COSPAS-SARSAT
MISSION CONTROL CENTRE
COMMISSIONING STANDARD

C/S A.006
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February 2018

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1. INTRODUCTION

1.1 Purpose

This document shall be used to verify that a new Mission Control Centre (MCC) or a new nodal MCC complies with the provisions of document C/S A.005, "Cospas-Sarsat Mission Control Centre Performance Specification and Design Guidelines".

Participants connecting their MCC to the Cospas-Sarsat System or assuming the responsibility of a new nodal MCC in the Cospas-Sarsat System shall conduct tests and provide data as specified in this document. This document shall also be used to verify that a previously commissioned MCC continues to comply with the provisions of document C/S A.005, as appropriate.

1.2 Scope

The commissioning process outlined in this document is required to ensure that all MCCs, including nodal MCCs, provide for reliable, timely and accurate exchange of alert data and System information within the Cospas-Sarsat Ground Segment.

The commissioning process includes preliminary actions to be performed by the responsible Ground Segment operators, co-ordination required with other Ground Segment operators involved in the commissioning tests, practical steps to be accomplished for implementing the commissioning tests, and the formal procedure leading to Council approval of the commissioning of the new MCC or the new nodal MCC in the Cospas-Sarsat System.

1.3 Reference Documents

a.	C/S A.001	Cospas-Sarsat Data Distribution Plan,
b.	C/S A.002	Cospas-Sarsat Mission Control Centres Standard Interface Description,
c.	C/S A.003	Cospas-Sarsat System Monitoring and Reporting,
d.	C/S A.005	Cospas-Sarsat Mission Control Centre Performance Specification and Design Guidelines,
e.	C/S G.004	Cospas-Sarsat Glossary,
f.	C/S P.011	Cospas-Sarsat Programme Management Policy,
g.	C/S T.001	Specification for Cospas-Sarsat [First-Generation] 406 MHz Distress Beacons,
h.	C/S T.002	Cospas-Sarsat LEOLUT Performance Specification and Design Guidelines,
i.	C/S T.005	Cospas-Sarsat LEOLUT Commissioning Standard,
j.	C/S T.009	Cospas-Sarsat GEOLUT Performance Specification and Design Guidelines,
k.	C/S T.010	Cospas-Sarsat GEOLUT Commissioning Standard,

l.	C/S T.015	Cospas-Sarsat Specification and Type-Approval Standard for 406 MHz Ship Security Alert System (SSAS) Beacons,
m.	C/S T.018	Specification for Cospas-Sarsat Second-Generation 406 MHz Distress Beacons,
n.	C/S T.019	Cospas-Sarsat MEOLUT Performance Specification and Design Guidelines,
o.	C/S T.020	Cospas-Sarsat MEOLUT Commissioning Standard.

Other information that is used in this document is contained on the Cospas-Sarsat web-site, available at http://www.cospas-sarsat.int/en/pro.

The acronyms used in this document are contained in the “Cospas-Sarsat Glossary”, document C/S G.004.

- END OF SECTION 1 -

2. INTEGRATION OF MCCS IN THE COSPAS-SARSAT SYSTEM

2.1 Pre-Integration Test

2.1.1 General

Prior to formal integration testing, the new MCC under development (DMCC) shall provide the Cospas-Sarsat Secretariat with information about its new Local User Terminal(s) (LUTs), if any, its proposed service area, and all other information needed to amend the appropriate pages of the Cospas-Sarsat website and the sections of document C/S A.001 (DDP). Upon completion of these steps the Cospas-Sarsat Joint Committee will designate or approve a nodal MCC as the host MCC (HMCC) to which the DMCC will be connected. Bilateral arrangements between the DMCC and the host MCC needed to support integration testing are the responsibility of the respective Administrations. Any equipment needed for the commissioning test shall normally be provided by the DMCC.

For an MCC with an associated LUT (or LUTs), the LUT commissioning, defined in documents C/S T.005, C/S T.010, and/or C/S T.020 may take place at the same time that the MCC is being commissioned. If so, it is desirable that operational data exchange be scheduled after responsible Administrations have conducted preliminary tests to verify that their LUT(s) comply with the provisions of documents C/S T.002, C/S T.009, and/or C/S T.019, as appropriate.

2.1.2 Preliminary Actions

Prior to undergoing commissioning, preliminary actions regarding participation in Cospas-Sarsat shall have been undertaken in accordance with the "Guidelines for Integration of New MCCs in the Cospas-Sarsat System" attached at Annex A to this document. The DMCC shall have completed those actions specified in Steps A and B of the Guidelines at Annex A to this document.

In preparation for formal commissioning, the DMCC shall ensure that:

a) its LUT/MCC interface(s) functions satisfactorily[1] and that the LUT is able to provide the data needed to support message exchanges with the DMCC;

b) it is capable of receiving and generating messages in accordance with the applicable requirements of document C/S A.005, and formatted in accordance with the provisions of document C/S A.002 (SID);

c) it has conducted preliminary communications checks with the host MCC, using SIT 915 narrative messages and determined that the selected communications circuits are suitable for operational testing in accordance with the applicable requirements of document C/S A.005;

d) it is capable of suppressing unwanted data in accordance with the applicable requirements of document C/S A.005; and

[1] This applies only to an MCC that has an associated LUT.

e) it is capable of providing message traceability, national Ground Segment monitoring and information retrieval in accordance with the applicable requirements of document C/S A.005.

The foregoing preliminary actions are the responsibility of the DMCC. When they have been completed, the DMCC shall complete the standard declaration form at Annex G to this document, inform the host MCC accordingly, and advise that it is ready for further testing.

2.1.3 Pre-Integration Test

The host MCC, when satisfied with the progress reported by the DMCC, will schedule a pre-integration test with the DMCC. The pre-integration test may include validation of SIT message formats, alert processing, operator capabilities and Geosort. The pre-integration test can be undertaken continuously or be interrupted to resolve any problems encountered.

To ensure the success of the formal integration test, it would be prudent to conduct the pre-integration test over a period of up to a week and to resolve all noted deficiencies prior to the integration test. Results from the pre-integration test should not be treated as part of MCC commissioning integration test and should not be included in the MCC commissioning report.

2.2 Integration Test

2.2.1 General

The integration test involves the exchange of alert data to and from the DMCC in accordance with document C/S A.001.

Alert data referred to above shall include all real-life alerts occurring during the integration test period and a series of pre-formatted messages generated by the host MCC to check C/S A.005 requirements. In addition, test-coded 406 MHz beacons may be deployed to supplement real-life beacon activations, as needed.

The commissioning tests shall include alerts from the LEOSAR, MEOSAR, and GEOSAR systems. The commissioning tests shall also include data from all types of operational Cospas-Sarsat distress beacons, including First-Generation Beacons (FGBs, compliant with C/S T.001), Second-Generation Beacons (SGBs, compliant with C/S T.018), Ship Safety Alerting System beacons (SSAS, compliant with C/S T.015), distress tracking ELT(DT) beacons (based on both FGB and SGB specifications), and Return Link Service (RLS) beacons (based on both FGB and SGB specifications).

The test data may be generated either by activating a test beacon for the purposes of this test or by simulating messages to force the testing of a specific feature of the MCC specification.

The integration test should last a minimum of 48 hours, but should not exceed 7 days.

2.2.2 Test Preparation and Commissioning Plan

The DMCC should give as much advance notice as possible to the host MCC of its request to be commissioned. The host MCC shall:

a) notify all operational MCCs of the test period;

b) co-ordinate 406 MHz beacon codes to be used for the test, and the individual beacon on/off times and locations (beacon locations shall be provided to the nearest 10 metres);

c) provide operational MCCs with predicted times for the 406 MHz test beacon detections; and

d) ensure that a Commissioning Test Plan has been developed that satisfies the test requirements of section 2.2.3.

2.2.3 Test Requirements

During the integration test, the message routings and formats defined in documents C/S A.001 (DDP) and C/S A.002 (SID) shall be used. The basic functions of the DMCC that shall be tested include the capability to:

a) receive, process and forward alert data[2] and System information in accordance with document C/S A.001 (DDP);

b) selectively report or suppress transmission of alert data[2] for a particular beacon when requested;

c) re-transmit a specified message;

d) respond to direct requests for information from other MCCs or SPOCs;

e) retrieve information on request;

f) generate a "notification of country of beacon registration" (NOCR) message;

g) use all identified communication links;

h) switch to backup procedures (to be identified by the DMCC in the appropriate subsection of the “Description of Cospas-Sarsat MCCs” part of the section entitled “Cospas-Sarsat Space and Ground Segment Description” in document C/S A.001);

i) process unlocated 406 MHz alerts[2];

j) process ship security alerts[2];

k) process distress tracking ELT alerts[2];

l) generate a message to the Return Link Service Provider (RLSP) for a Return Link Service (RLS) coded beacon; and

m) process and forward alert data[2] to SPOCs that the DMCC will service after FOC.

During the test, if any serious problems are noted either by the DMCC or by other operational MCCs, the host MCC shall be notified immediately. The host MCC will assess the information provided and decide whether the test should continue, be

[2] Note that all references to alert data include data of all types, including LEOSAR, MEOSAR, and GEOSAR alert data, and must include data for all types of Cospas-Sarsat distress beacons.

delayed, or be re-scheduled at a later date. The decision will depend upon the impact of the problem on normal operations and the time needed for its correction.

2.3 Data Collection and Analysis

2.3.1 General

In order to facilitate data collection and analysis, key operational data should be collected and provided in the standard format defined at Annex B to this document. Each participating MCC shall retain copies of all incoming and outgoing messages exchanged with the DMCC during the test period. The DMCC shall also retain copies of all messages exchanged with other participating MCCs.

2.3.2 DMCC Data Collection

The DMCC shall provide the following data to the host MCC:

a) a summary of LUT data (LUT Summary), per Annex B, Table B-1[3];

b) a detailed summary of alert data exchanged (Alert Data Summary) including alerts forwarded to SPOCs if applicable, per Annex B, Table B-2;

c) a summary of non-alert messages (Non-Alert Messages Summary), per Annex B, Table B-3; and

d) a summary report on the status of its Ground Segment equipment (Ground Segment Status Summary).

Other participating MCCs shall provide the host MCC with a summary report of their own results, as necessary, noting only deficiencies which may warrant further examination.

2.3.3 Ground Segment Status Summary

This is a general report prepared by the DMCC giving the status of its Ground Segment equipment during the test and describing any unusual problems that might have affected its performance, together with an assessment of its readiness to continue 24 hours per day operations.

This report should include the confirmation that the DMCC is capable of meeting all of the timing requirements of the MCC specification (document C/S A.005).

