COSPAS-SARSAT STRATEGIC PLAN

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COSPAS SARSAT

COSPAS-SARSAT STRATEGIC PLAN

History

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LIST OF PAGES

Page #	Date of latest revision	Page #	Date of latest revision
cover	Oct 08	A-1	Oct 08
i	Oct 08	A-2	Oct 08
ii	Oct 08	A-3	Oct 08
iii	Oct 08	A-4	Oct 08
iv	Oct 08		
		B-1	Oct 08
1-1	Oct 08	B-2	Oct 08
1-2	Oct 08	B-3	Oct 08
		B-4	Oct 08
2-1	Oct 08		
2-2	Oct 08	C-1	Oct 08
2-3	Oct 08	C-2	Oct 08
2-4	Oct 08		
3-1	Oct 08		
3-2	Oct 08		
3-3	Oct 08		
3-4	Oct 08		
3-5	Oct 08		
3-6	Oct 08		
3-7	Oct 08		
3-8	Oct 08		

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF ANNEXES

- Page left blank -

1. INTRODUCTION

The international Cospas-Sarsat System has been successfully operating since 1982 and has achieved world-wide recognition as a provider of satellite distress alerts to search and rescue (SAR) authorities. The carriage of Cospas-Sarsat distress beacons onboard aircraft[1] and ships[2] is mandated by Administrations in accordance with the recommendations of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO). Their use onboard fishing vessels, pleasure craft and general aviation aircraft is also a requirement in numerous countries. Furthermore, non-mandated usage of distress beacons is becoming increasingly popular among individuals at risk in difficult or dangerous environments[3].

The International Cospas-Sarsat Programme is faced with challenges and changes that provide an opportunity to establish long-term goals and identify new opportunities and priorities. This Strategic Plan recognises these challenges and opportunities, and charts a course ahead.

The scope of this Strategic Plan and the Programme background are presented in section 2 of this document.

The long-term strategic goals of the Programme were developed for a 20 year horizon. The strategic goals, associated medium term objectives, and near term actions that support these objectives are described in section 3.

Cospas-Sarsat achievements towards reaching each of these goals will be monitored and evaluated using appropriate performance indicators.

The following terms are used in this document with specific meanings:

Customers: SAR authorities to whom Cospas-Sarsat delivers distress alert and location data.

Users: Persons or organisations who own or use distress beacons compatible with the Cospas-Sarsat System.

System: The network of satellites, ground receiving stations (also called Local User Terminals or LUTs), Mission Control Centres (MCCs) and associated communication links that detects, processes and delivers distress alert and location data to the Cospas-Sarsat customers.

[1] Emergency Locator Transmitters (ELTs) are carried onboard aircraft.
[2] Emergency Position Indicating Radio Beacons (EPIRBs) are carried onboard ships.
[3] Distress beacons used by individuals in various environments are called Personal Locator Beacons (PLBs).

In the context of this strategic plan, the term “Cospas-Sarsat” encompasses:

- The International Cospas-Sarsat Programme established under the International Cospas-Sarsat Programme Agreement signed on 1 July 1988
- The four Parties (Canada, France, Russia, USA) who are signatories to the International Cospas-Sarsat Programme Agreement
- The States non-Party to the International Cospas-Sarsat Programme Agreement and organisations, who have formally notified their association with the Programme (the Participants)
- The Council, which oversees the implementation of the Agreement and co-ordinates the activities of the Parties and Participants
- The Secretariat, the permanent administrative body of the Programme, which takes direction from the Council
- Policies, standards and processes, as detailed in Cospas-Sarsat documents approved by the Council

Other definitions of terms and acronyms used in the Strategic Plan are provided at Annex A.

Annex B provides an overview of the Cospas-Sarsat System and its planned evolution.

Annex C describes the search and rescue performance criteria set by ICAO and IMO for the provision of distress alert and location data and the actual performance of the Cospas-Sarsat System.

- END OF SECTION 1 -

2. SCOPE OF THE STRATEGIC PLAN AND PROGRAMME BACKGROUND

2.1 Scope of the Strategic Plan

The International Cospas-Sarsat Programme is faced with upcoming changes, new opportunities and challenges in several areas. These include the opportunities arising from an increasing number of participating countries and a growing user base, and the challenges presented by the continued provision of effective System operation, evolving user needs and the planned integration of a Medium-altitude Earth-Orbiting Search and Rescue (MEOSAR) satellite system.

The Strategic Plan recognises these changes, challenges and opportunities, and charts a course that takes them into account within the strategic goals of the Programme. The Plan discusses priorities within the context of the Programme mission, and provides a strategic framework for improvements and stronger relationships with stakeholders, customers and users. This Plan will guide the Parties and Participants associated with the Programme, and aid the Cospas-Sarsat Council (the Council) in making decisions in respect to short-term and medium-term issues. It will also inform other interested parties and stakeholders about Programme strategic priorities.

The key stakeholders include SAR Authorities (Cospas-Sarsat customers), regulatory Administrations, ICAO, IMO, the International Telecommunication Union (ITU), international and national standards organisations, the System's users and industry.

While this Plan covers the twenty-year period 2008 to 2028, the Council intends to review it as necessary.

