
COSPAS-SARSAT ORBITOGRAPHY NETWORK SPECIFICATION

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COSPAS-SARSAT ORBITOGRAPHY NETWORK SPECIFICATION**History**

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LIST OF PAGES**Page #** **Date of**
latest
revision

cover	Oct 11
i	Oct 11
ii	Oct 11
iii	Oct 01
iv	Oct 01
1-1	Oct 01
1-2	Oct 01
2-1	Oct 11
2-2	Oct 09
3-1	Oct 01
3-2	Oct 09
4-1	Oct 01
4-2	Oct 01
A-1	Oct 01
A-2	Oct 01

2 COSPAS-SARSAT ORBITOGRAPHY NETWORK DESCRIPTION

2.1 Purpose

The Cospas-Sarsat 406 MHz system provides world-wide global coverage. All LEOLUTs have the capability to locate 406 MHz distress beacons anywhere on the Earth. Achieved location accuracy is dependent on various parameters. Of these parameters, satellite orbit ephemeris is dealt within the document.

The contribution to the location error budget due to orbit determination error is required to be less than 2 km (see Cospas-Sarsat LEOLUT Performance Specification and Design Guidelines, C/S T.002). An efficient way to achieve such accuracy is to perform orbit ephemeris updates based on data received from high-quality beacons placed at accurately known locations.

These high-quality beacons also provide an ideal resource to complete the Quality Management System (QMS) objectives stated in section 7 of C/S P.015 “Cospas-Sarsat Quality Manual”.

2.2 Characteristics

The network consists of three 406 MHz orbitography beacons located at high latitudes and the time reference beacon located at Toulouse, France. The identification and location of these beacons are given in the Cospas-Sarsat Data Distribution Plan, document C/S A.001. These beacons provide sufficient data to allow any Cospas-Sarsat LEOLUT to achieve the specified orbit determination accuracy. If an orbitography beacon fails then data from the time calibration beacon (see C/S A.001) may be used until the beacon which had failed has been returned to service.

2.3 Back-up Procedures

In case of failure of satellite on-board equipment, back-up procedures for updating the orbit ephemeris are necessary.

In order to collect data from the orbitography beacons, the onboard Search and Rescue Processor (SARP), including its memory, has to function properly. In case of on-board SARP memory failure, the recommended back-up procedures are to update orbit ephemeris using data collected from either the Cospas-Sarsat MCC Network or measurements on the satellite down-link frequency. Degraded accuracy in orbit ephemeris determination is accepted in this back-up mode. The preferred orbit update methods, listed in order of priority for each specific payload, is provided at Annex III/D of document C/S A.001 (DDP).

2.4 List of Orbitography Beacons in System

The orbitography beacons used in the Cospas-Sarsat System are provided by Denmark, Norway, the USA and France. The complete list of beacons, including the identification and location of each, is provided in the Cospas-Sarsat Data Distribution Plan, document C/S A.001.

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