2.3.4 Performance Specifications Not Part of the Integration Test

In connection with the operational test, the DMCC shall declare that it is capable of performing the responsibilities listed in document C/S A.005 that are not part of the operational test. The declaration shall be sent to the host MCC which shall compare it to the operational test results as applicable. Any follow up questions from the host MCC shall be answered by the DMCC. The host MCC shall include the DMCC declaration together with its own comments, in its report on the commissioning test.

[3] This applies only to an MCC that has an associated LUT.

2.3.5 Analysis

Upon receipt of the above data, the Host MCC shall examine it to determine whether the DMCC meets the criteria as outlined in documents C/S A.001, C/S A.002, C/S A.003, and C/S A.005. This analysis will involve the DMCC and other MCCs, as necessary. If deficiencies are noted, the DMCC shall correct these deficiencies and notify the host MCC when it is ready to repeat the relevant portion of the integration test.

2.3.6 MCC Commissioning Report

The DMCC shall prepare the preliminary MCC Commissioning Report using the data gathered for analysis. The Report shall be prepared according to the format provided in Annex C, and forwarded to the host MCC for review and completion. The host MCC shall complete the Report and forward it to the Secretariat prior to the date the DMCC is expected to achieve Full Operational Capability (FOC), for consideration at the next Joint Committee meeting.

2.4 Commissioning of New MCCs

When the integration test is completed and accepted by the host MCC and the procedure of the formal association of the new Ground Segment Provider has been completed, the DMCC is considered operational in an Initial Operational Capability (IOC). The host MCC shall advise other Ground Segment operators of the change in status in accordance with document C/S A.001 (DDP), using the format specified in Annex H of this document.

The host MCC, through its designated Agency, shall forward the "MCC Commissioning Report" to the Cospas-Sarsat Secretariat and recommend that the DMCC be commissioned. The report will be reviewed by the Joint Committee and approved by the Cospas-Sarsat Council at their next meeting to formally confirm that the new MCC is commissioned in the Cospas-Sarsat System, and to direct the Secretariat to update the document C/S A.001 (DDP) and the Cospas-Sarsat website. However, the new MCC will be allowed to operate in the Cospas-Sarsat System in the IOC and FOC status under the responsibility of the Ground Segment Provider at the IOC/FOC dates confirmed by the host MCC, independent of the dates of the next Joint Committee and Council meetings.

During the Initial Operational Capability phase, the new MCC will participate in all Cospas-Sarsat Ground Segment operations as a fully functional MCC. The only limitation placed on the new MCC's operation during the IOC phase is that the service area of the new MCC is limited to its national search and rescue region. However, the Ground Segment Provider of the new MCC will ensure that the LUT commissioning tests have been completed, and the LUT commissioning report has been forwarded to the Secretariat, as applicable, before distributing the LUT alert data in the Cospas-Sarsat System when the new MCC attains IOC status.

If no significant problems are discovered during the IOC phase, the new MCC will normally assume Full Operational Capability (FOC), including the servicing of its service area as coordinated in accordance with Annex F to this document, at the FOC date. The FOC date is automatically set at the IOC date plus 3 months, or as agreed with the Joint Committee prior to integration testing. The IOC phase can be extended by up to an additional nine months, if problems are discovered during the operation of the MCC.

If the MCC is not able to transition to FOC at the end of the one-year period, the new MCC will be considered not operational and will be documented as “under development”. When the new MCC is ready to be reintegrated into the System it must retest the elements that prevented it from reaching FOC status and again operate in an IOC phase until it is ready to reach FOC. The host MCC will ensure that the MCC commissioning report has been completed and forwarded to the Secretariat for submission to the Joint Committee before confirming the FOC date of the new MCC.

At Full Operational Capability date, the new MCC shall confirm to SPOCs in its service area, all MCC operators and the Cospas-Sarsat Secretariat, its change of status.

The complete commissioning process is represented in Figure 2.1, and the evolution from IOC to FOC status is described at Step D of Annex A "Guidelines for Integration of New MCCs in the Cospas-Sarsat System".

2.5 Recommissioning of a Previously Commissioned MCC

A commissioned MCC shall be commissioned again in the following circumstances:

- it has significantly upgraded its hardware, software or communications,
- it has been declared “commissioned, not operational” (CNO), as defined in document C/S A.003, or
- there has been a major change in the MCC specification that requires a recommissioning of previously commissioned MCCs; for example, the introduction of MEOSAR capability.

When an MCC that requires recommissioning is ready for recommissioning, it shall undergo a set of commissioning tests as determined by the associated nodal MCC (which is normally the backup nodal MCC if the upgraded MCC is itself a nodal MCC), to verify that it complies with the requirements of document C/S A.005 “Cospas-Sarsat Mission Control Centre (MCC) Performance Specification and Design Guidelines” and other associated documents. The nodal MCC, or the backup nodal MCC if the upgraded MCC is itself a nodal MCC, shall decide what constitutes a significant upgrade. If the upgraded MCC maintains an “operational” status, it shall continue to distribute alert data to its associated SPOCs, unless the associated nodal MCC determines that continued distribution poses a significant risk that the associated SPOCs will not receive timely, reliable alerts.

The associated nodal MCC shall determine the set of commissioning tests to be conducted, based on the scope of changes in the upgraded MCC, or, in the case of an MCC that had been declared “commissioned, not operational”, the nature of the failure(s) that caused the MCC to be declared non-operational. Results of the commissioning tests shall be reported by the upgraded MCC and the associated nodal MCC, following the established procedures for commissioning a new MCC.

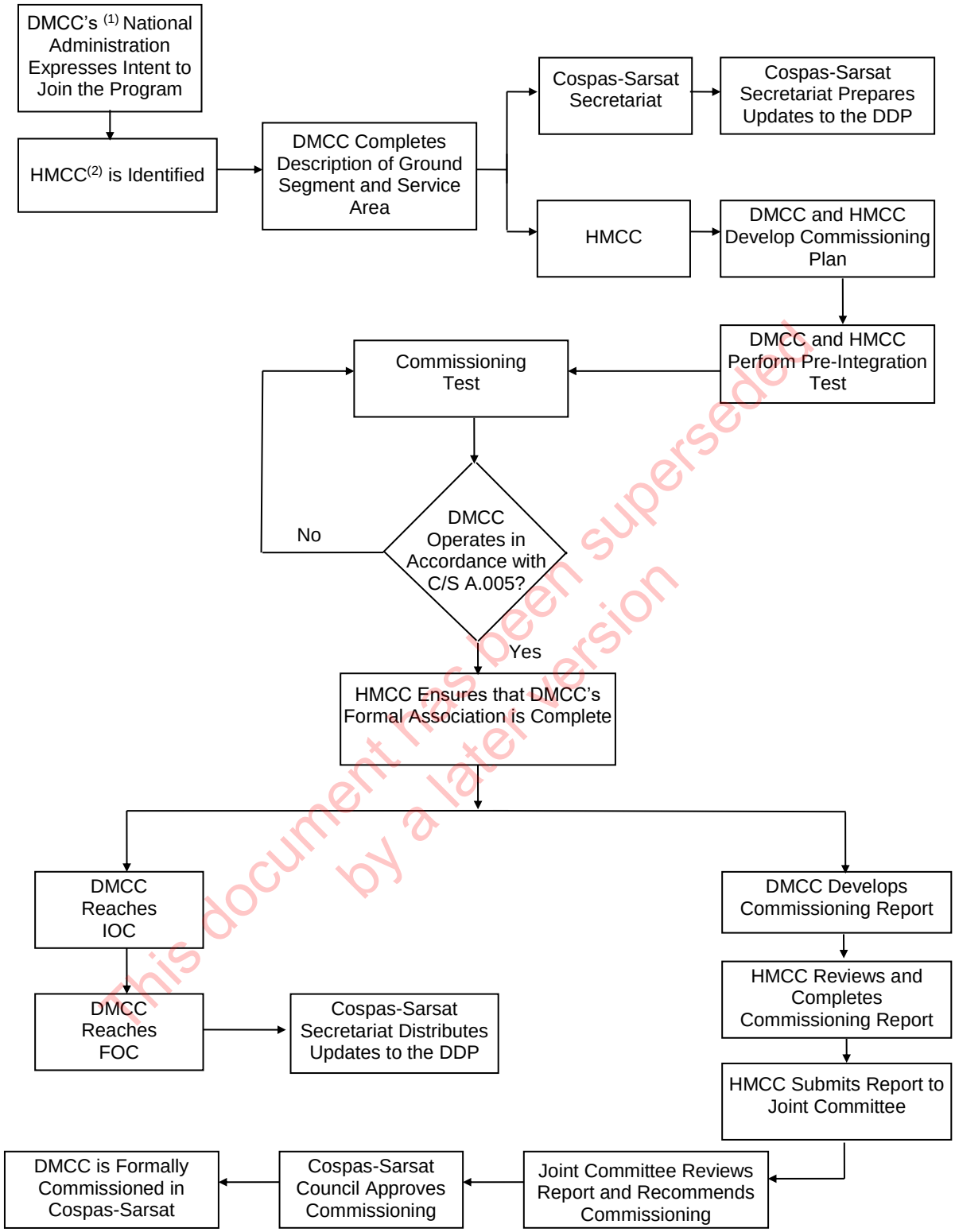
Depending on the condition(s) that warranted recommissioning, the associated nodal MCC should also perform tests to assess the continued capability of the operators of the CNO MCC to perform the functions detailed in Annex G of this document, and should obtain a renewed declaration on operator capability from the CNO MCC.

After the commissioning tests have been successfully completed, the tested MCC shall be declared at Initial Operational Capability (IOC) and then upgraded to Full Operational Capability (FOC), following the same procedure as has been established for a new MCC. The

duration of the period of IOC shall be determined by the nodal MCC, based on the condition(s) that warranted recommissioning, and on the duration of the period of non-operational status. When a commissioned MCC upgrades its software solely to comply with modified MCC requirements, the upgraded MCC need not be commissioned again, unless the Cospas-Sarsat Council has decided that a new commissioning is needed for those modified requirements.

2.6 Change of Location of a Commissioned MCC

If the location of a commissioned MCC is changed, the responsible national Administration shall ensure that the MCC satisfies the requirements of document C/S A.005 (MCC Performance Specification and Design Guidelines) prior to resuming operations. Additionally, the national Administration shall submit to the Cospas-Sarsat Secretariat an amendment to the MCC commissioning report detailing the new location of the MCC, a description of the primary and backup communications to associated LUTs and other MCCs, and a declaration that the MCC satisfies all C/S A.005 requirements.



(1) DMCC = MCC Under Development
(2) HMCC = Host MCC

Figure 2.1: MCC Commissioning Procedure

- END OF SECTION 2 -

3. ESTABLISHMENT OF NEW NODAL MCCS

3.1 Principles for Establishing New Nodal MCCs

The implementation of a new nodal MCC in the Cospas-Sarsat System may significantly affect existing MCCs and nodal MCCs, requiring extensive coordination with all affected MCCs/nodal MCCs, software changes and possibly new communication links with existing nodal MCCs.