The strategic goals established in section 3 of this Plan:

- reflect the agreement of Participants on how the Programme should evolve within a twenty-year horizon,
- identify priority actions and objectives for the Programme,
- convey to customers and other stakeholders the long-term goals of the Programme, and
- demonstrate the intention of the Programme to continue providing required services in the future.

All goals, objectives and actions in this plan are developed within the framework of the 1988 International Cospas-Sarsat Programme Agreement.

2.2 Cospas-Sarsat Programme Background

The International Cospas-Sarsat Programme aims to reduce, as far as possible, delays in the provision of distress alerts to the search and rescue authorities and the time required to locate a distress, as these have a direct impact on the probability of survival of the person in distress. The rapid detection and location of distress events also contributes to the reduction of the costs of SAR operations and risks faced by rescuers.

To achieve this objective, Cospas-Sarsat Participants implement, maintain, co-ordinate and operate a multi-national satellite system on a long-term basis. The System is capable of detecting distress alert transmissions from radiobeacons that comply with Cospas-Sarsat specifications and performance standards, and of determining their position anywhere on the globe. Cospas-Sarsat Participants have also implemented a robust Ground Segment and a unique, worldwide data distribution system that provides in a timely and reliable manner Cospas-Sarsat distress alert messages to the appropriate SAR Points of Contact (SPOCs) and Rescue Coordination Centres (RCCs).

An overview of the Cospas-Sarsat System and its performance can be found at Annex B and Annex C to this document, and in the document C/S G.003 “Introduction to the Cospas-Sarsat System”.

Cospas-Sarsat is currently developing a third generation satellite alerting capability. The MEOSAR system, which is planned to begin operating in the 2012 - 2015 timeframe, is expected to provide global, near-instantaneous alerting and locating capabilities for existing and new generation 406 MHz distress beacons. The MEOSAR system will provide a potential for enhanced performance, including greater resilience to beacon-to-satellite obstructions and a possible return link to the beacon. Detailed information on MEOSAR system development is available in the document C/S R.012 “Cospas-Sarsat 406 MHz MEOSAR Implementation Plan”.

2.3 Trend Analysis of User Demand

Changes in technology, expanding user groups and new national and international regulations are creating unique challenges for the Programme. In particular, future user demand is expected to reflect the following major trends:

- a swift increase of the number of non-mandated users who purchase beacons on a voluntary basis in the context of decreasing beacon prices,
- limited growth of the number of mandated users,
- new user segments with high expectations for system performance that would take advantage of evolving technologies, including devices that combine several functionalities, and
- a large global demand for locating and communication devices for non-distress applications.

These trends and changes in technology open opportunities for new regional or global satellite systems that may offer locating and communication services on a commercial basis, including distress alerting.

The Cospas-Sarsat System was established by governments to provide distress alerting and locating services on a global, non-discriminatory basis and free-of-charge for the user in distress. It operates in frequency bands assigned by the ITU which are strictly reserved for distress alerting, i.e. in situations of grave and imminent danger to the safety of human life.

In line with the mandate of the International Cospas-Sarsat Programme Agreement, Cospas-Sarsat provides a distress alerting and location service to SAR authorities. While Cospas-Sarsat does not intend to compete with commercial systems that offer other communication or locating services, it will seek to continuously improve its distress alerting and locating service, as practical and necessary to meet the long-term SAR requirements of ICAO and IMO, and its users' and customers' expectations.

To manage the impact of the trends identified above, Cospas-Sarsat has devised strategies to successfully:

- identify the System’s core user segment and address opportunities as well as potential threats which could result from uncontrolled growth,
- address user needs while maintaining the control of specifications and standards,
- address the evolving needs and expectations of SAR authorities, and
- monitor System operations and use, and manage the available frequency spectrum to meet System capacity requirements.

- END OF SECTION 2 -

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3. COSPAS-SARSAT STRATEGIC GOALS

Mission Statement

The International Cospas-Sarsat Programme provides accurate, timely and reliable distress alert and location data to help search and rescue authorities assist persons in distress.

Programme Strategy

The Programme will emphasise cooperation and partnership in order to achieve its goals. As no country or organisation has the resources to implement and operate an international satellite-aided search and rescue system on its own, success is only achieved through international cooperation and partnership among States and organisations. Furthermore, the Programme will strive to raise awareness of the System through education and outreach. Knowledge of the System and its capacity is important to ensure that users and customers realise the full potential of the System.

Strategic Goals

The Cospas-Sarsat strategic goals were established for a twenty year time frame after considering the mission of the Programme and its past accomplishments. The following five strategic goals have been identified:

1. Continuous and effective System operation
2. A comprehensive management structure to support System evolution and ensure Programme continuity
3. Worldwide support for the Programme
4. Participants, users and customers use and operate the System to its full potential
5. A robust industrial base to support System operations

Each strategic goal is subdivided into medium-term objectives that can be reviewed and revised by the Council to align with actual developments in the Programme. Each objective is further detailed in a number of near-term actions to be accomplished to reach the desired objective.

