC 4400	komcc2@kornet.net komcc1@kornet.net	Search and Rescue Division, Guard and Rescue Bureau Korea Coast Guard / KOMCC, 3-8, SongDo-Dong YeonSu-Gu, Incheon City REPUBLIC OF KOREA
NIMCC 6570	mcc@nema.gov.ng abdsalaam76@yahoo.co.uk	NEMA, Plot 8, Ademola Adetokunbo Crescent Maitama, P.M.B. 357, Garki, Abuja, NIGERIA
NMCC 2570	mailto@jrcc-bodoe.no	HOVEDREDNINGS-SENTRALEN NORD-NORGE, Box 1016 8001 Bodoe, NORWAY
PAMCC* 4630	sckhi@suparco.gov.pk pamcc@suparco.gov.pk	SUPARCO P.O.Box 8402, Sector 28, Gulzar-e-Hijri Off University Road, Karachi-75270 PAKISTAN
PEMCC 7600	pemcc@dicapi.mil.pe	Direccion General de Capitanias y Guardacostas Calle Constitucion 150, Callao 1 PERU
SAMCC 4030	sar-samcc@gaca.gov.sa	GACA-SED P.O.Box 15441, Jeddah 21444 SAUDI ARABIA
SIMCC 5630	CAAS_RCC@caas.gov.sg	MCC Singapore Singapore Air Traffic Control Centre (SATCC) Biggin Hill Road, Singapore 509950 REPUBLIC OF SINGAPORE
SPMCC 2240	spmcc@inta.es	Cospas-Sarsat / SPMCC INTA, Centro Espacial de Canarias, Aptdo.29 35100 Maspalomas, Las Palmas, SPAIN
TAMCC 4160	tamcc@ms23.hinet.net	Taipei Mission Control Centre 362 Pin-Kiang Street CHINESE TAIPEI
THMCC 5670	bkkrcc@aviation.go.th	THMCC, Flight Safety Bureau, Department of Aviation 71 Soi Ngamdupliee, Rama IV Road, Sathorn Bangkok 10120, THAILAND
TRMCC 2710	trmcc@denizcilik.gov.tr	TRMCC, Denizcilik Mustesarligi G.M.K. Bul No: 128/A Maltepe/Ankara/TURKEY
UKMCC 2320	ukmcc@atlas.co.uk	UKMCC ARCC Kinloss, RAF Kinloss Forres, Moray IV36 3UH UNITED KINGDOM
USMCC 3660	usmcc@noaa.gov	USMCC E/SP3, NSOF NOAA, 4231 Suitland Road Suitland, MD 20746-4304, USA
VNMCC 5740	ncchien@vishipel.com.vn vnmcc@vishipel.com.vn	VNMCC 02, Nguyen Thuong Hien Street Haiphong City, VIETNAM
VZMCC* 7750	sar@inac.gob.ve	VZMCC Apartado Postal 68676, Oficina de Ipostel Altamira Avenida Francisco de Miranda Código Postal 1060, Caracas, VENEZUELA

Notes: T.B.D. - To be determined. * - Under development.

Table II / A.2 : Summary Status of MCCs (1/2)

as at: 29 October 2009

MCC Name / Location	Data Distribution Region	MCC Code	Status	Comments
AEMCC (Abu Dhabi, UAE)	South Central DDR	4700	Under development (a)	Staffed 24 / 7
ALMCC (Algiers, Algeria)	South Central DDR	6050	FOC	Staffed 24 / 7
ARMCC (El Palomar, Buenos Aires, Argentina)	Western DDR	7010	FOC	Staffed 24 / 7
ASMCC (Cape Town, South Africa)	South West Pacific DDR	6010	FOC	Staffed 24 / 7
AUMCC (Canberra, Australia)	South West Pacific DDR	5030	FOC	Nodal MCC Staffed 24 / 7
BRMCC (Brasilia, Brazil)	Western DDR	7100	FOC	Staffed 24 / 7
CHMCC (Santiago, Chile)	Western DDR	7250	FOC	Staffed 24 / 7
CMC (Moscow, Russia)	Eastern DDR	2730	FOC	Nodal MCC Staffed 24 / 7
CMCC (Trenton, Canada)	Western DDR	3160	FOC	Staffed 24 / 7
CNMCC (Beijing, P. R. of China)	North West Pacific DDR	4120	FOC	
FMCC (Toulouse, France)	Central DDR	2270	FOC	Nodal MCC Staffed 24 / 7
GRMCC (Athens, Greece)	Central DDR	2400	FOC	Staffed 24 / 7
HKMCC (Hong Kong, China)	North West Pacific DDR	4770	FOC	Staffed 24 / 7
IDMCC (Jakarta, Indonesia)	South West Pacific DDR	5250	FOC	Staffed 24 / 7
INMCC (Bangalore, India)	Eastern DDR	4190	FOC	Staffed Monday-Saturday, see Note b
ITMCC (Bari, Italy)	Central DDR	2470	FOC	Staffed 24 / 7
JAMCC (Tokyo, Japan)	North West Pacific DDR	4310	FOC	Nodal MCC Staffed 24 / 7
KOMCC (Incheon, R. of Korea)	North West Pacific DDR	4400	FOC	
NIMCC (Abuja, Nigeria)	South Central DDR	6570	FOC	Staffed 24 / 7
NMCC (Bodoe, Norway)	Central DDR	2570	FOC	Staffed 24 / 7
PAMCC (Karachi, Pakistan)	Eastern DDR	4630	Under development (a)	
PEMCC (Callao, Peru)	Western DDR	7600	FOC	Staffed 24 / 7
SAMCC (Jeddah, Saudi Arabia)	South Central DDR	4030	FOC	Staffed 24 / 7
SIMCC (Singapore, Singapore)	South West Pacific DDR	5630	FOC	Staffed 24 / 7
SPMCC (Maspalomas, Spain)	South Central DDR	2240	FOC	Nodal MCC Staffed 24 / 7
TAMCC (Taipei, ITDC)	North West Pacific DDR	4160	FOC	

Table II / A.2 : Summary Status of MCCs (2/2)

as at: 29 October 2009

MCC Name / Location	Data Distribution Region	MCC Code	Status	Comments
THMCC (Bangkok, Thailand)	South West Pacific DDR	5670	FOC	Staffed 24 / 7
TRMCC (Ankara, Turkey)	Central DDR	2710	FOC	Staffed 24 / 7
UKMCC (Kinloss, UK)	Central DDR	2320	FOC	Staffed 24 / 7
USMCC (Suitland, USA)	Western DDR	3660	FOC	Nodal MCC Staffed 24 / 7
VNMCC (Haiphong, Vietnam)	North West Pacific DDR	5740	FOC	Staffed 24 / 7
VZMCC (Maiquetia, Venezuela)	Western DDR	7750	Under development (a)	

Notes: (a) MCCs under development could change their status to operational before the next revision of this document.

(b) Manned from Monday to Saturday between 03-30 UTC and 12-00 UTC.

During un-manned hours contact:
ISTRAC - Phone: (91.80) 28376029 or (91.80) 28094534, Fax: (91.80) 28094444
Mr. N. K. Shrivastava - Phone: (91.80) 23456954 or (91.80) 28094546
Mr. P. Soma - Phone: (91.80) 26667800 or (91.80) 28094583
Mr. S. K. Shivakumar - Phone: (91.80) 26660708 or (91.80) 28094581 or (91) 98455070935.

Table II / A.3 : MCCs Contact Numbers for Automated Exchange of SIT Messages and Status of FTP-VPN

MCC Name	Telex	AFTN	X.25	FTP-VPN
AEMCC*	-	OMADYCYX	-	Operational
ALMCC	-	DAALZSZX	Address provided on a need to know basis	Operational
ARMCC	-	SAEZZSZX	-	Operational
ASMCC	-	FACTYCYX	-	Operational
AUMCC(1)	-	YSARYCYX	-	Operational
BRMCC	-	SBBRZSZX	-	Operational
CHMCC	-	SCTIZSZX	-	Operational
CMC (2)	-	UUUUYCYX	-	Operational
CMCC	-	CYTRYCYT	-	Operational
CNMCC	-	ZBBBZSZX	-	Operational
FMCC	-	LFIAZSZX	-	Operational
GRMCC	-	LGGGYCYC	-	Operational
HKMCC	-	VHHHZSZX	-	Operational
INMCC	-	VOBGYCYS	-	
IDMCC	-	WIIIYCYL	-	Operational
ITMCC (3)	-	LIJCYFYX	-	Operational
JAMCC	-	RJTTYKYY	-	Operational
KOMCC	(801) 45502 KOMCC		-	Operational
NIMCC	-	DNAAZXFX	-	Operational
NMCC	-	ENBOYCYS	Address provided on a need to know basis	Operational
PAMCC*	-	OPKCZSZX	-	Operational
PEMCC	26042 PE 59655 PE	SPIMZSZX	-	Operational
SAMCC	-	OEJNJSAR	-	Operational
SIMCC	-	WSSSZSZX	-	Operational
SPMCC	-	GCMPZSZX	Address provided on a need to know basis	Operational
TAMCC	-	RCTPRESX	-	Operational
THMCC	-	VTBAYCYX	-	Operational
TRMCC	-	LTACZSZX	028634112107124	Operational
UKMCC	-	EGQPZSZX	Address provided on a need to know basis	Operational
USMCC	-	KZDCZSZA	-	Operational
USMCC Back-up Facility	-	KZDCZSZC	-	Operational
VNMCC	-	VVHPZSZX	-	Operational
VZMCC*	-	SVMIZSZX	-	Operational

Notes: T.B.D. To be determined.
(1) Email address for SIT alerts provided on a need to know basis.
(2) Email address for SIT 915 only: cmc@morflot.ru
(3) Email address for SIT alerts only: itmccoperator@cospas-sarsat-italy.it
* Under development.

- END OF ANNEX II / A -

ANNEX II / B

STATUS OF GROUND SEGMENT - LEOLUTs AND GEOLUTs

This annex provides the current status of Cospas-Sarsat LEOLUTs and GEOLUTs.

Table II / B.1 contains details and status of LEOLUTs.

Table II / B.2 contains details and status of GEOLUTs.

Table II / B.1 : Details and Status of LEOLUTs

as at: 29 October 2009

Ground Segment Operator	LEOLUT Name	Code	Associated MCC	Location		LEOLUT Commis. Report	G-SARP Commis. Report	LEO/ GEO Commis. Report	Status	Comments
				Latitude	Longitude					
Algeria	Ouargla	6051	ALMCC	31° 52.80' N	005° 29.40' E	JC-10	JC-10		FOC	
	Algiers	6052		36° 45.20' N	003° 22.86' E	JC-19	JC-19		FOC	
Argentina	Rio Grande	7012	ARMCC	53° 46.75' S	067° 42.32' W	JC-23	JC-23	JC-23	FOC	
	El Palomar	7014		34° 36.00' S	058° 36.00' W	JC-23	JC-23	JC-23	FOC	
Australia	Bundaberg	5032	AUMCC	24° 45.50' S	152° 24.77' E	JC-18	JC-18		FOC	
	Albany	5033		35° 07.20' S	117° 53.94' E	JC-19	JC-19		FOC	
Brazil	Brasilia	7101	BRMCC	15° 51.43' S	047° 54.16' W	JC-18	JC-18	JC-19	FOC	
	Recife	7102		08° 08.30' S	034° 55.50' W	JC-18	JC-18	JC-20	FOC	
	Manaus	7103		03° 01.39' S	060° 03.24' W	JC-21	JC-21		FOC	
Canada	Goose Bay	3161	CMCC	53° 18.76' N	060° 27.96' W	JC-18	JC-18	JC-23	FOC	
	Churchill	3162		58° 45.54' N	093° 59.64' W	JC-18	JC-18	JC-23	FOC	
	Edmonton	3163		53° 40.69' N	113° 18.97' W	JC-18	JC-18	JC-23	FOC	
	Ottawa	3168		45° 19.72' N	075° 40.47' W	JC-19	JC-19	JC-23	FOC	Test facility
Chile	Santiago	7251	CHMCC	33° 29.34' S	070° 42.00' W	JC-22	JC-22		FOC	
	Punta Arenas	7252		53° 00.36' S	070° 50.82' W	JC-22	JC-22		FOC	
	Easter Island	7254		27° 09.01' S	109° 26.22' W	JC-15	JC-15		FOC	
China (P.R.of)	Beijing (1)	4121	CNMCC	39° 54.30' N	116° 25.05' E	JC-11	JC-11		UD	Operations terminated on 18 August 2009
	Beijing (2)	4122		39° 54.30' N	116° 25.05' E	JC-11	JC-11		UD	Operations terminated on 18 August 2009
France	Toulouse (1)	2271	FMCC	43° 33.64' N	001° 28.85' E	JC-18	JC-18		FOC	
	Toulouse (2)	2272		43° 33.63' N	001° 28.85' E	JC-18	JC-18		FOC	
Greece	Penteli	2401	GRMCC	38° 04.85' N	023° 52.98' E	JC-21	JC-21	JC-22	FOC	
Hong Kong, China	Hong Kong (1)	4771	HKMCC	22° 16.55' N	114° 08.67' E	JC-22	JC-22		FOC	
	Hong Kong (2)	4772		22° 16.55' N	114° 08.67' E	JC-22	JC-22		FOC	
India	Bangalore	4191	INMCC	13° 02.09' N	077° 30.70' E	JC-17	JC-17		FOC	
	Lucknow	4192		26° 54.80' N	080° 57.44' E	JC-20	JC-20		FOC	
Indonesia	Jakarta	5251	IDMCC	06° 07.57' S	106° 39.36' E	JC-23	JC-23		FOC	

Ground Segment Operator	LEOLUT Name	Code	Associated MCC	Location		LEOLUT Commis. Report	G-SARP Commis. Report	LEO/ GEO Commis. Report	Status	Comments
				Latitude	Longitude					
Indonesia	Makassar	5252		05° 04.00' S	119° 33.00' E	T.B.D.	T.B.D.		UD	
Italy	Bari	2471	ITMCC	41° 08.26' N	016° 50.86' E	JC-14	JC-14		FOC	
ITDC	Keelung (1)	4161	TAMCC	25° 08.10' N	121° 45.42' E	JC-11	JC-11		FOC	
	Keelung (2)	4162		25° 08.12' N	121° 45.44' E	JC-23	JC-23	JC-23	FOC	
Japan	Gunma	4313	JAMCC	36° 25.56' N	138° 57.30' E	JC-21	JC-21		FOC	
Korea	Incheon	4403	KOMCC	37° 23.58' N	126° 38.94' E	JC-20	JC-20		FOC	
New Zealand	Wellington	5121	AUMCC	41° 09.12' S	175° 30.27' E	JC-19	JC-19		FOC	
Nigeria	Abuja	6571	NIMCC	09° 04.56' N	007° 29.58' E	JC-18	JC-18		FOC	
Norway	Tromsoe	2571	NMCC	69° 39.74' N	018° 56.42' E	JC-7	JC-10		FOC	
	Spitsbergen	2573		78° 13.74' N	015° 23.76' E	JC-17	JC-17		FOC	
Pakistan	Karachi	4631	PAMCC	24° 56.76' N	067° 08.16' E	T.B.D.	T.B.D.		UD	
Peru	Callao	7601	PEMCC	12° 01.84' S	077° 07.79' W	JC-20	JC-20		FOC	
Russia	Moscow[(a)]	2731	CMC	55° 37.20' N	037° 30.48' E	Note (b)			N	
	Arkhangelsk[(a)]	2732		64° 22.60' N	040° 36.52' E	Note (b)			N*	* No automatic data exchange with CMC
	Nakhodka	2733		42° 51.52' N	132° 47.44' E	JC-20	JC-20		FOC	
Saudi Arabia	Jeddah (1)	4031	SAMCC	21° 39.90' N	039° 08.76' E	JC-21	JC-21		FOC	
	Jeddah (2)	4032		21° 39.90' N	039° 08.76' E	JC-21	JC-21		FOC	
Singapore	Singapore	5631	SIMCC	01° 21.12' N	103° 59.28' E	JC-19	JC-19		FOC	
South Africa	Cape Town	6011	ASMCC	33° 52.80' S	018° 30.00' E	JC-13	JC-13		FOC	
Spain	Maspalomas	2241	SPMCC	27° 45.84' N	015° 38.04' W	JC-7	JC-10		FOC	
Thailand	Bangkok (1)	5671	THMCC	13° 43.03' N	100° 32.60' E	JC-23	JC-23	JC-23	FOC	
	Bangkok (2)	5672		13° 43.03' N	100° 32.59' E	JC-23	JC-23	JC-23	FOC	
Turkey	Ankara (1)	2711	TRMCC	40° 08.45' N	032° 59.38' E	JC-19	JC-19	JC-20	FOC	
	Ankara (2)	2712		40° 08.44' N	032° 59.38' E	JC-19	JC-19	JC-20	FOC	
UAE*	Abu Dhabi	4701	AEMCC	24° 25.89' N	054° 26.87' E	JC-22	JC-22	JC-22	UD	See Note
UK	Combe Martin	2321	UKMCC	51° 10.20' N	004° 03.06' W	JC-18	JC-18	JC-20	FOC	
USA	Alaska 1 (AK1)	3031	USMCC	64° 58.42' N	147° 31.04' W	JC-18	JC-18		FOC	
	Alaska 2 (AK2)	3032		64° 58.41' N	147° 31.06' W	JC-18	JC-18		FOC	
	Hawaii 1 (HI1)	3381		21° 31.24' N	157° 59.78' W	JC-18	JC-18		FOC	
	Hawaii 2 (HI2)	3382	USMCC	21° 31.24' N	157° 59.78' W	JC-18	JC-18		FOC	

Ground Segment Operator	LEOLUT Name	Code	Associated MCC	Location		LEOLUT Commis. Report	G-SARP Commis. Report	LEO/ GEO Commis. Report	Status	Comments
				Latitude	Longitude					
USA(Cont.)	Guam 1 (GU1)	3383		13° 34.70' N	144° 56.34' E	JC-18	JC-18		FOC	
	Guam 2 (GU2)	3384		13° 34.70' N	144° 56.35' E	JC-18	JC-18		FOC	
	Florida 1 (FL1)	3663		25° 36.96' N	080° 23.03' W	JC-18	JC-18		FOC	
	Florida 2 (FL2)	3664		25° 36.98' N	080° 23.03' W	JC-18	JC-18		FOC	
	California 1 (CA1)	3667		34° 39.75' N	120° 33.09' W	JC-19	JC-19		FOC	
	California 2 (CA2)	3668		34° 39.74' N	120° 33.10' W	JC-19	JC-19		FOC	
	Greenbelt, Maryland	3691		38° 59.92' N	076° 50.46' W	JC-20	JC-20		-	IOC to be declared after communication with USMCC is established
Vietnam	Haiphong	5741	VNMCC	20° 48.07' N	106° 42.60' E	JC-18	JC-18		FOC	
Venezuela*	Maiquetia (1)	7751	VZMCC	10° 35.88' N	066° 58.92' W	JC-20	JC-20		UD	See Note
	Maiquetia (2)	7752		10° 35.94' N	066° 59.10' W	JC-20	JC-20		UD	

Notes:
(a) Indicates that this LUT location has not yet been provided in the Bureau International de l'Heure (BIH) Geodetic Reference System.
(b) LUT commissioned as per CSC-5 decision.
N Not operational.
T.B.D. To be determined.
UD Under development(could change their status to operational before the next revision of this document).
FOC Full Operational Capability.
* Association with Cospas-Sarsat pending.

Table II / B.2 : Details and Status of GEOLUTs

as at: 29 October 2009

Ground Segment Operator	GEOLUT Name	Code	Associated MCC	Location		Operational Satellite	GEOLUT Commis. Report	Status	Comments
				Latitude	Longitude				
Algeria	Algiers	6053	ALMCC	36° 45.20'N	003° 22.86' E	MSG-2	JC-19	FOC	
Argentina	El Palomar	7011	ARMCC	34° 36.00' S	058° 36.00' W	GOES-12	JC-16	FOC	
Brazil	Brasilia	7104	BRMCC	15° 51.43' S	047° 54.16' W	GOES-12	JC-16	FOC	
	Recife	7105		08° 08.30' S	034° 55.50' W	GOES-12	JC-17	FOC	
Canada	Edmonton	3166	CMCC	53° 40.69' N	113° 18.97' W	GOES-11	JC-18	FOC	
	Ottawa (1)	3167		45° 19.74' N	075° 40.44' W	GOES-12 / 11	JC-21	FOC	Test / back-up facility
	Ottawa (2)	3169		45° 20.63' N	075° 40.46' W	GOES-12	JC-21	FOC	
Chile	Santiago	7253	CHMCC	33° 29.34' S	070° 42.00' W	GOES-12	JC-22	FOC	
France	Toulouse	2273	FMCC	43° 33.52' N	001° 28.85' E	MSG-2	JC-18	FOC	
Greece	Penteli	2402	GRMCC	38° 04.85' N	023° 52.98' E	MSG-2	JC-21	FOC	
India	Bangalore	4193	INMCC	13° 02.09' N	077° 30.70' E	INSAT-3A	CSC-43*	FOC	* subject to a favourable recommendation on the acceptability of the results by a group of technical experts to be appointed by the Cospas-Sarsat Parties
Italy	Bari	2472	ITMCC	41° 08.22' N	016° 50.82' E	MSG-2	JC-21	FOC	
New Zealand	Wellington (1)	5122	AUMCC	41° 09.12' S	175° 30.27' E	GOES-11	JC-20	FOC	
	Wellington (2)	5123		41° 09.12' S	175° 30.27' E	GOES-11	JC-18	FOC	
Norway	Fauske	2572	NMCC	67° 14.22' N	015° 18.12' E	MSG-1	JC-19	FOC	
Spain	Maspalomas (1)	2242	SPMCC	27° 45.84' N	015° 38.04' W	GOES-12	JC-16	FOC	
	Maspalomas (2)	2243		27° 45.84' N	015° 38.04' W	MSG-2	JC-19	FOC	
Turkey	Ankara	2713	TRMCC	40° 08.42' N	032° 59.40' E	MSG-1	JC-19	FOC	
UAE*	Abu Dhabi	4702	AEMCC	24° 25.87' N	054° 26.88' E	MSG-2	JC-22	UD	
UK	Combe Martin	2322	UKMCC	51° 10.05' N	004° 02.83' W	MSG-2	JC-19	FOC	GOES-12 is used as operational satellite when needed (commissioning report agreed at JC-14)
USA	Maryland (1)	3674	USMCC	38° 51.02' N	076° 55.80' W	GOES-12	JC-19	FOC	
	GSE	3675		38° 51.02' N	076° 55.80' W	GOES-11 / 12	JC-19	FOC	Operational
	Maryland (2)	3676		38° 51.02' N	076° 55.80' W	GOES-11	JC-19	FOC	
	Greenbelt, Maryland	3692		38° 59.94' N	076° 50.44' W	T.B.D.	JC-20	-	IOC to be declared after communication with USMCC is established

Ground Segment Operator	GEOLUT Name	Code	Associated MCC	Location		Operational Satellite	GEOLUT Commis. Report	Status	Comments
				Latitude	Longitude				
Venezuela*	Maiquetia	7753	VZMCC	10° 35.88' N	066° 58.92' W	GOES-12	JC-20	UD	

Notes:
GSE GEOSAR Support Equipment.
FOC Full Operational Capability.
UD Under development.
* Association with Cospas-Sarsat pending.

- END OF ANNEX II / B -

ANNEX II / C

DESCRIPTION OF COSPAS-SARSAT MCCs

II / C.1 GENERAL

The purpose of this Annex is to describe the Cospas-Sarsat MCCs and their interfaces, types of messages originated, normal routing of these messages, and any back-up arrangements with other MCCs and a list of supported SPOCs. Any general information, such as 406 MHz beacon register queries, may be included in this section.

Any changes which are unique to the MCC may be amended by that MCC. If bilateral changes are involved, both MCCs shall draft appropriate amendments to their sections once the new interface has been successfully tested. These changes will be released in accordance with section 1.4.

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II / C.AE AEMCC - UNITED ARAB EMIRATES MISSION CONTROL CENTRE
(under development)

1. GENERAL

T.B.D.

2. SPOCs SUPPORTED

T.B.D.

3. SYSTEM INFORMATION MESSAGES

T.B.D.

4. BACK-UP PROCEDURES AND AGREEMENTS

T.B.D.

5. OTHER INFORMATION

T.B.D.

- END OF THIS SECTION -

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II / C.AL ALMCC - ALGERIAN MISSION CONTROL CENTRE

1. GENERAL

The Algerian Mission Control Center is located at Algiers. The ALMCC controls two LEOLUTs at Ouargla and Algiers (see location at Annex II / B, Table II / B.1) and one GEOLUT at Algiers (see Table II / B.2 of Annex II / B).

The Ouargla and Algiers LEOLUTs coverage overlaps with French, Italian, Spanish and UK LEOLUTs on Western Africa and Europe and extends southward to the Guinea Gulf up to Gabon and Congo and eastward up to the Red Sea.

The two LEOLUTs can localise transmitters and distress beacons in local mode and global mode. Interferers in the 406.0 to 406.1 MHz band are localised in the local mode and this information is provided to the Algerian Telecommunication for action through the ITU.

The GEOLUT is co-located with the LEOLUT at Algiers and it operates with MSG-2 satellite.

The SAR Administration is the head agency in Algeria for the Cospas-Sarsat Programme.

2. SPOCs SUPPORTED

ALMCC provides alert data to SPOCs in the ALMCC service area including:

Algeria	Libya
Burkina Faso	Niger
Egypt	

It also routes alert messages to SPMCC, and can receive these messages from this source.

Alert messages in other DDR service areas are routed to the SPMCC.

A communication summary for these interfaces is shown below:

Algerian RCC:	AFTN, Telex, Fax, Voice
SPMCC:	FTP-VPN, AFTN, X.25, Fax, Voice

3. SYSTEM INFORMATION MESSAGES

The following System information messages are received/originated at ALMCC:

Orbit vectors:	received from SPMCC;
SARP calibration:	received from SPMCC;
System status:	received and originated as required;
Narrative:	received and originated as required.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Ouargla LEOLUT has overlapping local mode coverage areas to a greater or lesser extent with the following LEOLUTs: Abuja, Bari, Combe Martin, Maspalomas and Toulouse. It is therefore feasible for one to back up the other in the case of a failure or planned maintenance downtime.

LUT operators will forward written notice of intention to perform maintenance routines involving deactivation of the LUT well in advance. The MCC will inform all other MCCs as soon as a decision has been taken and will confirm the times a minimum of two weeks prior to deactivation.

In the case of a complete failure of the ALMCC, the SPMCC will assume the duties of the ALMCC. SPMCC will send validated Cospas-Sarsat alert data within the ALMCC service area to designated SPOCs or RCCs. In the Algerian SRR this will be Algiers RCC (this AFTN address is DAALZSZX).

5. OTHER INFORMATION

To be determined.

- END OF THIS SECTION -

II / C.AR ARMCC - ARGENTINE MISSION CONTROL CENTRE

1. GENERAL

The Argentine Mission Control Centre (ARMCC) is located in El Palomar, Buenos Aires. The ARMCC controls two LEOLUTs and one GEOLUT at the following locations:

	Latitude	Longitude
El Palomar GEOLUT	34 º 36.00' S	058 º 36.00' W
Rio Grande LEOLUT	53 º 46.75' S	067 º 42.32' W
El Palomar LEOLUT	34 º 36.00' S	058 º 36.00' W

The Argentine LEOLUTs provide full processing of 406 MHz frequency alert data, including G-SARP processing of the transponded SARR data and combined LEO/GEO processing, according to the relevant Cospas-Sarsat specifications. The local coverage area of the Argentine LEOLUTs includes Argentina, South of Brazil and Peru, Bolivia, Paraguay, Uruguay, Chile, part of Antarctica, the Southwestern Atlantic Ocean and Southeastern Pacific Ocean.

The Argentine GEOLUT receives data from the GOES-12 satellite and provides it to the ARMCC for distribution and to the LEOLUTs for combined LEO/GEO processing.

The communication interfaces available at the ARMCC are AFTN, FTP-PNV, Telephone and Fax. These communication means are used as follows:

ARMCC-USMCC:	FTP-VPN	AFTN
ARMCC-RCCs:	AFTN	
ARMCC-Malvinas/Falkland Islands:	Telephone	Facsimile
ARMCC-CHMCC:	AFTN	

The entire ground segment is maintained and operated twenty-four hours a day, seven days a week by SASS (Servicio de Alerta y Socorro Satelital), a joint Argentine Navy/Air Force office.

2. SPOCs SUPPORTED

The ARMCC supports the RCCs in Argentina and Falkland Islands / Malvinas SRR.

3. SYSTEM INFORMATION MESSAGES

The ARMCC receives and process the following System information messages:

Orbit vectors
SARP calibration data
SARR calibration data
System status
Narrative

The ARMCC is capable of originating the following System information messages:

System status
Narrative

These messages are normally received from, or sent to the USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The back-up procedure described herein is available for the whole Argentine Mission Control Centre (ARMCC) service area in such a way that the coverage in local mode provided by the LEOLUT stations of the Chilean Mission Control Centre (CHMCC) overlaps the LEOLUT coverage of the ARMCC.