Therefore, the establishment of a new nodal MCC will be considered only if:

a) a need for improving the Cospas-Sarsat data distribution system is recognized by the Cospas-Sarsat Council; the improvement may be achieved as a result of enhancing the reliability of data distribution, enhancing the effectiveness of data distribution or reducing the workload on an existing nodal MCC;

b) an existing MCC is prepared to accept the responsibility of a nodal MCC for the new Data Distribution Regions (DDRs) to be implemented; and

c) the proposed new nodal MCC can provide all nodal functions for at least one other MCC in the new DDR.

Note that all nodal MCCs must be previously commissioned MCCs that are fully capable of processing data from the LEOSAR, GEOSAR and MEOSAR systems (that is, they must be LEOSAR–GEOSAR-MEOSAR-capable, LGM MCCs).

3.2 Preliminary Actions

The following actions should be accomplished before a final decision can be made in the Council to proceed with the implementation of a new nodal MCC:

a) the Joint Committee assesses the need to improve the exchange of alert and System data between MCCs in the Cospas-Sarsat System using the guidelines provided in Annex D;

b) the Joint Committee assesses the capabilities of existing MCCs and makes a recommendation to Council on the practical options for developing a new nodal MCC;

c) the Joint Committee recommends to Council that such improvement should be pursued with establishing one (or several) additional DDR(s);

d) the Council approves the Joint Committee recommendation(s);

e) after approval by the Council and acceptance by the proposed new nodal MCC(s), the Joint Committee identifies:

- the new DDR(s) associated with the new nodal MCC(s),
- the new structure of the inter-regional data distribution network; and

f) the Council approves the new DDR(s) and the inter-regional network structure.

3.3 Regional Coordination and Commissioning Plan

3.3.1 Regional Coordination

The new nodal MCC shall coordinate all commissioning activities with assistance from the host nodal MCC before the new nodal MCC begins commissioning tests.

The Commissioning Plan can be coordinated through bi-lateral contacts. However, a regional meeting of all MCCs in the DDR and the host nodal MCC is recommended to develop and finalize the Commissioning Plan.

3.3.2 Commissioning Plan

The new nodal MCC shall analyse the additional requirements for a nodal MCC and ensure that they can be met. These requirements should include hardware enhancements, software enhancements and communication links at regional and inter-regional levels as required.

The new nodal MCC, in cooperation with the host nodal MCC, shall develop a Commissioning Plan that is coordinated with all MCCs involved in the commissioning process. The Commissioning Plan shall contain the following information as a minimum:

a) procedures and schedule for connecting MCCs to the new nodal MCC and, if necessary, for connecting the new nodal MCC to other nodal MCCs;

b) roles of participants;

c) a description of the tests to be performed;

d) a test schedule;

e) data collection requirements for participants; and

f) backup arrangements for the new nodal MCC.

3.4 Commissioning of New Nodal MCCs

3.4.1 General

The new nodal MCC commissioning will involve testing communication links and exchange of test specific and alert data through the new nodal MCC. The intent of the commissioning process is to test alert data and System information distribution procedures including geographical sorting of alerts and specific nodal requirements outlined in document C/S A.005, section 6. The operational, functional, and performance requirements contained in document C/S A.005, sections 3, 4, and 5 are not to be included in the commissioning tests for a new nodal MCC.

3.4.2 Pre-test Coordination

It is the responsibility of the host nodal MCC to notify all MCCs regarding the start of the commissioning test. The notification shall include information on the schedule of tests, the number and identification of test beacons and any special processing required.

The host nodal MCC, new nodal MCC and one of the MCCs in the DDR shall modify their MCC software for geographical sorting of alerts, communications addresses and/or links in order to begin commissioning tests.

3.4.3 Test Requirements

During the commissioning tests, the new nodal MCC shall be capable of:

a) receiving, filtering and transmitting alert data to/from the MCC(s) in its DDR and to/from the host nodal MCC;

b) receiving and transmitting System data within the DDR and between DDRs;

c) verifying and validating System data;

d) meeting nodal MCC requirements outlined in document C/S A.005; and

e) demonstrating the functionality of backup arrangements identified in the Commissioning Plan or maintaining the option to return to the initial configuration of the DDR on a temporary basis until such backup arrangements can be made.

During the tests, if any serious problems are noted by any participating MCCs, the host nodal MCC will be notified and it shall assess whether the test should continue, be delayed or be re-scheduled for a later date. If necessary, the initial configuration of the DDR should be restored.

3.5 Nodal MCC Data Collection and Analysis

3.5.1 General

In order to facilitate the data analysis, the new nodal MCC shall collect test specific data in accordance with sections C and D of Annex B to this document. Furthermore, each participating MCC shall retain copies of all incoming and outgoing alert and system messages and forward them to the host nodal MCC. Each participating MCC should attempt to collect test specific data in accordance with sections C and D of Annex B.

3.5.2 New Nodal MCC Data Collection

The new nodal MCC shall provide all of the data described in section 2.3.2[4].

3.5.3 Performance Specifications Not Part of the Commissioning Tests

The new nodal MCC shall, in conjunction with the commissioning test, declare that it is capable of performing the responsibilities listed in document C/S A.005 that are not part of the commissioning tests. The declaration will be made to the host nodal MCC and if possible verified by the host.

3.5.4 Analysis

The host nodal MCC will collect and analyse data from other MCCs, as necessary. The data shall be analysed to ensure that the new nodal MCC meets the commissioning

[4] Note that the test alerts should include all of LEOSAR, GEOSAR and MEOSAR incident alert data, and should include data from all types of Cospas-Sarsat distress beacons.

criteria as outlined in document C/S A.005 and operates in accordance with document C/S A.001. If any deficiencies are noted, the host nodal MCC will notify the new nodal MCC. After the deficiencies are corrected, the relevant portions of the commissioning tests will be repeated.

3.5.5 Nodal MCC Commissioning Report

After all the MCCs in the proposed DDR are integrated successfully, the new nodal MCC will complete the nodal MCC commissioning report (provided as Annex E to this document) and forward it to the host nodal MCC. The host nodal MCC will review the report and forward it to the Cospas-Sarsat Secretariat.

3.6 Commissioning Procedure and Implementation

The new nodal MCC will connect to one other MCC within the proposed DDR and test alert and system data distribution procedures. When tests with the first MCC have been successfully completed, the host nodal MCC will declare the new nodal MCC at IOC. The host nodal MCC shall advise all ground segment operators of the change in status in accordance with document C/S A.001 (DDP).

At IOC, the new nodal MCC is expected to provide the nodal functions for one MCC in the new DDR. The new nodal MCC should then proceed with the testing and integration of the remaining MCCs in the DDR as provided in the Commissioning Plan. Such changes should not affect other nodal MCCs except the host nodal MCC.

If links to other nodal MCCs are required as per the Commissioning Plan, the new nodal MCC will proceed with testing these links.

The new nodal MCC shall complete and forward the nodal MCC commissioning report to the host nodal MCC. The host nodal MCC, through its designated agency, shall forward the nodal MCC commissioning report to the Cospas-Sarsat Secretariat and recommend that the new nodal MCC be commissioned. The report will be reviewed by the Joint Committee and, as appropriate, approved by the Cospas-Sarsat Council at their next meeting.

The host nodal MCC will coordinate the FOC date for the new nodal MCC, with all nodal MCCs involved, and inform all Ground Segment operators.
At the FOC date, all nodal MCCs involved will implement the new data exchange matrix and the geographical sorting of alert data as provided in the document C/S A.001 (DDP).

- END OF SECTION 3 -

ANNEX A

GUIDELINES FOR INTEGRATION OF NEW MCCs IN THE COSPAS-SARSAT SYSTEM

1. The material in this Annex is a textual flow-chart which sketches procedures for integrating an MCC under development (DMCC) into the existing Cospas-Sarsat Ground Segment.

2. The introduction of new MCCs in the Cospas-Sarsat System is supervised by the Cospas-Sarsat Joint Committee whose objectives include:

a) to improve the overall coverage and performance of the Cospas-Sarsat Ground Segment; and

b) to maintain technical control of the development of the Cospas-Sarsat MCC network.

3. The purpose of these procedures is:

a) to provide the Joint Committee with guidelines to manage and coordinate the introduction of new MCCs into the existing Ground Segment; and

b) to assist the DMCC in planning and performing the appropriate integration tests.

4. Step A may be completed outside of Joint Committee meetings, if necessary. All this information, albeit preliminary at times, should be sent directly to the Cospas-Sarsat Secretariat.

5. Step B should be conducted on a regional basis and, after agreement, be presented to the Joint Committee for adoption.

6. Step C and Step D should be conducted with the host MCC with which the DMCC is to be aligned.

STEP A Initial Ground Segment Description and LUT Coverage

Objective: Preliminary information gathering to assist the Joint Committee in deciding how the DMCC best fits into the existing System.

A-1[5] The Cospas-Sarsat Secretariat develops and updates the worldwide map of visibility areas of LUTs in the Cospas-Sarsat System. The map should be a standard geographic coordinate system showing the coverage areas of all operational LUTs.

A-2[5] The DMCC shall identify its new LUT(s) with: (1) coordinates, (2) address, (3) frequencies and (4) LUT antenna mask(s).

[5] These steps are only required for a new MCC with associated LUTs.

A-3[5] With these coordinates, the Secretariat shall plot the new LUT coverage on a map projection.

A-4 The DMCC shall propose its new service area, in accordance with the document C/S P.011, "Cospas-Sarsat Programme Management Policy" and taking into account the factors described in Step B below.

A-5 The DMCC shall provide information required to amend the Cospas-Sarsat website (SAR points of contact, points of contact for 406 MHz beacon registers, MCCs and LUTs) and DDP (SID implementation status, regional (DDR) procedures or arrangements). The information may be preliminary at times, but should be kept updated.

STEP B **Assignment of Service Area and Message Distribution Procedures**

Objective: To determine the DMCC's responsibilities within the Cospas-Sarsat MCC network, consistent with the goal of improving System performance.

B-1 The Joint Committee shall review the service area and the message routing assignments for System information and alert data distribution, including regional procedures, if any.

The following factors should be taken into account when developing and reviewing the service area of a new MCC:

a) aeronautical, maritime and terrestrial regions in which the MCC's national authorities facilitate or provide SAR services should become part of its MCC service area;

b) where practical, any Search and Rescue Region (SRR) will be entirely included within the service area of a given MCC; and

c) communications infrastructure: new service areas should maximize the efficiency with which alert data can be delivered.