3.1 STRATEGIC GOAL 1: CONTINUOUS AND EFFECTIVE SYSTEM OPERATIONS

The detection and location with minimum delay of an aircraft crash, a ship in distress or an individual in imminent danger are of paramount importance to the search and rescue (SAR) teams and to the potential survivors. Studies show that survival rates after a distress at sea or after an aircraft crash rapidly decrease with time, particularly in circumstances where survivors are injured, hypothermic or exposed to the elements. Furthermore, the availability of accurate distress location data can significantly reduce both SAR costs and the exposure of rescue forces to hazardous conditions, and improve SAR operational efficiency. Cospas-Sarsat will strive to improve the accuracy, timeliness and reliability of alert data delivered to SAR authorities.

Recognising the risk and possible delays associated with space segment activities, Cospas-Sarsat aims to provide continuity of Space and Ground Segment operations within the twenty year timeframe of this strategic plan by integrating new MEOSAR capabilities into the existing System.

3.1.1 Objective 1: Deliver distress alerts to the appropriate Search and Rescue Points of Contact (SPOCs)

Action 1: Coordinate with ICAO, IMO and other appropriate bodies to identify SPOCs and ensure that proper arrangements and systems are in place to deliver alerts.

Action 2: Establish procedures for each MCC to identify a back-up SPOC in case of communication failure with the primary SPOC.

3.1.2 Objective 2: Maintain or improve location accuracy

Action 1: Ensure ground segment equipment is correctly operated, monitored and maintained.

Action 2: Investigate possible improvements associated with the implementation of the MEOSAR system, including revised beacon specifications.

3.1.3 Objective 3: Improve timeliness of distress alert delivery

Action 1: Strive to maintain reliable communication links throughout the System and to SPOCs.

Action 2: Promote the use of automated processes at MCCs to deliver distress alerts to SPOCs.

Action 3: Encourage Administrations to facilitate and promote the use of distress beacons with navigational input to enable rapid location using the GEOSAR system.

Action 4: Coordinate and maximise Space Segment contributions to reduce wait time for beacon detection and ensure optimal coverage.

3.1.4 Objective 4: Ensure reliability of distress beacons

Action 1: Monitor the performance of beacons post type-approval, including their ability to acquire GNSS position data.

Action 2: Encourage SAR authorities to assess beacon performance during SAR incident analyses and provide this information to the Programme.

Action 3: Establish a mechanism to provide feedback to manufacturers on beacon performance.

3.1.5 Objective 5: Manage System capacity to accommodate increasing beacon population

Action 1: Coordinate with Administrations and the ITU to protect the System uplink and downlink frequency bands.

Action 2: Update the Cospas-Sarsat Frequency Management Plan (C/S T.012) to include a model of the MEOSAR system capacity.

3.1.6 Objective 6: Ensure seamless integration of the MEOSAR system

Action 1: Provide a capability to detect and locate distress beacons globally, near instantaneously, by encouraging Space Segment Providers to continue providing LEOSAR and GEOSAR capabilities.

Action 2: Encourage Ground Segment Providers to continue operating GEOLUTs and LEOLUTs.

Action 3: Develop a risk management plan to maintain the current level of System performance and ensure the detection and location of distress events.

3.1.7 Objective 7: Implement the MEOSAR space and ground segments

Action 1: Complete the MEOSAR Proof of Concept / In-Orbit Validation phase and develop a Demonstration and Evaluation Plan to confirm expected performance.

Action 2: Consider possible new or revised specifications and type approval standards for beacons operating with the MEOSAR system that would enhance performance, provide new capabilities and/or allow lower beacon costs.

Action 3: Coordinate the implementation of a MEOSAR ground segment in order to ensure a full operational capability.

Action 4: Investigate strategies to coordinate and operate the MEOSAR space segment.

Action 5: Plan for the implementation of a return-link capability.

3.2 STRATEGIC GOAL 2: A COMPREHENSIVE MANAGEMENT STRUCTURE TO SUPPORT SYSTEM EVOLUTION AND ENSURE PROGRAMME CONTINUITY

Provision of an effective management structure and appropriate legal framework is crucial to the continued ability of the Cospas-Sarsat Programme to perform its mission while maintaining the flexibility to take advantage of emerging opportunities. In respect of System operations, effective management requires the development and implementation of a Quality Management System. Effective management also requires transparency and accountability in all aspects of the Programme activities, including the Programme Common Costs. In addition, a comprehensive Programme management demands that the Council and Participants remain aware of the evolving environment in which the System operates.

3.2.1 Objective 1: Provide an effective management structure to support operational Programme activities

Action 1: Investigate the possible implementation of centrally managed activities for the Programme, including communications, beacon registration, and Ground Segment operations.

3.2.2 Objective 2: Establish the appropriate legal framework to support the Programme evolution

Action 1: Assess the suitability of existing legal instruments for the coordination and management of an operational MEOSAR system, and recommend possible actions for the timely implementation of required changes.

3.2.3 Objective 3: Acquire and efficiently manage Programme financial and human resources

Action 1: Ensure appropriate funding for the Programme Common Costs to maintain effective and efficient coordination of activities.

Action 2: Maintain effective management and oversight of the Programme Common Costs, including adequate risk management strategies to address potential liabilities.