The procedure whereby the back-up service is implemented in case of an unexpected failure or scheduled interruption of the ARMCC service may occur and is expected to last more than four (4) hours is as follows:

The CHMCC sends Cospas-Sarsat alerts data to the ARMCC over AFTN.

During scheduled or unscheduled ARMCC outages, incoming AFTN data is re-routed to appropriate RCCs using the SIT 185 format as defined in the C/S A.002 document.

When this procedure is implemented, the ARMCC's duty personnel will contact the National RCCs (maritime and aerial) and advice them that CHMCC provide the Cospas Sarsat alert distress distribution.

The ARMCC will attempt to pass them to its service area RCCs/SPOCs by manually geosorting them and using the AFTN link communication, facsimile and/or other alternative links.

The back-up procedures for the ARMCC consist of the following steps:

a. Whenever back-up service is required, the ARMCC notifies CHMCC and USMCC, requesting them to provide the back-up service. The requirement is voice-transmitted

to the USMCC and CHMCC by the ARMCC and optionally confirmed by means of Email or Fax.

b. The CHMCC notifies USMCC and ARMCC when the back-up service is being provided.

c. The USMCC notifies CHMCC and ARMCC when the back-up service is being provided. During the back-up service provision, the USMCC sends to CHMCC the messages for and to be forwarded to ARMCC. The USMCC will hold the messages intended for ARMCC for re-transmission upon request.

d. The USMCC notifies all MCCs of the start of the back-up service by means of a SIT 605 message (as established in C/S A.001, section 3.6).

e. The ARMCC sends a SIT 605 message when the ARMCC normal service is restored.

f. The USMCC sends a SIT 915 message to ARMCC and CHMCC notifying them that data distribution to/from ARMCC is back to normal.

g. The CHMCC sends a SIT 915 message to ARMCC and USMCC notifying them that data distribution to/from ARMCC is back to normal.

5. OTHER INFORMATION

The beacon database is maintained by the ARMCC.

- END OF THIS SECTION -

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II / C.AS ASMCC - SOUTH AFRICAN MISSION CONTROL CENTRE

1. GENERAL

The South African Mission Control Centre is located in Milnerton (Cape Town). The ASMCC controls one LEOLUT with G-SARP. This LEOLUT is located at:

Latitude	Longitude
33 ^{o} 52.80' S	018 ^{o} 30.00' E

The South African MCC and LEOLUT operate 24 hours a day throughout the year.

The Maritime division of Telkom SA is responsible for the operation of the South African MCC and LEOLUT.

2. SPOCs SUPPORTED

Angola	Lesotho	South Africa	Zimbabwe
Botswana	Malawi	St. Helena	
Burundi	Mozambique	Swaziland	
Democratic	Namibia	Uganda	
Republic of Congo	Rwanda	Zambia	

The communication interfaces used by the ASMCC are:

AFTN FTP-VPN X.25 Telex

3. SYSTEM INFORMATION MESSAGES

The ASMCC originates and receives the following System information:

Orbit vectors: receive from AUMCC;
SARP calibration: receive from AUMCC;
System status: originate and receive from AUMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the event the ASMCC becomes unserviceable, the AUMCC will provide back-up support to the ASMCC. All alerts for the ASMCC service area will be transmitted on SIT 185 format and faxed to a number nominated by the ASMCC. The ASMCC will ensure distribution to the RCCs it supports.

5. OTHER INFORMATION

To be determined.

- END OF THIS SECTION -

II / C.AU AUMCC - AUSTRALIAN MISSION CONTROL CENTRE

1. GENERAL

The Australian Mission Control Centre is co-located with the RCC Australia in Canberra. The AUMCC controls two advanced technology LEOLUTs (ATLUT -500) with G-SARP. These two LEOLUTs are located in lighthouses on the coast at:

	Latitude	Longitude
Albany, Western Australia (Cave Point Lighthouse)	35 ^{o} 07.20' S	117 ^{o} 53.94' E
Bundaberg, Queensland (South Head Lighthouse)	24 ^{o} 45.50' S	152 ^{o} 24.77' E

These two LEOLUTs are known nationally as AULUTW (AULUT West - ID: 5033) and AULUTE (AULUT East - ID: 5032) and provide local mode coverage of the continental land mass and extending to seaward into the Indian and South Pacific Oceans and Coral and Tasman Seas.

Both LEOLUTs were registered with ITU in October 1999 (ID numbers: 96.944556 and 96.944558 - for Albany LEOLUT, 96.944552 and 96.944554 - for Bundaberg LEOLUT).

The AUMCC receives alert data from the Wellington LEOLUT (NZLUT - ID: 5121) and Wellington GEOLUTs (NZGEO1 - ID: 5122 and NZGEO2 - ID: 5123) and distributes them in accordance with document C/S A.001.

The AUMCC and LEOLUTs operate 24 hours a day throughout the year providing alert data through the co-located RCC in accordance with this document.

The AUMCC also assumes the nodal responsibilities for the Southwest Pacific DDR as defined at Annex III / A of this document.

The Australian Maritime Safety Authority (AMSA) is responsible for the management and operation of the Australian Cospas-Sarsat ground segment.

2. SPOCs SUPPORTED

American Samoa, Nauru , Samoa, Vanuatu, Australia, New Caledonia, Solomon Islands, Fiji, New Zealand, Tonga, Kiribati, Papua New Guinea, and Tuvalu.

American Samoa, Tonga, and Samoa are within the New Zealand SRR. Kiribati, Tuvalu, and Vanuatu are within the Fiji SRR. Nauru is within the Solomon Islands SRR.

The AUMCC, in supporting its service area, passes alerts to the following SRRs: Australia, New Zealand, Papua New Guinea, Solomon Islands and Fiji.

Alerts in vicinity of New Caledonia are passed to the SAR authority in Noumea.

3. SYSTEM INFORMATION MESSAGES

The AUMCC originates, receives and forwards System Information messages as follows:

Orbit vectors: receive from CMC and USMCC and forward to ASMCC, IDMCC, SIMCC and THMCC;

SARP calibration: receive from FMCC and forward to ASMCC, IDMCC, SIMCC and THMCC;

System status: originate, receive and forward from/to ASMCC, CMC, FMCC, IDMCC, JAMCC, SIMCC, SPMCC, THMCC and USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Australian and New Zealand LEOLUTs provide partial back-up for each other as there is some overlapping local mode coverage.

An agreement is in place with the USMCC to provide back-up of the AUMCC nodal responsibility. The following procedure has been agreed to:

In the event of a failure of the nodal AUMCC, the duty personnel will:

a. contact the USMCC and advise them to assume AUMCC nodal responsibilities;
b. request the USMCC to transmit AUMCC service area alerts in SIT 185 format. The AUMCC will attempt to pass them to its service area RCCs/SPOCs by manually geosorting them and using the RCC communication modes available; and
c. advise the USMCC that alerts from the local Australian or New Zealand LEOLUTs will be passed by the RCC in some form on a 'best effort' basis.

It should be noted that the RCC/AUMCC has a disaster recovery plan and if conditions are such that the primary site has to be abandoned then personnel will be transferred to an alternative site. This alternate site is already set up to support most of the RCC functions and some AUMCC functions.

5. OTHER INFORMATION

The AUMCC is responsible for the allocation of serial numbers for all serialized coded beacons and the maintenance of the Australian beacon database register and can be contacted at any time to obtain database information. Purchasers of beacons are required to complete a registration form (http://beacons.amsa.gov.au) giving details of craft, emergency contact numbers and beacon 15 HEX ID.

If national serial numbers, as provided by Australia's national authority, AusSAR (Email: ausbeacon@amsa.gov.au), are to be used, the Cospas-Sarsat type approval number (TAC) should **NOT** be inserted and bit 43 should be set to "0". If the TAC No is to be inserted, bit 43 should be set to "1" and the manufacturer's serial number of the beacon used.

EPIRBs and PLBs for sale in Australia should meet the requirements of the Australian Standard 4280. The 121.5 MHz homing transmitter referred to in Standard 4280 must be approved by the Australian Communications Authority or by a laboratory providing an equivalent service. Beacons being sold to the general public in Australia should have compliance folders that demonstrate the beacon meets the operational and environmental requirements of the Australian Standard.

EPIRBs carried by vessels under the Australian Navigation Act must comply with the relevant Parts of Marine Orders.

ELTs for sale in Australia are required to comply with Aviation Regulation 252.

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II / C.BR BRMCC - BRAZILIAN MISSION CONTROL CENTRE

1. GENERAL

The Brazilian Mission Control Centre (BRMCC) operates two Operational Control Consoles (OCCs). The first one as primary OCC located in Brasilia, the second one as secondary OCC being a back-up facility co-located with RCC-RE in Recife. Three LEOLUTs are located at Brasilia, Manaus and Recife; the BRMCC also operates two GEOLUTs at Brasilia and Recife with the following co-ordinates:

LEOLUTs:

	Latitude	Longitude
Brasilia	15° 51.43' S	047° 54.16' W
Manaus	03° 01.39' S	060° 03.24' W
Recife	08° 08.30' S	034° 55.50' W

GEOLUTs:

Brasilia	15° 51.43' S	047° 54.16' W
Recife	08° 08.30' S	034° 55.50' W

All Brazilian LEOLUTs can localise 406 MHz distress beacons in local and global coverage mode also Brazilian LEOLUTs can process 406 MHz interference data in local coverage mode.

The local mode coverage of the Brazilian LEOLUTs includes the central part of South America and western area of South Atlantic Ocean.

The BRMCC, GEOLUTS and LEOLUTs operate 24 hours a day throughout the year.
The communication interfaces used by BRMCC are:

AFTN FTP-VPN Voice Facsimile

2. SPOCs SUPPORTED

The BRMCC provides primary support to the Brazilian RCCs and Ascension Island and routes alert and notification (NOCR) messages to other countries and can receive these messages from them.

3. SYSTEM INFORMATION MESSAGES

The BRMCC originates and receives the following System information:

Orbit vectors: receive from USMCC;
SARP calibration: receive from USMCC;

System status: originate to and receive from USMCC;
406 MHz SARR frequency calibration: receive from USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

Brasilia, Manaus and Recife LUTs have overlapping local mode coverage areas to a greater or lesser extent with the following LEOLUTs: Parana, Callao, Florida and Santiago. It is therefore feasible for the Brazilian area to be partly covered in the case of failure or planned maintenance downtime.

The BRMCC operates two Operational Control Consoles (OCCs). The first one as primary OCC located in Brasilia, the second one as secondary OCC being a back-up facility co-located with RCC-RE in Recife.

In the event of failure of primary OCC, Brazil has back-up agreements and procedures in place with the USA. The following procedures have been agreed to:

a) the BRMCC (from Brasilia) notifies the USMCC whenever the back-up service is required by means of Fax, Phone or Email;

b) the USMCC notifies the BRMCC (Brasilia) when the back-up service commences by fax, phone or email. In case of failure of these contacts, USMCC shall notify the BRMCC (Recife), as contact list bellow;

c) the USMCC sends a SIT 605 message notifying the other MCCs of the BRMCC failure, and that the USMCC is performing back-up service according to section 3.7, document C/S A.001;

d) the USMCC transmits alert messages or status messages, as appropriate, for the Brazilian service area to RCC-RE using the BRMCC OCC-2 AFTN address **SBRFZSZX** (primary communication link) or via FTP-VPN link;

e) in the event that the USMCC is unable to communicate with the BRMCC (OCC-2 Recife) as described in “d” above, the USMCC shall transmit alerts for the Brazilian service area in SIT 185 format to the Brasilia RCC (RCC-BS) AFTN address (primary communication link) or via Fax. In this case, the USMCC will advise the RCC-BS of their inability to communicate with the BRMCC (OCC-2 Recife). Other Brazilian RCCs as well as BRMCC (Brasilia) will be advised by RCC-BS;

f) the BRMCC (from Recife) advises the Brazilian RCCs about the BRMCC failure and about the back-up procedures;

g) the BRMCC (from Brasilia or Recife) will notify the USMCC as soon as the problem is solved, and will advise the time when the BRMCC (Brasilia) plans to restore normal operations;

h) when the BRMCC (Brasilia) returns to normal operations it will send a SIT 605 message notifying the USMCC and other MCCs that the BRMCC (Brasilia) has resumed normal operations;

i) the USMCC will send all requested missing messages to the BRMCC (Brasilia).

CONTACT LIST	
BRMCC in Brasilia	Phone: (55) 61 3364 8395 / (55)61 33652964 Fax: (55) 61 3365 2964 / (55) 61 3365 1212 Email: brmcc@cindactal.aer.mil.br
BRMCC in Recife	Phone/Fax: (55) 81 21298102 or (55) 81 34624927 AFTN RCC-RF: SBREYCYX Email: salvaero.re@gmail.com
RCC Brasilia	Phone: (55) 61 3364 8394 Fax: (55) 61 3365 2964 / (55) 61 3365 1212 AFTN RCC-BS: SBBSYCYX Email: rccbs@cindacta1.aer.mil.br

5. OTHER INFORMATION

To be determined.

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II / C.CA CMCC - CANADIAN MISSION CONTROL CENTRE

1. GENERAL

The Canadian Mission Control Centre is located in Trenton, Ontario and controls four LEOLUTs:

Churchill, Manitoba
Edmonton, Alberta
Goose Bay, Labrador
Ottawa, Ontario (test facility)

and two GEOLUTs at the following locations:

Edmonton, Alberta
Ottawa, Ontario

Locations are provided at Annex II / B.

The LEOLUTs provide full coverage of Canadian SRRs from mid-Atlantic to the Gulf of Alaska and from the North Pole south to approximately 30 degrees north latitude. Operations are 24 hours per day, 7 days per week.

The communication interfaces used by the CMCC are:

Canadian RCCs:	FTPS (File Transfer Protocol Secure), PSTN (Public Switched Telephone Network), Voice, Fax
LUTs to CMCC:	FTPS, PSTN
USMCC:	FTP-VPN, AFTN, Voice, Fax
UKMCC:	AFTN, FTP-VPN, Voice, Fax
Other MCCs as required:	FTP-VPN, AFTN, Voice, Fax

2. SPOC'S SUPPORTED

The CMCC has no SPOCs in its SRR. However, the CMCC provides primary support to three Canadian RCCs and two Canadian Maritime Rescue Sub-Centres (MRSCs), as well to Saint Pierre and Miquelon. It also routes alerts and NOCR messages to the USMCC, and the UKMCC, and can receive these messages from these sources.

Alert and NOCR messages for other service areas are routed through the USMCC.

The CMCC also co-operates with the UKMCC to help resolve ambiguity on 406 MHz signals in the North Atlantic.

3. SYSTEM INFORMATION MESSAGES

Canada originates and receives the following System information messages:

SARR command:	originate to USMCC;
SARR command verification:	receive from USMCC;
System Status:	originate and receive, as required;
Narrative:	originate and receive, as required;
Orbit Vectors:	receive via USMCC;
SARP calibration:	receive via USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The LUTs operated by the CMCC and USMCC provide overlapping coverage of each other's areas of responsibility.

In the event of a complete CMCC failure, Canada has a back-up agreement and procedure in place with the USMCC. The USMCC would route alert data directly to appropriate Canadian RCC or MRSC.

In the event of a USMCC failure, the USMCC has a back-up agreement and procedure in place with CMCC and AUMCC. CMCC would assume USMCC national Sarsat responsibility and send alerts directly to the appropriate US RCCs. For alerts outside the USMCC SRR, CMCC will send alerts via FTP-VPN or AFTN to AUMCC, as AUMCC assumes nodal responsibilities for USMCC. The USMCC provides CMCC with the current Geosort data for its national RCCs and SPOCs.

In the event of problems with the two communications links established with the UKMCC, data will be forwarded via the USMCC.

Canada has installed a completely functional back-up system for CMCC at Belleville. Ontario. In the unlikely event of the need to transition to this alternate location, CMCC would inform the USMCC as soon as possible. Once all communication links have been reconfigured, operation of the back-up site would be transparent to external MCCs/agencies.

CMCC retains all data received on-line for approximately 35 days, after which it is archived.

5. OTHER INFORMATION

Registration of Beacons

A register for Canadian beacons is maintained by the Canadian Beacon Registry, located at CMCC in Trenton, Canada.

- END OF THIS SECTION -

II / C.CH CHMCC - CHILEAN MISSION CONTROL CENTRE

1. GENERAL

The Chilean Mission Control Centre is co-located with the Santiago RCC and controls three LEOLUTs at the following locations:

	Latitude	Longitude
Punta Arenas	53° 00.36' S	070° 50.82' W
Santiago	33° 29.70' S	070° 42.24' W
Easter Island	27° 09.01' S	109° 26.22' W

These LEOLUTs can localise transmitters and distress beacons in local mode as well as global mode.

The local mode coverage of the Chilean LEOLUTs covers the areas of Argentina, Bolivia, Chile, Paraguay, Uruguay, part of Brazil, Peru, Pacific Ocean and Antarctica.

The CHMCC also controls one GEOLUT located in Santiago.

The CHMCC, LEOLUTs and GEOLUT operate 24 hours a day throughout the year.

The Chilean Air Force (FACH) is responsible for the operation of the Chilean MCC, LEOLUTs and GEOLUT.

2. SPOCs SUPPORTED

Bolivia
Chile
Paraguay
Uruguay

3. SYSTEM INFORMATION MESSAGES

The following System information messages are received/originated at CHMCC:

Orbit vectors: received from USMCC;
SARP calibration: received from USMCC;
System status: received and originated as required;
Narrative: received and originated as required.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the unlikely event of a CHMCC failure, Chile has back-up agreements and the following procedures in place with the USA:

a. The CHMCC notifies the USMCC when the back service is required by phone or optionally by Email.

b. The USMCC notifies the CHMCC when back-up service commences by Phone, Fax or Email.

c. The USMCC sends a SIT 605 message notifying the other MCCs of the failure of the CHMCC and that the USMCC is performing back-up service according to section 3.7 of document C/S A.001. The USMCC also notifies the CHMCC's SPOCs of the same by SIT 915 message.

d. Once the failure is overcome, the CHMCC sends a SIT 605 message notifying the USMCC and other MCCs that the CHMCC has resumed normal operations. The CHMCC notifies its SPOCs by SIT 915 message that it has resumed normal operations.

e. As requested by the CHMCC, the USMCC retransmits SIT 185 messages previously sent to the CHMCC, to the CHMCC as MCC to MCC SIT formatted messages.

5. OTHER INFORMATION

Beacon Registration

406 MHz EPIRBs have been approved for carriage on Chilean vessels. A beacon register for Chilean beacons is maintained at the CHMCC.

- END OF THIS SECTION -

II / C.CN CNMCC - CHINESE MISSION CONTROL CENTRE

1. GENERAL

The Chinese Mission Control Centre is co-located with the China Maritime Search and Rescue Centre and controls two LEOLUTs installed at the Ministry of Communications at the following location:

Latitude	Longitude
39° 54.30' N	116° 25 00.05' N

The local mode of the Chinese LEOLUTs covers the main land of China, the East China Sea, the Yellow Sea and the part of the South China Sea.

Both LEOLUTs can locate transmitters and distress beacons in local mode as well as global mode. The Beijing (1) LEOLUT includes a Ground Search and Rescue Processor (G-SARP) to process the repeater band. The Beijing (2) LEOLUT is used as a back-up of Beijing (1).

The CNMCC and LEOLUTs operate 24 hours a day throughout the year and provide alert data to Chinese RCCs and to SPOCs within the CNMCC service area in accordance with document C/S A.001 and national procedures.

2. SPOCs SUPPORTED

The CNMCC provides primary support to Chinese RCCs.

The communication interfaces used by the CNMCC are:

AFTN FTP-PNV Voice Facsimile

3. SYSTEM INFORMATION MESSAGES

The following system information are received/originated at CNMCC:

Orbit vectors: received from JAMCC;
SARP calibration: received from JAMCC;
System status: originated to and received from JAMCC.

4. BACK-UP PROCEDURE AND AGREEMENTS

The LEOLUTs at Beijing, Daejeon, Nakhodka, among others, have overlapping local mode coverage areas. It is therefore feasible for one to back-up the other in case of failure or planned maintenance downtime. Co-operation in the coverage of individual satellites passes may also be feasible in the future.

In the unlikely event of a CNMCC failure, China has back-up agreements with Hong Kong.

5. OTHER INFORMATION

A register of maritime EPIRBs is maintained at China Transport Telecommunications Centre. The CNMCC is able to get access to the register.

- END OF THIS SECTION -

II / C.CO CMC - COSPAS MISSION CENTRE

1. GENERAL

The Cospas Mission Centre (i.e. the Russian Mission Control Centre) is located in Moscow and controls four national LEOLUTs at the following locations (see Annex II / B):

Arkhangelsk
Moscow
Nakhodka

These LEOLUTs can localise transmitters and distress beacons in local mode and global mode.

The local mode coverage of the Russian LEOLUTs includes Europe, northern and central parts of Asia, western part of North Pacific, north-eastern part of Africa.

The Russian MCC and LEOLUTs operate 24 hours per day throughout the year.

The CMC also assumes the nodal responsibilities for the Eastern DDR as defined at Annex III / A of this document.

The Agency Morsviazsputnik is responsible for operation of the Russian MCC and LEOLUTs.

2. SPOCs SUPPORTED

The CMC service area includes the territory of Armenia, Azerbaijan, Belarus, Bulgaria, Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Moldova, Mongolia, Poland, Romania, Russia, Slovakia, Ukraine and Uzbekistan.

The CMC routes alert data to RCCs of the Russian Federation and to other States in its service area and to the AUMCC, FMCC, INMCC, JAMCC, PAMCC and USMCC in accordance with the document C/S A.001 (DDP).

The following communication lines are used by the CMC:

Russian RCCs:	PSTN (Public Switched Telephone Network) communications, Fax
Russian LUTs:	FTP, PSTN communications
AUMCC:	FTP-VPN, AFTN
FMCC:	FTP-VPN, AFTN
INMCC:	AFTN, FTP-VPN
JAMCC:	FTP-VPN, AFTN
PAMCC:	Email

SPMCC: FTP-VPN, AFTN
USMCC: FTP-VPN, AFTN

3. SYSTEM INFORMATION MESSAGES

The CMC originates and receives the following System information messages:

Orbit vectors:	originate to AUMCC, FMCC, INMCC, JAMCC, PAMCC, SPMCC and USMCC and receive from USMCC;
SARP calibration:	receive from FMCC, forward to INMCC and PAMCC;
System status:	originate to and receive from AUMCC, FMCC, INMCC, JAMCC, PAMCC, SPMCC and USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Russian LEOLUTs in Moscow and Arkhangelsk have largely overlapping local mode coverage areas, which is taken into account in planning satellite pass processing so that one LEOLUT backs up the other in the case of failure or planned maintenance downtime. In the event of CMC equipment failure, alert messages may be received or transmitted by Telephone. If the CMC is inoperative, Russian LEOLUTs forward their alert data to national RCCs.

All alert information obtained at CMC is archived for up to 90 days.

In the case of complete failure of the CMC, the FMCC will assume the duties of the CMC. FMCC will send validated Cospas-Sarsat alert data within the CMC service area to designated SPOCs or RCCs.

5. OTHER INFORMATION

Beacon Registration

A register on national units equipped with beacons is maintained at the CMC.

- END OF THIS SECTION -

II / C.FR FMCC - FRENCH MISSION CONTROL CENTRE

1. GENERAL

The French Mission Control Centre is co-located with dual LEOLUTs in Centre National d'Études Spatiales (CNES) technical centre in Toulouse (see Annex II / B). The LEOLUTs are equipped with dedicated antennas which makes possible tracking of all Cospas-Sarsat satellites passing over Toulouse, unless two satellites are in conflict (i.e. pass at the same time).

The dual LEOLUTs can localise transmitters and distress beacons in both the global and local modes. Interferers in the 406.0 MHz to 406.1 MHz frequency band are localised in the local mode and this information is provided to the French Telecommunication Administration for action through ITU. The Toulouse LEOLUTs provide local mode coverage of Europe, eastern half of North Atlantic and Africa to latitude 20 degrees North. Operations are 24 hours per day throughout the year. The French Administration (Civil Aviation and Maritime Affairs) is responsible for validation and transmission of alert data to MCCs and SPOCs, in accordance with C/S A.001 and national procedures.

The FMCC uses AFTN to forward alert data, as well as FTP-VPN.

The FMCC also assumes the nodal responsibilities for the Central DDR as defined at Annex III / A of this document.

2. SPOCs SUPPORTED

The French Mission Control Centre receives alert data from the Toulouse dual LEOLUT and GEOLUT and from other Cospas-Sarsat MCCs in accordance with the document C/S A.001.

It provides Cospas-Sarsat alert data to the following countries:

EUROPE:		AFRICA:	INDIAN OCEAN:	SOUTH AMERICAN REGION:
Andorra	Liechtenstein	Chad	Kerguelen Islands	
Austria	(via Switzerland SPOC)	Djibouti	Madagascar	Surinam
Belgium	Luxemburg	Morocco	Mauritius	
France	Monaco	Tunisia	Reunion	
Germany	Netherlands			
Gibraltar	Portugal			
	Switzerland			

CARIBBEAN:	ATLANTIC OCEAN:
Martinique	Azores
	Madeira

FMCC provides alert data by a French overseas SPOC to the following countries:

INDIAN OCEAN REGION: Comoros

SOUTH AMERICA REGION: Antigua, Saint Lucia, Saint Kitts and Nevis, Dominica

and the British overseas territories: Anguilla and Montserrat

PACIFIC REGION: Pitcairn

and to French overseas territories: Reunion Islands and Mayotte (Indian ocean), French West Indies, French Guiana (South American Region), French Polynesia (Pacific Region).

The listed countries are part of the FMCC service area, unless they indicate that they wish to receive the alert data from another MCC or start operation of their own LEOLUT/MCC. The list of SPOCs used by the French MCC is provided at Annex I / D.

Cospas-Sarsat alerts localised inside the FMCC service area are forwarded to the responsible SPOC or RCC. For alerts localised inside the FMCC service area in a country which has not designated a SPOC, the FMCC forwards alert data to the CROSS Gris Nez for handling in accordance with agreed international SAR regulation.

AFTN and FTP-VPN are used for communication with other MCCs. AFTN, Telex and Fax are used for communication with the supported SPOCs.

3. SYSTEM INFORMATION MESSAGES

The following System information messages are received/originated at FMCC:

SARP command:	originate to USMCC;
SARP command verification:	receive from USMCC;
System status:	originate and receive as required;
Narrative:	as required;
Orbit vectors:	receive from CMC and USMCC and forward to TMCC, NMCC, and UKMCC;
SARP calibration:	originate to AUMCC, CMC, ITMCC, JAMCC, NMCC, SPMCC, UKMCC and USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Toulouse dual LEOLUTs have overlapping local mode coverage areas to a greater or lesser extent with the following LUTs: Bari, Combe Martin, Maspalomas, Ouargla and Tromsoe. It is therefore feasible for one to back up the other in the case of failure or planned maintenance downtime.

LUT/MCC operators will forward written notice of intention to perform maintenance routines involving deactivation of the LUT/MCC well in advance. The MCC will inform all other MCCs as soon as a decision has been taken, and confirm the times a minimum of two weeks prior to deactivation.

The LUT/MCC operator will inform the associated MCC by the quickest possible means, followed by a written confirmation when an estimate of the duration of the downtime is available. The MCC will immediately inform the other MCCs.

In the case of complete failure of the FMCC or in case of circumstances outside one's control, the SPMCC will assume the duties of the FMCC. SPMCC will send validated Cospas-Sarsat alert data, within the FMCC service area and/or within other areas to designated SPOCS or RCCs.

In the case of complete failure or unavailability of the ITMCC, the FMCC will assume the duties of the ITMCC. The FMCC will send validated Cospas-Sarsat alert data within the ITMCC service area and/or within other areas to designated RCCs or SPOCs.

In the case of a complete failure of the SPMCC, the FMCC will assume the duties of the SPMCC. FMCC will send validated Cospas-Sarsat alert data within the SPMCC service area and within other areas to designated SPOCs or RCCs. In the Spanish SRR this will be RCC Madrid and CNCS (MRCC). It was agreed to periodically exchange test messages between FMCC and the Spanish RCCs (RCC Madrid and CNCS) to check the communication links. All validated Cospas-Sarsat alert data within the South Central DDR service area will be directly transmitted to the South Central DDR destination MCCs.

In the case of complete failure of the CMC, the FMCC will assume the duties of the CMC. FMCC will send validated Cospas-Sarsat alert data within the CMC service area to designated SPOCs or RCCs.

5. OTHER INFORMATION

Nil.

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II / C.GR GRMCC - GREEK MISSION CONTROL CENTRE

1. GENERAL

The Greek Mission Control Centre is located at Piraeus, Greece. The GRMCC controls a LEOLUT and a GEOLUT located at Penteli Mountain (see location at Annex II / B).

The LUTs are located at the following co-ordinates:

	Latitude	Longitude
LEOLUT	38° 04.85′ N	023° 52.98′ E
GEOLUT	38° 04.85′ N	023° 52.98′ E

The LEOLUT can localise transmitters and distress beacons in local mode and global mode.

The GRMCC and LUTs operate 24 hours a day throughout the year.