In the case where difficulties arise with the development of a new MCC's service area, the following additional factors should be considered:

- global communications capabilities,
- existing national SAR and bilateral/multilateral operational arrangements,
- common SAR area boundaries,
- common service area boundaries,
- preferences declared by the country responsible for a SRR.

If agreement cannot be reached on the service area of a new MCC, the affected service areas shall be established in accordance with document C/S P.011 (under "MCC Service Areas").

B-2 The DMCC shall identify and notify the Host MCC of the Search and Rescue Point of Contact (SPOC) in each of the countries within its service area.

B-3 The DMCC shall identify and notify the Host MCC of the SSAS Competent Authority in each of the countries within its service area.

B-4 The Joint Committee shall select or review the prior selection of a host MCC, taking into account, among others, the following operational factors:

- geographical location and north/south structure of the network,
- global communications capabilities,
- national SAR arrangements,
- bilateral operational agreements,
- common service area boundaries,
- common SAR area boundaries.

B-5 The Joint Committee shall review the service area of the DMCC to ensure that the service area is consistent with document C/S P.011. Based on the declared service area and host MCC selection, the Joint Committee shall review the message routing assignments for System information and alert data distribution, including regional procedures, if any, and agree the appropriate amendments of the document C/S A.001 (DDP) and of the Cospas-Sarsat website.

B-6 Prior to the integration test, the DMCC shall establish bilateral communication checks, message distribution and test procedures with each Cospas-Sarsat MCC with which it will exchange data operationally. This test shall demonstrate correct message formatting using the required message fields.

STEP C **Integration Test**

Objective: To test the DMCC's operational readiness and compliance with Ground Segment requirements.

Recommendation: Experience of DMCCs and host MCCs implementing the procedures outlined in this document has shown the considerable value of a detailed bi-lateral meeting over two or three days, if necessary, held prior to the integration test. This meeting should endeavour to develop a complete script of the integration test, clarify all aspects of the procedures, and define the methods and points of contact for the resolution of incidents during the integration testing and the necessary coordination of activities after the DMCC Initial Operational Capability has been established.

C-1 Prior to the integration test, the DMCC shall state to the host MCC that it complies with all applicable Ground Segment requirements as defined in Cospas-Sarsat System documents, and is prepared to initiate operational integration into the Cospas-Sarsat MCC network.

C-2 The DMCC shall give as much notice as possible to the host MCC when planning its integration test. The integration test should be completed as soon as possible.

C-3 All MCCs scheduled to interface with the DMCC, as specified in Step B, shall participate in the test.

C-4 During the test, the DMCC shall exchange data with the host MCC (HMCC) (and other participating MCCs) as if it were an "operational MCC". However, the integration test shall not impact the distribution of operational alert data as per the current DDP. Therefore, only the DMCC shall use the modified sections of document C/S A.001 (DDP) during the test. In addition, the HMCC shall filter alert data received from the DMCC so that it is not distributed in the operational MCC network.

C-5 At the conclusion of the test, the DMCC and each participating MCC shall evaluate the test results in accordance with the procedures, formats and requirements specified in the System documentation. Each participating MCC shall notify the DMCC of any deficiencies in complying with Ground Segment requirements.

C-6 The DMCC shall correct its deficiencies, if any, and notify the host MCC its readiness for repeating the relevant portion of the integration test. The host MCC shall determine and coordinate the schedule of the new test and, if successful, shall declare the DMCC operational.

C-7 The DMCC shall prepare the preliminary "MCC Commissioning Report" and forward to the host MCC for review and completion.

STEP D **Establishment of Initial and Full Operational Capability**

Objective: To start operation at the Initial Operational Capability (IOC) date and assume Full Operational Capability (FOC) at the pre-determined FOC date.

Remark: Before confirming the DMCC IOC status, the host MCC shall assure itself that:

a) the procedure for the formal association of the Ground Segment Provider (or the Ground Segment Operator) with the Cospas-Sarsat Programme has been completed; and

b) all tests required for the integration of the DMCC in the Cospas-Sarsat Ground Segment have been successfully completed.

The FOC date of the new Cospas-Sarsat MCC is automatically set at IOC date plus three months. If confirmation of IOC status is delayed, the FOC date will be postponed by the same amount of time. MCCs which have not reached FOC within one year of the initial IOC date will be considered not operational, documented as "Under Development," and will require a retest of the elements which prevented it from reaching FOC. The MCC then must operate in an IOC phase again prior to reaching FOC.

D-1 When the integration test is completed and no significant deficiencies are noted by the host MCC, the DMCC is ready for operation in an Initial Operational Capability. The DMCC may operate in an Initial Operational Capability with minor deficiencies, as

determined by the host MCC, provided that the DMCC agrees to fix these deficiencies prior to FOC.

D-2 During IOC phase, the new MCC is permitted to participate in all Cospas-Sarsat Ground Segment operations (i.e., exchange of alert data and System information through the Cospas-Sarsat MCC network). However, the service area of a new MCC at IOC is limited to its national search and rescue region. Requirements in respect of the service area of a previously commissioned MCC are described in section 2.5.

D-3 The host MCC shall notify all Ground Segment operators of the new MCC IOC status (Annex H) and confirm the tentative date for Full Operational Capability. Prior to FOC, the new MCC shall ensure that it has established appropriate arrangements with SPOCs in its service area for the distribution of alert data. At FOC date, the updated data distribution procedures contained in document C/S A.001 (DDP) will be implemented.

D-4 At Full Operational Capability date, the new MCC assumes all its operational responsibilities, including servicing its service area as determined under Step B. The new MCC shall confirm to SPOCs in its service area, all MCC operators and the Secretariat, its change of status at FOC date.

D-5 Prior to FOC date, the host MCC, through its designated Agency, shall forward the "MCC Commissioning Report" to the Cospas-Sarsat Secretariat and recommend commissioning of the new MCC. The report shall be reviewed by the Joint Committee and, as appropriate, forwarded to the Cospas-Sarsat Council with a recommendation for approval by the Council at their next meetings.

STEP E **Limited Re-Commissioning of an MCC**

Objective: To continue or resume operation at the Initial Operational Capability (IOC) date and assume Full Operational Capability (FOC) at the pre-determined FOC date.

Remark: This describes the actions to be taken after the DMCC has been out of service for an extended period of time, or after a major upgrade of the DMCC hardware or software has been performed.

The FOC date of the upgraded or restored Cospas-Sarsat MCC is automatically set at IOC date plus three months. If confirmation of IOC status is delayed, the FOC date will be postponed by the same amount of time. MCCs which have not reached FOC within one year of the declared IOC date will be considered not operational, documented as “Under Development,” and will require a retest of the elements which prevented it from reaching FOC. The DMCC then must operate in an IOC phase again prior to reaching FOC.

E-1 If an MCC is out of service for an extended period of time, or if a major upgrade of the MCC hardware or software is performed, then the MCC may have to undergo a limited re-commissioning. In general, the re-commissioning will consist of a subset of the tests that are described in this Commissioning Standard. The extent of the commissioning tests to be performed will be established by the associated nodal MCC,

taking into account the nature of the reasons for the MCC being out of service or the nature of the upgrade that has been performed.

E-2 When the integration test is completed and no significant deficiencies are noted by the host MCC, the DMCC is ready for operation in an Initial Operational Capability. The DMCC may operate in an Initial Operational Capability with minor deficiencies, as determined by the host MCC, provided that the DMCC agrees to fix these deficiencies prior to FOC.

- END OF ANNEX A -

ANNEX B

FORMAT FOR REPORTING DMCC TEST DATA

For the commissioning of any MCC, report data in accordance with Tables B-1 to B-3. Note that Table B-1 should address the LUTs that are the primary sources of data for the DMCC during the commissioning tests. It does not have to be a LUT that is associated with the DMCC.

Table B-1: LUT Summary Database

Field	Description	Detailed Format
1	LUT identifier (see C/S A.002)	nnnn
2	Spacecraft identifier (see C/S A.002)	nnn
4	LEOLUT AOS GEOLUT data collection start time MEOLUT data collection start time	YYDDDhhmm
5	LEOLUT LOS GEOLUT data collection end time MEOLUT data collection end time	YYDDDhhmm
6	LEOLUT Time Processing Complete (n/a for MEOLUT or GEOLUT)	YYDDDhhmm
7	Time MCC completed processing of LEOSAR pass Time MCC completed processing of MEOSAR or GEOSAR data	YYDDDhhmm
8	Number of solutions with independent locations, not including ELT(DT) solutions	nnnn
9	Number of solutions with no independent location, including all ELT(DT) solutions	nnnn
10	Comments	AAAAAAAA

Table B-2: Alert Data Summary Database

Field	Description	Detailed Format
1	Source identifier (LUT or MCC) (see C/S A.002)	nnnn
2	Beacon location (Nearest town or sea area) (if available)	AAAAAAAAAAA
3	Beacon identifier (FGB: 15-Hex ID padded on the right with blanks) or (SGB: 23-Hex ID)	AAAAAAAAAAAAAAA AAAAAAAA
4	Spacecraft identifier (see C/S A.002)	nnn
5	Calculated TCA (if no Doppler location, use time of first data point.)	YYDDDhhmm
6	Input message number (“0” if not available)	nnnnn
7	Source of message (see C/S A.002)	nnnn
8	Receipt time	YYDDDhhmm
9	MCC Time Processing Complete	YYDDDhhmm
10	Processing Disposition Code: ab - for data processed for output PR – NOCR PP - passed for output/located PV - passed for output/unlocated PM - merged for output ab - for data suppressed SR - redundant/located SV - redundant/unlocated SN - suppressed national procedure SM - suppressed/merged SO - suppressed other reason Fields 11 - 14 are used only if solution is processed for output.	AA
11	Output message number	nnnnn
12	Transmit time	YYDDDhhmm
13	Output message SIT number (see C/S A.002)	nnn
14	Destination	AAAA
15	Doppler A or DOA MCC Service Area	AAAA
16	Doppler A or DOA latitude	snn.nnn
17	Doppler A or DOA longitude	snnn.nnn
18	Doppler B MCC Service Area	AAAA
19	Doppler B latitude	snn.nnn

Field	Description	Detailed Format
20	Doppler B longitude	snnn.nnn
21	DOA altitude (km)	snn.nnn
22	Solution mode: L=local (LEOSAR or GEOSAR) G=global (LEOSAR) S=single burst (MEOSAR) M=multi-burst (MEOSAR)	A
23	Encoded position MCC Service Area	AAAA
24	Encoded position latitude	snn.nnn
25	Encoded position longitude	snnn.nnn
26	Encoded position altitude (km)	snn.nnn
27	Beacon type: F=First-Generation E=FGB ELT(DT) A=SSAS S=Second-Generation T=SGB ELT(DT)	A
28	Alert type: D=Distress T=Distress Tracking R=Return Link Service request S=Ship Security Alert	A
29	Comments	AAAAAAAA

Table B-3 Non-Alert Message Summary Database

Field	Description	Detailed Format
1	Source	nnnn
2	Destination	nnnn
3	Message Number	nnnnn
4	SIT Number	nnn
5	Time received / sent	YYDDDhhmm
6	Comments	AAAAAAAA

- END OF ANNEX B -

ANNEX C

MCC COMMISSIONING REPORT

Country or national Administration: _____

Location of MCC: _____

Cospas-Sarsat Identifier: _____

Start of Commissioning Period: _____

End of Commissioning Period: _____

Section 1 contains information on the communication links established by the DMCC. Section 2 contains the summary tables with the commissioning results, where the Method of Compliance is one or more of:

- declaration by the national Administration (D),
- verification by the host MCC (V),
- verification by the national Administration (Vn),
- measurement by the host MCC (M), or
- measurement by the national Administration (Mn).