Action 3: Evaluate and plan for future human resource needs.

3.2.4 Objective 4: Establish a Quality Management System (QMS)

Action 1: Develop and implement a System monitoring tool, to include a feedback mechanism to address non-conforming products.

Action 2: Implement a Cospas-Sarsat model course for Cospas-Sarsat Ground Segment operators.

Action 3: Develop the International Cospas-Sarsat Handbook for RCCs and Competent Authorities.

3.2.5 Objective 5: Maintain awareness of the environment in which the System operates

Action 1: Periodically review the regulatory environment.

Action 2: Conduct reviews of emerging trends and opportunities and consult with stakeholders to assess possible impacts.

3.3 STRATEGIC GOAL 3: WORLD WIDE SUPPORT FOR THE PROGRAMME

Cospas-Sarsat will strive to maintain a Programme that is well recognised internationally. By promoting participation in the System and enhancing support for the Programme, Cospas-Sarsat will enhance its ability to maintain the Cospas-Sarsat System, ensure its continuity, and assist SAR authorities worldwide. Cospas-Sarsat must also manage the expectations of stakeholders by making sure they are aware of the capabilities and limitations of the System.

3.3.1 Objective 1: Promote adoption and use of Cospas-Sarsat standards and specifications

Action 1: Actively cooperate with standards organisations to ensure consistency of international and national standards with Cospas-Sarsat requirements.

Action 2: Support Administrations in implementing Cospas-Sarsat standards and specifications.

3.3.2 Objective 2: Expand involvement with and use of the Cospas-Sarsat System

Action 1: Identify Administrations that would benefit from using the System and support, to the extent possible, their use of Cospas-Sarsat data.

Action 2: Encourage a wider use of the International Beacon Registration Database (IBRD) to make beacon registration data readily available to SAR authorities.

3.3.3 Objective 3: Manage stakeholder expectations

Action 1: Liaise with appropriate international organisations to publicise System performance and inform user groups of System capabilities and Programme objectives.

3.4 STRATEGIC GOAL 4: PARTICIPANTS, USERS AND CUSTOMERS USE AND OPERATE THE SYSTEM TO ITS FULL POTENTIAL

While the Programme has been successful to date and large numbers of people have benefited from use of the System, there are many more who are at risk and not aware of the capabilities and potential benefits of distress beacons. Cospas-Sarsat needs to assist Administrations in educating potential users. In addition, to allow efficient operation of the Cospas-Sarsat System, users have to be aware of certain important requirements including the need to register, properly operate and dispose of beacons.

3.4.1 Objective 1: Raise user awareness on the availability and proper use of the System

Action 1: Develop a plan to educate users on the proper use and benefits of the System.

Action 2: Analyse the causes of false alerts to promote corrective actions.

3.4.2 Objective 2: Promote complete and accurate beacon registration

Action 1: Encourage Administrations to establish policies and regulations to maximise registration of 406 MHz beacons and ensure registration data held is accurate.

Action 2: Maintain the International Beacon Registration Database (IBRD) to facilitate user and customer access to registration information.

Action 3: Assess possible means to ensure data held in the IBRD is accurate.

3.4.3 Objective 3: Ensure Participants' awareness of the System and Programme to realise their full potential

Action 1: Develop information documents on Cospas-Sarsat operations for Participant representative at varying levels of government.

3.4.4 Objective 4: Ensure Customers' awareness of the System to realise its full potential

Action 1: Develop standardised training modules that can be used in international training programmes.

Action 2: Work with international agencies to conduct training seminars for non-Participants.

Action 3: Coordinate with Administrations on the proper use of 406 MHz for training.

3.5 STRATEGIC GOAL 5: A ROBUST INDUSTRIAL BASE TO SUPPORT SYSTEM OPERATIONS

The continued availability of affordable and reliable ground segment equipment and beacons that meet evolving needs and Cospas-Sarsat requirements is dependent on a robust and active industrial base, and its ability to use and integrate newly developed technologies. Adoption of new technologies can be stimulated by a competitive environment.

3.5.1 Objective 1: Facilitate fair and streamlined supplier access to the Cospas-Sarsat beacon market

Action 1: Ensure adequate resources and expertise is maintained in Cospas-Sarsat to provide effective and timely review of beacon type approval applications.

Action 2: Encourage and facilitate the acceptance of testing laboratories by Cospas-Sarsat to ensure adequate capabilities for the timely implementation of type approval testing.

Action 3: Encourage the adoption of policies that broaden the choice of beacons available to users.

3.5.2 Objective 2: Encourage the diversity of providers of Ground Segment equipment

Action 1: Facilitate manufacturers' access to Cospas-Sarsat documentation and information to promote fair and open competition principles.

Action 2: Maintain independent expertise within the Programme for the analysis of System performance and the development of requirements.

3.5.3 Objective 3: Consider opportunities to lower beacon costs and improve beacon capabilities and performance

Action 1: Provide timely review of new technology developments and investigate proposals that could lower the cost or increase the functionality of 406 MHz beacons.