The communication interfaces used by GRMCC are as follows:

AFTN FTP-VPN Facsimile Voice

2. SPOCs SUPPORTED

The GRMCC provides primary support to the Greek JRCC and routes alert and notification (NOCR) messages to other countries and can receive these messages from them

3. SYSTEM INFORMATION MESSAGES

The following System information messages are received/originated at GRMCC:

Orbit vectors:	receive from FMCC;
SARP calibration:	receive from FMCC;
System status:	originate to and receive from FMCC;
Narrative:	received and originated as required.

4. BACK-UP PROCEDURES AND AGREEMENTS

The GRMCC operates two Operational Control Consoles (OCC), one of them being a back-up. In the event of failure of both GRMCC OCCs, Greece has back-up agreements and procedures in place with Italy. The following procedures have been agreed to:

a) The GRMCC notifies the ITMCC whenever the back-up service is required by means of Fax, Phone or Email. GRMCC notices ITMCC about the alert events which were handling before the failure.

b) The ITMCC notifies the GRMCC when the back-up service commences by Fax/Phone or Email.

c) The ITMCC sends a SIT 605 message notifying the other MCCs of the GRMCC failure, and that the ITMCC is performing back-up service according to section 3.7, document C/S A.001.

d) The ITMCC transmits alerts for the Greek service area in SIT 185 format to Greek JRCC using the Greek JRCC Telex (primary communication link) or via Fax.

e) In the event that the ITMCC is unable to communicate with the JRCC as described above, the ITMCC shall; transmit alerts for the GRMCC service area in SIT 185 format to the GRMCC via Fax. In the case, the ITMCC will advise the GRMCC of their inability to communicate with the Greek JRCC.

f) The GRMCC advises the Greek JRCC about the GRMCC failure and about the back-up procedures.

g) The GRMCC will notify the ITMCC as soon as the problem is solved, and will advise the time when the GRMCC plans to restore normal operations.

h) When the GRMCC returns to normal operations it will send a SIT 605 message notifying the ITMCC and other MCCs that the GRMCC has resumed normal operations. The GRMCC also notifies Greek JRCC that it has resumed normal operations.

i) The ITMCC will send all requested missing messages to the GRMCC and will notice it about the events handled during the back-up.

j) The ITMCC shall contact with GRMCC by means of:

Phone: +30 210 4082690
Fax: + 30 210 4082870
Email: grmcc@yen.gr
AFTN : LGGGYCYC

k) The ITMCC shall contact with JRCC Piraeus by means of:

Phone: +30 210 4112500 Maritime section
+30 210 4191599 Aviation section
AFTN: LGGGYCYX
Fax: +30 210 4132398
Telex: 601 211588 RCC GR
Email: jrccpgr@yen.gr

l) The GRMCC shall contact with ITMCC by means of:

Phone: +39 080 5341053 – 5341571 - 5344033
Fax: +39 080 5342145
Telex: +811375
Email: itmccoperator@cospas-sarsat-italy.it

5. OTHER INFORMATION

Beacon Registration

A register of beacons is maintained at the GRMCC.

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II / C.HK HKMCC - HONG KONG MISSION CONTROL CENTRE

1. GENERAL

The Hong Kong Mission Control Centre is located on Hong Kong Island in the MRCC controlling two advanced technology LEOSAR Local User Terminals (dual LEOLUT system) located on the Peak on Hong Kong Island at the following location:

Latitude	Longitude
22°16.56' N	114°08.76' E

Both LEOLUTs can locate transmitters and distress beacons in local mode as well as global mode.

The local mode coverage of the Hong Kong LEOLUT covers the area from Mongolia in the north to the south of Indonesia and from the eastern side of the Indian Ocean to the western part of the Pacific.

The HKMCC and LEOLUTs both operate 24 hours a day and provide alert data to countries within the HKMCC service area in accordance with document C/S A.001 and national procedures.

A second operator control console (OCC) is available as a back-up MCC and is located at the VTC in Macau Ferry Terminal.

The Marine Department of Hong Kong is responsible for the operation of the HKMCC and the HKLEOLUT.

2. SPOCs SUPPORTED

Hong Kong, China
Macau
Philippines

The communications interfaces used by the HKMCC are:

FTP-VPN AFTN Facsimile Voice

3. SYSTEM INFORMATION MESSAGES

The following System information are received/originated at HKMCC:

Orbit vectors: receive from JAMCC;
SARP calibration: receive from JAMCC;
System status: originate to and receive from JAMCC.

4. BACK-UP PROCEDURE AND AGREEMENTS

The HKMCC established a mutual back-up procedure with the TAMCC for system outage on either side.

In the case of complete failure of the CNMCC, the HKMCC will assume the duties of the CNMCC.

In the case of complete failure of the VNMCC, the HKMCC will assume the duties of the VNMCC.

The LUTs at Hong Kong, Singapore and Japan have overlapping local mode coverage areas to a greater or lesser extent. It is therefore feasible for the Hong Kong area to be fully covered in the case of failure or planned maintenance downtime.

5. OTHER INFORMATION

Beacon Registration

A register of beacons is maintained at the HKMCC.

- END OF THIS SECTION -

II / C.ID IDMCC - INDONESIA MISSION CONTROL CENTRE

1. GENERAL

The Indonesia Mission Control Centre is collocated with one Local User Terminal in Jakarta. The IDMCC controls two advanced technology Local User Terminals (ATLUT System) located in Jakarta and Makassar at the following locations:

	Latitude	Longitude
Makassar	05°04.00' S	119°33.00' E
Jakarta	06°07.53' S	106°39.47' E

These LUTs can locate transmitters and distress beacons in local mode as well as global mode.

The local mode coverage of the Indonesia LUTs is able to cover the area of Brunei, Malaysia, Singapore, Papua New Guinea, Thailand (ASEAN Area) as well as Laos, Myanmar, South of Philippines and North Australia.

The IDMCC and LUTs operate 24 hours a day (seven days a week) throughout the year.

The National SAR Agency (BASARNAS) is responsible for the operation of the IDMCC/LUTs.

2. SPOCs SUPPORTED

The IDMCC provides primary support to the four Indonesia RCCs and routes alert and notification (NOCR) messages to other countries and can receive these messages from them.

The communications interfaces used by IDMCC:

FTP-VPN AFTN Facsimile Voice

3. SYSTEM INFORMATION MESSAGES

The IDMCC originates and receives System information to/from the AUMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The LUTs in Indonesia, Singapore and Australia have overlapping local mode coverage to greater or less extent. It is therefore feasible for the Indonesia to be fully covered in the case of failure or planned maintenance downtime.

In the event the IDMCC becomes unserviceable, the SIMCC will provide back-up support to the IDMCC. All the alerts for the IDMCC service area will be transmitted in SIT 185 format to a fax number nominated by the IDMCC or via AFTN.

5. OTHER INFORMATION

Beacon Registration

A register of national ships equipped with beacons is maintained by National SAR Agency.

- END OF THIS SECTION -

II / C.IN INMCC - INDIAN MISSION CONTROL CENTRE

1. GENERAL

The Indian Mission Control Centre is located at Bangalore and controls two national LEOLUTs at the following locations:

	Latitude	Longitude
Bangalore	13°02.09' N	077°30.70' E
Lucknow	26°54.80' N	080°57.44' E

These LEOLUTs can locate transmitters and distress beacons radiating in both local mode as well as global mode.

The local mode coverage of the Indian LEOLUTs includes the entire Indian sub-continent and the adjacent sea regions and islands.

The INMCC also controls one GEOLUT located in Bangalore.

The Indian MCC and LUTs operate 24 hours a day throughout the year.

The Indian Space Research Organization (ISRO) of the Department of Space, Government of India is responsible for the operation of the Indian MCC and LUTs.

2. SPOCs SUPPORTED

Bangladesh	Maldives	Sri Lanka
Bhutan	Nepal	Tanzania
India	Seychelles	

3. SYSTEM INFORMATION MESSAGES

The INMCC originates and receives the following System information:

Orbit vectors:	receive from CMC;
SARP calibration:	receive from CMC;
System status:	originate to and receive from CMC.

4. BACK-UP PROCEDURES

The Indian LEOLUTs at Bangalore and Lucknow have large local mode overlaps which are taken into account in planning satellite pass scheduling. In the event of INMCC equipment failure, alert messages can be received or transmitted by Telephone. All alert data are archived.

5. OTHER INFORMATION

Beacon Registration

There is a plan to maintain a register of national units equipped with beacons at the INMCC.

- END OF THIS SECTION -

II / C.IT ITMCC - ITALIAN MISSION CONTROL CENTRE

1. GENERAL

The Italian Mission Control Centre is located in Bari, at the Italian Coast Guard Naval Base, together with one LEOLUT and one GEOLUT (see Annex II / B).

The LEOLUT is equipped with an antenna which tracks all Cospas-Sarsat satellites passing over Bari, unless two satellites are in conflict. The LEOLUT is able to localise transmitters and distress beacons in local mode and global mode. Interferers in the 406.0 MHz to 406.1 MHz frequency band are localised in the local mode and forwarded to the Italian Telecommunication Authority for subsequent action through the ITU.

The Bari LEOLUT provides local mode coverage in South-East and Central part of Europe, the Mediterranean Sea, part of Middle-East Asia and part of Central and East Africa, from latitude 71° N to 11° N.

The ITMCC works 24 hours per day throughout the year. A dedicated team is responsible for validation of alert data and transmission to MCCs and SPOCs throughout the world, in accordance with document C/S A.001 and national procedures. ITMCC is equipped with a back-up server which replaces the primary one in case of failure or scheduled downtime for maintenance. All the Cospas-Sarsat alert data are continuously replicated in the back-up server, hence, in case of primary unexpected outage the MCC operator could switch on the back-up server in a very short time.

Concerning communication links, the ITMCC uses FTP-VPN to exchange data with MCCs and when not available AFTN. To send Cospas-Sarsat alert data to SPOCs or RCCs the ITMCC uses AFTN and Fax. Telephone communications are also available with national and international SAR contacts.

2. SPOCs SUPPORTED

The Italian Mission Control Centre receives alert data from the Bari LEOLUT and GEOLUT and from other MCCs according to document C/S A.001. It provides alert data to the following countries:

AFRICA:
Eritrea
Ethiopia
Kenya
Somalia
Sudan

ASIA:
Israel

EUROPE:
Albania
Bosnia and Herzegovina
Croatia
Cyprus
Italy
Malta
Montenegro
Palestine
San Marino
Serbia
Slovenia
The Former Yugoslav Rep. of Macedonia
Vatican City

3. SYSTEM INFORMATION MESSAGES

The following messages are received or originated at the Italian MCC:

System status:	originate and receive as required;
Narrative:	as required;
Orbit vectors:	receive via FMCC;
SARP calibration:	receive via FMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Bari LEOLUT has overlapping local mode coverage areas with the following LEOLUTs in the Central Data Distribution Region: Combe Martin, Toulouse, Tromsoe, Penteli and Ankara. It is feasible for one to back-up the other in case of failure or planned maintenance downtime.

LUT operators will forward written advance notice of routine maintenance deactivation of the LUT. The MCC will advise all others MCCs as soon as decision has been taken and confirm the times a minimum of two weeks before deactivation. In case of failure, the LUT operators will inform the MCC which will notice the downtime to other MCCs in CDDR using the appropriate SIT message.

In the case of complete failure or unavailability of the ITMCC, the FMCC will assume the duties of the ITMCC sending the SIT 605 to all MCCs notifying the ITMCC failure. The FMCC will send validated Cospas-Sarsat alert data within the ITMCC service area to designated RCCs or SPOCs.

ITMCC provides back-up to GRMCC and TRMCC in case of their scheduled or not scheduled downtimes according to agreements established with these MCCs.

5. OTHER INFORMATION

Beacon Registration

The ITMCC provides registration of EPIRBs, ELTs and PLBs. The ITMCC maintains the beacon registry and provides information 24 hours per day throughout the year to SPOCs or RCCs.

- END OF THIS SECTION -

II / C.JA JAMCC - JAPAN MISSION CONTROL CENTRE

1. GENERAL

The Japan Mission Control Centre is located at the Japan Coast Guard Headquarters in Tokyo. The JAMCC controls one LEOLUT at Gunma at the following location:

Latitude	Longitude
36°25.56' N	138°57.30' E

The Japan LEOLUT can localise transmitters and distress beacons in local mode as well as global mode.

The local mode coverage of the Japan LEOLUT covers the area from Russia in the north to the western part of the Pacific and from China in the west to the central part of the Pacific.

The JAMCC and LUT operate 24 hours a day and send alert data to national RCCs within the JAMCC service area in accordance with document C/S A.001 and national procedures.

The JAMCC also assumes the nodal responsibilities for the Northwest Pacific DDR as defined at Annex III / A of this document.

The Japan Coast Guard (JCG) is responsible for the management and operation of the Japan Cospas-Sarsat ground segment.

2. SPOCs SUPPORTED

Japan

3. SYSTEM INFORMATION MESSAGES

The following System information are received/originated at JAMCC:

Orbit vectors:	receive from CMC, USMCC and forward to CNMCC, HKMCC, KOMCC, TAMCC and VNMCC;
SARP calibration:	receive from FMCC and forward to CNMCC, HKMCC, KOMCC, TAMCC and VNMCC;
System status:	originate, receive and forward from/to AUMCC, CMC, FMCC, USMCC, CNMCC, HKMCC, KOMCC, SPMCC, TAMCC and VNMCC.

4. BACK-UP PROCEDURE AND AGREEMENTS

In the event of a failure of the nodal JAMCC, the duty personnel will:

a. contact and advise the USMCC to assume JAMCC nodal responsibilities;

b. contact and advise the CNMCC, HKMCC, KOMCC, TAMCC and VNMCC to divert all their traffic to the USMCC and to expect System information direct from the USMCC;

c. request the USMCC to transmit JAMCC service area alerts in SIT 185 format. The JAMCC will attempt to pass them to its service area RCCs/SPOCs by manually geosorting them; and

d. advise the USMCC that JAMCC will pass alerts from Japanese LUTs in some form on a 'best effort' basis.

5. OTHER INFORMATION

Beacon Registration

A beacon register on national units equipped with beacons is maintained at the JAMCC.

- END OF THIS SECTION -

II / C.KO KOMCC - KOREA MISSION CONTROL CENTRE

1. GENERAL

The Korea Mission Control Centre is located at the Korea Aerospace Research Institute (KARI) in Incheon and controls a dual LEOLUT at the following location:

Latitude	Longitude
37° 23.58' N	126° 38.94' E

The local mode of the Korea LEOLUT covers the area from the eastern part of Russia in the north to the Philippines and from the eastern part of China in the west to the western part of Pacific Ocean.

Both LUTs can locate transmitters and distress beacons in local mode as well as global mode.

The Korea MCC and LUTs operate 24 hours a day throughout the year and send alert data to countries within the KOMCC service area in accordance with document C/S A.001and national procedures.

The Korea Maritime and Port Administration is responsible for the operation of the KOMCC and LUTs.

2. SPOCs SUPPORTED

Democratic People's Republic of Korea
Korea (Republic of)

3. SYSTEM INFORMATION MESSAGES

The following system information are received/originated at KOMCC:

Orbit vectors: received from JAMCC;
SARP calibration: received from JAMCC;
System status: originated to and received from JAMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The LEOLUTs at Incheon and Yokohama have overlapping local mode coverage areas. It is therefore feasible for one to back-up the other in case of failure or planned maintenance downtime. Co-operation in the coverage of individual satellites passes may also be feasible in the future.

In the case of complete failure of the KOMCC, the JAMCC will assume the duties of the KOMCC. The following procedures apply:

a. Incheon LEOLUTs manually forward their alert data to the selected SPOCs/RCCs; and

b. the JAMCC provides alert data to the KOMCC via Fax for further distribution to SPOCs/RCCs by the KOMCC.

5. OTHER INFORMATION

Beacon Registration

A database of the Korean registered beacons is maintained at the KOMCC.

- END OF THIS SECTION -

II / C.NI NIMCC - NIGERIA MISSION CONTROL CENTRE

1. GENERAL

The Nigeria Mission Control Centre is co-located with one LEOLUT in the National Emergency Management Agency Building at the following location:

Latitude	Longitude
09° 04.56' N	007° 29.58' E

The local mode of the Abuja LEOLUT covers Central Africa and the Eastern part of the Atlantic Ocean. The LEOLUT can locate transmitters and distress beacons in local mode as well as global mode. The Nigeria MCC and LEOLUT operate 24 hours a day throughout the year and send alert data to MCCs and SPOCs, in accordance with the document C/S A.001 and national procedures.

2. SPOCs SUPPORTED

Nigeria

3. SYSTEM INFORMATION MESSAGES

The following System information are received/originated at NIMCC:

Orbit vectors: receive from SPMCC;
SARP calibration: receive from SPMCC;
System status: originate to and receive from SPMCC.

4. BACK-UP PROCEDURE AND AGREEMENTS

In case of complete failure of the NIMCC, the SPMCC will assume the duties of the NIMCC. The SPMCC will send validated Cospas-Sarsat alert data within the NIMCC service area to designated SPOCs or RCCs.

5. OTHER INFORMATION

A database of registered beacons is maintained by the National Maritime Authority and Nigeria Civil Aviation Authority.

- END OF THIS SECTION -

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II / C.NO NMCC - NORWEGIAN MISSION CONTROL CENTRE

1. GENERAL

The Norwegian Mission Control Centre is a combination between the LEOLUTs in Tromsoe and Spitsbergen, a GEOLUT at Fauske and MCC in Bodoe. These form the NMCC with the Tromsoe and Spitsbergen LEOLUTs and the GEOLUT at Fauske as the technical bodies of the MCC, and MCC Bodoe as the operational body. The NMCC is integrated and co-located with JRCC Bodoe.

Two LEOLUTs are installed at the following locations:

	Latitude	Longitude
Tromsoe	69° 39.74' N	018° 56.42' E
Spitsbergen	78° 13.74' N	015° 23.76' E

The GEOLUT is installed at the following location:

	Latitude	Longitude
Fauske	67° 14.14' N	015° 17.87' E

The NMCC also provides global mode locations. The NMCC operates 24 hours per day, 7 days a week.

The Ministry of Justice and Police is responsible for the coordination of SAR.

2. SPOCs SUPPORTED

The NMCC provides alert data to SPOCs in the NMCC service area including:

Denmark	Greenland	Norway
Estonia	Iceland	Sweden
Faroe Islands	Latvia	
Finland	Lithuania	

A summary of communication systems for these interfaces follows:

SPOCs in NMCC service area:	FTP	AFTN	Fax	Voice
FMCC:	FTP-VPN	AFTN	Fax	Voice
ITMCC:	FTP-VPN	AFTN	Fax	Voice
UKMCC:	FTP-VPN	AFTN	Fax	Voice
TRMCC:	FTP-VPN	AFTN	Fax	Voice
GRMCC:	FTP-VPN	AFTN	Fax	Voice
SPMCC (nodal Back-up):	FTP-VPN	AFTN	Fax	Voice

3. SYSTEM INFORMATION MESSAGES

NMCC originates and receives the following System information messages:

System status:	originate and receive, normally through FMCC;
Narrative:	for status messages;
SARP calibration:	via FMCC;
Orbit vectors:	via FMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Tromsoe and Spitsbergen LEOLUTs have overlapping local mode coverage areas to a greater or lesser extent with the following LEOLUTs: Combe Martin and Toulouse. It is therefore feasible for one to back up the other in the case of failure or planned maintenance downtime.

In the case of complete failure of the NMCC, the UKMCC will assume the duties of the NMCC. UKMCC will send validated Cospas-Sarsat alert data, within the NMCC service area to designated SPOCs or RCCs. In the Norwegian SRRs this will be JRCC Stavanger.

In the case of complete failure of the UKMCC, the NMCC will assume the duties of the UKMCC. NMCC will send validated Cospas-Sarsat alert data, within the UKMCC service area to designated SPOCs or RCCs. In the UK SRRs this will be MRCC Falmouth.

5. OTHER INFORMATION

NMCC has access 24/7 to the Norwegian beacon registries (EPIRBs, ELTs and PLBs with country codes 257, 258 and 259).

- END OF THIS SECTION -

II / C.PA PAMCC - PAKISTAN MISSION CONTROL CENTRE
(under development)

1. GENERAL

The Pakistan Mission Control Centre is located at the Space Research Centre (SPARCENT), SUPARCO Karachi and controls one Local User Terminal (LUT) and two Rescue Coordination Centres (RCCs) at Karachi:

Latitude	Longitude
24° 56.76' N	067° 08.16' E

The PALUT can locate distress beacons in local mode, as well as in global mode. In addition, the PALUT can process the repeater channel for interference monitoring.

The local mode-coverage of the PALUT includes countries from Saudi Arabia to China and the Commonwealth of Independent States (CIS) to Sri Lanka.

The PALUT and PAMCC are operating 24 hours a day throughout the year. The Pakistan Space and Upper Atmospheric Research Commission (SUPARCO) is responsible for the PALUT and PAMCC operations while RCC1 is operated by Pakistan Civil Aviation Authority (CAA) and RCC2 is operated by Pakistan Maritime Security Agency (MSA).

2. SPOCs SUPPORTED

Pakistan

3. SYSTEM INFORMATION MESSAGES

The PAMCC receives and originates System status information from/to the CMC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The PAMCC has a back-up procedure with the CMC for its service area. In the event of PAMCC outages, alert messages will be received or transmitted by Email, Fax and Telephone. All alert information is archived.

5. OTHER INFORMATION

A register of national units equipped with beacons will be maintained in the IBRD and locally at PAMCC.

- END OF THIS SECTION -

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II / C.PE PEMCC - PERUVIAN MISSION CONTROL CENTRE

1. GENERAL

The Peruvian Mission Control Centre is located in Callao and controls one advanced technology LEOLUT Local User Terminal at the following location:

Latitude	Longitude
12° 01.62' S	077° 07.62' W

This LUT can localise transmitters and distress beacons in local mode as well as global mode.

The local mode coverage of the Peruvian LUT covers the areas of Bolivia, Colombia, Costa Rica, Ecuador, French Guiana, Guatemala, Guyana, Panama, Paraguay, Surinam, Uruguay, Venezuela, and parts of Argentina, Brazil, and Chile, and extends 3,000 nm into the Pacific Ocean to the West.

The PEMCC and LUT operate 24 hours a day throughout the year.

The General Direction of Capitaincies and Coast Guard of the Peruvian Navy (DICAPI) is responsible for the PELUT, PEMCC and Peruvian RCCs operations.

2. SPOCs SUPPORTED

PEMCC provides primary support to the Peruvian RCCs.

3. SYSTEM INFORMATION MESSAGES

The following System information messages are received/originated at PEMCC:

Orbit vectors: received from USMCC;
SARP calibration: received from USMCC;
System status: received and originated as required;
Narrative: received and originated as required.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the unlikely event of a PEMCC failure, Peru has a back-up agreement with Argentina and in accordance with the following procedures, the ARMCC will assume the duties of the PEMCC:

a. The PEMCC notifies the ARMCC when the back-up service is required by Phone or optionally by Email.

b. The ARMCC notifies the PEMCC when back-up service commences by Phone, Fax or Email.

c. The ARMCC sends a SIT 605 message notifying all MCCs of the PEMCC failure and that the ARMCC is performing back-up service according to section 3.7 of document C/S A.001.

d. The ARMCC transmits alerts for the Peruvian service area in SIT 185 format to PEMCC via Fax or Email;

e. Once the failure is overcome, the PEMCC sends a SIT 605 message notifying the ARMCC and all MCCs that the PEMCC has resumed normal operations.

f. The ARMCC will send all requested missing messages to the PEMCC.

5. OTHER INFORMATION

406 MHz EPIRBs have been approved for carriage on Peruvian vessels. A beacon register of Peruvian beacons is maintained at the PEMCC.

The PEMCC is responsible for the allocation of serial numbers for all serialized coded beacons and the maintenance of the Peruvian 406 MHz beacon database register and can be contacted at any time to obtain database information. Purchasers of 406 MHz beacons are required to follow the registration procedure provided in DICAPI's Unique Text of Administrative Procedures (TUPA): www.serviciosalciudadano.gob.pe/tramites/11794/3413.htm.

- END OF THIS SECTION -

II / C.SA SAMCC - SAUDI ARABIAN MISSION CONTROL CENTRE

1. GENERAL

The Saudi Arabian Mission Control Centre is co-located with the RCC in Jeddah. The SAMCC controls two LEOLUTs with G-SARP. These two LUTs are located at:

Latitude	Longitude
21 ^{o} 39.90' N	039 ^{o} 08.76' E

These two LEOLUTs are known as SALUT1 (ID: 4031) and SALUT2 (ID: 4032) and provide local mode coverage of the whole Middle East region.

The Saudi MCC and LEOLUTs operate 24 hours a day throughout the year providing alert data through the co-located RCC.

The Saudi General Authority of Civil Aviation (GACA) is responsible for the management and operation of the Saudi Cospas-Sarsat ground segment.

2. SPOCs SUPPORTED:

Bahrain	Oman	United Arab Emirates
Jordan	Qatar	Yemen
Kuwait	Saudi Arabia	
Lebanon	Syria	

The communication interfaces used by the SAMCC are:

FTP-VPN AFTN

3. SYSTEM INFORMATION MESSAGES

The SAMCC originates and receives the following System information:

Orbit vectors:	receive from SPMCC;
SARP calibration:	receive from SPMCC;
System status:	originate and receive from SPMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the case of complete failure of the SAMCC, the SPMCC will assume the duties of the SAMCC. SPMCC will send validated Cospas-Sarsat alert data within the SAMCC service area to designated SPOCs or RCCs.

5. OTHER INFORMATION

To be determined.

- END OF THIS SECTION -

II / C.SI SIMCC - SINGAPORE MISSION CONTROL CENTRE

1. GENERAL

The Singapore Mission Control Centre is located at the Singapore Air Traffic Control Centre, LORADS Complex, Biggin Hill at the following location:

Latitude	Longitude
01° 23.40' N	103° 59.10' E

Singapore's LEOLUT at Changi Airport Terminal 2 can locate transmitters and distress beacons in local mode as well as global mode.

The local mode coverage of Singapore LEOLUT is able to cover the ASEAN areas (Brunei, Indonesia, Malaysia, Singapore and South West of Philippines) as well as Cambodia, Laos, Myanmar and North West of Australia.

A second operator control console (OCC) serves as a back-up MCC and is located at the LORADS Complex Rescue Co-ordination Centre (RCC). A third OCC is located at the Maritime and Port Authority of Singapore, Tanjong Pagar Complex.

The Singapore MCC and LEOLUT operate 24 hours a day throughout the year.

The Civil Aviation Authority of Singapore and the Maritime Authority of Singapore are responsible for the operation of the Singapore LEOLUT and MCC.

2. SPOCs SUPPORTED

The SIMCC can provide alert data to SPOCs in the SIMCC service area including:

Brunei	Myanmar
Malaysia	Singapore

The communication interfaces used by SIMCC are:

AUMCC:	FTP-VPN	AFTN	Voice
SPOCs:	AFTN	Voice	

3. SYSTEM INFORMATION MESSAGES

The SIMCC originates and receives the following System information:

Orbit vectors: receive from AUMCC;
SARP calibration: receive from AUMCC;
System status: originate and receive from AUMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The LEOLUTs at Singapore, Australia, India and Hong Kong have overlapping local mode coverage areas to a greater or lesser extent. It is therefore feasible for the Singapore area to be fully covered in the case of failure or planned maintenance downtime.

In the event the SIMCC becomes unserviceable, the THMCC will provide back-up support to the SIMCC. All the alerts for the SIMCC service area will be transmitted in SIT 185 format to a Fax number nominated by the SIMCC or via AFTN.

The SIMCC is a back-up of the THMCC and IDMCC. Should the THMCC or IDMCC become unserviceable, messages will be passed via AFTN or Fax.

5. OTHER INFORMATION

Beacon Registration

A register of national ships equipped with beacons is maintained by the Maritime and Port Authority. Users of maritime EPIRBs installed on Singapore ships are required to register their EPIRBs with the Singapore Register, the Telecommunication Authority of Singapore (TAS), Radio Standard/Licensing Department.

A register of all aviation beacons are maintained by the Civil Aviation Authority of Singapore (CAAS). Users of aviation beacons carried on board Singapore registered aircraft are required to register their beacons with the CAAS. A register for both aviation and maritime beacons is available at the SIMCC.

- END OF THIS SECTION -

II / C.SP SPMCC - SPANISH MISSION CONTROL CENTRE

1. GENERAL

The Spanish Mission Control Centre is co-located with one LEOLUT in Instituto Nacional de Técnica Aeroespacial (INTA) at the Maspalomas Tracking Station in Gran Canaria, at the following location:

Latitude	Longitude
27°45.68' N	015°37.90' W

The LEOLUT is equipped with a dedicated antenna which makes possible tracking of all Cospas-Sarsat satellites passing over Canary Islands, unless satellites are in conflict.

The LEOLUT can localise transmitters and distress beacons in local mode and global mode. Interferers in the 406.0 MHz to 406.1 MHz band are localised in the local mode, and this information is provided to the Spanish Telecommunication Administration for action through ITU. The Maspalomas LEOLUT provides local mode coverage of North-Central Atlantic and North West Africa to latitude 0 degrees and operates 24 hours per day throughout the year.

The SPMCC also controls two GEOLUTs which are co-located with the LEOLUT.