Where the method of compliance is listed as verification, evidence of that verification shall be included in the data package that is submitted to the Cospas-Sarsat Secretariat with the MCC Commissioning Report. Section 3 contains a summary of SIT messages exchanged. Section 4 contains explanatory comments necessary to amplify the results contained in the summary tables of section 2. Section 5 contains any other relevant information concerning the conduct of the commissioning test, while section 6 contains the recommendations of the host MCC towards the commissioning of the MCC under test.

1. COMMUNICATION LINKS

Provide information on each link that will be used operationally by the DMCC, to LUTs, RCCs, SPOCs, SSAS Competent Authorities, the Autonomous Distress Tracking Data Repository (ADR), Return Link Service Providers (RLSPs), and other MCCs. The destination type is to be identified (in brackets) below the destination name. Include links required to backup other MCCs.

Table C-1: Communications Links

Destination Name (and Type)	Network Type (e.g., FTP)	Link Address	Direction of Data to DMCC (Input, Output, Both)	Pass/ Fail	Comments

2. SUMMARY TABLES

Table C-2: Operational Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
3.1 General Operations						
3.1.1	Establish procedures for alert data distribution	n/a			D	
3.1.2	Respond to request for information				V	Detailed specific tests are documented in C/S A.005, sections 3.9 and 3.10.
3.1.3	Account for all messages				D/V	Limited verification by HMCC
3.1.4	Validate received messages				D	
3.1.5	Configurable to selectively process or suppress alert data				V	Addressed in section 4.3 of C/S A.005. See note [6]
3.1.6	Voice communication with other MCCs				V	
3.1.7	Transmit solution data for reference beacons designated for QMS from LEOLUTs				V	This requirement only applies if the MCC has an associated LEOLUT
3.1.8	Transmit solution data for reference beacon designated for QMS from GEOLUTs				V	This requirement only applies if the MCC has an associated GEOLUT
3.1.9	Transmit solution data for reference beacon designated for QMS from MEOLUTs				V	This requirement only applies if the MCC has an associated MEOLUT
3.2 Availability						
3.2	Operational 24/7 with people available to respond, as needed	24-hour availability			D/V	Limited verification by HMCC

[6] Each Central Data Distribution Region (CDDR) MCC shall demonstrate the ability to process alert messages provided by CDDR LEOLUTs with Doppler data and CDDR MEOLUTs with DOA data based only on the 406 MHz beacon message when an accuracy ratio falls below the associated "red" threshold defined in document A.003 (in document C/S A.003, see subsections entitled "Unreliable Alert Data Filtering" in "LEOLUT Location Accuracy Assessment, Status Reporting and Follow-up Actions" and "MEOLUT Location Accuracy" in "MEOLUT Assessment, Status Reporting and Follow-up Actions").

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
3.3 LUT Co-ordination						
3.3.1	Process associated LUT data				D	This requirement only applies if the MCC has an associated LUT
3.3.2	Transmit System data to LUT				D	This requirement only applies if the MCC has an associated LUT
3.4 Data Communication						
3.4.1	Internal communication links	n/a	n/a	n/a	n/a	
3.4.6	Use of communication networks defined in C/S A.002				V	
	Receive messages in non-SIT format				V	
3.4.7	Communication links as defined in C/S A.001				V	
	Maintain at least two international networks				V	
	Bilateral agreements with other MCCs	n/a	n/a	n/a	D	Describe, if any
3.4.8	Communication links with SPOCs in service area				D	
3.4.9	Access to two communication links recommended	Via national SAR authority if necessary			D	
	Communication links documented in C/S A.001				V	
3.4.10	Communications use standards and protocols in C/S A.002				D/V	Limited verification by HMCC
3.4.11	Communications links and networks operate simultaneously				D	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
3.5 Data Formats						
3.5.1	Internal data formats	n/a	n/a	n/a	n/a	
3.5.2	Use formats from C/S A.002	C/S A.002			V	See the section entitled "Data Communication Facilities" of document C/S A.002; section 3 of this Commissioning Report contains counts of SIT messages exchanged
3.5.3	Send or receive every SIT message format	C/S A.002			V	See the section entitled "Data Communication Facilities" of document C/S A.002; section 3 of this Commissioning Reports contains counts of SIT messages exchanged
3.5.4	Use of required SIT message formats	C/S A.002			V	(Every SIT format required in C/S A.005 to be verified)
	Receive and verify LEOSAR orbit vectors and SARP calibration data	C/S A.002			V	
	Send orbit vectors and SARP calibration to LEOLUTs	C/S A.002			V	This requirement only applies if the MCC has an associated LEOLUT
	Receive and verify MEOSAR orbit vectors	C/S A.002			V	
3.5.5	Change message format to SIT 915 if required	C/S A.002			V	
3.5.6	Use of SIT 185 message format	C/S A.002			V	
3.6 Monitoring of National Ground Segment						
3.6.1	Monitoring of associated LUTS	C/S A.003			D	This requirement only applies if the MCC has an associated LUT
3.6.2	Monitoring of MCC/LUT(s) communication link(s)				D	This requirement only applies if the MCC has an associated LUT
3.6.3	Monitor operation of MCC				D/V	Limited verification by HMCC for filtering of corrupt data
3.6.4	Monitor external communications				D/V	Limited verification by HMCC
3.6.5	Notify status if anomaly detected, and implement backup procedures, if required	C/S A.001 and C/S A.003			D	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
3.7 Backup Provisions						
3.7.1	Implement backup procedures, as required				D	Describe backup procedures
	Inform other MCCs using status message	C/S A.001			V	
3.7.2	Failure of associated LUT(s)				D	This requirement only applies if the MCC has an associated LUT
3.7.3	Transmit messages manually				D	
	Bilateral agreement for transfer of LUT data if MCC inoperative	Recommended			D	This requirement only applies if the MCC has an associated LUT
3.8 Re-routing of Messages						
3.8	Re-route messages				D/V	Optional – describe and verify any capabilities
3.9 406 MHz Beacon Register						
3.9	Maintain access to national 406 MHz beacon register				D/V	
	Request FGB information from other States' registers				V	
	Request SGB information from other States' registers				V	
	Respond to request for beacon register information using FGB and SGB 15-hex code				V	
	Respond to request for beacon register information using SGB 23-hex code				V	
	Respond to request for beacon register information using vehicle mobile identification data				V	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
3.10 Information Archival and Retrieval						
3.10	Archive and retrieve messages				D/V	
	Retransmit information to requesting entity				V	Details provided in sections 3.10.1 and 3.10.2 of C/S A.005
3.10.1	Retrieve FGB alert data				V	Describe interrogation modes tested
3.10.1	Retrieve SGB alert data				V	Describe interrogation modes tested
3.10.1	Retrieve SSAS alert data				V	Describe interrogation modes tested
3.10.1	Retrieve ELT(DT) alert data				V	Describe interrogation modes tested
3.10.2	Retrieve C/S messages				V	Describe interrogation modes tested
3.11 Test and Exercise Co-ordination and Reporting						
3.11	Participate in test and exercises as requested	C/S A.001 and C/S A.003			D	
	Collect and report data using agreed formats	C/S A.003			D	
3.12 Interference Control						
3.12	Co-operate to locate and remove interference	n/a	n/a	n/a	D	Provide description of national arrangements
	Collect 406 MHz interference data through SARR channel of associated LEOLUTs				D/V	Optional. Limited verification by HMCC. This requirement only applies if the MCC has an associated LEOLUT with interference monitoring capability
	Collect 406 MHz interference data through SARR channel of associated MEOLUTs				D/V	Optional. Limited verification by HMCC. This requirement only applies if the MCC has an associated MEOLUT with interference monitoring capability
	Report on detected interferers	C/S A.003			D	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
3.13 Reference Beacon Operation						
3.13	Provision of orbitography or reference beacon, if applicable	n/a	n/a	n/a	D	Provide short description of national arrangements.
	Provision of MEOSAR reference beacon, if applicable	n/a	n/a	n/a	D	Provide short description of national arrangements.
	Process orbitography and reference beacon detections	n/a	n/a	n/a	D	Provide short description of how beacons are processed by MCC.
3.14 Reporting Requirements						
3.14	Reporting	C/S A.003			D	