- END OF SECTION 3 -

ANNEXES
TO
THE COSPAS-SARSAT
STRATEGIC PLAN

ANNEX A

ACRONYMS AND DEFINITIONS OF TERMS USED IN THE STRATEGIC PLAN

1. ACRONYMS

COSPAS	Russian words "Cosmicheskaya Sistyema Poiska Avariynich Sudov", meaning Space System for the Search of Vessels in Distress
ELT	Emergency Locator Transmitter
EPIRB	Emergency Position Indicating Radio Beacon
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
GEO	Geostationary Earth Orbit
GEOLUT	Local User Terminal in a GEOSAR System
GEOSAR	Geostationary satellite system for Search and Rescue
GOES	Geostationary Operational Environmental Satellite
GNSS	Global Navigation Satellite System
IBRD	International Beacon Registration Database
ICAO	International Civil Aviation Organization
ICSPA	International Cospas-Sarsat Programme Agreement
IMO	International Maritime Organization
ITU	International Telecommunication Union
LEO	Low-altitude Earth Orbit
LEOLUT	Local User Terminal in a LEOSAR System
LEOSAR	Low-altitude Earth Orbit satellite system for Search and Rescue
LUT	Local User Terminal (ground receiving station)

MCC	Mission Control Centre
MEO	Medium-altitude Earth Orbit
MEOLUT	Local User Terminal in a MEOSAR system
MEOSAR	Medium-altitude Earth-Orbit satellite system for Search and Rescue
PLB	Personal Locator Beacon
QMS	Quality Management System
RCC	Rescue Coordination Centre
SAR	Search and Rescue
SARP	Search and Rescue Processor
SARR	Search and Rescue Repeater
SARSAT	Search and Rescue Satellite-Aided Tracking
SPOC	SAR Point of Contact

2. DEFINITIONS OF TERMS

Beacon (Cospas-Sarsat beacon)

A radiobeacon designed to be activated in a distress situation and to transmit a radio signal on frequencies of 406 MHz and 121.5 MHz, the characteristics of which comply with appropriate provisions of the International Telecommunication Union and Cospas-Sarsat specifications.

Cospas-Sarsat

In the context of this strategic plan, the term "Cospas-Sarsat" encompasses:

- The International Cospas-Sarsat Programme established under the International Cospas-Sarsat Programme Agreement signed on 1 July 1988,
- The four Parties (Canada, France, Russia, USA) who are signatories to the International Cospas-Sarsat Programme Agreement (document C/S P.001),
- The States non-Party to the International Cospas-Sarsat Programme Agreement and organisations who have formally notified their association with the Programme (the Participants),
- The Council, which oversees the implementation of the Agreement and co-ordinates the activities of the Parties and Participants,
- The Secretariat, the permanent administrative body of the Programme, which takes direction from the Council,
- Policies, standards and processes, as detailed in Cospas-Sarsat documents approved by the Council.

Council (Cospas-Sarsat Council)

The Cospas-Sarsat Council established in accordance with Articles 7, 8 and 9 of the International Cospas-Sarsat Programme Agreement.

Customers

SAR authorities to whom Cospas-Sarsat delivers distress alert and location data.

Ground Segment Operator

Any Organisation which establishes and operates Ground Segment equipment, avails itself of the System and becomes associated with the Programme in accordance with provisions set forth by the Council under the terms of the ICSPA.

Ground Segment Provider	A State which establishes and operates Ground Segment equipment under the terms of Article 11 and Article 12 of the International Cospas-Sarsat Programme Agreement.
Participants	The States non-Party to the International Cospas-Sarsat Programme Agreement, who have formally notified their association with the Programme either as a Ground Segment Provider or as a User-State.
Party (to the International Cospas-Sarsat Programme Agreement)	A State for which the International Cospas-Sarsat Programme Agreement has entered into force.
Stakeholder	Any organisation which has a vested interest in the International Cospas-Sarsat Programme, the System and its operation.
System	The network of satellites, ground receiving stations (also called Local User Terminals or LUTs), Mission Control Centres (MCCs) and associated communication links that detects, processes and delivers distress alert and location data to the Cospas-Sarsat customers.
Users	Persons or organisations who own or use distress beacons compatible with the Cospas-Sarsat System.
User State	A State that avails itself of the System under the terms of Article 12 of the International Cospas-Sarsat Programme Agreement.