Alert data are validated and transmitted to MCCs and SPOCs, in accordance with document C/S A.001 and national procedures.

The SPMCC also assumes the nodal responsibilities for the South Central DDR as defined at Annex III / A of this document.

2. SPOCs SUPPORTED

The Spanish Mission Control Centre receives alert data from the Maspalomas LEOLUT and GEOLUTs and from other Cospas-Sarsat MCCs in accordance with document C/S A.001. It provides Cospas-Sarsat alert data to the following countries:

Benin
Cameroon
Cape Verde
Central Africa Republic
Congo
Côte d'Ivoire
Equatorial Guinea
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Liberia
Mali
Mauritania
Sao Tome and Principe
Senegal
Sierra Leone
Spain
Togo

The communication interfaces used by the SPMCC are:

ALMCC:	X.25	AFTN	
AUMCC:	X.25	AFTN	FTP-VPN
CMC:	AFTN	FTP-VPN	
FMCC:AFTN	FTP-VPN		
JAMCC:	AFTN	FTP-VPN	
NIMCC:	AFTN		
SAMCC:	AFTN	FTP-VPN	
USMCC:	AFTN	FTP-VPN	

3. SYSTEM INFORMATION MESSAGES

The following System information are received/originated at SPMCC:

Orbit vectors:	receive from CMC and USMCC and forward to ALMCC, NIMCC and SAMCC;
SARP calibration:	receive from FMCC and forward to ALMCC, NIMCC and SAMCC;
System status:	originate, receive from and forward to ALMCC, AUMCC, CMC, FMCC, JAMCC, NIMCC, SAMCC and USMCC.

4. BACK-UP PROCEDURE AND AGREEMENTS

The Maspalomas LEOLUT has overlapping local mode coverage areas with the following LEOLUTs: Abuja, Bari, Combe Martin, Maspalomas, Ouargla and Toulouse. It is feasible for one to back-up the other in case of failure or planned maintenance downtime. Co-operation in the coverage of individual satellite passes may also be feasible in the future.

The LUT operators will forward written advance notice of routine maintenance deactivation of a LUT. The MCC will advise all others MCCs as soon as decision has been taken and confirm the times a minimum of two weeks before deactivation. In case of failure, the LUT operators will inform the associated MCC in the quickest possible way followed by a written confirmation when an estimate of the duration of the downtime is available. The MCC will inform immediately the MCCs in South Central DDR and the nodal MCCs.

In the case of a complete failure of the SPMCC, the FMCC will assume the duties of the SPMCC. FMCC will send validated Cospas-Sarsat alert data within the SPMCC service area and within other areas to designated SPOCs or RCCs. In the Spanish SRR this will be RCC Madrid and CNCS (MRCC). It was agreed to periodically exchange test messages between FMCC and the Spanish RCCs (RCC Madrid and CNCS) to check the communication links. All validated Cospas-Sarsat alert data within the South Central DDR service area will be directly transmitted to the destination MCC.

In the case that SPMCC has to assume the backup duties for FMCC, SPMCC will be able to process and relay the alert messages originally created for FMCC, that is to say, with MF#5 set to 2270.

5. OTHER INFORMATION

Beacon Registration

A database of the Spanish register for maritime Cospas-Sarsat beacons is maintained by the General Directorate of Merchant Navy, and another database of the Spanish register for aviation Cospas-Sarsat beacons is maintained by the General Directorate of Civil Aviation, with a copy of both databases at the SPMCC.

- END OF THIS SECTION -

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II / C.TA TAMCC - ITDC / TAIPEI MISSION CONTROL CENTRE

1. GENERAL

The ITDC / Taipei Mission Control Centre is located in the Taipei Air Navigation and Weather Services (ANWS), Civil Aeronautics Administration (CAA), at Taipei domestic airport. Two LEOSAR Local User Terminals (dual LEOLUT system) are located at Keelung Coast Radio Station with the following co-ordinates:

Latitude	Longitude
25° 08.10' N	121° 45.42' E

Both LEOLUTs can localise transmitters and distress beacons in local mode and global mode.

The local mode coverage of the ITDC LEOLUTs includes the area from Eastern part of the Indian Ocean to Western part of the Pacific Ocean.

The TAMCC and LEOLUTs operate 24 hours a day throughout the year.

The Civil Aeronautics Administration and the Maritime Department of the Ministry of Transport and Communications are responsible for the operation of the TAMCC and LEOLUTs.

2. SPOCs SUPPORTED

The TAMCC provides primary support to Chinese Taipei RCCs.

The communication interfaces used by TAMCC are:

X.25 AFTN Telex Voice Facsimile

3. SYSTEM INFORMATION MESSAGES

The TAMCC originates and receives the following System information:

Orbit vectors: receive from USMCC;
SARP calibration: receive from USMCC;
System status: originate to and receive from USMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The TAMCC established a mutual back-up procedure with the HKMCC for system outage on either side.

ITDC LEOLUTs have overlapping local mode coverage areas to a greater or lesser extent with the following LEOLUTs: Guam, Hong Kong, Jakarta, Nakhodka, Singapore, Daejeon and Yokohama. It is therefore feasible for the Chinese Taipei area to be fully covered in the case of failure or planned maintenance downtime.

5. OTHER INFORMATION

Beacon Registration

A register of national ships equipped with beacons is maintained by the Directorate General of Telecommunications (DGT). Users of maritime EPIRBs installed on Chinese Taipei ships are required to register their EPIRBs with the Directorate General of Telecommunications (DGT), Radio Standard/Licensing Department.

- END OF THIS SECTION -

II / C.TH THMCC - THAILAND MISSION CONTROL CENTRE

1. GENERAL

The Thailand Mission Control Centre (THMCC) is located at the Department of Aviation in Bangkok. The THMCC controls two LEOLUTs.

The Thai LEOLUTs provide full capability processing, including G-SARP processing of the transponded SARR data and combined LEO/GEO processing, according to the relevant Cospas-Sarsat specifications. The local coverage area of the Thai LEOLUTs includes the Bay of Bengal, parts of the Indian Ocean, and the South China Sea, as well as the land area of South Asia, including all of Thailand and the Malaysian Peninsula.

The entire Thai Ground Segment is designed for twenty-four-hour, seven days a week, operations.

2. SPOCs SUPPORTED

In its initial operational configuration, the Thai MCC will support the RCCs in Thailand.

3. SYSTEM INFORMATION MESSAGES

The THMCC will receive and process the following System information messages:

Orbit Vectors
SARP Calibration Data
SARR Calibration data
System Status
Narrative

The THMCC is capable of originating the following system information messages:

System Status
Narrative

These messages will normally be received from, or sent to, the designated nodal MCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the event the THMCC becomes unserviceable, the SIMCC will provide backup support to the THMCC. All alerts for the THMCC service area will be transmitted in SIT 185 format and to a Fax number nominated by THMCC or via AFTN. The THMCC will ensure distribution to the RCCs and SPOCs it supports.

The local coverage area of the Thai LEOLUTs overlaps with the coverage area of LEOLUTs operated by Hong Kong, China, India, Indonesia, Singapore, and ITDC. In the fringe

coverage areas, there is also some overlap with LUTs operated by China (P. R. of), Japan, Korea, Pakistan, and the USA (Guam).

5. OTHER INFORMATION

None.

- END OF THIS SECTION -

II / C.TR TRMCC - TURKEY MISSION CONTROL CENTRE

1. GENERAL

The Turkey Mission Control Centre is located at the Main SAR Coordination Centre (MSRCC) building (G.M.K. Bulvari No: 128/A, 06570 Maltepe, Ankara). Two LEOLUTs and one GEOLUT are installed at the Ankara Esenboga Airport.

LUTs are located at the following co-ordinates:

	Latitude	Longitude
LEOLUT (1)	40° 08.45' N	032° 59.38' E
LEOLUT (2)	40° 08.44' N	032° 59.38' E
GEOLUT	40° 08.42' N	032°59.40'E

Turkey LEOLUTs can localise transmitters and distress beacons in local mode and global mode.

The TRMCC and LEOLUTs operate 24 hours a day throughout the year.

The communication interfaces used by TRMCC are as follows:

AFTN FTP-VPN X.25 Facsimile Voice

2. SPOCs SUPPORTED

The TRMCC provides primary support to the Turkey RCCs and routes alert and notification (NOCR) messages to other countries and can receive these messages from them. The TRMCC distributes alert data for the following SPOCs: Afghanistan, Iran and Iraq.

3. SYSTEM INFORMATION MESSAGES

The TRMCC originates and receives the following System information:

Orbit vectors:	receive from FMCC;
SARP calibration:	receive from FMCC;
System status:	originate to and receive from FMCC;
Narrative:	received and originated as required.

4. BACK-UP PROCEDURES AND AGREEMENTS

TRMCC operates two Operational Control Consoles (OCC), one of them being a back-up. In the event of failure of both TRMCC OCCs, Turkey has back-up agreements and procedures in place with Italy. The following procedures have been agreed to:

a) Whenever the back-up service is required, TRMCC notifies ITMCC by means of Fax, Telephone or Email,
b) ITMCC notifies TRMCC when the back-up service commences by Fax, Telephone or Email,

c) ITMCC sends a SIT 605 message notifying the other MCCs of the TRMCC failure, and that ITMCC is performing back-up service according to section 3.7, document C/S A.001,

d) TRMCC advises the Turkish RCCs and SPOCs about the TRMCC failure and the back-up procedures,

e) ITMCC transmits alerts for the Turkish service area in SIT 185 format to:

- TRMCC using the Turkish MSRCC Telex (primary communication link) or via Fax, and
- TRMCC SPOCs using SPOCs communication links mentioned in item (l) below,

f) In the event that ITMCC is unable to communicate with TRMCC and/or TRMCC SPOCs as described above, ITMCC shall transmit alerts for the Turkish service area in SIT 185 format to MSRCC/Ankara via land Telex, Inmarsat C Telex or Fax. In this case, ITMCC will advise MSRCC/Ankara of their inability to communicate with TRMCC and/or the TRMCC SPOCs. Other Turkish RCCs and SPOCs as well as TRMCC will be advised by MSRCC/Ankara,

g) TRMCC will notify ITMCC as soon as the problem is solved, and will advise the time when TRMCC plans to restore normal operations,

h) When TRMCC returns to normal operations it will send a SIT 605 message notifying ITMCC and other MCCs that TRMCC has resumed normal operations. TRMCC will also notify its RCCs and SPOCs that it has resumed normal operations,

i) ITMCC will send all requested missing messages to TRMCC,

j) ITMCC shall contact TRMCC by means of:

Tel : +90.312.2313374
Fax : +90.312.2312902
E-mail : trmcc@denizcilik.gov.tr
AFTN : LTACZSZX

k) ITMCC shall contact MSRCC/Ankara by means of:

Tel : +90.312.2319105 / 2324783
Fax : +90.312.2320823
Tlx : +60744144
Email : trmrcc@denizcilik.gov.tr
Inm-C : 427122324

l) ITMCC shall contact the TRMCC SPOCs by means of:

- Iran (Tehran RCC)

Tel: +98.214.4544107 / 4544116
Fax: +98.214.4544114 / 4544117
AFTN: OIIIZRZX

- Iraq & Afghanistan (Qatar JPRC)
  Tel: +974.4589555 / 4364215
  Email: jprc.chief1@auab.afcent.af.mil

m) TRMCC shall contact ITMCC by means of:

Tel : +39 080 5341053 – 5341571 - 5344033
Fax : +39 080 5342145
Tlx : +811375
Email : itmccoperator@cospas-sarsat-italy.it

5. OTHER INFORMATION

A register of beacons is maintained at the TRMCC.

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II / C.UK UKMCC - UNITED KINGDOM MISSION CONTROL CENTRE

1. GENERAL

The United Kingdom Mission Control Centre is co-located with the ARCC at Kinloss, Scotland and controls one LEOLUT and one GEOLUT located at Combe Martin (see Annex II /B). The UKMCC has a hot back-up MCC, also located at Kinloss. The UKMCC is manned 24 hours per day throughout the year, including public holidays.

The UK LEOLUT operates in the global mode and provides local mode coverage of Europe, the Eastern half of the North Atlantic Ocean and part of Southern Scandinavia. Alert data from the UK LEOLUT and GEOLUT is transmitted to the UKMCC via two 64 kb Kilostream Assured Restore lines with automatic 64 kb ISDN back-up, one line feeding the Primary MCC and one the back-up MCC. The UKMCC uses FTP-VPN, X.25, AFTN, Fax, point-to-point data-link and voice Telephone to distribute data to MCCs and RCCs.

2. SPOCs SUPPORTED

The UKMCC provides alert data to United Kingdom and Republic of Ireland MRCCs and ARCCs.

The UKMCC also provides alert and Notification of Beacon Registration (NOCR) messages to MCCs within the Central Data Distribution Region and has a bilateral arrangement with the CMCC for the direct exchange of alert and NOCR data. Alert messages for areas outside the Central DDR are routed to the FMCC. NOCR messages are routed in accordance with Figure III / A.8 of document C/S A.001.

The communications interfaces used by UKMCC are:

UK ARCC:	Data-link	Fax	Voice		
UK MRCCs:	Fax	Voice			
Irish MRCC:	AFTN	Fax	Voice		
FMCC:	FTP-VPN	AFTN	Fax	Voice	
ITMCC:	AFTN	X.25	Fax	Voice	
NMCC:	AFTN	Fax	Voice	FTP-VPN	
CMCC:	AFTN	Fax	Voice	FTP-VPN	
TRMCC:	AFTN	X.25	FTP-VPN	Fax	Voice

3. SYSTEM INFORMATION MESSAGES

The following System information messages are received/originated at UKMCC:

Orbit vectors:	received from FMCC;
SARP calibration:	received from FMCC;
System status:	received and originated as required;
Narrative:	received and originated as required;
406 MHz SARR frequency calibration:	receive from CMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

The Combe Martin LEOLUT has overlapping local mode coverage areas to a greater or lesser extent with the following LEOLUTs: Bari, Maspalomas, Ouargla, Spitsbergen, Tromsoe and Toulouse. It is therefore feasible for one to back up the other in the case of failure or planned maintenance downtime.

Co-operation in the coverage of individual satellites passes may also be feasible, but requires further study.

LEOLUT operators will forward a written notice of intention to perform maintenance routines involving deactivation of LEOLUT well in advance. The MCC will inform all other MCCs as soon as a decision has been taken, and confirm the times a minimum of two weeks prior to deactivation.

The LEOLUT operator will inform the associated MCC by the quickest possible means, followed by a written confirmation when an estimate of the duration of the downtime is available. The MCC will immediately inform the other MCCs.

The UKMCC has a back-up facility also located at Kinloss but, in the case of complete failure of the UKMCC, the NMCC will assume the duties of the UKMCC. The NMCC will send validated Cospas-Sarsat alert data, within the UKMCC service area to designated SPOCs or RCCs. In the UK SRRs this will be MRCC Falmouth, and for Eire this will be MRCC Dublin.

The UKMCC provides back-up facilities for the NMCC.

5. OTHER INFORMATION

An ELT register of UK serial-coded beacons is maintained at UKMCC.

A register of UK EPIRB beacons is maintained at MRCC Falmouth.

- END OF THIS SECTION -

II / C.US USMCC - UNITED STATES MISSION CONTROL CENTRE

1. GENERAL

The United States Mission Control Centre is located at the National Oceanic and Atmospheric Administration, Suitland, Maryland. The USMCC controls dual LEOLUTs at the following locations (see Annex II / B):

Fairbanks, Alaska
Vandenberg AFB, California
Wahiawai, Hawaii
Suitland, Maryland (LEOSAR Support Equipment (LSE))
Andersen AFB, Guam
Miami, Florida.

The LEOLUTs provide coverage of the U.S. SRRs from mid-Atlantic to the western-Pacific, and from the North Pole south to approximately 15 degrees south. Operations are 24 hours per day, seven days a week. When available, the OSE, and LSE are used operationally. The LSE is also used for LEOLUT system development and testing. The OSE is air transportable and can be set up at any location as required.

The USMCC also controls two operational GEOLUTs (MD1and MD2) which are located in Suitland, MD. A third GEOLUT, the GEOSAR Support Equipment (GSE), is used for GEOLUT system development and testing but can also be used operationally, when available (see Annex II / B).

The USMCC uses a dedicated frame relay network for communications with its LUTs and the majority of its RCCS. AFTN and FTP-VPN are used for communication with other MCCs. AFTN and Fax are used for communication with the USMCC SPOCs.

The USMCC also assumes the nodal responsibilities for the Western DDR as defined at Annex III / A of this document.

The National Oceanic and Atmospheric Administration is the lead agency in the United States for the Cospas-Sarsat Programme.

2. SPOCs SUPPORTED

In support of the United States National Search and Rescue Plan, the USMCC provides alert data to U.S. Coast Guard and Air Force Rescue Co-ordination Centres. In accordance with document C/S A.001, the USMCC also exchanges alert and notification (NOCR) messages with other MCCs. The USMCC distributes alert data for the following SPOCs:

CARIBBEAN:

Aruba	Cuba	Honduras	Puerto Rico
Bahamas	Dominican Republic	Jamaica	St. Vincent and and the Grenadines
Barbados	El Salvador	Mexico	Trinidad and Tobago
Belize	Grenada	Netherlands Antilles	Turks and Caicos Islands
British Virgin Island	Guatemala	Nicaragua	
Cayman Islands	Haiti	Panama	
Costa Rica			

SOUTH AMERICA:

Colombia	Guyana
Ecuador	Venezuela

ATLANTIC:	PACIFIC:	
Bermuda	Marshall Islands	Northern Mariana Islands
	Micronesia	Palau

3. SYSTEM INFORMATION MESSAGES

The USMCC originates and receives the following System information messages:

SARR command verification:	to the CMCC;
SARP command verification:	to the FMCC;
SARR command:	from the CMCC;
SARP command:	from the FMCC;
System status:	originate and receive;
Narrative:	originate and receive;
Orbit vectors:	originate and receive;
SARP calibration:	originate and receive;
406 MHz SARR frequency calibration:	originate and receive.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the unlikely event of a USMCC failure, the USA has backup agreements and procedures in place with Australia and Canada. Australia provides backup for nodal MCC responsibilities and Canada and Australia together provide backup for other MCC alert data intended for U.S. RCCs and SPOCs. Accordingly, the USMCC has designated separate communications paths and procedures for RCCs and SPOCs. The USA has also installed an alternate system at a site in Lanham, MD. The backup procedures will be used during the period of time required to transition from the USMCC in Suitland, MD to the alternate site in Lanham, MD or if the USMCC in Suitland and the alternate site in Lanham experience a simultaneous outage such as may occur during a regional power outage.

The USMCC has provided Australia and Canada with Geosort data for its national RCCs and SPOCs. In the event of a USMCC outage that lasts or is expected to last more that 30 minutes, but less than one (1) hour, the CMCC will support the USMCC by sending, alert data directly to the U.S. RCCs. In the event of a USMCC outage that lasts or is expected to last more than 1 hour, the AUMCC will assume nodal responsibilities for the Western DDR, send alerts for the U.S. SRR to the CMCC, and Fax alerts for the U.S. SPOCs to the USMCC. The CMCC will provide support by sending alerts directly to the U.S. RCCs.

The USMCC does not have the capability to reroute or redirect traffic to another MCC.

5. OTHER INFORMATION

406 MHz EPIRBs / ELTs have been approved for carriage on U.S. vessels and aircraft. A beacon register for USA beacons is maintained at the USMCC.

- END OF THIS SECTION -

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II / C.VN VNMCC - VIETNAM MISSION CONTROL CENTRE

1. GENERAL

The Vietnam Mission Control Centre is located at the Vietnam Maritime Communication and Electronics Company in Haiphong. The VNMCC controls one LEOLUT.

The Vietnam LEOLUT provides full processing, including G-SARP processing of the transponded SARR data, according to the relevant Cospas-Sarsat specifications. The local coverage area of the Vietnam LEOLUT includes the Bay of Bengal, parts of the Indian Ocean, and the South China Sea, as well as the land area of South Asia, including all of Vietnam.

The entire Vietnam ground segment is designed for twenty-four-hour, seven days a week, operations.

2. SPOCs SUPPORTED:

Cambodia Vietnam
Laos

The communication interfaces used by the VNMCC are:

FTP-VPN AFTN Facsimile Voice

3. SYSTEM INFORMATION MESSAGES

The VNMCC receives and processes the following system information messages:

Orbit vectors: receive from JAMCC;
SARP calibration data: receive from JAMCC;
System status: originating to and receive from JAMCC.

The VNMCC is capable of originating the following system information messages:

System Status
Narrative

These messages are normally received from, or sent to JAMCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

In the event the VNMCC cannot provide its service, the HKMCC will provide back-up to the VNMCC. All alerts in the VNMCC service area will be sent in SIT 185 format to designated RCCs/SPOCs via FTP-VPN, AFTN or Fax.

The local coverage area of the Vietnam LEOLUT overlaps with the LEOLUTs operated by Hong Kong, India, Indonesia, ITDC, Singapore, and Thailand. In the fringe coverage areas, there is also some overlap with LUTs operated by China, Japan, Korea, Pakistan, and the United States (Guam).

5. OTHER INFORMATION

None.

- END OF THIS SECTION -

II / C.VZ VZMCC – VENEZUELA MISSION CONTROL CENTRE
(under development)

1. GENERAL

The Venezuelan Mission Control Centre (VZMCC) is located in Maiquetia, Venezuela. The VZMCC is installed within the Air Traffic Control Building at the Maiquetia Airport with Venezuela LEOLUT 1 and GEOLUT. Venezuela LEOLUT 2 is installed in the BASE SAR building and within 2 kilometers from the VZMCC. These LUT are located at the following locations:

	Latitude	Longitude
LEOLUT 1	10° 35.88' N	66° 58.92' W
LEOLUT 2	10 ° 35.94' N	66 ° 59.10' W
GEOLUT	10° 35.88' N	66° 58.92' W

The Venezuelan LEOLUTs have the capability to provide local and global coverage. The GEOLUT also provides data alerts from beacons within the GOES-12 coverage area.

The Venezuelan MCC, LEOLUTs and GEOLUT operate 24 hours a day, seven days a week throughout the year.

The Instituto Nacional de Aeronáutica Civil (INAC) is the lead agency in Venezuela for the Cospas-Sarsat Programme.

2. SPOCs SUPPORTED

The Venezuelan MCC is in initial operational configuration, when at IOC it will support RCCs in Venezuela.

3. SYSTEM INFORMATION MESSAGES

The VZMCC will receive and process the following system information messages:

Orbit Vectors
SARP Calibration Data
SARR Calibration Data
System Status
Narrative

The VZMCC is capable of originating the following system information messages:

System Status
Narrative

These messages will normally be received from, or sent to the designated nodal MCC.

4. BACK-UP PROCEDURES AND AGREEMENTS

None.

5. OTHER INFORMATION

None.

- END OF THIS SECTION -

- END OF ANNEX II / C -

ANNEX II / D

SID IMPLEMENTATION STATUS

The document C/S A.002 "Cospas-Sarsat Mission Control Centres Standard Interface Description" has been approved by the Council. It contains standardised message formats, identified by "Subject Identifier Type" (SIT) codes, which may be used by MCCs.

The tables shown below indicate which SITs for System information messages and alert and narrative messages have been implemented by the various MCCs.

They also indicate whether the capability is receive, originate, both receive and originate, or not implemented. After each MCC has added the capability to use any of these messages, it shall notify other MCCs in accordance with section 1.4.

SYSTEM INFORMATION MESSAGES

as at: 29 October 2009

MCC Name	SIT NUMBER													
	215	216	415	416	417	425	435	445	510	515	525	535	545	605
AEMCC*	R	R	R	-	R	-	-	-	-	-	-	-	-	B
ALMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
ARMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
ASMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
AUMCC	B	B	B	-	B	-	-	-	B	-	-	-	-	B
BRMCC	R		R	-	R	-	-	-	R	-	-	-	-	B
CHMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
CMC	B		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
CMCC	R	R	R	-	T.B.D.	-	-	-	B	R	R	O	R	B
CNMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
FMCC	B	B	B	B	B	R	O	R	-	-	-	-	-	B
GRMCC	R		R	-	R	-	-	-	-	-	-	-	-	B
HKMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
IDMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	R
INMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
ITMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
JAMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
KOMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
NIMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
NMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
PAMCC*	R	*R*	R	-	R	-	-	-	-	-	-	-	-	B
PEMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
SAMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
SIMCC	R		R	-	R	-	-	-	-	-	-	-	-	R
SPMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
TAMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
THMCC	R		R	-	T.B.D.	-	-	-	-	-	-	-	-	B
TRMCC	R	R	R	-	R	-	-	-	R	-	-	-	-	B
UKMCC	R		R	-	T.B.D.	-	-	-	R	-	-	-	-	B
USMCC	B	O	R	O	B	O	R	O	B	O	O	R	O	B
VNMCC	R	R	R	-	R	-	-	-	-	-	-	-	-	B
VZMCC*	T.B.D.		T.B.D.	-	T.B.D	-	-	-	-	-	-	-	-	T.B.D.

Legend: O originate. B both originate and receive. R receive. - not implemented.

Notes: * under development.
T.B.D. to be determined.

ALERT & NARRATIVE MESSAGES

as at: 29 October 2009

MCC Name	SIT Number											
	121	122	123	124	125	126	127	132	133	185	915	925
AEMCC*	B	B	B	B	B	B	B	B	B	B	B	B
ALMCC	B	B	B	B	B	B	B	B	B	B	B	B
ARMCC	B	B	B	B	B	B	B	B	B	B	B	B
ASMCC	B	B	B	B	B	B	B	B	B	B	B	B
AUMCC	B	B	B	B	B	B	B	B	B	B	B	B
BRMCC	B	B	B	B	B	B	B	B	B	B	B	B
CHMCC	B	B	B	B	B	B	B	B	B	B	B	B
CMC	B	B	B	B	B	B	B	B	B	B	B	-
CMCC	B	B	B	B	B	B	B	B	B	B	B	B
CNMCC	B	B	B	B	B	B	B	B	B	B	B	R
FMCC	-	B	B	B	B	B	B	B	B	B	B	B
GRMCC	B	B	B	B	B	B	B	B	B	B	B	R
HKMCC	B	B	B	B	B	B	B	B	B	B	B	B
IDMCC	B	B	B	B	B	B	B	B	B	O	B	B
INMCC	B	B	B	B	B	B	B	B	B	B	B	B
ITMCC	B	B	B	B	B	B	B	B	B	B	B	T.B.D.
JAMCC	B	B	B	B	B	B	B	B	B	B	B	B
KOMCC	B	B	B	B	B	B	B	B	B	B	B	B
NIMCC	B	B	B	B	B	B	B	B	B	B	B	B
NMCC	B	B	B	B	B	B	B	B	B	B	B	B
PAMCC*	B	B	B	B	B	B	B	B	R	O	B	B
PEMCC	B	B	B	B	B	B	B	B	B	B	B	B
SAMCC	B	B	B	B	B	B	B	B	B	B	B	B
SIMCC	B	B	B	B	B	B	B	B	B	B	B	B
SPMCC	B	B	B	B	B	B	B	B	B	B	B	B
TAMCC	B	B	B	B	B	B	B	B	B	B	B	B
THMCC	B	B	B	B	B	B	B	B	B	B	B	B
TRMCC	B	B	B	B	B	B	B	B	B	B	B	B
UKMCC	R	B	B	B	B	B	B	B	B	B	B	B
USMCC	B	B	B	B	B	B	B	B	B	O	B	B
VNMCC	B	B	B	B	B	B	B	B	B	B	B	B
VZMCC *	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.

Legend: O originate. R receive. B both originate and receive. - not implemented.

Notes: T.B.D. to be determined.
* under development.

- END OF ANNEX II / D -

ANNEX II / E

ORBITOGRAPHY BEACONS

This annex provides a listing of orbitography/reference beacons which transmit on a permanent or semi-permanent basis. These beacons are used for a variety of purposes, such as System monitoring as part of the Quality Management System (QMS), the updating of ephemeris data and monitoring of LUT performance. Amendments to this table may be made in accordance with section 1.4 to this document.

Cospas-Sarsat System Orbitography Beacons

Identification	Location (Lat. / Long.)	Elevation (metres)	Time Interval (secs)	Transmit Frequency (MHz)	Remarks
DENMARK 9B621 97CA7 03590	77°27.885' N 069°13.033' W	36.59	30	406.021844	near Thule
FRANCE 9C600 00000 00001	43°33.60' N 001°28.80' E	214.27	30	406.022000	Toulouse
FRANCE * 9C634 E2AB5 09240	43°33.60' N 001°28.80' E	214.27	30	406.034000	Toulouse
NORWAY A0234 BF8A7 335D0	78°13.739' N 015°23.730' E	502.4	30	406.022001	Longyearbyen
USA ADC268F8E0D3730 **	77°50.762' S 166°42.707' E	170.962	30	406.022000	McMurdo Station, Antarctica

Notes: * This second French beacon has all the characteristics of an orbitography beacon, except the transmit frequency of 406.034 MHz, set to avoid interference with the Sarsat time calibration beacon. The beacon will be equipped by default with an LHCP antenna to support MEOSAR applications with the DASS proof-of-concept constellation.