Table C-3: Functional Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration / Verification or Comments
4.1 Data Acquisition						
4.1	Receive messages without loss				D/V	Limited verification by HMCC.
	Time tag and store incoming data				D/V	Limited verification by HMCC.
	Store data electronically				D/V	Limited verification by HMCC.
	Incoming data accessible to operator				V	See related sections 3.10.2 and 5.8 of C/S A.005
4.2 Data Validation						
4.2.1	Validate format and consistency of SIT messages	C/S A.001 and C/S A.002			V	
	Request retransmission of message				V	
4.2.2	Validate FGB incident alert messages	C/S A.001, Section 4.2			V	
4.2.2	Validate SGB incident alert messages	C/S A.001, Section 4.2			V	
4.2.2	Validate SSAS incident alert messages	C/S A.001, Section 4.2			V	
4.2.2	Validate ELT(DT) incident alert messages	C/S A.001, Section 4.2			V	
4.2.3	Validate position against satellite footprint (encoded location)	C/S A.001, Section 3.2.1			V	Validate against a selected sample of solutions
4.2.3	Validate position against satellite footprint (LEOSAR)	C/S A.001, Section 3.2.1			V	Validate against a selected sample of solutions
4.2.3	Validate position against satellite footprint (MEOSAR)	C/S A.001, Section 3.2.1			V	Validate against a selected sample of solutions
4.3 Process Data Selectively						
4.3.1	Selectively process data				V	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration / Verification or Comments
4.3.2	Suppress transmission of alert data for specific FGB beacon				V	
4.3.2	Suppress transmission of alert data for specific SGB beacon				V	
4.3.2	Suppress transmission of alert data for specific ELT(DT) beacon				V	
4.4 Position Matching						
4.4	Use position matching criteria for alerts according to C/S A.001	C/S A.001			V	
4.5 Position Confirmation						
4.5.1	Use the criteria contained in C/S A.001 to confirm position	C/S A.001			V	
	Position Matching and Unresolved Doppler Position Match	C/S A.001, section 4.2.2 (g)			D	
4.5.2	Continue distribution of alert data to other MCCs after position confirmation				V	
	Selectively discontinue transmission after position confirmation				V	
4.5.3	Use of other means at national level to confirm position				D	Provide short description.
4.6 Geographic Sorting of Alert Data						
4.6	Geographically sort beacon locations by Cospas-Sarsat GEOSORT				V	
4.6	Sort FGB beacon locations by Country Code				V	
4.6	Sort SGB beacon locations by Country Code				V	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration / Verification or Comments
4.6	Sort SSAS beacon locations to SSAS Competent Authority by Country Code				V	
4.7 Filtering Redundant Alert Data						
4.7	Filter solutions	C/S A.001, Section 4.2			V	
	Determine better quality solutions	C/S A.001, Section 4.2			D/V	Limited verification by HMCC.
	Do not filter QMS data	C/S A.001, Section 4.2			D/V	Limited verification by HMCC. Not applicable for nodal MCCs.
	LEOSAR image position determination prior to ambiguity resolution	C/S A.001, section 3.2.3 and C/S A.002, Appendix B.2 to Annex B			V	
	Filter redundant ELT(DT) data	C/S A.001, section 3.2.3.2			V	
4.8 Notification of Country of Beacon Registration (NOCR)						
4.8	Provide NOCR messages	C/S A.001			D/V	Limited verification by HMCC. See sections 1 and 2.2 of this C/S A.006.
4.9 Notification of Return Link Service (RLS) Beacon Alerts						
4.9	Provide RLS messages to RLSP	C/S A.001			D/V	Limited verification by HMCC. See sections 1 and 2.2 of this C/S A.006.
4.9	Process RLS messages	C/S A.001, Section 4.2			D/V	Limited verification by HMCC.
4.10 Ship Security Alerts						
4.10	Process ship security alerts	C/S A.001, Section 4.2			D/V	Limited verification by HMCC.

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration / Verification or Comments
4.12 Cancellation Message						
4.12	Process FGB ELT(DT) cancellation message	C/S A.001, Section 4.2			V	
4.12	Process SGB (non-ELT(DT)) cancellation message	C/S A.001, Section 4.2			V	
4.12	Process SGB ELT(DT) cancellation message	C/S A.001, Section 4.2			V	
4.12	Process FGB ELT(DT) cancellation message with restart	C/S A.001, Section 4.2			V	
4.12	Process SGB (non-ELT(DT)) cancellation message with restart	C/S A.001, Section 4.2			V	
4.12	Process SGB ELT(DT) cancellation message with restart	C/S A.001, Section 4.2			V	
4.12	Write FGB ELT(DT) data to ADR				V	To be verified once the ADR is available
4.12	Write SGB ELT(DT) data to ADR				V	To be verified once the ADR is available
4.13 TAC related information on beacon characteristics						
4.13	Process TAC information				V	

Table C-4: Performance Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
5.1 Availability						
5.1	Availability	Operational 99.5% over 1 year			D/M	Limited measurement by HMCC during test period.
5.2 Communication Links						
5.2	Implement procedures to ensure specifications are met	n/a	n/a	n/a	D	Provide short description of any procedures implemented
LUT/MCC						
5.2.1.1	Receive data from LUT(s)	within 10 min. 99% of time			Mn	This requirement only applies if the MCC has an associated LUT. Provide summary to HMCC.
5.2.1.2	Lost messages from LUT(s)	< 0.1%			Mn	This requirement only applies if the MCC has an associated LUT. Provide summary to HMCC.
5.2.1.3	Distress tracking alert messages from LUT(s)	within 2 min. 99% of time			Mn	This requirement only applies if the MCC has an associated LUT. Provide summary to HMCC.
MCC/MCC						
5.2.2.1	Transfer data to other MCCs	within 10 min. 99% of time			M	
5.2.2.2	Lost or corrupted messages to other MCCs	< 0.1%			M	
5.2.2.3	Availability of communication link to other MCCs	99% each day			M	
MCC to Non-MCC Alert Recipient						
5.2.3	Availability of MCC to SPOC communication	95% each day			Mn	Provide summary to HMCC.
5.2.3	Availability of MCC to RLSP communication	95% each day			Mn	Provide summary to HMCC.
5.2.3	Availability of MCC to SSAS Competent Authority communication	95% each day			Mn	Provide summary to HMCC.

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
5.3 Alert Data Processing Capacity						
5.3.1	Process distress alert data from associated LEOLUT	at least 100 alerts per LUT			D	This requirement only applies if the MCC has an associated LEOLUT
5.3.1	Process distress alert data from associated GEOLUT	at least 100 alerts per LUT			D	This requirement only applies if the MCC has an associated GEOLUT
5.3.1	Process distress alert data from associated MEOLUT	at least 100 alerts per LUT			D	This requirement only applies if the MCC has an associated MEOLUT
5.3.2	Process distress alert data from other MCCs	at least 100 alerts in 10 minutes			D	
5.3.3	Process distress alerts to alert data destinations	at least 100 alerts in 10 minutes			D	
5.4 System Information Processing Capacity						
5.4	Send and receive System information messages	15 per day			D	
5.5 QMS Continuous Monitoring & Objective Assessment Capacity						
5.5.1	Transmit LEOLUT solution data per QMS procedures				V	See C/S A.003. This requirement only applies if the MCC has an associated LEOLUT
5.5.2	Transmit GEOLUT solution data per QMS procedures				V	See C/S A.003. This requirement only applies if the MCC has an associated GEOLUT
5.5.3	Transmit MEOLUT solution data per QMS procedures				V	See C/S A.003. This requirement only applies if the MCC has an associated MEOLUT
5.6 Processing Time						
5.6	Processing time for alert data	5 minutes 99% of time			Mn	Provide summary to HMCC.
5.7 Processing Integrity						
5.7.1	Maintain accuracy of distress alert location	no more than 0.2 km from received data			V	Compare locations sent by the DMCC to locations sent to the DMCC.

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
5.7.2	Accurately Geosort beacon locations to appropriate RCC/SPOC	± 25 km of Geosort boundary			V	
5.7.3	Maintain accurate time reference	within ± 25 sec			D/V	Provide description of capability. Limited verification by HMCC.
5.7.4	Maintain integrity of transiting data	no corruption			D/V	Limited verification by HMCC.
5.8 Access to Archived Information						
5.8.1	Archive data and messages	at least 30 days			V	
5.8.2	Respond to request for archived alert data and messages	60 minutes			V	
5.8.3	Respond to request for alert data and messages covering last 48 hr	30 minutes			V	
5.9 Backup Timing						
5.9	Time required to switch to backup system	30 minutes			V	Note actual time, for use in operational backup procedures
5.10 Additional Timing Requirements						
5.10.1	Suppress alert data	10 minutes			V	
5.10.2	Implement backup procedures	60 minutes			V	
5.10.3	Access beacon register	15 minutes			V	
5.10.4	Forwarded retrieved information to requestor	15 minutes			V	

3. SIT MESSAGE FORMAT

Provide information for all SIT messages that will be exchanged by the DMCC operationally, including those that are mandatory according to document C/S A.002 (SID) and those listed as implemented in document C/S A.001 (DDP).

Table C-5: FGB LEOSAR and GEOSAR Incident Alert Messages

The 8 types of SIT 185 messages listed below, in sequence, correspond to SIT messages 122 to 133, respectively.

SIT	Name	Pass/ Fail	Number of Messages Sent and Received			
			HMCC Tx	DMCC Rx	DMCC Tx	HMCC Rx
121	Interferer Notification					
122	Incident (No Doppler)					
123	Position Conflict (Encoded Only)					
124	Position Confirmation (Encoded Only)					
125	Incident (Doppler)					
126	Position Conflict (Doppler)					
127	Position Confirmation (Doppler)					
132	NOCR (Encoded Only)					
133	NOCR (Doppler)					
134	Return Link Alert (Encoded Only)					
135	Return Link Alert (Doppler)					
185	Cospas-Sarsat Incident (No Doppler)					
185	Cospas-Sarsat Position Conflict (Encoded Only)					
185	Cospas-Sarsat Position Confirmation (Encoded Only)					
185	Cospas-Sarsat Incident (Doppler)					
185	Cospas-Sarsat Position Conflict (Doppler)					
185	Cospas-Sarsat Position Confirmation (Doppler)					
185	Cospas-Sarsat NOCR (Encoded Only)					
185	Cospas-Sarsat NOCR (Doppler)					

Table C-6: FGB MEOSAR Incident Alert Messages

The 8 types of SIT 185 messages listed below, in sequence, correspond to SIT messages 142 to 147, 136 and 137, respectively.

SIT	Name	Pass/ Fail	Number of Messages Sent and Received			
			HMCC Tx	DMCC Rx	DMCC Tx	HMCC Rx
136	NOCR (Encoded Only)					
137	NOCR (DOA)					
138	Return Link Alert (Encoded Only)					
139	Return Link Alert (DOA)					
141	Interferer Notification					
142	Incident (No DOA)					
143	Position Conflict (Encoded Only)					
144	Position Confirmation (Encoded Only)					
145	Incident (DOA)					
146	Position Conflict (DOA)					
147	Position Confirmation (DOA)					
185	Cospas-Sarsat Incident (No DOA)					
185	Cospas-Sarsat Position Conflict (Encoded Only)					
185	Cospas-Sarsat Position Confirmation (Encoded Only)					
185	Cospas-Sarsat Incident (DOA)					
185	Cospas-Sarsat Position Conflict (DOA)					
185	Cospas-Sarsat Position Confirmation (DOA)					
185	Cospas-Sarsat NOCR (Encoded Only)					
185	Cospas-Sarsat NOCR (DOA)					

Table C-7: SGB Incident Alert Messages

The 8 types of SIT 185 messages listed below, in sequence, correspond to SIT messages 342 to 347, 336 and 337, respectively.