- END OF ANNEX A -

ANNEX B

COSPAS-SARSAT SYSTEM OVERVIEW

Figure 1: The Existing LEOSAR and GEOSAR Systems

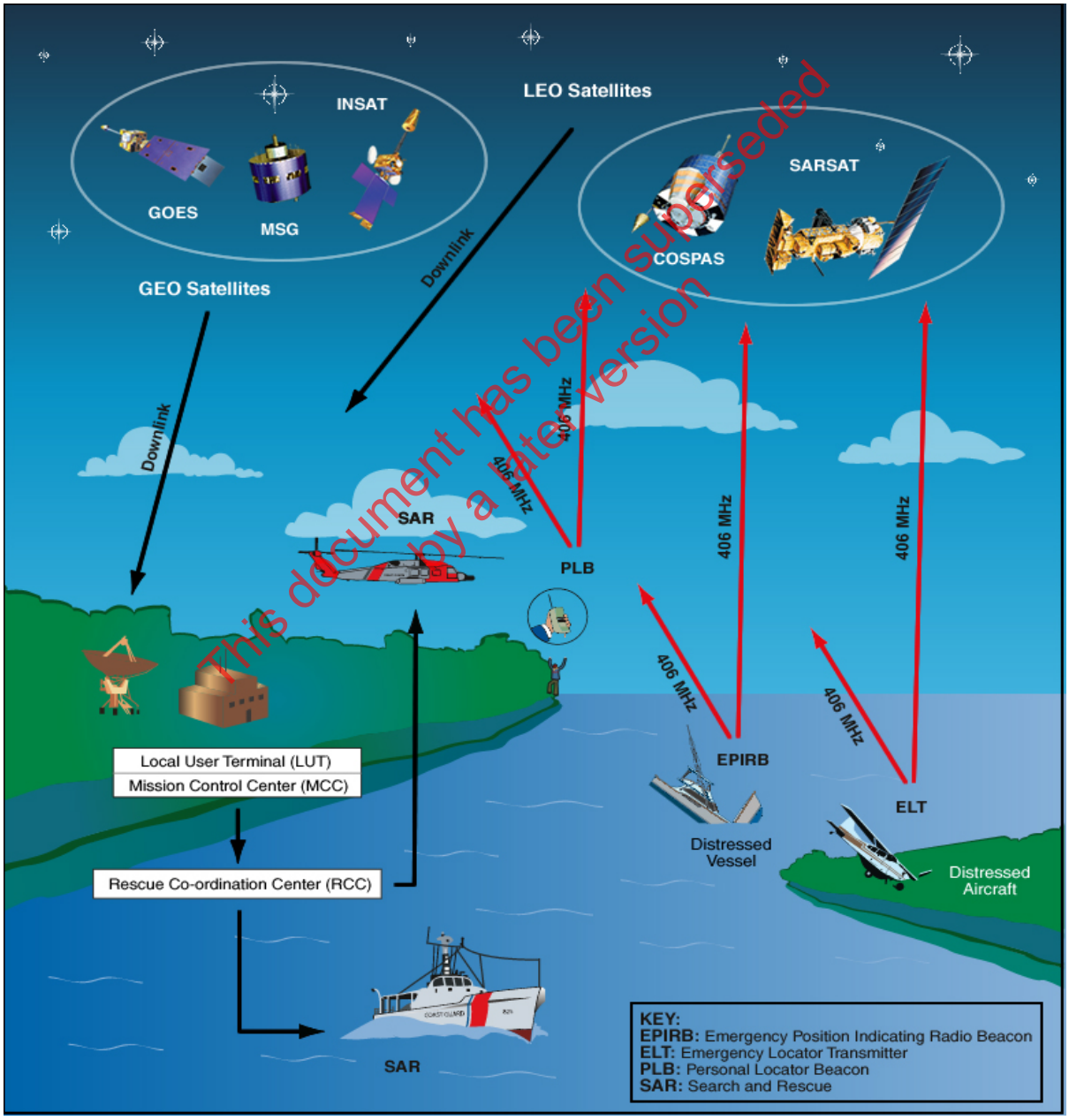


Figure 2: GEO and LEO Orbits

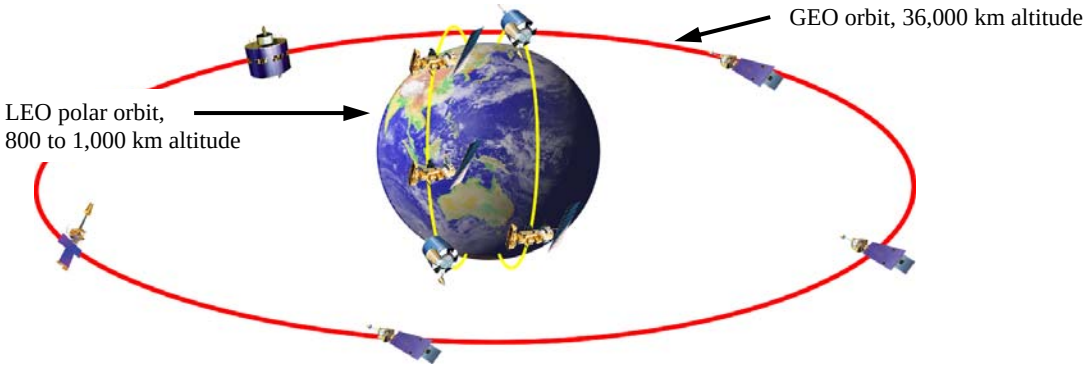