** Indicates that this location was provided in the International Earth Rotation System (IERS) Terrestrial Reference Frame or ITRF-93. Other locations are provided in the Bureau International de l'Heure (BIH) Geodetic Reference System.

Other Cospas-Sarsat Reference Beacons

Identification	Location (Lat. / Long.)	Elevation (metres)	Time Interval (secs)	Transmit Frequency (MHz)	Remarks
CANADA A79EE E26E3 2E1D0	53°40.72' N 113°18.90' W	654	50	406.021843	Edmonton
FRANCE 9C7FEC2AACD3590 *	49°21.09' S 070°15.36' E	80	30	406.021856	Kerguelen
RUSSIA A23C0 00000 00000 *	55°37.20' N 037°30.48' E	T.B.D.	50	406.022103	Moscow
UK 9D1FC FA7AB 0D990	51°10.20' N 004°03.06' W	265	50	406.022000	Combe Martin

Notes: * Indicates that this location has not yet been provided in the Bureau International de l'Heure (BIH) Geodetic Reference System

Reference beacons are beacons which are installed and operated on a semi-permanent basis. Users should consult the national MCC for current status information. These beacons may not meet the orbitography specifications. Reference beacons must meet the following requirements:

- be encoded with a test protocol;
- transmit with a repetition period of 50 ± 2.5 sec and preferably be varied over that range; and
- from 1 January 1999 transmit at 406.022 MHz ± 1 kHz if possible.

T.B.D. To be determined.

- END OF ANNEX II / E -

ANNEX II / F

STATUS OF SPACE SEGMENT

This Annex provides the current status of Cospas-Sarsat Space Segment payloads. Table II / F.1 contains information on the data that is considered operational for exchange between Cospas-Sarsat Participants. Table II / F.2 and II / F.3 contain the current status of LEOSAR and GEOSAR payloads.

Each satellite platform provider will commission new satellite payloads according to the procedures documented in C/S T.004. The results will be provided to the Secretariat who will update and distribute this Annex accordingly. Additionally, after a payload is declared operational, and whenever there is a change in the configuration or status of a satellite payload, the Space Segment Providers will notify all Ground Segment Operators and the Secretariat. The message format described in Figure II / F.1 will be used to provide this notification. In validating the satellite ID (per Table B.1 of C/S A.002), MCCs shall use the operational status of the satellite payload as provided by notification from the Space Segment Provider, as well as the spacecraft status contained in Table II / F.1.

The tables in this Annex attempt to describe the operational capabilities of the SAR payloads to Cospas-Sarsat Participants, therefore, no details on redundant systems on-board the satellite are provided. It is assumed that each platform provider will make the necessary configuration changes to provide for continued operation of the payload by switching to redundant systems where and when applicable. These changes do not have to be documented within Cospas-Sarsat.

```
/12345 00000/3660/97 123 1234
/605/5030
/TO:  ALL MCCS
FROM:  <MCC ASSOCIATED WITH SATELLITE OR PAYLOAD PROVIDER>
SUBJECT:   A) INITIAL OPERATIONAL CAPABILITY FOR <S/C> SAR PAYLOAD
           B) DECLARATION OF OPERATION FOR <S/C> SAR PAYLOAD
           C) CHANGE IN STATUS FOR <S/C> SAR PAYLOAD
           D) DECOMMISSIONING OF <S/C> SAR PAYLOAD

DATA CONSIDERED OPERATIONAL IN COSPAS-SARSAT (C/S A.001, TABLE II/F.1)
----------------------------------------------------------------------

   (L/G) 406 SARR: A) OPERATIONAL, B) NOT OPERATIONAL OR C) NOT APPLICABLE
   (L)   406 SARP (LOCAL): A) OPERATIONAL OR B) NOT OPERATIONAL
   (L)   406 SARP (GLOBAL): A) OPERATIONAL OR B) NOT OPERATIONAL
   (L)   PSEUDO MODE: A) OPERATIONAL, B) NOT OPERATIONAL OR C) NOT
         APPLICABLE

STATUS OF SAR PAYLOAD (C/S A.001, TABLE II/F.2)
-----------------------------------------------

   (L)   L-BAND DOWNLINK: A) NORMAL, B) DEGRADED OR C) UNUSABLE
   (L/G) 406 SARR: A) NORMAL, B) DEGRADED, C) UNUSABLE OR D) NOT APPLICABLE
   (L/G) 406 SARR GAIN CONTROL:  A) AUTOMATIC, B) FIXED OR C) NOT
         APPLICABLE
   (L)   406 SARP (LOCAL): A) NORMAL, B) DEGRADED OR C) UNUSABLE
   (L)   406 SARP (GLOBAL): A) NORMAL, B) DEGRADED OR C) UNUSABLE
   (L)   PSEUDO MODE: A) ENABLED, B) DISABLED OR C) NOT APPLICABLE
   (L/G) BANDWIDTH: A) 27 KHZ, B) 40 KHZ, C) 80 KHZ OR D) NOT APPLICABLE
   (G)   POSITION:
   (G)   DOWNLINK FREQUENCY/TYPE:

    (L)   SAR INSTRUMENTS ACTIVE DURING SATELLITE MANOEUVRE: A) YES, B) NO
          OR C) NOT APPLICABLE


COMMENTS
--------
QQQQ
/LASSIT
/ENDMSG
```


Notes: (L) - Applies to LEOSAR only.
(G) - Applies to GEOSAR only.
(L/G) - Applies to both LEOSAR and GEOSAR.

Figure II / F.1 : Standard Message for Reporting Satellite Payload Status

```
/12345 00000/3660/05 123 1412
/605/5030
/TO: ALL MCCS
FROM: <MCC RESPONSIBLE FOR THE SATELLITE MANOEUVRE >
SUBJECT: MANOEUVRE OF SATELLITE <XNN>

STATUS OF MANOEUVRE: <SCHEDULED, EXECUTED OR CANCELLED>
TYPE OF MANOEUVRE: <IN PLANE, OUT OF PLANE OR BOTH>
SAR INSTRUMENTS ACTIVE DURING MANOEUVRE: <YES OR NO>

MANOEUVRE START TIME: <DD MON YEAR HHMM> UTC
MANOEUVRE END TIME: <DD MON YEAR HHMM> UTC
[REPEAT INFORMATION ABOUT MANOEUVRE START AND END TIME AS NEEDED]

TIME NEW ORBIT VECTORS ARE EXPECTED: <DD MON YEAR HHMM> UTC

MAXIMUM EXPECTED CHANGE IN SATELLITE POSITION DUE TO THE SATELLITE
MANOEUVRE: <XX> KM AFTER <YY> HOURS
MAXIMUM EXPECTED ERROR IN DOPPLER LOCATION: <XX> KM AFTER <YY> HOURS

THIS DOPPLER LOCATION ERROR INCLUDES A NOMINAL SYSTEM ERROR OF 5 KM.

COMMENTS -  MCCS SHOULD <EXECUTE OR REFER TO> PROCEDURES ON SATELLITE
MANOEUVRES CONTAINED IN SECTION 3.6.5 OF C/S A.001.

QQQQ
/LASSIT
/ENDMSG
```

Figure II / F.2 : Standard Message for Reporting Satellite Manoeuvres

Table II / F.1 : Operational Status of the Cospas-Sarsat SAR Payloads

as at: 29 October 2009

Satellite (Launch Date)	Code	406 MHz SARR	406 MHz SARP			Comments			
			Global Mode	Local Mode	Message Format	Pseudo Mode	Altitude (km)	Equator Crossing Time	Other
Sarsat-7 (1998)	007	Operational	Operational	Operational	Long	Disabled	810	1749A	
Sarsat-8 (2000)	008	Operational	Operational	Operational	Long	Disabled	853	1505A	
Sarsat-9 (2002)	009	Operational	Operational	Operational	Long	Disabled	823	2223A	
Sarsat-10 (2005)	010	Operational	Operational	Operational	Long	Disabled	854	1349A	
Sarsat-11 (2006)	011	Operational	Operational	Operational	Long	Disabled	820	1031D 2231A	SARP-3 instrument has an intermittent software issue that causes a memory reset approximately every 10 days
Sarsat-12 (2009)	012	Operational	Operational	Operational	Long	Disabled	856	1355A	FOC (2 September 2009)
Cospas-11 (2009)	111	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	Launched on 21 July 2009
Cospas-12 (2009)	112	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	Launched on 17 September 2009

GEOSAR System				
				Comments
GOES-10 (1997)	210	Standby	NA	In-orbit spare
GOES-11 (2000)	211	Operational		
GOES-12 (2001)	212	Operational		
GOES-13 (2006)	213	Standby		In-orbit spare
GOES-14 (2009)	214	Standby		Launched on 27 June 2009. In-orbit spare
INSAT-3A (2003)	243	Operational		System not fully commissioned, however, alerts are used operationally by SAR services
MSG-1 (2002)	261	Operational		
MSG-2 (2005)	262	Operational		

Note: NA Not available.

Table II / F.2 : LEOSAR Satellite Payloads

as at: 29 October 2009

Satellite	L-band Down-link	406 MHz SARR		406 MHz SARP Status				Comments
		Status	Gain Control	Global Mode	Local Mode	Band-width	Pseudo Mode	
Sarsat-7	F	F	AGC	F	F	40 kHz	Disabled	
Sarsat-8	F	F	AGC	F	F	40 kHz	Disabled	
Sarsat-9	F	F	AGC	F	F	40 kHz	Disabled	
Sarsat-10	F	F	AGC	F	F	40 kHz	Disabled	
Sarsat-11	F	F	AGC	F	F	80 kHz	Disabled	The SARP-3 instrument has an intermittent software issue which causes a memory reset approximately every 10 days
Sarsat-12	F	F	AGC	F	F	80 kHz	Disabled	FOC
Cospas-11	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	Launched on 21 July 2009
Cospas-12	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	T.B.D.	Launched on 17 September 2009

Notes: AGC Automatic gain control.
F Full operational status.
T.B.D. To be determined.

Table II / F.3 : GEOSAR Satellite Payloads

as at: 29 October 2009

Satellite	Position	Downlink			406 MHz Transponder			Comments
		Status	Frequency	Type	Status	Bandwidth	Gain Control	
GOES-10	60° W	Standby	1544.5 MHz	Broad	Not Operational	406.010 MHz-406.090 MHz	AGC	In-orbit spare
GOES-11	135° W	F	1544.5 MHz	Broad	F	406.010 MHz-406.090 MHz	AGC	Operational
GOES-12	75° W	F	1544.5 MHz	Broad	F	406.010 MHz-406.090 MHz	AGC	Operational
GOES-13	105° W	Standby	1544.5 MHz	Broad	Standby	406.010 MHz-406.090 MHz	AGC	In-orbit spare
GOES-14	T.B.D	Standby	1544.5 MHz	Broad	Standby	406.010 MHz-406.090 MHz	AGC	In-orbit spare
INSAT-3A	93.5° E	See comments	4505.695549 MHz	Narrow	See comments	406.010 MHz-406.090 MHz	T.B.D.	System not fully commissioned, however, alerts are used operationally by SAR services
MSG-1	9.5° E	F	1544.5 MHz	Broad	F	406.010 MHz-406.090 MHz	Fixed	Operational
MSG-2	0°	F	1544.5 MHz	Broad	F	406.010 MHz-406.090 MHz	Fixed	Operational

Notes: AGC Automatic gain control.
F Full operational status.
T.B.D. To be determined.

- END OF ANNEX II / F -

C/S A.001 ANNEXES

PART III:

OPERATIONAL PROCEDURES FOR COSPAS-SARSAT MCCs

ANNEX III / A

DATA DISTRIBUTION REGIONS AND INTER-MCC DATA EXCHANGE

III / A.1 INTRODUCTION

This annex describes the inter-DDR arrangements for data exchange and includes the particular regional arrangements or agreements that affect MCCs within a DDR. It may be amended by the MCCs involved. However, other MCCs should be notified of any changes in the event that the changes impact MCCs outside the region. If so, agreement of the Joint Committee is needed prior to implementation.

These procedures and arrangements become effective for MCCs under development (see section II / B.1) only after confirmation by the appropriate host MCC, that the MCC under development has achieved Initial Operational Capability (IOC).

III / A.2 DEFINITION OF DDR

A data distribution region (DDR) is a region comprising two or more MCC service areas. Cospas-Sarsat alert data and System information are exchanged between DDRs through an MCC in each DDR which is the single point of contact for that DDR. This MCC is identified as the nodal MCC of the DDR.

III / A.3 DATA EXCHANGE BETWEEN DDRs

The inter-nodal network diagram is provided as Figure III / A.1.

The nodes of the MCC communication network and the associated DDRs are identified as follows:

Australia:	AUMCC – South West Pacific DDR	AU
France:	FMCC - Central DDR	FR
Japan:	JAMCC – North West Pacific DDR	JA
Russia:	CMC - Eastern DDR	RU
Spain:	SPMCC - South Central DDR	SP
USA:	USMCC - Western DDR	US

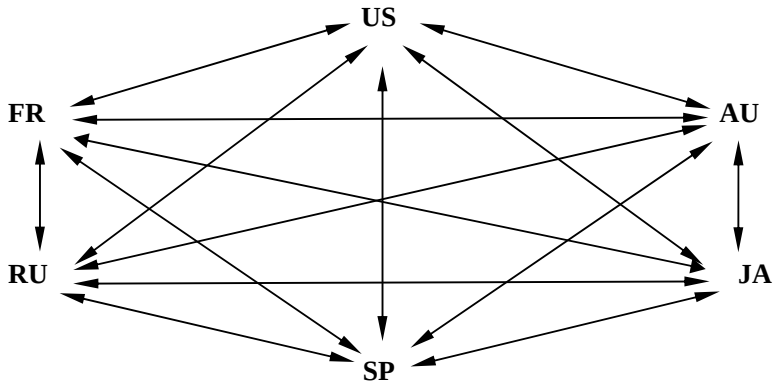


Figure III / A.1 : Inter-Nodal Network Diagram

III / A.4 DATA EXCHANGE WITHIN DDRs

III / A.4.1 Western DDR

The USMCC, as a nodal MCC, has accepted responsibility for passing alert information in this region and for the filtering of global mode alert or NOCR messages. Specific SRRs are outlined in Annex II / C.

Data flow in Western DDR (ARMCC, BRMCC, CHMCC, CMCC, PEMCC, USMCC and VZMCC) is described in Figure III / A.2.

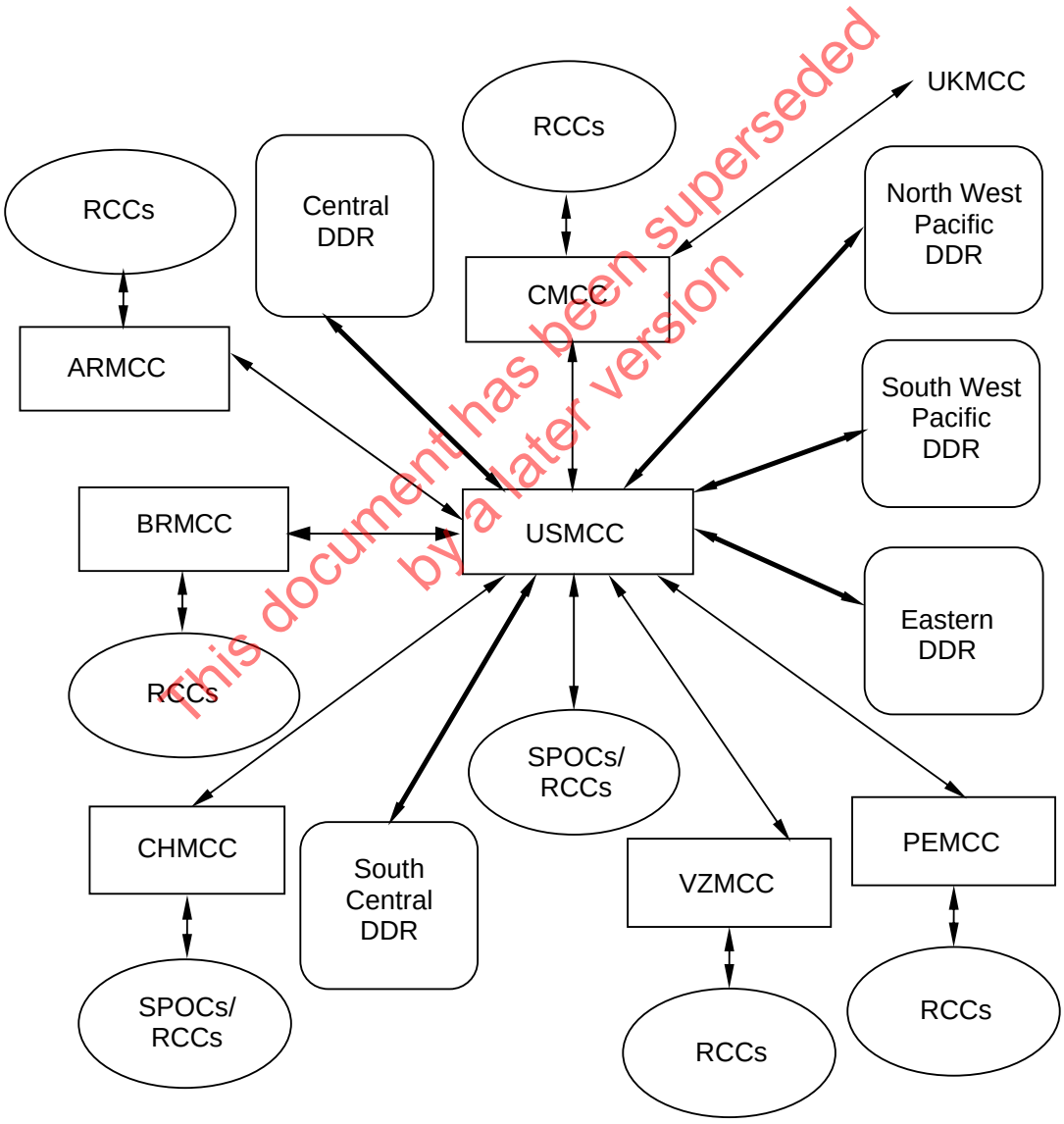


Figure III / A.2 : Western DDR Network Diagram

III / A.4.2 Central DDR

Data flow in Central DDR (FMCC, GRMCC, ITMCC, NMCC, TRMCC and UKMCC) is described in Figure III / A.3. Central DDR MCCs validate locations before forwarding them to the SAR organizations.

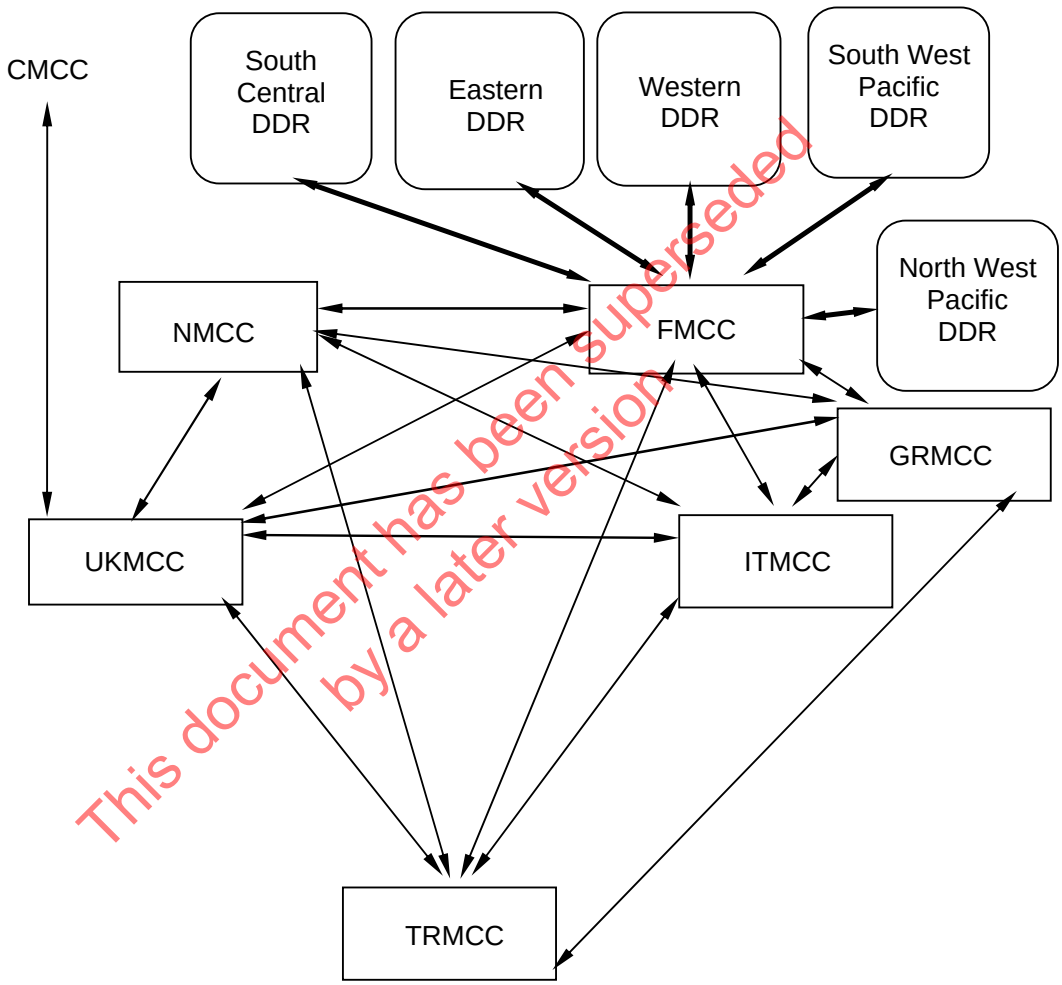


Figure III / A.3 : Central DDR Network Diagram

III / A.4.3 Eastern DDR

The CMC has no formal regional agreements.

Data flow in Eastern DDR (CMC, INMCC and PAMCC) is described in Figure III / A.4.

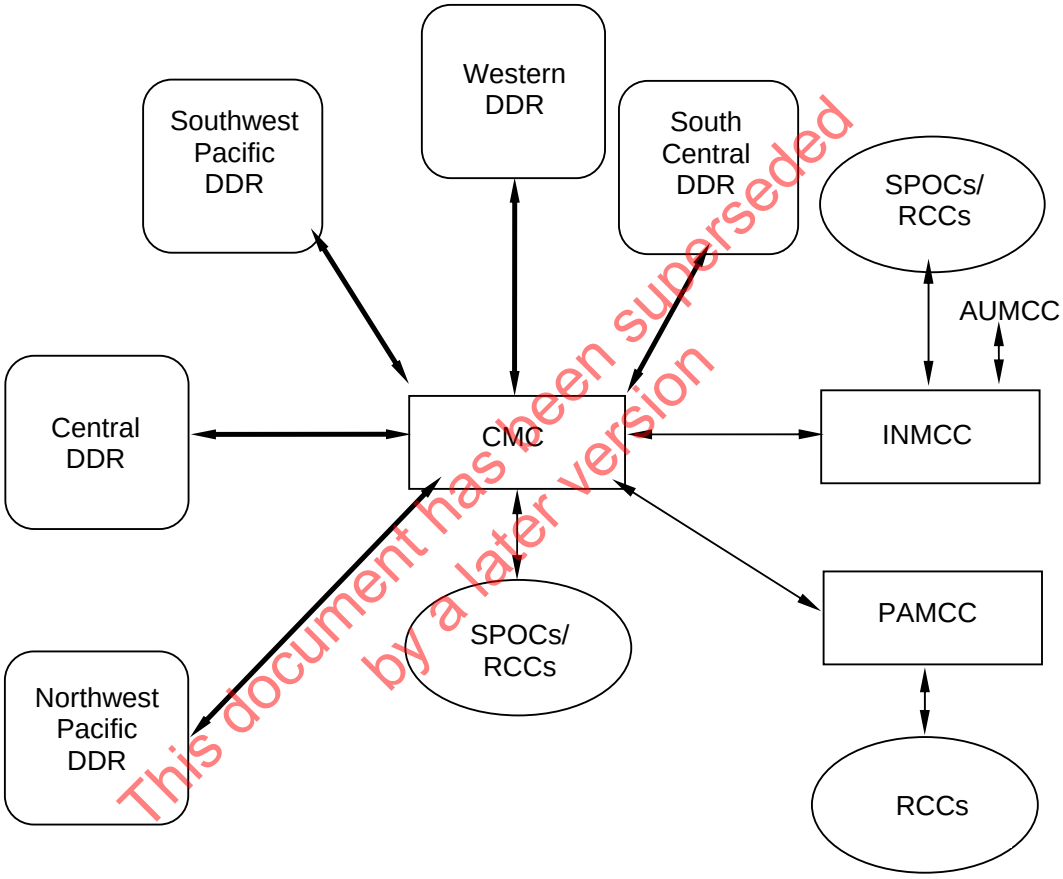


Figure III / A.4 : Eastern DDR Network Diagram

III / A.4.4 South West Pacific DDR

Data flow in South West Pacific DDR (ASMCC, AUMCC, IDMCC, SIMCC and THMCC) is described in Figure III / A.5.

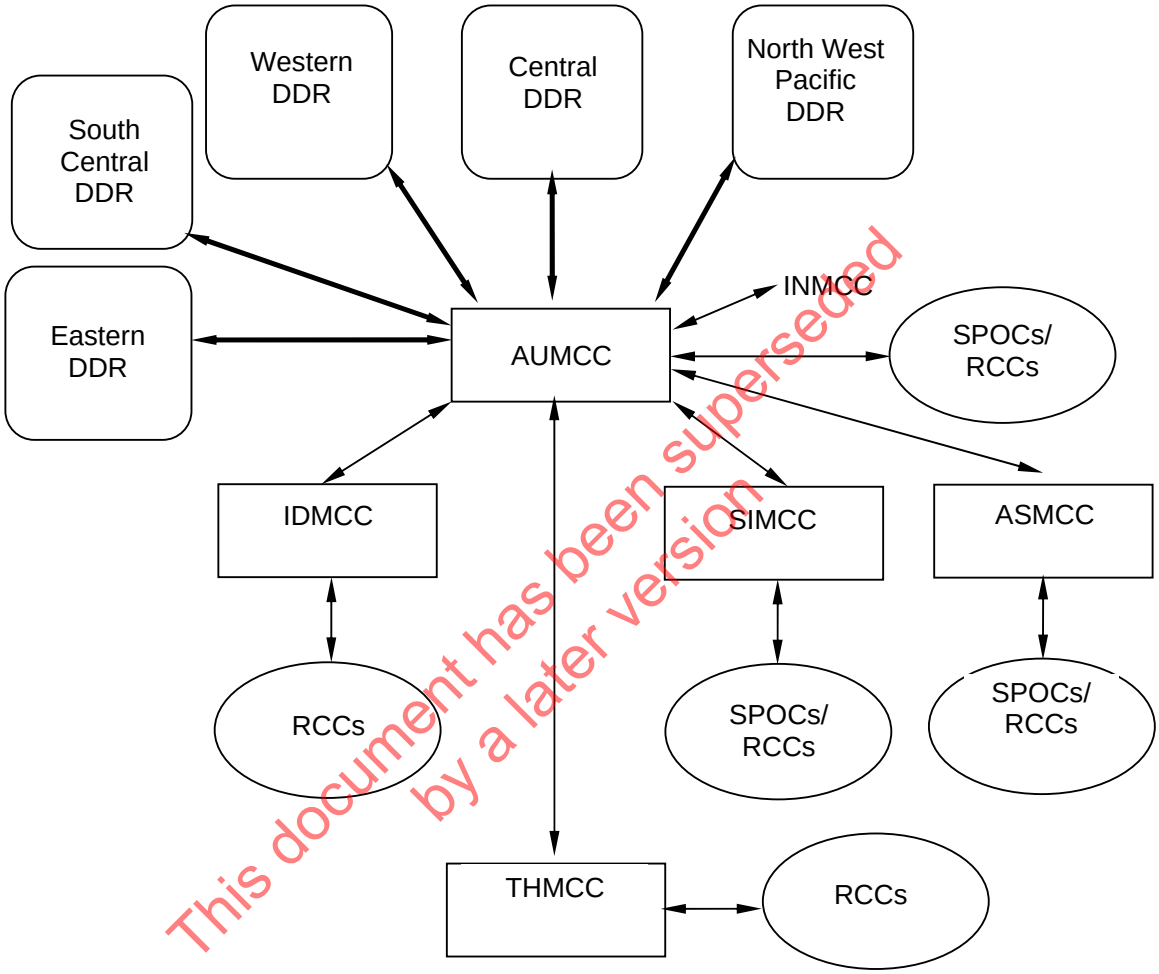


Figure III / A.5 : South West Pacific DDR Network Diagram

III / A.4.5 North West Pacific DDR

Data flow in North West Pacific DDR (CNMCC, HKMCC, JAMCC, KOMCC, TAMCC and VNMCC) is described in Figure III / A.6.