SIT	Name	Pass/ Fail	Number of Messages Sent and Received			
			HMCC Tx	DMCC Rx	DMCC Tx	HMCC Rx
322	LEOSAR/GEOSAR Incident (No Doppler)					
323	Position Conflict (GEOSAR Encoded Only)					
324	Position Confirmation (GEOSAR Encoded Only)					
332	NOCR (GEOSAR Encoded Only)					
336	NOCR (MEOSAR Encoded Only)					
337	NOCR (MEOSAR with DOA)					
338	Return Link Alert (MEOSAR Encoded Only)					
339	Return Link Alert MEOSAR with (DOA)					
342	MEOSAR Incident (No DOA)					
343	Position Conflict (MEOSAR Encoded Only)					
344	Position Confirmation (MEOSAR Encoded Only)					
345	Incident (MEOSAR with DOA)					
346	Position Conflict (MEOSAR with DOA)					
347	Position Confirmation (MEOSAR with DOA)					
185	Cospas-Sarsat Incident (No DOA)					
185	Cospas-Sarsat Position Conflict (Encoded Only)					
185	Cospas-Sarsat Position Confirmation (Encoded Only)					
185	Cospas-Sarsat Incident (DOA)					
185	Cospas-Sarsat Position Conflict (DOA)					
185	Cospas-Sarsat Position Confirmation (DOA)					
185	Cospas-Sarsat NOCR (Encoded Only)					
185	Cospas-Sarsat NOCR (DOA)					

Table C-8: System Messages

SIT	Name	Pass/ Fail	Number of Messages Sent and Received			
			HMCC Tx	DMCC Rx	DMCC Tx	HMCC Rx
215	LEOSAR Orbit Vectors					
216	LEOSAR Orbit Vectors					
217	MEOSAR Orbit Vector (TLE)s					
415	LEOSAR SARP Calibration					
417	LEOSAR SARP-3 Calibration					
510	LEOSAR SARR Frequency Calibration					
605	System Status					
915	Narrative					
925	406 MHz Beacon Registration Data					
926	406 MHz Beacon Registration Data					
927	Beacon operational characteristics information					

Table C-9: System Messages for Space Segment Providers

The system messages that are used by the space segment providers to command or report on the status of the SAR payloads are only to be tested if the MCC is operated by a Space Segment Provider, and only those messages that apply to the provided space segment instruments need to be tested.

SIT	Name	Pass/ Fail	Number of Messages Sent and Received			
			HMCC Tx	DMCC Rx	DMCC Tx	HMCC Rx
416	SARP Telemetry					
425	SARP Out of Limit					
435	SARP Command					
445	SARP Command Verification					
515	SARR Telemetry					
525	SARR Out of Limit					
535	SARR Command					
545	SARR Command Verification					

4. EXPLANATORY COMMENTS AS REQUIRED FOR ITEMS IN SECTION 2, SUMMARY TABLE

(List each comment by reference to test paragraph number from column 1 of Summary Table)

5. OTHER INFORMATION RELEVANT TO THE COMMISSIONING TEST

(Include any comments not covered elsewhere on the conduct, analysis, or results of the commissioning test

6. RECOMMENDATIONS

- END OF ANNEX C -

ANNEX D

GUIDELINES FOR IMPLEMENTING NEW NODAL MCCs

1. The material included hereunder is a textual flow-chart which sketches the procedures for integrating new nodal MCCs into the existing Cospas-Sarsat Ground Segment.

2. The introduction of a new nodal MCC in the Cospas-Sarsat System is supervised by the Joint Committee and approved by the Cospas-Sarsat Council, with the objective of improving the Cospas-Sarsat data distribution system.

3. The purpose of this annex is to provide guidelines, used in conjunction with the contents of section 3 of this document C/S A.006, for coordinating the introduction of a new nodal MCC and assisting the new nodal MCC in planning and performing the appropriate integration tests.

4. The guidelines are separated into the following steps.

STEP A Determination of Need and Selection of New Nodal MCC

A-1 The Joint Committee assesses the need to improve the exchange of alert and System data between MCCs in the Cospas-Sarsat System.

The improvement can be achieved by:

- improving the reliability of data distribution,
- improving the effectiveness of data distribution, or
- reducing the workload of an existing nodal MCC.

The reliability of alert data distribution may be increased with the introduction of a new nodal MCC and DDR. The increased reliability could be a result of a new nodal MCC's ability to validate alerts better at a regional level, or to monitor the system better at a regional level. The ability of a new nodal MCC to provide better backup arrangements also increases reliability. Given that a nodal MCC may be a single point of failure in Cospas-Sarsat data distribution, reliability can be improved if the number of MCCs in a DDR remains small. Lastly, the reliability of data distribution may be improved due to a better communications infrastructure between the new nodal MCC and MCCs in the region and other nodal MCCs.

The effectiveness of alert data distribution may be improved by taking into consideration:

- language barriers - planning, coordination and problem resolution may be improved if personnel from different MCCs speak the same language,
- existing bilateral or regional operational arrangements - Cospas-Sarsat data distribution may be enhanced if ICAO or IMO regional plans exist for SAR services,

- geographic proximity and bordering SAR boundaries - planning, coordination and problem resolution may be improved if MCCs within the DDR are in close proximity and within the same time zones,
- reduction in time for alert data distribution - effectiveness of alert data can be increased if the time for alerts to reach their final destination is reduced,
- compatible communication links - Cospas-Sarsat data distribution may be enhanced if MCCs in a region share similar communication links.

The data distribution in Cospas-Sarsat may also be improved if one nodal MCC is not overburdened distributing alerts. The burden may be quantified by the size of the existing nodal MCC's service area, the size of the DDR, and the resources expended to complete the nodal MCC's mission. The size of the DDR can be measured in many different ways (e.g., the message filter factor from the Exercise of 1990), but ultimately must be reviewed on a case-by-case basis as the capabilities of different MCCs vary considerably.

A-2 The Joint Committee assesses the capabilities of existing MCCs and makes a recommendation to Council on the practical options for selection and development of a new nodal MCC.

A-3 The Joint Committee recommends to Council that such improvement should be pursued by the establishment of a new nodal MCC and its associated DDR.

A-4 The Council considers and approves the Joint Committee recommendation, as appropriate.

A-5 After approval by the Council and acceptance by the proposed new nodal MCC, the Joint Committee identifies:

- the new Data Distribution Region (DDR) associated with the new nodal MCC,
- the new structure of the inter-regional data distribution network.

A-6 The Council approves the new DDR and the inter-regional network structure.

STEP B **Preparation for System Commissioning Test**

B-1 The Joint Committee designates a host MCC to assist the new nodal MCC in System integration. The host MCC will usually be the existing nodal MCC in one of the DDR(s) affected, and therefore, the nodal MCC in the best position to assist the new nodal MCC in the commissioning process.

B-2 The new nodal MCC coordinates with MCCs in the proposed new DDR on procedures for exchange of data and communications media to be used.

B-3 The new nodal MCC analyses the additional requirements for a nodal MCC and ensures they can be met. The requirements analysis includes the necessary hardware enhancements, software enhancements and communication links at regional and inter-regional levels.

B-4 The new nodal MCC coordinates all commissioning activities, with assistance from the host nodal MCC, before commissioning tests begin.

B-5 The new nodal MCC, in cooperation with the host nodal MCC, develops a Commissioning Plan that is coordinated with all MCCs involved in the commissioning process.

STEP C **Commissioning Test**

C-1 The host nodal MCC notifies all MCCs regarding the start of the commissioning test.

C-2 The host nodal MCC, the new nodal MCC and one of the MCCs in the new DDR modify their MCC software for geographical sorting of alerts, communications addresses and/or links in order to begin commissioning tests.

C-3 The host nodal MCC, the new nodal MCC, and one MCC in the new DDR conduct the commissioning test according to the prepared Commissioning Plan.

C-4 The host nodal MCC, the new nodal MCC, and the remaining MCCs in the new DDR conduct the commissioning test according to the prepared Commissioning Plan.

C-5 Each MCC participating in the test collects test data in accordance with sections C and D of Annex B to this document.

C-6 The new nodal MCC completes the nodal MCC commissioning report (provided as Annex E to this document) and forwards it to the host nodal MCC.

C-7 The host nodal MCC collects and analyses data from participating MCCs, as necessary.

C-8 The host nodal MCC, through its designated agency, forwards the new nodal MCC commissioning report to the Cospas-Sarsat Secretariat and recommends that the new nodal MCC be commissioned.

C-9 The Joint Committee reviews the commissioning report and recommends approval by the Cospas-Sarsat Council at their next meeting.

STEP D **Establishment of Initial and Full Operational Capability**

Remark When the commissioning tests are completed and accepted by the host nodal MCC, the new nodal MCC is considered operational in an Initial Operational Capability (IOC), with respect to its nodal functions. The host nodal MCC shall advise all ground segment operators of the change in status in accordance with document C/S A.001 (DDP).

D-1 At IOC the new nodal MCC provides the nodal functions for one MCC in the new DDR. Such change should not affect other nodal MCCs except the host nodal MCC.

D-2 The new nodal MCC proceeds with the testing and implementation of the communication links to the remaining MCCs in the DDR, as provided in the Commissioning Plan.

D-3 If no links to other nodal MCCs are required, and all MCCs in the DDR have been successfully connected to the new nodal MCC, the host nodal MCC declares the new nodal MCC at Full Operational Capability (FOC) and informs all Ground Segment operators.

D-4 If links to other nodal MCCs are required as per the Commissioning Plan, the new nodal MCC proceeds with testing these communication links. When all communication tests have been completed successfully, the host MCC coordinates the FOC date for the new nodal MCC with all nodal MCCs involved, and informs all ground segment operators.

D-5 Before the FOC date, the Secretariat shall update the sections of document C/S A.001 (DDP) and the system status tables on the Cospas-Sarsat website.

D-6 Before the FOC date, the Secretariat shall provide the new nodal MCC with the access passwords and any other requirements to enable it to modify the system status tables on the Cospas-Sarsat website.

D-7 At the FOC date, all nodal MCCs involved implement the new data exchange matrix and the geographical sorting of alert data as provided in the document C/S A.001 (DDP).

- END OF ANNEX D -

ANNEX E

NODAL MCC COMMISSIONING REPORT

Country or national Administration: _____

Location of MCC: _____

Cospas-Sarsat Identifier: _____

Start of Commissioning Period: _____

End of Commissioning Period: _____

Section 1 contains information on the communication links established with other MCCs to support nodal MCC functions.

Section 2 contains the summary tables that show the commissioning results, where the Method of Compliance is one of:

- declaration by the national Administration (D),
- verification by the host MCC (V),
- verification by the national Administration (Vn),
- measurement by the host MCC (M), or
- measurement by the national Administration (Mn).

Where the method of compliance is listed as verification, evidence of that verification shall be included in the data package that is submitted to the Cospas-Sarsat Secretariat with the MCC Commissioning Report. Section 3 contains explanatory comments necessary to amplify the results contained in the summary tables of section 2. Section 4 includes any comments required on the commissioning process or new nodal MCC status. Finally, section 5 includes the recommendations of the host MCC as to the readiness of the new nodal MCC to be commissioned.

1. COMMUNICATION LINKS

Provide information on each link that will be used operationally by the MCC to perform its nodal functions, as indicated in documents C/S A.001 and C/S A.005. This includes links to other MCCs in its DDR and to other nodal MCCs.