Figure 3: Medium Earth Orbit Satellite Constellation

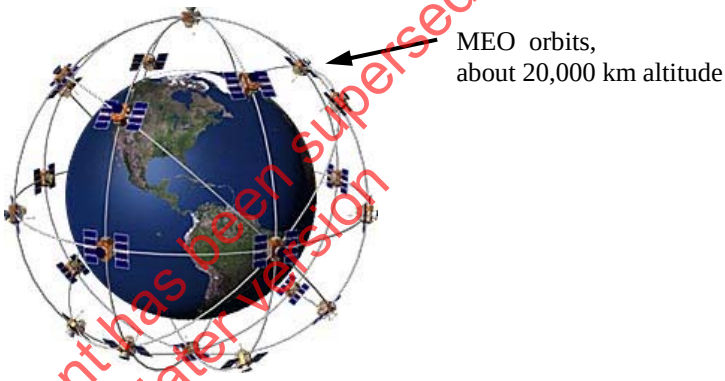


Figure 4: 406 MHz MEOSAR System Concept

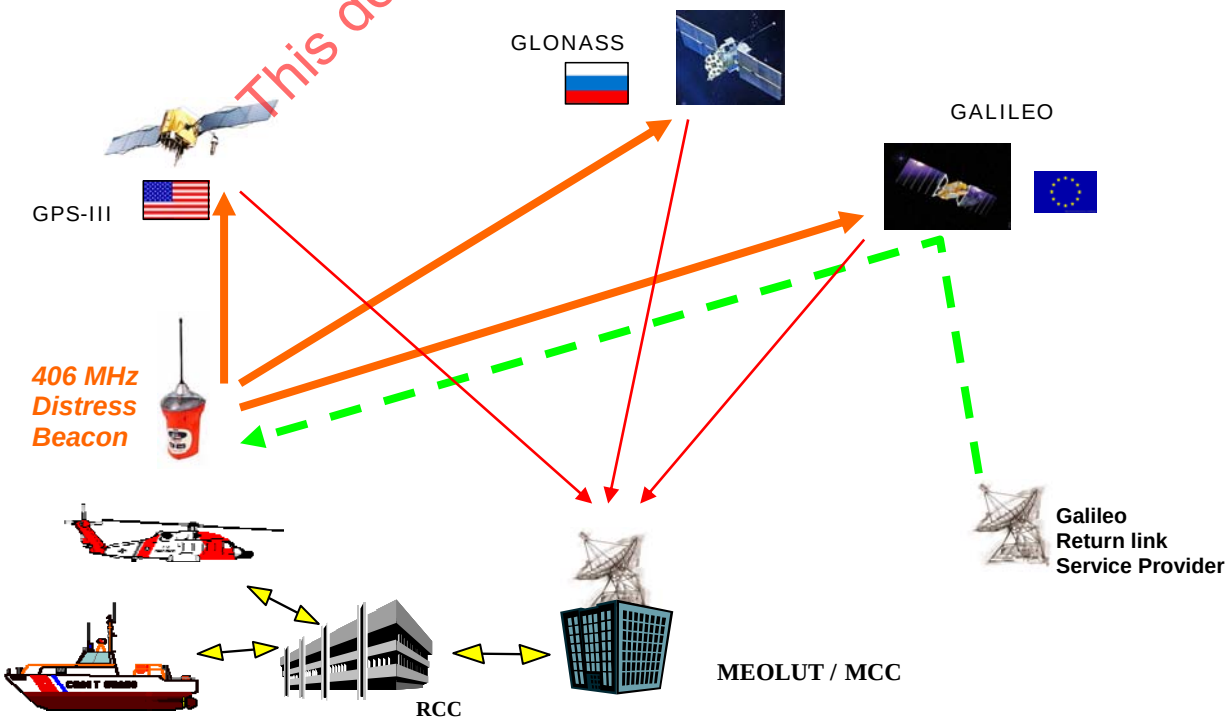
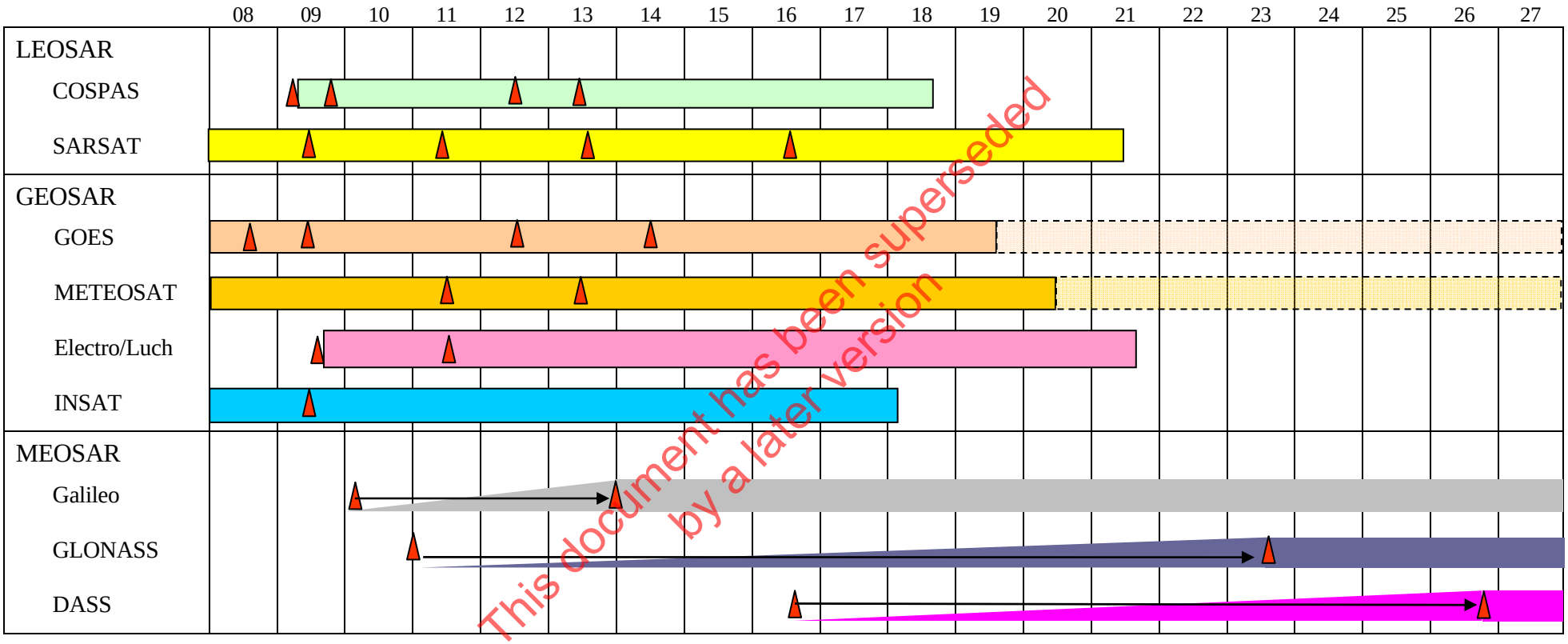