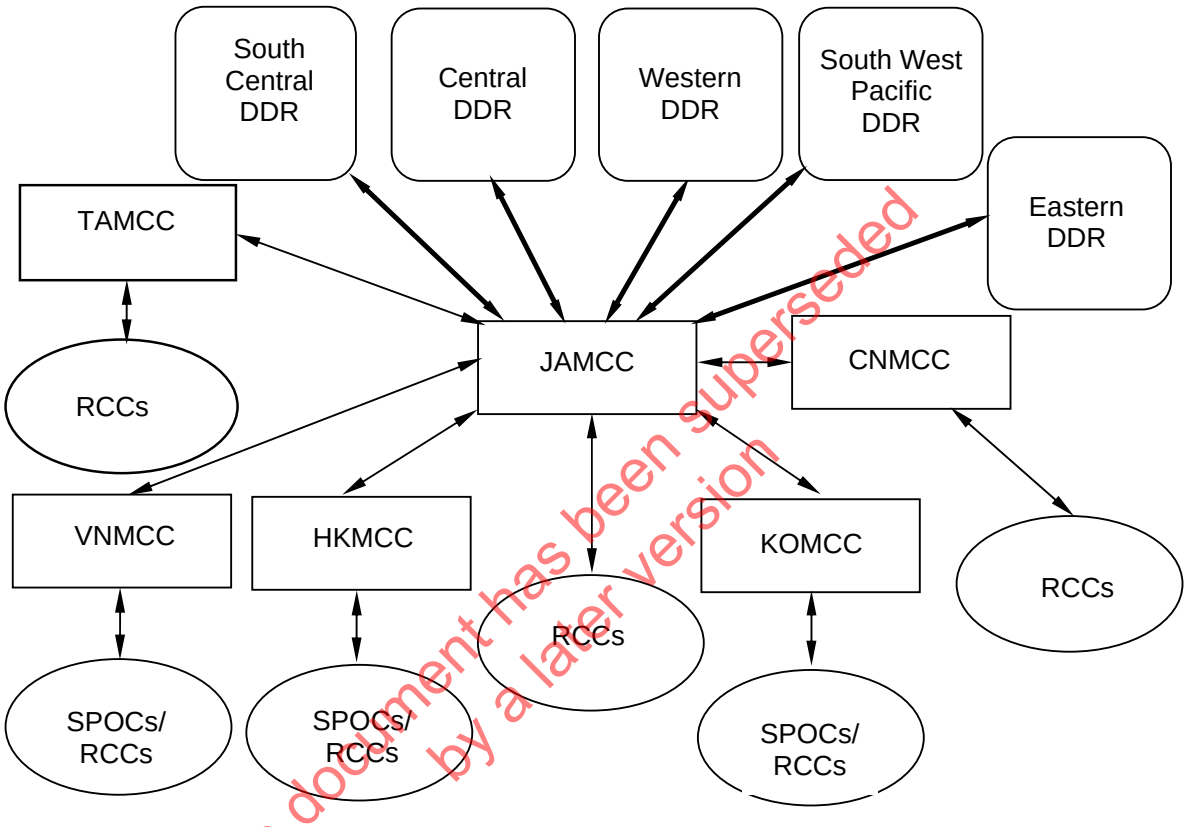


Figure III / A.6 : North West Pacific DDR Network Diagram

III / A.4.6 South Central DDR

Data flow in South Central DDR (AEMCC, ALMCC, NIMCC, SAMCC and SPMCC is described in Figure III / A.7.

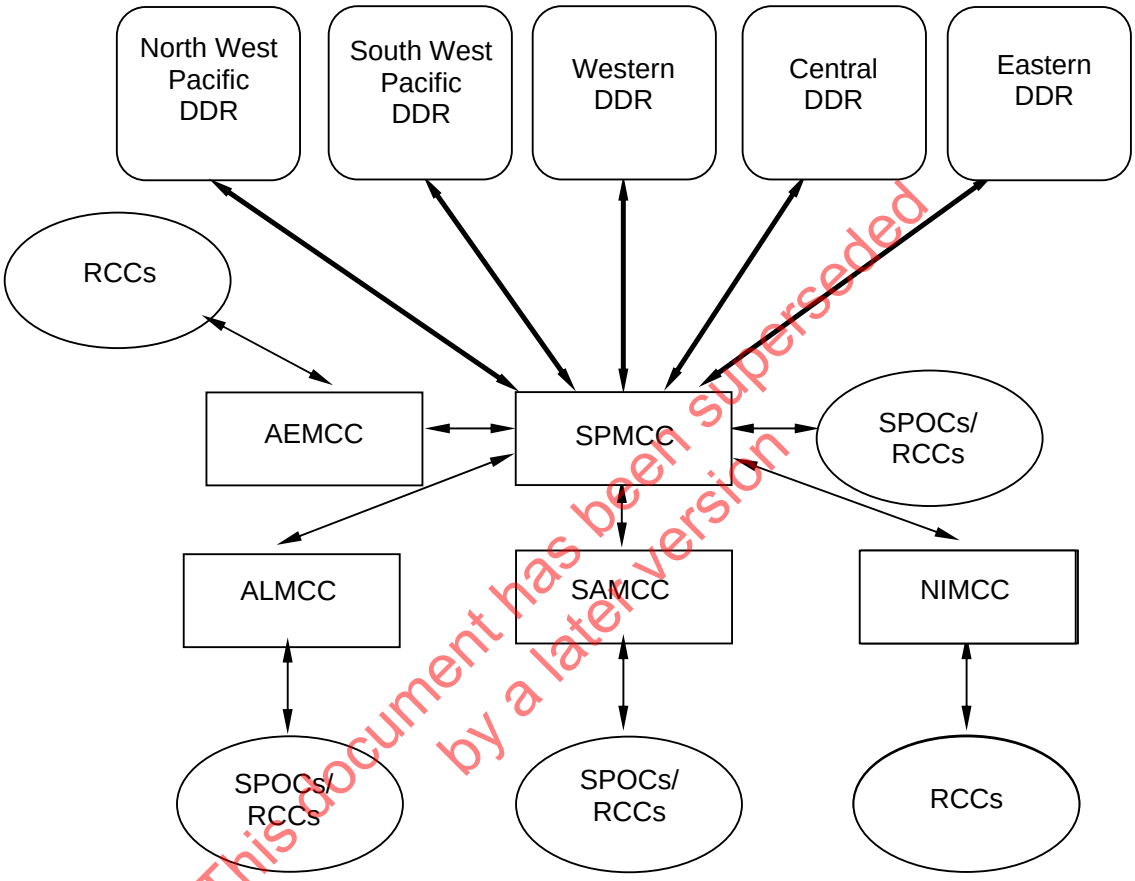


Figure III / A.7: South Central DDR Network Diagram

III / A.5 INTER-MCC ROUTING OF ALERT DATA

The receiving MCC shall route alert data to the MCC in which service area the alert is located (i.e., the destination MCC) as described in Figure III / A.8.

Location data provided by LEOLUT Doppler processing shall not be removed or altered by a distributing MCC.

III / A.6 INTER-MCC ROUTING OF SYSTEM INFORMATION

The routing of System information between MCCs is described in Figure III / A.9 “System Information Distribution”. MCCs shall route System information as described in Figure III / A.8.

Receiving MCC: / Destination MCC:	AEMCC*	ALMCC	ARMCC	ASMCC	AUMCC	BRMCC	CHMCC	CMC	CMCC	CNMCC	FMCC	GRMCC	HKMCC	IDMCC
AEMCC*	Nat.Pr.	SPMCC	USMCC	AUMCC	SPMCC	USMCC	USMCC	SPMCC	USMCC	JAMCC	SPMCC	FMCC	JAMCC	AUMCC
ALMCC	SPMCC	Nat. Pr.	USMCC	AUMCC	SPMCC	USMCC	USMCC	SPMCC	USMCC	JAMCC	SPMCC	FMCC	JAMCC	AUMCC
ARMCC	SPMCC	SPMCC	Nat. Pr.	AUMCC	USMCC	USMCC	USMCC	USMCC	USMCC	JAMCC	USMCC	FMCC	JAMCC	AUMCC
ASMCC	SPMCC	SPMCC	USMCC	Nat. Pr.	ASMCC	USMCC	USMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	JAMCC	AUMCC
AUMCC	SPMCC	SPMCC	USMCC	AUMCC	Nat. Pr.	USMCC	USMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	JAMCC	AUMCC
BRMCC	SPMCC	SPMCC	USMCC	AUMCC	USMCC	Nat. Pr.	USMCC	USMCC	USMCC	JAMCC	USMCC	FMCC	JAMCC	AUMCC
CHMCC	SPMCC	SPMCC	USMCC	AUMCC	USMCC	USMCC	Nat. Pr.	USMCC	USMCC	JAMCC	USMCC	FMCC	JAMCC	AUMCC
CMC	SPMCC	SPMCC	USMCC	AUMCC	CMC	USMCC	USMCC	Nat. Pr.	USMCC	JAMCC	CMC	FMCC	JAMCC	AUMCC
CMCC	SPMCC	SPMCC	USMCC	AUMCC	USMCC	USMCC	USMCC	USMCC	Nat. Pr.	JAMCC	USMCC	FMCC	JAMCC	AUMCC
CNMCC	SPMCC	SPMCC	USMCC	AUMCC	JAMCC	USMCC	USMCC	JAMCC	USMCC	Nat. Pr.	JAMCC	FMCC	JAMCC	AUMCC
FMCC	SPMCC	SPMCC	USMCC	AUMCC	FMCC	USMCC	USMCC	FMCC	USMCC	JAMCC	Nat. Pr.	FMCC	JAMCC	AUMCC
GRMCC	SPMCC	SPMCC	USMCC	AUMCC	FMCC	USMCC	USMCC	FMCC	USMCC	JAMCC	GRMCC	Nat. Pr.	JAMCC	AUMCC
HKMCC	SPMCC	SPMCC	USMCC	AUMCC	JAMCC	USMCC	USMCC	JAMCC	USMCC	JAMCC	JAMCC	FMCC	Nat. Pr.	AUMCC
IDMCC	SPMCC	SPMCC	USMCC	AUMCC	IDMCC	USMCC	USMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	JAMCC	Nat. Pr.
INMCC	SPMCC	SPMCC	USMCC	AUMCC	INMCC	USMCC	USMCC	INMCC	USMCC	JAMCC	CMC	FMCC	JAMCC	AUMCC
ITMCC	SPMCC	SPMCC	USMCC	AUMCC	FMCC	USMCC	USMCC	FMCC	USMCC	JAMCC	ITMCC	ITMCC	JAMCC	AUMCC
JAMCC	SPMCC	SPMCC	USMCC	AUMCC	JAMCC	USMCC	USMCC	JAMCC	USMCC	JAMCC	JAMCC	FMCC	JAMCC	AUMCC
KOMCC	SPMCC	SPMCC	USMCC	AUMCC	JAMCC	USMCC	USMCC	JAMCC	USMCC	JAMCC	JAMCC	FMCC	JAMCC	AUMCC
NIMCC	SPMCC	SPMCC	USMCC	AUMCC	SPMCC	USMCC	USMCC	SPMCC	USMCC	JAMCC	SPMCC	FMCC	JAMCC	AUMCC
NMCC	SPMCC	SPMCC	USMCC	AUMCC	FMCC	USMCC	USMCC	FMCC	USMCC	JAMCC	NMCC	NMCC	JAMCC	AUMCC
PAMCC**	SPMCC	SPMCC	USMCC	AUMCC	CMC	USMCC	USMCC	PAMCC	USMCC	JAMCC	CMC	FMCC	JAMCC	AUMCC
PEMCC	SPMCC	SPMCC	USMCC	AUMCC	USMCC	USMCC	USMCC	USMCC	USMCC	JAMCC	USMCC	FMCC	JAMCC	AUMCC
SAMCC	SPMCC	SPMCC	USMCC	AUMCC	SPMCC	USMCC	USMCC	SPMCC	USMCC	JAMCC	SPMCC	FMCC	JAMCC	AUMCC
SIMCC	SPMCC	SPMCC	USMCC	AUMCC	SIMCC	USMCC	USMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	JAMCC	AUMCC
SPMCC	SPMCC	SPMCC	USMCC	AUMCC	SPMCC	USMCC	USMCC	SPMCC	USMCC	JAMCC	SPMCC	FMCC	JAMCC	AUMCC
TAMCC	SPMCC	SPMCC	USMCC	AUMCC	JAMCC	USMCC	USMCC	JAMCC	USMCC	JAMCC	JAMCC	FMCC	JAMCC	AUMCC
THMCC	SPMCC	SPMCC	USMCC	AUMCC	THMCC	USMCC	USMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	JAMCC	AUMCC
TRMCC	SPMCC	SPMCC	USMCC	AUMCC	FMCC	USMCC	USMCC	FMCC	USMCC	JAMCC	TRMCC	TRMCC	JAMCC	AUMCC
UKMCC	SPMCC	SPMCC	USMCC	AUMCC	FMCC	USMCC	USMCC	FMCC	UKMCC	JAMCC	UKMCC	UKMCC	JAMCC	AUMCC
USMCC	SPMCC	SPMCC	USMCC	AUMCC	USMCC	USMCC	USMCC	USMCC	USMCC	JAMCC	USMCC	FMCC	JAMCC	AUMCC
VNMCC	SPMCC	SPMCC	USMCC	AUMCC	JAMCC	USMCC	USMCC	JAMCC	USMCC	JAMCC	JAMCC	FMCC	JAMCC	AUMCC
VZMCC*	SPMCC	SPMCC	USMCC	AUMCC	USMCC	USMCC	USMCC	USMCC	USMCC	JAMCC	USMCC	FMCC	JAMCC	AUMCC

Figure III / A.8 : MCC Data Routing Matrix (1/2)

Notes: Nat.Pr. - National Procedures. * - Under development. ** - Not operational

Receiving MCC: / Destination MCC:	ITMCC	JAMCC	KOMCC	NIMCC	NMCC	PAMCC**	PEMCC	SAMCC	SIMCC	SPMCC	TAMCC	THMCC	TRMCC	UKMCC	USMCC	VNMCC	VZMCC*
AEMCC*	FMCC	SPMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	AEMCC	JAMCC	AUMCC	FMCC	FMCC	SPMCC	JAMCC	USMCC
ALMCC	FMCC	SPMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	ALMCC	JAMCC	AUMCC	FMCC	FMCC	SPMCC	JAMCC	USMCC
ARMCC	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	FMCC	ARMCC	JAMCC	USMCC
ASMCC	FMCC	AUMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	AUMCC	JAMCC	AUMCC	FMCC	FMCC	AUMCC	JAMCC	USMCC
AUMCC	FMCC	AUMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	AUMCC	JAMCC	AUMCC	FMCC	FMCC	AUMCC	JAMCC	USMCC
BRMCC	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC.	FMCC	BRMCC	JAMCC	USMCC
CHMCC	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	FMCC	CHMCC	JAMCC	USMCC
CMC	FMCC	CMC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	CMC	JAMCC	AUMCC	FMCC	FMCC	CMC	JAMCC	USMCC
CMCC	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	CMCC	CMCC	JAMCC	USMCC
CNMCC	FMCC	CNMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	JAMCC	JAMCC	AUMCC	FMCC	FMCC	JAMCC	JAMCC	USMCC
FMCC	FMCC	FMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	FMCC	JAMCC	AUMCC	FMCC	FMCC	FMCC	JAMCC	USMCC
GRMCC	GRMCC	FMCC	JAMCC	SPMCC	GRMCC	CMC	USMCC	SPMCC	AUMCC	FMCC	JAMCC	AUMCC	GRMCC	GRMCC	FMCC	JAMCC	USMCC
HKMCC	FMCC	HKMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	JAMCC	JAMCC	AUMCC	FMCC	FMCC	JAMCC	JAMCC	USMCC
IDMCC	FMCC	AUMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	AUMCC	JAMCC	AUMCC	FMCC	FMCC	AUMCC	JAMCC	USMCC
INMCC	FMCC	CMC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	CMC	JAMCC	AUMCC	FMCC	FMCC	CMC	JAMCC	USMCC
ITMCC	Nat. Pr.	FMCC	JAMCC	SPMCC	ITMCC	CMC	USMCC	SPMCC	AUMCC	FMCC	JAMCC	AUMCC	ITMCC	ITMCC	FMCC	JAMCC	USMCC
JAMCC	FMCC	Nat. Pr.	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	JAMCC	JAMCC	AUMCC	FMCC	FMCC	JAMCC	JAMCC	USMCC
KOMCC	FMCC	KOMCC	Nat. Pr.	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	JAMCC	JAMCC	AUMCC	FMCC	FMCC	JAMCC	JAMCC	USMCC
NIMCC	FMCC	SPMCC	JAMCC	Nat. Pr.	FMCC	CMC	USMCC	SPMCC	AUMCC	NIMCC	JAMCC	AUMCC	FMCC	FMCC	SPMCC	JAMCC	USMCC
NMCC	NMCC	FMCC	JAMCC	SPMCC	Nat. Pr.	CMC	USMCC	SPMCC	AUMCC	FMCC	JAMCC	AUMCC	NMCC	NMCC	FMCC	JAMCC	USMCC
PAMCC**	FMCC	CMC	JAMCC	SPMCC	FMCC	Nat. Pr.	USMCC	SPMCC	AUMCC	CMC	JAMCC	AUMCC	FMCC	FMCC	CMC	JAMCC	USMCC
PEMCC	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	Nat. Pr.	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	FMCC	PEMCC	JAMCC	USMCC
SAMCC	FMCC	SPMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	Nat. Pr.	AUMCC	SAMCC	JAMCC	AUMCC	FMCC	FMCC	SPMCC	JAMCC	USMCC
SIMCC	FMCC	AUMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	Nat. Pr.	AUMCC	JAMCC	AUMCC	FMCC	FMCC	AUMCC	JAMCC	USMCC
SPMCC	FMCC	SPMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	Nat. Pr.	JAMCC	AUMCC	FMCC	FMCC	SPMCC	JAMCC	USMCC
TAMCC	FMCC	TAMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	JAMCC	Nat. Pr.	AUMCC	FMCC	FMCC	JAMCC	JAMCC	USMCC
THMCC	FMCC	AUMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	AUMCC	JAMCC	Nat. Pr.	FMCC	FMCC	AUMCC	JAMCC	USMCC
TRMCC	TRMCC	FMCC	JAMCC	SPMCC	TRMCC	CMC	USMCC	SPMCC	AUMCC	FMCC	JAMCC	AUMCC	Nat. Pr.	TRMCC	FMCC	JAMCC	USMCC
UKMCC	UKMCC	FMCC	JAMCC	SPMCC	UKMCC	CMC	USMCC	SPMCC	AUMCC	FMCC	JAMCC	AUMCC	UKMCC	Nat. Pr.	FMCC	JAMCC	USMCC
USMCC	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	FMCC	Nat. Pr.	JAMCC	USMCC
VNMCC	FMCC	VNMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	JAMCC	JAMCC	AUMCC	FMCC	FMCC	JAMCC	Nat. Pr.	USMCC
VZMCC*	FMCC	USMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	USMCC	JAMCC	AUMCC	FMCC	FMCC	PEMCC	JAMCC	Nat. Pr.

Figure III / A.8 : MCC Data Routing Matrix (2/2)

Notes: Nat.Pr. - National Procedures. * - Under development. ** - Not operational.

Transmitting MCC:	AEMCC*	ALMCC	ARMCC	ASMCC	AUMCC	BRMCC	CHMCC	CMC	CMCC	CNMCC	FMCC	GRMCC	HKMCC	IDMCC	INMCC
System Information:															
Sarsat Spacecraft & Ephemeris Data	LUTs	LUTs	LUTs	LUTs	ASMCC IDMCC SIMCC THMCC LUTs	LUTs	LUTs	INMCC PAMCC LUTs	LUTs	LUTs	ITMCC GRMCC NMCC TRMCC UKMCC LUTs	LUTs	LUTs	LUTs	LUTs
Cospas Spacecraft & Ephemeris Data	LUTs	LUTs	LUTs	LUTs	ASMCC IDMCC SIMCC THMCC LUTs	LUTs	LUTs	AUMCC FMCC INMCC JAMCC PAMCC SPMCC USMCC LUTs	LUTs	LUTs	ITMCC GRMCC NMCC TRMCC UKMCC LUTs	LUTs	LUTs	LUTs	LUTs
Sarsat Time Calibration	LUTs	LUTs	LUTs	LUTs	ASMCC IDMCC SIMCC THMCC LUTs	LUTs	LUTs	INMCC PAMCC LUTs	LUTs	LUTs	AUMCC CMC GRMCC ITMCC JAMCC NMCC SPMCC TRMCC UKMCC USMCC LUTs	LUTs	LUTs	LUTs	LUTs
SARP Commands											USMCC				
SARP Cmd Response & Housekeeping															
SARR Commands									USMCC						
SARR Cmd Response & Housekeeping															
System Status	SPMCC	SPMCC	USMCC	AUMCC	ASMCC CMC FMCC JAMCC IDMCC SIMCC SPMCC THMCC USMCC	USMCC	USMCC	AUMCC FMCC INMCC JAMCC PAMCC SPMCC USMCC	USMCC	JAMCC	AUMCC CMC GRMCC ITMCC JAMCC NMCC SPMCC TRMCC UKMCC USMCC	FMCC	JAMCC	AUMCC	CMC
406 MHz SARR Frequency Calibration									USMCC						

Figure III / A.9 : System Information Distribution (1/2)

Note: * - Under development.

Transmitting MCC:	ITMCC	JAMCC	KOMCC	NIMCC	NMCC	PAMCC**	PEMCC	SAMCC	SIMCC	SPMCC	TAMCC	THMCC	TRMCC	UKMCC	USMCC	VNMCC	ZMCC*
System Information:																	
Sarsat Spacecraft & Ephemeris Data	LUTs	CNMCC HKMCC KOMCC TAMCC VNMCC LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	AEMCC ALMCC NIMCC SAMCC LUTs	LUTs	LUTs	LUTs	LUTs	ARMCC AUMCC BRMCC CHMCC CMC CMCC FMCC JAMCC SPMCC PEMCC VZMCC LUTs	LUTs	LUTs
Cospas Spacecraft & Ephemeris Data	LUTs	CNMCC HKMCC KOMCC TAMCC VNMCC LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	AEMCC ALMCC NIMCC SAMCC LUTs	LUTs	LUTs	LUTs	LUTs	ARMCC AUMCC BRMCC CHMCC CMCC PEMCC VZMCC LUTs	LUTs	LUTs
Sarsat Time Calibration	LUTs	CNMCC HKMCC KOMCC TAMCC VNMCC LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	LUTs	AEMCC ALMCC NIMCC SAMCC LUTs	LUTs	LUTs	LUTs	LUTs	ARMCC BRMCC CHMCC CMCC PEMCC VZCC NOAA	LUTs	LUTs
SARP Commands																	
SARP Cmd Response & Housekeeping															FMCC		
SARR Commands															NOAA		
SARR Cmd Response & Housekeeping															CMCC		
System Status	FMCC	AUMCC CNMCC CMC FMCC HKMCC KOMCC TAMCC USMCC VNMCC SPMCC	JAMCC	SPMCC	FMCC	CMC	USMCC	SPMCC	AUMCC	AEMCC ALMCC AUMCC CMC FMCC JAMCC NIMCC SAMCC USMCC	JAMCC	AUMCC	FMCC	FMCC	ARMCC AUMCC BRMCC CHMCC CMC CMCC FMCC JAMCC PEMCC SPMCC VZMCC	JAMCC	USMCC
406 MHz SARR Frequency Calibration																	

Figure III / A.9 : System Information Distribution (2/2)

Note: * - Under development. ** - Not opearational.

- END OF ANNEX III / A -

ANNEX III / B

DETAILED IMPLEMENTATION OF DATA DISTRIBUTION PROCEDURES

The following sections provide detailed implementation information on selected data distribution procedures and requirements. These procedures are agreed by the Joint Committee and apply to all MCCs unless otherwise stated. A reference to the contents of this Annex follows:

III / B.1 ALERT MESSAGE VALIDATION (FILTERING ANOMALOUS DATA)

Alert message validation should be performed at each MCC to prevent incorrect data from being transmitted to other MCCs and eventually to RCCs and SPOCs. The flowchart (Figure III / B.1) is provided to illustrate data validation procedures for ease of comprehension, given the complexity of the validation process. The flowchart is intended to clarify data validation procedures and incorporates all the validation requirements of Annex III / B. It is not intended to replace the detailed requirements provided in the remainder of Annex III / B. The associated alert message validation table (Table III / B.1) follows the logic of the flowchart and includes the same decision diamonds.

III / B.1.1 Validation of Alert Message Format and Content

Each MCC should validate all incoming LEOSAR and GEOSAR beacon alert messages based on the format and content of the SIT message.

III / B.1.1.1 Validation of SIT Message Format

The format of a SIT message should be deemed corrupt if:

- any message field is missing;
- the size of any message field is incorrect;
- a numeric message field contains non-numeric character(s); or
- a space or decimal point is incorrectly placed.

The resultant MCC action is defined by Table III / B.1.

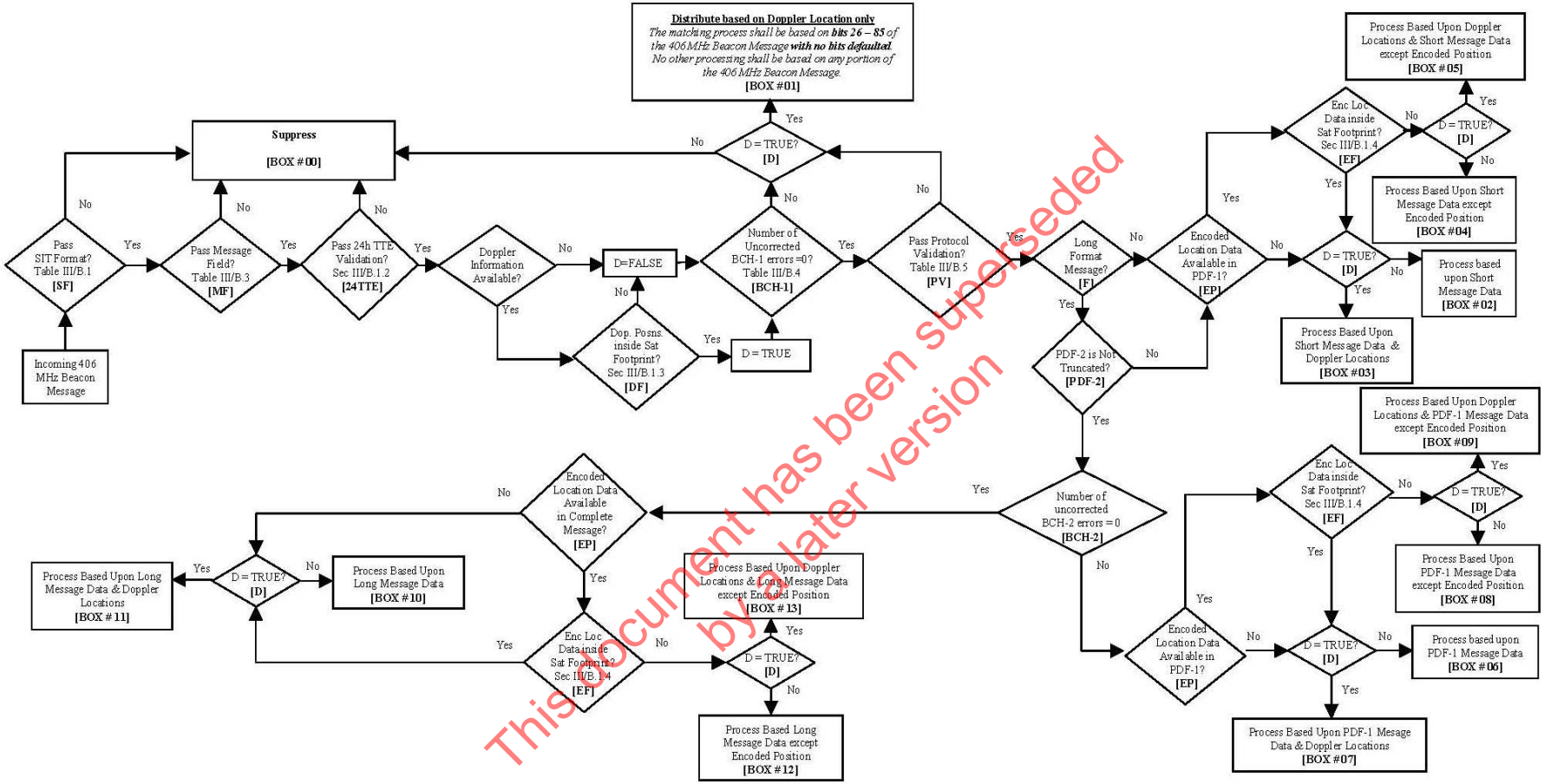


Figure III / B.1 : 406 MHz Alert Message Validation Flowchart

SIT Format	Action
Corrupt	Suppress
Not Corrupt	See Table III / B.2

Table III / B.1 : MCC Action Based on SIT Format

	1	2	3	4	5	6	7	8	9	10	11	
	SF	**MF**	**24TTE**	**BCH-1**	**PV**	**F**	**PDF-2**	**BCH-2**	**EP**	**EF**	**D**	**BOX**
1	0											**00**
2	1	0										**00**
3	1	1	0									**00**
4	1	1	1	0							0	**00**
5	1	1	1	0							1	**01**
6	1	1	1	1	0						0	**00**
7	1	1	1	1	0						1	**01**
8	1	1	1	1	1	0			0		0	**02**
9	1	1	1	1	1	0			0		1	**03**
10	1	1	1	1	1	0			1	0	0	**04**
11	1	1	1	1	1	0			1	0	1	**05**
12	1	1	1	1	1	0			1	1	0	**02**
13	1	1	1	1	1	0			1	1	1	**03**
14	1	1	1	1	1	1	0		0		0	**02**
15	1	1	1	1	1	1	0		0		1	**03**
16	1	1	1	1	1	1	0		1	0	0	**04**
17	1	1	1	1	1	1	0		1	0	1	**05**
18	1	1	1	1	1	1	0		1	1	0	**02**
19	1	1	1	1	1	1	0		1	1	1	**03**
20	1	1	1	1	1	1	1	0	0		0	**06**
21	1	1	1	1	1	1	1	0	0		1	**07**
22	1	1	1	1	1	1	1	0	1	0	0	**08**
23	1	1	1	1	1	1	1	0	1	0	1	**09**
24	1	1	1	1	1	1	1	0	1	1	0	**06**
25	1	1	1	1	1	1	1	0	1	1	1	**07**
26	1	1	1	1	1	1	1	1	0		0	**10**
27	1	1	1	1	1	1	1	1	0		1	**11**
28	1	1	1	1	1	1	1	1	1	0	0	**12**
29	1	1	1	1	1	1	1	1	1	0	1	**13**
30	1	1	1	1	1	1	1	1	1	1	0	**10**
31	1	1	1	1	1	1	1	1	1	1	1	**11**

Table III / B.2 : 406 MHz Alert Message Validation

Legend – Flowchart abbreviation equivalence

SF: Equivalent to diamond: <"Pass SIT Format? Table III/B.1">: (0= No / 1=Yes)
MF: Equivalent to diamond: <"Pass Message Field? Table III/B.2">: (0=No / 1=Yes)
24TTE: Equivalent to diamond: <"Pass 24h TTE Validation? Sec III/B.1.2">: (0=No / 1=Yes)
BCH-1: Equivalent to diamond <"Number of Uncorrected BCH-1 errors=0? Table III/B.3">: (0=No /1=Yes)
PV: Protocol Validation (0=Fail / 1=Pass)

F: Format (0=Short / 1=Long)
PDF-2: Equivalent to diamond <PDF-2 is Not Truncated?>: (0=No / 1=Yes)
BCH-2: Equivalent to diamond <Number of uncorrected BCH-2 errors=0?>: (0=No / 1=Yes)
EP: Encoded Position (0=No / 1=Yes)
EF: Encoded Location in Footprint (0=No / 1=Yes)
D: Valid Doppler Locations. Equivalent to Diamond <D=TRUE? >:
(0 =No / 1=Yes). If YES, the flag means that there are Doppler locations available, and both Doppler locations are inside satellite footprint, if NO, it is otherwise.