This table does not have to contain information on the links to the national LUTs, RCCs, SPOCs, SSAS Competent Authorities or ADR that have been described in the original Commissioning Report for this MCC.

Table E-1: Communications Links

Destination MCC	Network Type (e.g., FTP)	Link Address	Direction of Data to Nodal MCC (Input, Output, Both)	Pass/ Fail	Comments

2. SUMMARY TABLES

Table E-2: Operational Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
Operational Requirements						
6.1.1	On-site staff 24/7		n/a		D	
6.1.2	Access to communication links		n/a		D	
	Send and receive simultaneously		n/a		D	
6.1.3	Monitor operation of C/S System within DDR	C/S A.003	n/a		D	
6.1.4	Develop backup procedures	C/S A.001			V	Present backup plan to HMCC

Table E-3: Functional Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
6.2.1.1	Receive and process alert data				V	
6.2.1.2	Maintain data integrity				V	
6.2.2	Geosort beacon locations for all MCC service areas, as necessary				V	
6.2.3.1	Receive and process System information				V	

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
6.2.3.2	Validate and transmit System information	C/S A.001 and C/S A.003			V	
	Report invalid data to appropriate MCC				V	
6.2.4	Narrative Information Processing				V	

Table E-4: Performance Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/Verification or Comments
6.3.1	Availability of MCC functions	99.5% over one year	n/a		D/V	Limited verification by HMCC during test period.
	Implement backup if non-availability > 1 hour	n/a	n/a	n/a	D	Provide short statement of procedures
6.3.2	Availability of inter-nodal MCC communication	99.5% each day	n/a		D	
6.3.3.1	Capacity to process expected volume of distress alert data	n/a	n/a	n/a	D	Provide short statement of capability
6.3.3.2	Capacity to transmit expected volume of distress alert data	n/a	n/a	n/a	D	Provide short statement of capability

Table E-5: Co-ordinating Requirements

Paragraph in C/S A.005	Requirement or Test	Pass Criteria	Result	Pass/ Fail	Method of Compliance	Declaration/ Verification or Comments
6.4.1	Co-ordinate development of communication links within DDR	n/a	n/a	n/a	D	Provide short statement of plans to develop links
6.4.2	Act as focal point for C/S matters within DDR	n/a	n/a	n/a	D	Provide short statement of plans to accomplish requirements of C/S A.005, section 6.4.2
6.4.3	Provide support and assistance to developing MCCs within DDR	n/a	n/a	n/a	D	Provide short statement of plans to accomplish these requirements

3. EXPLANATORY COMMENTS AS REQUIRED FOR ITEMS IN SECTION 2, SUMMARY TABLE

(List each comment by reference to test paragraph number from column 1 of Summary Table.)

4. OTHER INFORMATION RELEVANT TO THE COMMISSIONING TEST

(Include any comments not covered elsewhere on the conduct, analysis, or results of the commissioning test.)

5. RECOMMENDATIONS

- END OF ANNEX E -

ANNEX F

MCC COMMISSIONING GUIDELINES

1 COSPAS-SARSAT COMMISSIONING POLICY

The general principles of the Cospas-Sarsat Council policy regarding Ground Segment equipment commissioning, including MCC commissioning, are provided in the document C/S P.011, “Cospas-Sarsat Programme Management Policy”. These principles shall prevail if any discrepancy is found in these guidelines for MCC commissioning.

The commissioning of a new MCC, and especially of newly developed software, is an undertaking that may require significant knowledge, effort and time. Accordingly, Administrations implementing new MCCs should implement the following steps prior to commencing pre-integration tests:

- Assign a staff member exclusively to the task of implementing and commissioning the new MCC. The knowledge required to implement and commission a new MCC exceeds the knowledge level of most MCC operators. A permanently assigned staff member will be able to obtain relevant knowledge and will have adequate time to smoothly work through the complex steps in the commissioning process.
- Install DMCC into a test setup that matches as closely as possible the planned operating environment. This can be achieved through additional temporary communications routes, through special temporary software configuration and other inexpensive means. Under ideal circumstances this test setup could be used to conduct significant portions of the pre-integration test while permitting operations to continue uninterrupted on the operational system. In this way Administrations can find and correct errors in their DMCC prior to scheduling actual commissioning tests.
- Implement work processes for configuration control and for maintenance and support systems. As modern software is highly user configurable, Administrations may not be able to rely upon manufacturer staff to control software configuration processes. Thus, MCC managers will need to implement their own work processes to identify baseline configuration, and to recommend, test and implement changes. Further, if the new MCC involves a new support model with the vendor, work process will need to be created or updated to ensure support is available before, during, and after commissioning.

2 MCC COMMISSIONING PROCESS

The following principles govern the implementation of the Cospas-Sarsat MCC Commissioning Standard (C/S A.006).

2.1 In preparation for its commissioning and integration into the Cospas-Sarsat Ground Segment, the developmental MCC (DMCC) shall follow the steps indicated in the "Guidelines for Integration of New MCCs in the Cospas-Sarsat System", (Annex B). These pre-test actions include:

- coordinating its future service area and communication links with other Cospas-Sarsat MCCs,

- determining, in coordination with the Joint Committee, the Host MCC which accepts to participate in the DMCC commissioning tests,
- developing the required bilateral arrangements between DMCC and the Host MCC.

2.2 The DMCC will be responsible for equipment which may be required for performing the commissioning tests. Costs associated with performing the commissioning tests should be addressed in bilateral arrangements between the DMCC and the Host MCC, as appropriate.

2.3 A pre-test shall be run to identify possible SIT-format errors in messages issued by the DMCC or the Host MCC and all deficiencies shall be eliminated prior to the operational testing which will be performed for a minimum of 24 hours and a maximum of seven days.

2.4 The commissioning test plan shall include testing of all basic functional requirements and evaluating all performance parameters specified in the document C/S A.005, "Cospas-Sarsat MCC Specification and Design Guidelines". For those functional requirements which cannot be tested and measured in a practical way, the DMCC shall provide a declaration stating that these capabilities are met.

2.5 The DMCC shall, in coordination with the Host MCC, analyse the test data and produce a Commissioning Report to be submitted to the Secretariat through the Host MCC Representative, for distribution to Ground Segment Providers and User States.

2.6 A statement by the Host MCC Representative that the requirements of document C/S A.005, "MCC Performance Specification and Design Guidelines" are met by the DMCC, shall be considered sufficient to declare that the DMCC is operational and ready for integration into the Cospas-Sarsat Ground Segment, as coordinated with the Joint Committee.

2.7 The Joint Committee shall, at its following meeting, review the DMCC report and recommend to the Cospas-Sarsat Council, as appropriate, formal commissioning of the DMCC.

2.8 The connection of a new LUT to an MCC which is currently in operation would not require repeating the Commissioning procedure for that MCC. However, the test of the LUT/MCC communication link, which is not part of the LUT commissioning procedure, will have to be performed by the MCC operator, after it has been verified that the LUT meets the criteria of document C/S T.002, C/S T.009, or C/S T.019.

3 GRANTING OF IOC AND FOC STATUS

In accordance with the Cospas-Sarsat policy for Ground Segment equipment commissioning as stated in document C/S P.011:

3.1 An MCC will be granted IOC status at the date agreed with the Nodal MCC after it has:

- declared its service area in accordance with document C/S P.011,

- demonstrated its capability to exchange Cospas-Sarsat data in accordance with the DDP, including with its own RCCs,
- met the requirements of the MCC Performance Specification and Design Guidelines, document C/S A.005, and the MCC Commissioning Standard, document C/S A.006;

3.2 FOC status will be granted three months after IOC, provided that the MCC has satisfied all applicable Cospas-Sarsat performance requirements during IOC operation;

3.3 To minimize disruptions to the operational Cospas-Sarsat system, an operational MCC that has been recommissioned to meet new Cospas-Sarsat requirements may be permitted to distribute data to its SPOCs (and to other MCCs within its Data Distribution Region, in the case of a nodal MCC) during the IOC phase of its operation, provided that the MCC has met all applicable Cospas-Sarsat performance requirements.

3.4 On reaching the FOC date, the nodal MCC should confirm to all MCCs and the Secretariat that all necessary procedures have been established; and

3.5 Commissioning of an MCC by the Cospas-Sarsat Council and the attribution of IOC and FOC dates are without prejudice to any bilateral discussions on service areas.

- END OF ANNEX F -

ANNEX G

DECLARATION OF DMCC ON OPERATOR CAPABILITY

Note: The following declaration is to be provided to the HMCC prior to the integration test and formal commissioning.

The DMCC declares that its operators have been trained to use the equipment installed at the DMCC, and are capable of performing all necessary functions, including those listed in the table that follows, without the need for external support.

The DMCC also declares that it is fully capable of receiving and processing data from the LEOSAR, MEOSAR, and GEOSAR systems.

The DMCC also declares that once it has been commissioned and confirmed at Initial Operations Capability (IOC), it will be fully staffed and operational 24 hours per day, seven days per week.

Table G-1: Operator Capability

No.	TASK	Reference C/S A.005	YES	NO
1	Selectively report alert data for a particular beacon	3.10.1		
2	Selectively suppress or process transmission of alert data for a particular beacon	3.1.5, 4.3 & 5.10.1		
3	Retransmit a specified message	3.10		
4	Respond to direct requests from MCCs and SPOCs	3.1.2		
5	Retrieve information on request	3.10 & 5.10.4		
6	Use all identified communication links	3.4.3		
7	Monitor its national ground segment	3.6		
8	Account for all messages received and transmitted	3.1.3		
9	Transmit narrative messages SITs 915, 925 and 605	3.5.2		
10	Access a beacon register	3.9, 5.10.3 & 5.10.4		
11	Notify status if an anomaly is detected & implement backup	3.6.5, 3.7 & 5.10.2		

- END OF ANNEX G –

ANNEX H

DECLARATION OF DMCC INITIAL OPERATIONAL CAPABILITY

Minimum information to be given by the Host MCC when declaring an MCC at IOC.

Date / Time IOC declared for ..... MCC (ID): .....

This MCC is a LEOSAR-GEOSAR-MEOSAR-capable MCC.

MCC Contact numbers for alerts:

Primary .....

Secondary .....

Other .....

Person to person contact numbers:

E-Mail Address: .....

MCC Telephone: .....

MCC Fax: .....

Officer-In-Charge Name: .....

GEOSORT Search & Rescue regions supported:

Associated LUT(s)[7]:

City: .....

LUT ID: .....

LUT Antenna Position(s): .....

LUT Commissioned and Report Submitted to the Secretariat (Yes / No):

- END OF ANNEX H –

- END OF DOCUMENT -

[7] This section is only required if the MCC has one or more associated LUTs. One copy of this section shall be completed for each associated LUT.

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