Figure 5: Cospas-Sarsat Space Segment and Tentative Launch Schedule



Tentative launch date

First and final launches of the complete deployment of a MEO constellation with SAR payloads

See explanatory notes on back of page

Explanatory Notes (Figure 5):

1. Cospas: Satellites are provided by Russia and carry search and rescue processor (SARP) instruments.
2. Sarsat: Satellites are provided by the USA and EUMETSAT. Search and rescue repeater (SARR) instruments are provided by Canada and SARP instruments are provided by France.
3. GOES: Satellites and SARR instruments provided by USA.
4. MSG: Satellite and SARR instruments provided by EUMETSAT.
5. Electro/Luch: Satellites and SARR instruments provided by Russia.
6. INSAT: Satellite and SARR instruments provided by India.
7. Galileo: SARR instruments planned to be carried on European GNSS. The system is expected to be completed with the launch of 27 satellites from 2010 through 2013, and should be replenished as necessary.
8. GLONASS: SARR instruments planned to be carried on the Russian GNSS GLONASS-K satellites.
9. DASS: Negotiations are underway to provide SARR instruments on USA GPS III GNSS satellites. The first launch would occur no earlier than 2013; however, a planning date of 2016 is assumed for presentation purposes. After the first launch a complete GPS constellation of 24 satellites with SARR instruments should be in place within 10 years.

- END OF ANNEX B -

ANNEX C

PERFORMANCE CRITERIA

The performance criteria were determined by the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue (JWG 13) in 2006 and endorsed at JWG 14 in 2007.

This table captures performance criteria and lists Cospas-Sarsat existing or future capabilities.

Performance Criteria	Existing LEO/GEO Capability	Future MEO Capability
Global coverage	Performance criterion is met. Current constellation of LEOSAR and GEOSAR satellites provides global coverage.	MEOSAR system is being designed to meet performance criterion of global coverage.
Signal activation without human intervention	Performance criterion is met by some beacon types. Administrations set the requirements for beacon activation.	This performance criterion is applicable to the beacon segment of the system and the MEOSAR system is being designed to relay this type of beacon
Distress alert provided to responsible RCC within 5 minutes	Performance criterion is met. Based on actual performance: GEOSAR distress alert detections provided to responsible RCC within 3 minutes. Distress alerts with position data provided within 3 minutes for 85 % of beacons that transmit encoded GNSS position data. Distress alerts with Doppler derived positions provided within 47 minutes on average.	MEOSAR performance capabilities are in the process of being validated. The system is being designed to provide distress alerts to the responsible RCC within 5 minutes.

Performance Criteria	Existing LEO/GEO Capability	Future MEO Capability
Distress alert location provided to an accuracy of 5 km or better	Performance criterion is met. Based on actual performance 95% of Doppler derived locations are accurate to within 5 km. Encoded GNSS positions are provided to a Lat/Long resolution of 4 sec (about 100 m accuracy).	The MEOSAR system is being designed and developed to exceed this criterion.
Beacon capability for transmission of both distress and homing signals, for a minimum period of 48 hours under temperature conditions between -40°C and +40°C	Many type approved beacons meet these criteria. Not applicable to all beacons as Administrations set the operational requirements for beacons.	This performance criterion is applicable to the beacon segment of the system and the MEOSAR system is being designed to relay this type of beacon. Many type approved beacons will continue to meet this criterion
Beacon survivability	Administrations set the survivability requirements for beacon specification.	This performance criterion is applicable to the beacon segment of the system and the MEOSAR system is being designed to relay this type of beacon. Many type approved beacons will continue to meet this criterion
Distressed craft ID transmission facility	Performance criterion is met. Vessel or aircraft ID can be encoded in the beacon message and/or is held in a beacon registry and available to RCCs.	Performance criterion will be met.

- END OF ANNEX C -

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