Note: If a test is irrelevant in a particular context (e.g. the BCH-2 test for Short Format Messages [F=0]) then the cell in the table is shaded.

III / B.1.1.2 Validation of SIT Message Field Content

Some message fields are essential to MCC alert processing. Each MCC should validate the contents of these fields. The contents of the message fields can be validated against allowable values defined in documents C/S A.002 or C/S T.001. Message Fields 2, 4, 6, 8, 10, 12, 13, 14, 20, 21, 25, 26, 27 and 31 should be checked against the range of values contained in Table B.1 of C/S A.002. Table III / B.3 defines the resultant action of the validation process.

Message Field	Data Contents (According to C/S A.002, Table B.1)	
	In Range	Out of Range
2, 4, 6, 8, 10, 12, 13, 14, 20, 21, 25, 26, 27 and 31	Process	Suppress
Other SIT Fields	Process	Process

Table III / B.3: MCC Action Based on Message Field Content

Alert messages shall not be suppressed based on out-of-range values unless the message field is contained in the above list.

III / B.1.1.3 406 MHz Beacon Message Validation

In addition to the above validation, each MCC should perform a BCH check of all incoming 406 MHz alert messages from MCCs and LUTs to ensure that the 406 MHz beacon message (message field 23) is valid. In checking the BCH for the first protected field (bits 25 - 106), the resultant MCC action is defined by Table III / B.4.

Number of Uncorrected BCH Errors Detected in the First Protected Field	Number of Points (as defined at Message Field 21 in document C/S A.002)	
	1	≥ 2
0	Process	Process
≥ 1	Suppress	Process (Doppler Only)*

Table III / B.4: MCC Action Based on BCH Error Determination in First Protected Field of 406 MHz Alert Messages

* The matching process shall be based on bits 26 – 85 of the 406 MHz Beacon Message with no bits defaulted. No other processing shall be based on any portion of the 406 MHz Beacon Message. Distribute based on Doppler Location only.

In addition, when the first protected field has no BCH errors, each MCC should compare the beacon message contents against a known protocol specification. Specifically, the following items in the protected field(s) should be validated against C/S T.001:

- country code,
- user protocol,
- Baudot characters,
- supplementary data field,
- binary coded decimal fields, and
- encoded latitude and longitude.

A 406 MHz beacon alert message fails when one or more of the conditions in Table III / B.5 below are met.

Item to Check	Bits	Fail if:
Country Code Not Allocated, per Annex I/C of C/S A.001	27 - 36	Decimal Value < 200 or > 780 or not allocated between 200 and 780
User Protocol	37 - 39	Bit 26 = 1 and Bits 37 - 39 = 101
Serial User Protocol	40 - 42	Bit 26 = 1 and Bits 40 - 42 = 101 or 111
Standard Location Ship Security Protocol	25 - 26	Bit 25 = 0 and Bit 26=0 and Bits 37 – 40 = 1100
Standard Location Ship Security Protocol	61 – 64	Bit 25 = 1 and Bit 26 = 0 and Bits 37 - 40 = 1100 and Bits 61 - 64 ≠ 0000
Maritime User, Radio Call Sign or Aviation User Protocol	82 - 83	Bit 26 = 1 and Bits 37 - 39 = 010, 110 or 001 and Bits 82 - 83 are non-zero
Unallocated Location Protocols	37 - 40	Bit 26 = 0 and Bits 37 - 40 = 0000, 0001, 1001, or 1101
Modified Baudot Code	Varies	Unassigned Baudot Character
Binary Coded Decimal	Varies	Decimal Value for Four Bit Group > 10
Encoded Latitude and Longitude	Varies	Encoded Latitude > 90 or Encoded Longitude > 180
Supplementary Data (Standard Location Protocols)	107 - 110	Bit 26 = 0 and Bits 37 - 40 = 0010, 0011, 0100, 0101, 0110, 0111 1110, and Bits 107 - 110 ≠ 1101
Supplementary Data (Standard Location Ship Security Protocol)	107 - 110	Bit 25 = 1 and Bit 26 = 0 and Bits 37 - 40 = 1100, and Bits 107 - 110 ≠ 1101
Supplementary Data (National Location Protocol, Short)	107 - 110	Bit 25=0 and Bit 26 = 0, and Bits 37 - 40 = 1000, 1010, 1011 or 1111, and Bits 107 - 110 ≠ 1101
Supplementary Data (National Location Protocol, Long)	107 - 109	Bit 25=1 and Bit 26 = 0, and Bits 37 - 40 = 1000, 1010, 1011 or 1111, and Bits 107 - 109 ≠ 110

Table III / B.5 : Protocol Validation for 406 MHz Alert Messages

The appropriate action by an MCC based on the results of the comparisons of Table III / B.5 are given in Table III / B.6 below.

Protocol Check Results	**Number of Points** (as defined at Message Field 21 in document C/S A.002)	
	1	≥ 2
Pass	Process	Process
Fail	Suppress	Process (Doppler Only)*

Table III / B.6 : MCC Action Based on Result of Protocol Validation in First Protected Field of 406 MHz Alert Messages

* The matching process shall be based on bits 26 – 85 of the 406 MHz Beacon Message with no bits defaulted. No other processing shall be based on any portion of the 406 MHz Beacon Message. Distribute based on Doppler Location only.

If the second protected field (bits 107 - 144) has uncorrected BCH errors, then no processing shall be based on any portion of this field, except for the Supplementary Data Bits as defined in Table III / B.5.

III / B.1.1.4 Additional Validation

MCCs may perform additional validation to meet national requirements, however, additional validation shall not affect the distribution of data to other MCCs.

III / B.1.2 24-Hour Time Tag Errors (Cospas)

Each MCC should implement procedures to filter out 24-hour time tag errors. One method to determine a 24-hour error at the MCC is to compare each new 406 MHz alert to alerts on file for the same beacon ID. If a prior alert from the same satellite for the same beacon with a TCA which was 24 hours earlier (± 20 minutes) is on file at the MCC, the new alert can be assumed to be in error and suppressed from further transmission.

III / B.1.3 Doppler Position Footprint Validation

Each MCC shall implement the algorithm for determining if the Doppler positions are inside the satellite footprint at the time of detection as per Figure B.2 of the Cospas-Sarsat MCC Standard Interface Description, C/S A.002 document. If one of the LEOSAR Doppler positions is conclusively outside the footprint then the alert shall be processed based only on the 406 MHz beacon message and the Doppler solution data shall not be distributed.

III / B.1.4 Encoded Position Footprint Validation

Each MCC shall implement the algorithm for determining if the encoded position is inside the satellite footprint at the time of detection (MF#14 per C/S A.002) as per Figure B.2 of the Cospas-Sarsat MCC Standard Interface Description, C/S A.002 document. If the encoded position is conclusively outside the footprint then no processing shall be based on the encoded position.

III / B.2 POSITION MATCHING

Position matching is the comparison of the computed distance between two beacon positions and a set distance criterion. It is used to decide if two positions should be considered operationally as a unique beacon position or as separate beacon positions. The matching process can include other technical parameters.

Matching criteria are necessary to determine if two sets of independent position data should be regarded as corresponding to the same beacon position. Such matching criteria are used in the ambiguity resolution process to determine whether two Doppler positions from two independent beacon events, or an encoded position and a Doppler position, are sufficiently close to determine which Doppler position is the "true" position and which is the image or incorrect position(s). Matching criteria are also used, before ambiguity resolution, to decide if a separate alert message should be transmitted for a beacon when a new position is at a distance from any previously received position greater than the distance separation defined by the matching criteria.

The points listed below concerning the matching of positions apply to the matching criteria distance to be used by MCCs:

a) for Doppler to Doppler matches and Doppler to encoded matches, the distance match criterion to be used for ambiguity resolution and for position conflict determination shall be the same;

b) the Doppler to Doppler distance match criterion shall be 50 kilometres;

c) the Doppler to encoded distance match criterion shall be 50 kilometres;

d) the encoded to encoded distance match criterion shall be 3 kilometres;

e) each of the above three distance match criterion shall be configurable;

f) in the match process, the "best" match shall be used to resolve ambiguity when multiple candidate positions meet the match criterion; however

g) if both pairs of Doppler positions meet the match criterion prior to ambiguity resolution for different satellite passes, this is deemed an Unresolved Doppler Position Match and:
   (i) ambiguity shall not be resolved from either pair of Doppler positions; and
   (ii) other pairs of positions shall remain eligible to resolve ambiguity, even if the "best" distance match was between ineligible Doppler positions.

III / B.3 AMBIGUITY RESOLUTION

Ambiguity resolution is the determination of the confirmed beacon position (the resolved position). This is achieved by the matching of Doppler position data from two unique LEO satellite passes (beacon events), the matching of encoded position data with Doppler position data from a LEO satellite pass, or by using operational criteria. Details on position matching are provided in Annex III / B.2.

Ambiguity resolution is necessary because some uncertainty exists in the determination of a unique beacon position when position information is available from only one data source -

either an encoded position or Doppler positions from a single LEO satellite pass. This uncertainty can be resolved by successfully matching position data from at least two independent beacon events which may consist of two LEO satellite passes providing independent Doppler positions, or only one LEO satellite pass providing Doppler positions and an encoded position provided by the Cospas-Sarsat LEOSAR system or a GEOSAR system. Two separate inputs with encoded position only **cannot** be considered as independent beacon events. However, ambiguity resolution can be achieved with position data from a single LEO satellite pass when encoded position information is available and it matches one of the computed Doppler positions.

Based on the principles above, the following rules concerning ambiguity resolution notifications apply between MCCs:

a) alert data shall be transmitted between MCCs until ambiguity is resolved;

b) all MCCs shall provide ambiguity resolution notification;

c) MCCs shall send an ambiguity resolution notification to each MCC that has the resolved position or a previous image position in its service area;

d) alert data will not be transmitted between MCCs after ambiguity is resolved unless an MCC requests continued transmission; and

e) an MCC requesting continued transmission after ambiguity resolution should co-ordinate its request with the appropriate MCC(s).

III / B.4 PROCEDURES TO DETERMINE BETTER QUALITY ALERT DATA FOR SAME BEACON EVENT POSITION CONFLICTS

III / B.4.1 Introduction

A position conflict exists when an alert is received at an MCC and the position data fails to match (see section III / B.2 above) any previously received position data for the same beacon. The filtering procedure detailed below should be used by MCCs for filtering **Doppler** position conflict alerts for the same beacon event when position ambiguity has not been resolved, or continued transmission has been requested.

The purpose of the filtering procedure is to minimise the distribution of alert messages containing “poor” quality Doppler position data. If a new alert with Doppler position conflict is for the same beacon event as previously received data, additional checks can be performed to determine if the new Doppler position data is of better quality than previously received Doppler position data and should be transmitted, or is of poorer quality and can be deemed redundant. If the relative quality of the Doppler positions cannot be determined, then the new data should be transmitted. The procedure below ensures that “good” data will not be suppressed while limiting the amount of erroneous data distributed to RCCs and SPOCs.

III / B.4.2 Position Conflict Procedure

An MCC should identify a reference alert with Doppler position data for each beacon event. By default, the first alert for each pass becomes the reference until another alert of better quality is received. Should an alert with new Doppler position data for the same beacon event be received which is determined to be of better quality, the new alert becomes the reference and a position conflict alert is transmitted.

An MCC determines if a new alert contains Doppler position data of better quality by performing the following checks in sequence. The appropriate action is then taken as indicated (see Table III / B.6).

Step 1:

If both alerts have a bias standard deviation less than 20 Hz, then proceed to Step 2. If both alerts have a bias standard deviation equal to or greater than 20 Hz, or if either bias standard deviation is not available, then quality differentiation cannot be made and the new alert is transmitted.

If the reference alert has a bias standard deviation equal to or greater than 20 Hz, and the new alert has a bias standard deviation less than 20 Hz, then the new alert is deemed to be of better quality, a position conflict alert is transmitted, and the new alert becomes the reference alert. If the reverse is true, the new alert is deemed to be of poorer quality and the new alert is not transmitted.

Step 2:

In this step both alerts are assumed to have bias standard deviations less than 20 Hz. If both alerts have WF values < 2, then go to Step 3. If the new alert contains a WF ≥ 2, then the new alert is not transmitted. If the WF of the reference alert contains a value ≥ 2 and the new alert contains a WF < 2, then the new alert is transmitted and becomes the reference alert. If both alerts have WF values ≥ 2, then quality differentiation cannot be made and the new alert is transmitted.

Step 3:

This step applies when both bias standard deviations are < 20 Hz and both Window Factors are < 2. In this case, the dimensions of the minor axis of the error ellipse are compared.

If the error ellipse minor axis (MIN) of the new alert is ≥ 99.9 and the MIN of the reference alert < 99.9, then the new alert is not transmitted. If the MIN for the new alert is < 99.9 and the MIN for the reference alert is ≥ 99.9, then the new alert is transmitted and becomes the reference alert. Finally, if either of the above conditions are not met, then quality differentiation cannot be made and the new alert is transmitted.

If for any reason the relative quality cannot be determined in the comparison of the Doppler positions from alerts for the same beacon event, the new position data should be transmitted.

	Parameters						
	Bias Std Dev (Hz) MF #13		**Window Factor (0 - 9) MF #15**		**Min. Error Ellipse (km) MF #27**		
Steps	Reference Alert	New Alert	Reference Alert	New Alert	Reference Alert	New Alert	Action
Step 1	< 20 Hz	< 20 Hz					Go to Step 2
	default [1]	default [1]					New alert transmitted
	≥ 20 Hz	< 20 Hz					New alert transmitted [2]
	< 20 Hz	≥ 20 Hz					New alert NOT transmitted
	≥ 20 Hz	≥ 20 Hz					New alert transmitted
Step 2	< 20 Hz	< 20 Hz	< 2	< 2			Go to Step 3
	< 20 Hz	< 20 Hz	< 2	≥ 2			New alert NOT transmitted
	< 20 Hz	< 20 Hz	≥ 2	< 2			New alert transmitted [2]
	< 20 Hz	< 20 Hz	≥ 2	≥ 2			New alert transmitted
Step 3	< 20 Hz	< 20 Hz	< 2	< 2	< 99.9	≥ 99.9	New alert NOT transmitted
	< 20 Hz	< 20 Hz	< 2	< 2	≥ 99.9	< 99.9	New alert transmitted [2]
	< 20 Hz	< 20 Hz	< 2	< 2	< 99.9	< 99.9	New alert transmitted
	< 20 Hz	< 20 Hz	< 2	< 2	≥ 99.9	≥ 99.9	New alert transmitted

1 indicates that at least one bias standard deviation is not available.
2 indicates that the new alert becomes the reference alert.

Table III / B.7 : Procedures to Determine Better Quality Alert Data for Same Beacon Event Position Conflicts

III / B.5 DETAILED PROCEDURES FOR ALERT DATA DISTRIBUTION

III / B.5.1 Analysis and General Representation of Alert Data Processing

Alert data received by a Cospas-Sarsat MCC, either from its associated LUTs or from another MCC, must be forwarded to a MCC, a SPOC or a RCC if it contains 'new' information useful to SAR services. The alert data distribution process consists of a set of rules commonly used by Cospas-Sarsat MCCs for deciding whether new input data concerning a particular 406 MHz beacon ID contains 'new' information. It is based on

a number of parameters (defined in the document C/S G.004 'Cospas-Sarsat Glossary') and matching rules (defined in this document), which include:

- the definitions of 'beacon events', 'ambiguity resolution' and 'position conflict'; and
- the definition of distance criteria for matching Doppler and encoded position data.

However, these basic rules and the variety of position data available in 406 MHz alert messages create a large number of possible combinations which need to be thoroughly analysed to ensure the consistency of the alert data distribution process throughout the Cospas-Sarsat MCC network.

In order to implement this data distribution process, the 'position information content' of each valid incoming alert message (referred to as 'Input' or 'I' in this Annex) must be compared with the information already transmitted concerning the same beacon ID. Therefore, the history of all data already transmitted must be preserved. For each beacon ID, that history can be summarised in a 'Status word' (Sw). Input and Status words are both characterised by the type of position information (received in the input or transmitted in previous messages). Similarly, the 'action(s)' resulting from the process (i.e. the message to be transmitted, its format and recipients) can be summarised in an 'Action word' (Aw) and characterised by the type of position information to be forwarded, taking also into account position data already distributed. The functional relations between 'Input', 'Status word' and 'Action word' in the process are summarised in Figure III / B.2.

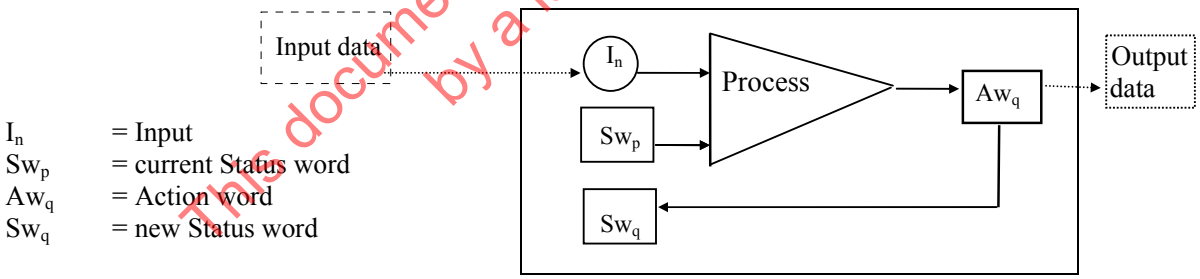


Figure III / B.2 : Alert Data Processing Concept

III / B.5.2 Definition of Input, Status and Action Words

The possible combinations of position data which characterise an input (I), the current status (Sw) or the resulting action (Aw) of the process concerning a given beacon ID, are described in Figure III / B.3. No other combinations of the type of position data are allowed and the possible position information contents of I, Sw and Aw are summarised in the last column.

Figure III / B.3 : Definition of the Input, Status and Action Words for 406 MHz Alerts

Input	Type of position data					Status word	Action word	Comments
	No Position Data	A / B Doppler Positions	Encoded Position Data	Doppler Amb. Resolved	D & E Positions Matched			Position Information Content
-	0	0	0	0	0	Sw_0	Aw_0	No message received or sent
I_1	1	0	0	0	0	Sw_1	Aw_1	Unlocated alert
I_2	0	1	0	0	0	Sw_2	Aw_2	A / B Doppler positions only
I_3	0	0	1	0	0	Sw_3	Aw_3	Encoded position only
I_4	0	1	1	0	0	Sw_4	Aw_4	A, B & E positions all unmatched
I_5	0	1	0	1	0	Sw_5	Aw_5	Doppler pos. only, ambiguity. resolved.
I_6	0	1	1	1	0	Sw_6	Aw_6	D pos. (amb. resolved) + E pos. unmatched
I_7	0	1	1	1	1	Sw_7	Aw_7	Resolved positions (D & E matched)

Notes: - The Input word (I) is specific to each individual input and independent of the origin of the data (e.g. another MCC or the LUTs associated with the receiving MCC).

- The Status word (Sw) summarises all previous inputs and actions in respect of a particular beacon ID. Sw_5, Sw_6 and Sw_7 are functionally equivalent in the process since no further transmissions are required after ambiguity resolution. However, the distinction between the various position information contents after ambiguity resolution is relevant for the Input and Action words.

- The Actions to be carried out as a result of the process depend on the Input / Status combination, but also on the results of comparisons (matching tests) between 'old' and 'new' position data received by the MCC, as shown in the matrix (Figure III / B.3). The selected Action word is also used to define the message format to be sent and, before ambiguity resolution, characterises the new status associated with that beacon ID after completion of the selected Action (i.e.: $Aw_i \longrightarrow Sw_i$).

III / B.5.3 Process Matrix for Alerts

The process is summarised in Figure III / B.4 which defines, for each Input / Status combination, the possible output (Action words), the corresponding SIT message numbers (to be used if the new data in the Input has to be forwarded to another MCC, outside the processing MCC service area) and the appropriate recipient(s) of this information, as determined by the geographic sorting of position data.

III / B.5.3.1 Processing Before Ambiguity Resolution (Sw_0 , Sw_1 , Sw_2 , Sw_3 , Sw_4 Status)

The process is quite simple when no data was previously received for the beacon ID in a new Input (Status Sw_0), or when the previously received alert(s) for that ID did not include any position information (Status Sw_1).

However, as shown in Figure III / B.4, a number of Input / Status combinations may result in several possible Actions. This occurs when a number of alert messages have been received prior to the new input, but the available position data did not satisfy the matching criteria for ambiguity resolution. The new position data in the input message must then be compared with all positions previously received for the same beacon ID, and these matching tests can lead to different Actions. The position information content of each possible Action is used to select the appropriate Action word as illustrated in the special algorithm described in section B.5.4 (Figures III / B.5, III / B.6, III / B.7 and III / B.8).

Figure III / B.4 : Processing Matrix, Message Formats and Distribution of 406 MHz Alerts

	I_1 (no position data)			I_2 (A / B Doppler positions)			I_3 (Encoded only)			I_4 (A / B / E unmatched)			I_5 (Resolved Doppler)			I_6 (Res. D + E unmatched)			I_7 (Resolved D and E)		
	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest
Sw_0	Aw_1	122	C	Aw_2	125	AB	Aw_3	122	E	Aw_4	126	ABE	Aw_5	127	R	Aw_6	127	R	Aw_7	127	R
Sw_1	Aw_0	-	-	Aw_2	125	AB	Aw_3	122	E	Aw_4	126	ABE	Aw_5	127	R	Aw_6	127	R	Aw_7	127	R
	Aw_1	122	C																		
Sw_2	Aw_0	-	-	Aw_5	127	RI	Aw_7	124	RI	Aw_7	127	RI									
				Aw_0	-	-	Aw_4	123	E	Aw_6	127	RI	Aw_5	127	RI	Aw_6	127	RI	Aw_7	127	RI
				Aw_2	126	AB				Aw_4	126	ABE									
				Aw_2	125	AB															
Sw_3	Aw_0	-	-	Aw_7	127	R	Aw_0	-	-	Aw_7	127	RI	Aw_7	127	RI	Aw_7	127	RI	Aw_7	127	RI
				Aw_4	126	AB	Aw_3	123	E	Aw_4	126	ABE	Aw_6	127	RI	Aw_6	127	RI			
Sw_4	Aw_0	-	-	Aw_7	127	RI	Aw_7	124	RI	Aw_7	127	RI	Aw_7	127	RI	Aw_7	127	RI	Aw_7	127	RI
				Aw_6	127	RI	Aw_0	-	-	Aw_6	127	RI	Aw_6	127	RI	Aw_6	127	RI			
				Aw_0	-	-	Aw_4	123	E	Aw_0	-	-									
				Aw_4	126	AB				Aw_4	126	ABE									
Sw_5 Sw_6 Sw_7	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-
				Ct_2	126	RD	Ct_3	123	RD	Ct_4	126	RD	Ct_5	127	RD	Ct_6	127	RD	Ct_7	127	RD
				Ct_5	127	RD	Ct_7	124	RD	Ct_7	127	RD									

Notes: .jc-23.Annex4.

I_i = Input
Sw_i = Status word
Aw_i = Action word
Ct_i = Continue transmission

A = A Doppler position
B = B Doppler position
E = Encoded position

R = Resolved position
I = Incorrect position(s)
C = Country code destination
RD= Requesting destination

Dest = Destination of SIT message
SIT = Subject Indicator Type / (standard message format)

III / B.5.3.2 Processing After Ambiguity Resolution (Sw_5, Sw_6, Sw_7 Status)

After ambiguity resolution, the distribution of incoming alert data is normally discontinued, unless continued transmission is specifically requested by a SPOC or an MCC. If continued transmission is requested, a different processing logic must be implemented since the initial objective of increasing the position information content to obtain a resolved position has already been achieved. To reflect this different approach, the new 'Actions' are identified in the matrices as Ct_i (see Figures III / B.4 and III / B.8).

All incoming position data is compared to the last resolved position transmitted by the MCC, in accordance with the usual processing criteria. If the process results in an Action different from Ct_0 (redundant data not to be distributed), the incoming position data is sent to the destination(s) which requested the continued transmission.

Notes:

The suffix of Inputs (I words), Actions (Ct) and Status (Sw) remain consistent with the definitions of Figure III / B.3, although there is no practical differences between the three Status words (Sw_5, Sw_6, and Sw_7) in terms of processing after ambiguity resolution in the proposed procedure.

Although Figure III / B.4 indicates several possible outcome for all Inputs but one after ambiguity resolution, only one comparison is performed between the new position data in the Input and the known resolved position. Therefore, the outcome is always unambiguous and no 'priority rule' is required.

III / B.5.4 Special Processing Procedures

III / B.5.4.1 Tests and Flag Setting for Special Processing Procedures

a) Before ambiguity resolution, five flags may be positioned to determine the output of an In / Swp combination which requires special procedures:

DEM = Doppler / Encoded positions Matching flag : set to "1" if a Doppler position and an Encoded position match the distance separation criterion (and other criteria as may be required) and set to "0" otherwise. However, in some Input / Status combinations this flag has no relevance, for example, if the Input is the I_2 type, containing only Doppler position data. In such cases the DEM flag is assumed to be set to default value "0".

In the DEM test, the E position is compared to all previously received Doppler positions (A / B solutions or resolved D position). Alternatively, the A / B Doppler positions of the Input are compared with any E position previously received at the MCC. A correct match with one solution of a Doppler location is sufficient to resolve the Doppler ambiguity. It also provides very reliable information since the D and E data are totally independent.

SBE = the 'Same Beacon Event' flag (same beacon ID, same satellite, same TCA) is to be set for each matching test as follows:

SBE set to "1" if previous A / B Doppler positions to be compared with Input are from same satellite and same TCA; and

SBE set to "0" if previous A / B Doppler positions to be compared with Input are not from same satellite and same TCA.

The SBE flag is used only in relation with the Doppler to Doppler position matching tests. It has no relevance for DEM or EEM tests and is assumed to be set to the default value "0" in such cases.

DDM = Doppler / Doppler positions Matching flag : set to "1" if two Doppler positions match the distance separation criterion (and other criteria as may be required) and set to "0" otherwise. For an Unresolved Doppler Position Match (as specified in Annex III / B.2) set to "0". However, in some Input / Status combinations this flag has no relevance, for example, if the current status is Sw_3 (previous alert data received at the MCC contain only encoded position data). In such cases the DDM flag is assumed to be set to default value "0".

EEM = Encoded position / Encoded position Matching flag : set to "1" if two encoded positions match the distance separation criterion (and other criteria as may be required) and set to "0" otherwise. However, the EEM test is relevant only in a limited number of cases (e.g. for the processing of I_3 type Inputs (E position only) in a Sw_3 context (only E positions were previously received)). In all other situations the EEM flag should be set to its default value "0".

PQF = Poor Quality Flag : The Poor Quality Flag is used in conjunction with the DDM test only, when a position conflict exists between Doppler positions for the same beacon event (SBE = 1 and DDM = 0). In such cases, parameters characterising the quality of the position data are tested to determine whether the new data provide a better quality position.

PQF is set to "1" if the new position data is of inferior quality than the data previously processed by the MCC for the same beacon event. The new data should then be considered as redundant.

PQF is set to "0" if the new position data is of better quality than the data previously processed for the same beacon event, or if the relative quality of the new versus the old position data cannot be determined. The new data should then be forwarded as a position conflict alert.

b) After ambiguity resolution, if continued transmission of alerts for a particular beacon ID has been requested, the same principles apply, but input Doppler position is compared for redundancy test only with the resolved (R) position previously distributed by the MCC, and all additional information is forwarded to

the recipient of the resolved position data (no additional geographic sorting is performed using the new position data) or to the requesting MCC/SPOC.

In this context, the DDM test is reinterpreted as a DRM test (Doppler / Resolved position Matching). Input encoded position is compared for redundancy test with the resolved (R) position previously distributed by the MCC only if there is no previous encoded position. The SBE and PQF tests are unchanged in their definition. The DEM test is not applicable after ambiguity resolution.

III / B.5.4.2 Selection of the Relevant Action in Input / Status Combinations with Multiple Outputs

When the I / Sw combination leads to several possible actions, it is essential to clarify which Action in the sequence supersedes others and should be completed. The logic to be followed in this selection is always that:

Actions enhancing the 'position information content' of the alert to be forwarded by the MCC should have overall precedence ($Aw_7 > Aw_6 > Aw_5$ > etc.) provided the 'position information content' (or suffix) of the Action word is superior to the suffix of the current Status word; and

Action Aw_0 (which means that the same data as in the Input has already been processed) has precedence over an Action which has same 'position information content' as the current Status (in Sw_4 status, $Aw_0 > Aw_4$). This rule reflects the fact that the Input is redundant, i.e. the Input matches all the characteristics of at least one set of data previously received, and all other matching tests have failed to enhance the 'position information content' of the possible output.

III / B.5.4.3 Definition of Special Processing Matrices

Special processing matrices are defined for each Status of the process to clarify the implementation of the test sequence to be performed for each possible input data. The Input / Status combinations which have a unique output Action (see Figure III / B.4) are not repeated in the special processing matrices shown in the following sections.

Notes:

Shaded cells in the 'Input' columns correspond to flag combinations which are not applicable for the particular Input / Status combination.

The default value for all flags is "0". If a test is irrelevant in a particular context (e.g. in the Sw_2 status, DEM = 1 and DDM = 1 means the PQF test is irrelevant) then the corresponding flag is set to "0" and the cell in the matrix is shaded. The flag column is entirely shaded if the corresponding test is inapplicable for all inputs in the Sw context (e.g. the EEM column in the Sw_2 status).

An "X" indicated in the flag column means that both flag values are possible, but the actual flag value does not affect the output Action (therefore the test can be ignored in this context).

III / B.5.4.3.1 Sw_2 Special Processing Matrix

A and B Doppler positions for the same beacon ID have already been processed by the MCC which receives the new input I_j.

Since no encoded position has previously been received, the EEM test is irrelevant (see shaded column). Similarly, the PQF test is irrelevant when a DEM test or a DDM test show a successful match (DEM = 1 and / or DDM =1).

Figure III / B.5 : Special Processing for Sw_2 Status

DEM	SBE	DDM	PQF	EEM	I_2 [A / B]	I_3 [E]	I_4 [A / B / E]
1	X	1	0	0			Aw_7
1	X	0	0	0		Aw_7	Aw_7
0	1	1	0	0	Aw_0		Aw_4
0	1	0	1	0	Aw_0		Aw_4
0	1	0	0	0	Aw_2	Aw_4	Aw_4
0	0	1	0	0	Aw_5		Aw_6
0	0	0	0	0	Aw_2	Aw_4	Aw_4
Aw priority if multiple matching tests are required					Aw_5 > Aw_0 > Aw_2	Aw_7 > Aw_4	Aw_7 > Aw_6 > Aw_4

III / B.5.4.3.2 Sw_3 Special Processing Matrix

An 'E' (encoded) position for the same beacon ID has already been processed by the MCC which receives the new input I_j, but no Doppler position data were received.

Therefore, the Doppler / Doppler matching tests, and the associated SBE and PQF tests, are irrelevant in this Status (columns SBE, DDM and PQF are shaded).

Figure III / B.6 : Special Processing for Sw_3 Status

DEM	SBE	DDM	PQF	EEM	I_2 [A / B]	I_3 [E]	I_4 [A / B / E]	I_5 [D]	I_6 [D+(E)]
1	0	0	0	1			Aw_7		Aw_7
1	0	0	0	0	Aw_7		Aw_7	Aw_7	Aw_7
0	0	0	0	1		Aw_0	Aw_4		Aw_6
0	0	0	0	0	Aw_4	Aw_3	Aw_4	Aw_6	Aw_6
Aw priority if multiple matching tests are required					Aw_7 > Aw_4	Aw_0 > Aw_3	Aw_7 > Aw_4	Aw_7 > Aw_6	Aw_7 > Aw_6

III / B.5.4.3.3 Sw_4 Special Processing Matrix

A / B Doppler positions and encoded position data for the same beacon ID have already been processed by the MCC which receives the new input, but no Doppler / Doppler or Doppler / encoded position matching tests have been successful.

Figure III / B.7 : Special Processing for Sw_4 Status

DEM	SBE	DDM	PQF	EEM	I_2 [A / B]	I_3 [E]	I_4 [A / B / E]	I_5 [D]	I_6 [D+(E)]
1	X	1	0	0	Aw_7		Aw_7	Aw_7	Aw_7
1	X	0	0	0	Aw_7	Aw_7	Aw_7	Aw_7	Aw_7
0	1	1	0	1			Aw_0		Aw_6
0	1	1	0	0	Aw_0		Aw_4	Aw_6	Aw_6
0	1	0	1	1			Aw_0		Aw_6
0	1	0	1	0	Aw_0		Aw_4	Aw_6	Aw_6
0	X	0	0	1		Aw_0	Aw_4		Aw_6
0	X	0	0	0	Aw_4	Aw_4	Aw_4	Aw_6	Aw_6
0	0	1	0	1			Aw_6		Aw_6
0	0	1	0	0	Aw_6		Aw_6	Aw_6	Aw_6
Aw priority if multiple matching tests are required					Aw_7 > Aw_6 > Aw_0 > Aw_4	Aw_7 > Aw_0 > Aw_4	Aw_7 > Aw_6 > Aw_0 > Aw_4	Aw_7 > Aw_6	Aw_7 > Aw_6

III / B.5.4.3.4 Special Filtering Matrix After Ambiguity Resolution

It is assumed that continued transmission has been requested, otherwise no action should be taken when receiving new alerts for the particular beacon ID under consideration.

The filtering procedure after ambiguity resolution is as follows:

- the Doppler position data received in the new input is compared only to the resolved position (R) used for reference (i.e. the DRM test replaces the DDM test);
- the encoded position data received in the new input is compared to previous encoded position, unless there is no previous encoded position, in which case it is compared to the resolved position (R) used for reference;
- all new beacon events are transmitted; and
- position data for same beacon events is forwarded if any one of the possible tests fails.

Figure III / B.8 : Special Processing for Sw_5, Sw_6 and Sw_7 Status

SBE	DRM	PQF	EEM*	I_2 [A / B]	I_3 [E]	I_4 [A / B / E]	I_5 [D]	I_6 [D+(E)]	I_7 [Resol. D+E]
1	1	0	1			Ct_0		Ct_0	Ct_0
1	1	0	0	Ct_0		Ct_4	Ct_0	Ct_6	Ct_7
1	0	1	1			Ct_0		Ct_0	Ct_0
1	0	1	0	Ct_0		Ct_4	Ct_0	Ct_6	Ct_7
1	0	0	1		Ct_0	Ct_4		Ct_6	Ct_7
1	0	0	0	Ct_2	Ct_3	Ct_4	Ct_5	Ct_6	Ct_7
0	1	0	1			Ct_7		Ct_6	Ct_7
0	1	0	0	Ct_5		Ct_4	Ct_5	Ct_6	Ct_7
0	0	0	1		Ct_7	Ct_4		Ct_6	Ct_7
0	0	0	0	Ct_2	Ct_3	Ct_4	Ct_5	Ct_6	Ct_7

* The encoded position data received in the new input is compared to the resolved position (R) used for reference if there is no previous encoded position.

III / B.6 DISTRIBUTION OF BEACON REGISTRATION INFORMATION

The identification data in the beacon message includes a code which identifies the country where the beacon is registered. When an MCC acquires distress alert or NOCR data (based on the alerts country code), the MCC can determine if it has access to the registry data. If so, the beacon registration could be transmitted to the MCC in whose service area the Doppler or encoded position is located using the SIT 925 message format. Registration data shall be routed in accordance with Figure III / A.8. The registration data would only be sent upon the first reception of an alert or NOCR message.

The message code contained in the SIT 925 message can be used by the receiving MCC to correlate it to a previously received alert message and forward the registry data to the appropriate RCC/SPOC.

An MCC is not required to automatically transmit registration data from its registry to other MCCs. However, the reception of this data is required by all MCCs.

An MCC receiving an NOCR alert may respond with registration data without being specifically requested.

III / B.7 NOCR PROCEDURES

III / B.7.1 Procedure

An NOCR message is initiated by an MCC when a 406 MHz alert for a beacon ID is first located in its service area and the country code in the 406 MHz beacon message is associated with another country's search and rescue region (SRR). The MCC service area includes the entire service area of the MCC and is not limited to its national SRR. When the beacon country code in the 406 MHz beacon message is associated with a country's search and rescue region (SRR) in the service area of an MCC sending the first location (Doppler or Encoded), the same MCC should also process and send an NOCR message to the associated country's SPOC or RCC. The location can be provided by either Doppler location processing, or by the encoded position contained in beacons coded using a location protocol. In some conditions multiple MCCs may initiate an NOCR message to the same support MCC.

An MCC in whose service area an alert is located (A, B and/or encoded position solution), transmits the NOCR message to the associated MCC (i.e., the destination MCC) based on the distribution matrix provided in Figure III / A.8. The appropriate associated MCC for NOCR message distribution is determined by the country code contained in the beacon ID of the message and Annex I / D.

In addition to distributing the NOCR message to the appropriate SPOC, the associated MCC should also process the NOCR message as an alert message, in accordance with Figure III/B.4: Processing Matrix, Message Formats and Distribution of Alerts.

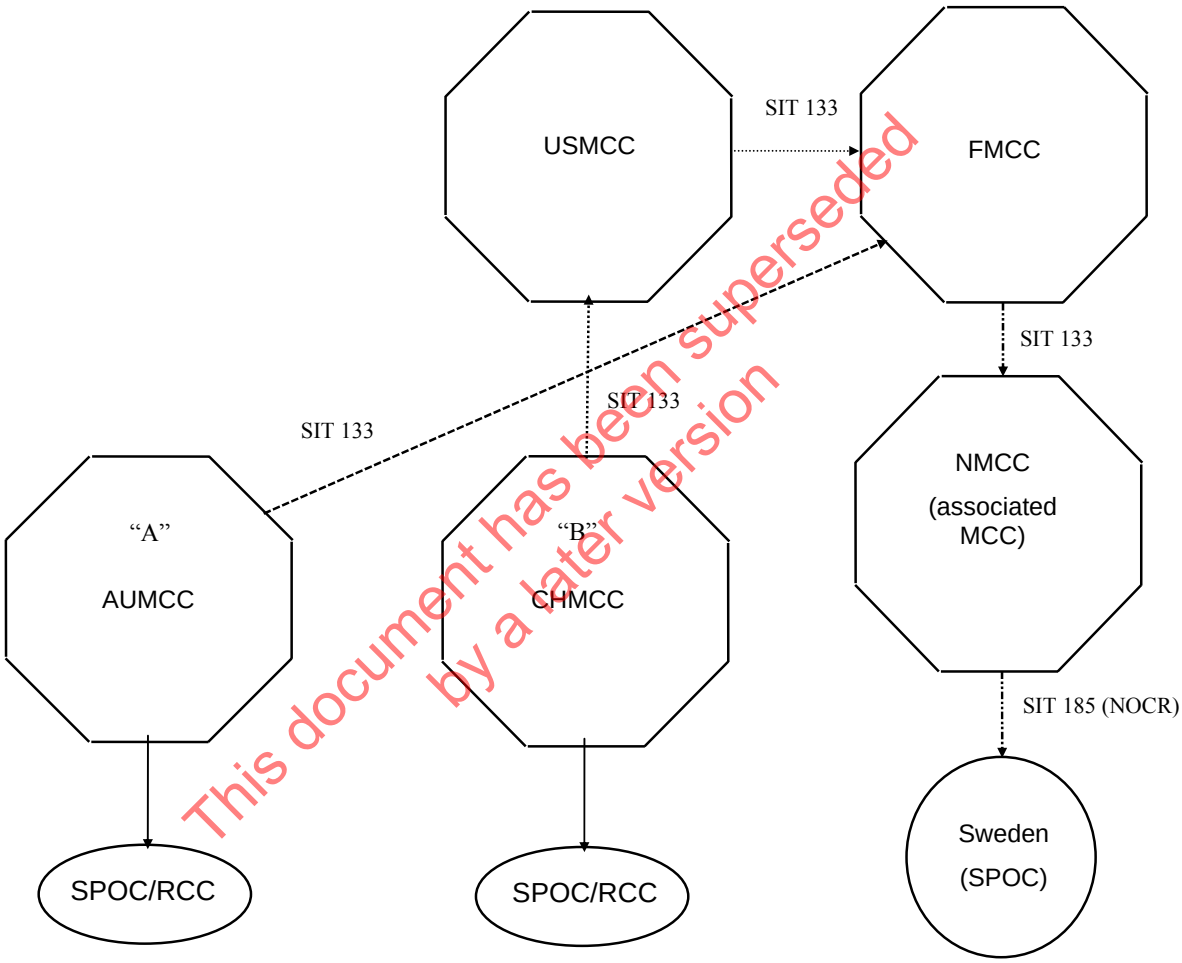
An NOCR message is not required for unlocated alerts because, by definition, the message initiation process is based on geographic position information. An MCC is not required to send an NOCR message to another MCC when the sending MCC has already sent to the receiving MCC an alert located in the service area of the receiving MCC.

The receiving MCC may filter redundant NOCRs for the same beacon ID.

III / B.7.2 NOCR Example

Scenario

Country code in Beacon ID: Sweden (265)
"A" Position Service Area: AUMCC (Australian MCC)
"B" Position Service Area: CHMCC (Chilean MCC)



III / B.8 DISTRIBUTION OF 406 MHz SHIP SECURITY ALERTS

The identification data in the beacon message includes a protocol code which can identify the 406 MHz transmission as a ship security alert. In addition, the beacon message also contains a country code which can be associated with the "flag state" of the vessel. When an MCC receives a ship security alert, the alert should be processed according to the same procedures that apply for distress alerts except that the resulting ship security alert message will be forwarded based only on the country code included in the beacon message.

All States wishing to use the Cospas-Sarsat System to relay ship security alerts should make the necessary arrangements with their associated MCC. Arrangements should include the identification of the competent authority responsible for receiving the ship security alert and the communication link to the competent authority

III / B.8.1 Procedure

An MCC will process ship security alerts (beacon message bits 37-40 = 1100) according to the logic provided in Figure III / B.9. Routing of ship security alerts will be based on the country code contained in the beacon message, that is, the message will be transmitted to the MCC associated with the country code as identified in Annex I / D, and not transmitted to other MCCs, RCCs, or SPOCs based on the Doppler locations or encoded position contained in the beacon message. Message routing for ship security alerts will follow the data distribution matrix as provided at Figure III / A.8. Ship security message will be exchanged between MCCs using the formats and data content for alert messages as contained in document C/S A.002 (SID).

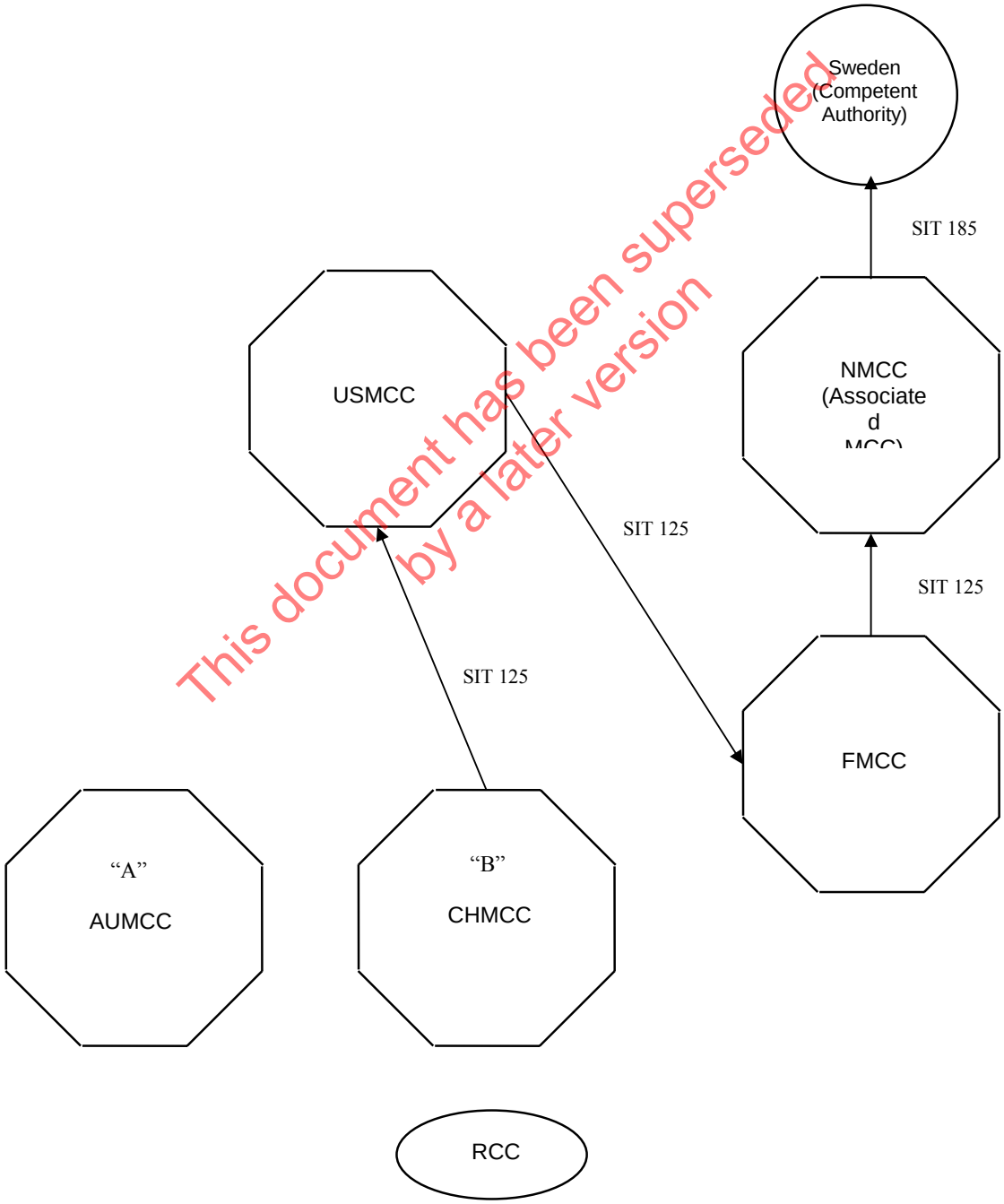
When a ship security alert is received by the Associated MCC as defined in Annex I / D, that MCC will notify the relevant competent security authority as provided by IMO or another appropriate point of contact as previously arranged.

MCCs will continue to transmit the appropriate alert messages until ambiguity is resolved, except for the Associated MCC which will continue to provide information to the competent authority on all additional "beacon events" after ambiguity resolution.

III / B.8.2 Ship Security Alerts Examples

Scenario

Country code in Beacon ID: Sweden (265)
Initial Alert with Doppler Location
"A" Position Service Area: AUMCC (Australian MCC)
"B" Position Service Area: CHMCC (Chilean MCC)
Receiving MCC: CHMCC



Scenario

Country code in Beacon ID: Panama
Initial Alert with Encoded Position
Encoded Position Service Area: SPMCC (Spanish MCC)
Receiving MCC: SPMCC

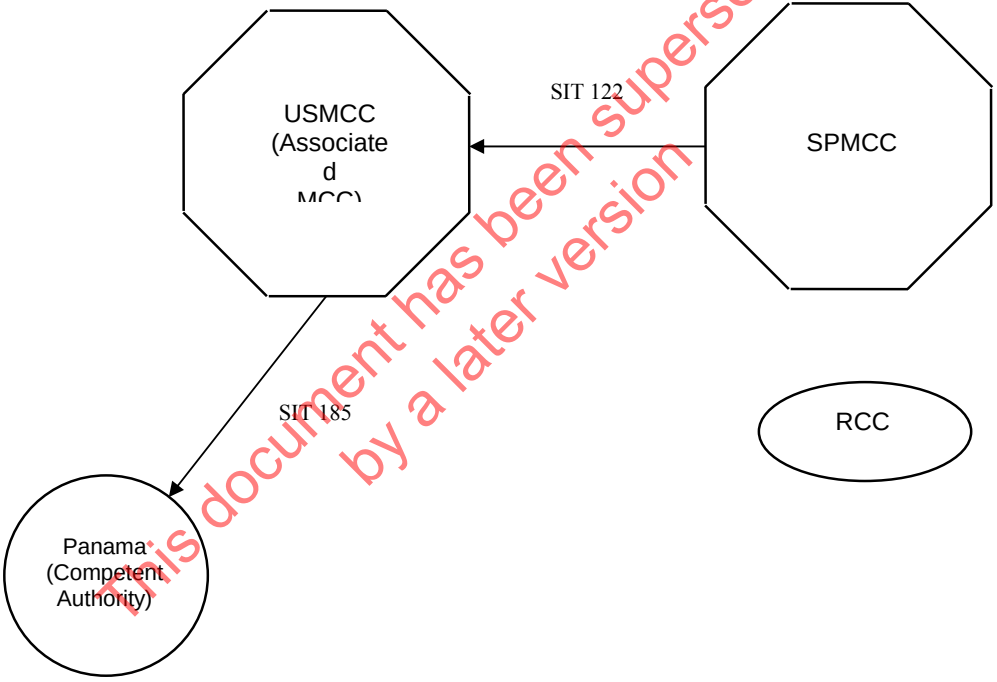


Figure III / B.9 : Processing Matrix, Message Formats and Distribution of 406 MHz Ship Security Alerts

	I_1 (no position data)			I_2 (A / B Doppler positions)			I_3 (Encoded only)			I_4 (A / B / E unmatched)			I_5 (Resolved Doppler)			I_6 (Res. D + E unmatched)			I_7 (Resolved D and E)		
	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest	Aw	SIT	Dest
Sw_0	Aw_1	122	C	Aw_2	125	C	Aw_3	122	C	Aw_4	126	C	Aw_5	127	C	Aw_6	127	C	Aw_7	127	C
Sw_1	Aw_0	-	-	Aw_2	125	C	Aw_3	122	C	Aw_4	126	C	Aw_5	127	C	Aw_6	127	C	Aw_7	127	C
Sw_2	Aw_0	-	-	Aw_5	127	C	Aw_7	124	C	Aw_7	127	C	Aw_5	127	C	Aw_6	127	C	Aw_7	127	C
				Aw_0	-	-	Aw_4	123	C	Aw_6	127	C									
				Aw_2	126	C				Aw_4	126	C									
Sw_3	Aw_0	-	-	Aw_7	127	C	Aw_0	-	-	Aw_7	127	C	Aw_7	127	C	Aw_7	127	C	Aw_7	127	C
				Aw_4	126	C	Aw_3	123	C	Aw_4	126	C	Aw_6	127	C	Aw_6	127	C			
Sw_4	Aw_0	-	-	Aw_7	127	C	Aw_7	124	C	Aw_7	127	C	Aw_7	127	C	Aw_7	127	C	Aw_7	127	C
				Aw_6	127	C	Aw_0	-	-	Aw_6	127	C	Aw_6	127	C	Aw_6	127	C			
				Aw_0	-	-	Aw_4	123	C	Aw_0	-	-									
				Aw_4	126	C				Aw_4	126	C									
Sw_5 Sw_6 Sw_7	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-	Ct_0	-	-
				Ct_2	126	C	Ct_3	123	C	Ct_4	126	C	Ct_5	127	C	Ct_6	127	C	Ct_7	127	C
				Ct_5	127	C	Ct_7	124	C	Ct_7	127	C									

Notes:

I_i = Input
Sw_i = Status word
Aw_i = Action word
Ct_i = Continue transmission

C = Country code destination

Dest = Destination of SIT message
SIT = Subject Indicator Type / (standard message format)

III / B.9 PROCESSING AND DISTRIBUTION OF 406 MHz INTERFERENCE DATA

III / B.9.1 406 MHz Interference Data Processing

When processing 406 MHz interference data, the matching of interferer solutions is based strictly on location, with a 100 km criterion. In addition, the thresholds for closing interferer sites, 72 hours without new data or 20 missed passes, takes into account the fact that interferers often do not transmit continually.

III / B.9.2 406 MHz Interference Data Distribution

MCCs exchange 406 MHz interference data in the SIT 121 message format. MCCs shall automatically distribute 406 MHz interference data to other MCCs only when ambiguity is resolved, based on the location of the interferer. MCCs shall send at least two messages to other MCCs for each interferer site.

- END OF ANNEX III / B -

ANNEX III / C

PROCEDURES FOR THE CO-ORDINATION OF BEACON TESTS

Section 3.8 of C/S A.001 defines the principles governing the implementation of tests using beacons coded with operational protocols or beacons coded with the Test User Protocol. The following procedures should be implemented by the MCC responsible for the test for co-ordinating the requirements of the test with all affected MCCs. This procedure does not apply to international exercises co-ordinated through the Cospas-Sarsat Joint Committee.

The co-ordination shall consist of an advance submission of a narrative message shown in Figure III / C.1. The extent of required co-ordination will depend on beacon protocol (operational or test) and the number of beacons used, as shown in Table III / C.1. Upon deactivation of the last beacon, the MCC responsible for the test shall also transmit a narrative end-of-test message to all MCCs from which data has been requested.

The Beacon ID must conform to the definition given in the Cospas-Sarsat Glossary (C/S G.004).

Figure III / C.1 : Beacon Test Co-ordination Message

SIT 915 <NARRATIVE MESSAGE>

DATE: DD MM YY
FM: MCC SUPPORTING THE 406 MHz TEST
TO: ALL AFFECTED MCCs
SUBJ: BEACON TEST

A. TEST OBJECTIVE:

B. TEST DESCRIPTION:

C. LOCATION OF TEST:

D. DATE, TIME AND DURATION OF TEST:

E. BEACON ID (15 CONTIGUOUS HEXADECIMAL CHARACTERS):

F. SPECIAL DATA COLLECTION AND PROCESSING REQUIREMENTS:

G. POINT OF CONTACT
NAME:
LOCATION:
TELEPHONE NO:
AFTN NO:
TELEX NO:
FACSIMILE NO:

Table III / C.1: Notification Time Requirement for Submission of Co-ordination Information Indicated in Figure III / C.1

Number of Beacons Used	Messages Required	Beacon Protocol	
		Operational	Test
1 -3	Initial Notification	As soon as practical	Not required
	Second Notification	24 hours prior to the activation of the first beacon *	Not required
	End-of-Test Notification	Upon deactivation of the last beacon as required	Not required
maximum 6	Initial Notification	30 days prior to the date of the test	30 days prior to the date of the test
	Second Notification	24 hours prior to the activation of the first beacon *	24 hours prior to the activation of the first beacon *
	End-of-Test Notification	Upon deactivation of the last beacon as required	Upon deactivation of the last beacon as required

Note: * This set of information will be an update, if necessary, of the original set.

- END OF ANNEX III / C -

ANNEX III / D

ORBIT VECTOR UPDATE METHOD

There are three methods for LUT orbit vector updates for each Cospas-Sarsat satellite: use of the downlink signal, use of orbitography beacon information and use of orbit vector data supplied by an MCC. Which method offers the more accurate orbit vector determination for a given satellite pass depends on the satellite's SAR instrument status and how often orbit vectors are available at the LUT from the MCC.

If the SAR instrument status of a satellite is such that any of the three update methods can be used, the preferred update method is through orbitography beacons. Table III / D.1 provides guidelines for each satellite with the update methods listed such that the preferred method is number 1.

Table III / D.1 : Orbit Vector Update Method

Satellite	Orbit Vector Update Method
Cospas-11 and Cospas-12	1. MCC Provided Orbit Vectors 2. Orbitography 3. Downlink
Sarsat-7, Sarsat-8, Sarsat-9, Sarsat-10, Sarsat-11 and Sarsat-12	1. Orbitography 2. MCC Provided Orbit Vectors 3. Downlink

- END OF ANNEX III / D -

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