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BUILDING A **SAFE AND RESILIENT CANADA**

International Cospas-Sarsat Programme

Canadian Domestic Guide

System Overview, History, Governance
and Roles and Responsibilities

Updated: October 5, 2021

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NOTE: Information contained within this document has been drawn from the *Introduction to the COSPAS-SARSAT System (G-003)* and the *Cospas-Sarsat Programme Management Policy (P-011)* unless specifically cited elsewhere. Both documents can be downloaded from the professional extension of the Cospas-Sarsat website: <https://cospas-sarsat.int/en/pro>.

Introduction

Canada, in partnership with France, the Russian Federation (formerly the Union of Soviet Socialist Republics) and the United States of America (USA), is a founding nation of the International Cospas-Sarsat Programme (Programme). Collectively, the four founding nations of the Programme are known as the Parties. The Programme manages, administers and maintains the Cospas-Sarsat System (System).

Public Safety Canada (PS) - National Search and Rescue Secretariat (NSS) has developed this guide to provide:

- An overview and understanding of the Programme and System;
- An overview of the interdepartmental framework for Canada's participation in the Programme; and,
- Limited guidance and direction for representatives of the Government of Canada (GC) who may be attending international meetings.

COSPAS-SARSAT is a multilingual acronym that reflects the international nature of this humanitarian initiative.

COSPAS is an acronym for the Russian words: *Cosmicheskaya Sistema Poiska Avariynyh Sudov*. The English translation is Space System for the Search of Vessels in Distress.

SARSAT is an acronym for **S**earch **A**nd **R**escue **S**atellite-**A**ided **T**racking.

This guide will be updated periodically by the NSS to support Canada's participation in the Programme.

Section 1: Cospas-Sarsat

Overview of the International Cospas-Sarsat Programme

The International Cospas-Sarsat Programme (Programme¹) is defined as those activities carried out by the Parties to provide, operate and coordinate the System which provides distress alerting and location data to search and rescue (SAR) authorities around the world. The mission of the Programme is to provide accurate, timely and reliable distress alert and location data to help SAR authorities assist persons in distress.² The Programme currently has 45 participating nations and/or entities³.

The Cospas-Sarsat System refers to the satellite-based distress alerting system and its associated ground-based equipment that detect and distribute distress alerts from Cospas-Sarsat compliant emergency beacons installed on vessels/aircraft and/or carried by individuals. The objective of the System is to reduce delays in the provision of distress alerts to SAR authorities, by providing accurate location data to assist those in distress.

To meet the Programme mission and System objective, Participants in the Programme collaborate to define beacon parameters while implementing, maintaining, coordinating and operating a multi-satellite space segment and an interconnected ground segment that is capable of detecting and locating those beacons.

The International Cospas-Sarsat Programme Agreement (ICSPA) was signed by Canada, France, the United States of America (USA) and the Union of Soviet Socialist Republics (USSR) in Paris on July 1, 1988, and entered into force on August 30, 1988. This established the Programme as an international, inter-governmental Programme that supported the distress alerting carriage requirements established by the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO).

In 1992 the Russian Federation assumed the USSR's ICSPA related responsibilities when the USSR dissolved.

¹ To ensure consistent nomenclature internationally, the French spelling of Programme is used by all Cospas-Sarsat participants.

² *The History and Experience of the International Cospas-Sarsat Programme for Satellite-Aided Search and Rescue*, edited by Levesque, Daniel, International Aeronautical Federation (IAF), Paris, 2016.

³ For a complete list refer to **Annex A**

COSPAS-SARSAT ORIGIN

In 1979, Canada, France, the United States of America and the Union of Soviet Socialist Republics (USSR) agreed to combine their efforts to develop a satellite-based distress-alerting system.

This joint effort brought together the Search and Rescue Satellite-Aided Tracking (SARSAT) Programme (developed by Canada, the US and France) with the USSR's *Cosmicheskaya Sistema Poiska Avariynich Sudov* (COSPAS).

The initial objective was to demonstrate that polar-orbiting satellites could effectively assist search and rescue operations by providing alert and location data to responsible administrations. This was realized in 1982 and the Cospas-Sarsat satellite system was declared operational.

For a complete history of the Programme, please refer to the document entitled *History and Experience of the Programme*, available on the International Cospas-Sarsat Programme website.

International Participation

Since the signing of the ICSPA in 1988, the Programme has expanded to include the four founding Parties and 41 participating nations and/or entities⁴. Participating nations provide support to the Programme in various ways. Those who contribute to the Programme are recognized as⁵:

PARTICIPANT TYPE	DESCRIPTION	FINANCIAL CONTRIBUTION TO PROGRAMME
PARTY	Are signatories to the ICSPA and are committed to the long-term availability of space-based assets for SAR. The Parties exercise full control of all Programme activities and are supported by the Cospas-Sarsat Secretariat which handles many of the daily Programme activities.	Each Party contributes \$272K (CAD) annually to maintain the Programme. ⁶
GROUND SEGMENT PROVIDER	States which are not Parties to the Agreement can elect to formally participate in the Programme and become a Ground Segment Provider. Ground Segment Providers establish and operate Local User Terminals (LUT) and Mission Control Centres (MCC).	Each year non-party participants (Ground Segment Providers and User States) also contribute towards the common costs of the Programme. At the time of publication, the contribution is \$68K (CAD).
USER STATE	A less formal option for States that wish to avail themselves of the Programme's services is to become a User State. User States coordinate their activities with other participating States but do not contribute a ground segment	

SAR Point of Contact (SPOC)

Cospas-Sarsat data, is available to all states that identify a Search and Rescue Points of Contact (SPOC), regardless of their affiliation with the Programme. Once a country identifies a SPOC, the Programme will ensure alert data is transferred to the SPOC which assumes responsibility for the coordination of the fast and effective transfer of Cospas-Sarsat alert data to appropriate rescue personnel within their area of responsibility.⁷

⁴ For a complete list refer to **Annex A**

⁵ Summary of content from Cospas-Sarsat Programme Management Policy (P-011)

⁶ As of 2019

⁷ Summary of content from *Introduction to the Cospas-Sarsat System (G-003)*

Related International Organizations

One of the key objectives and mandate of the Programme is to support safe international transportation. As such it works closely with other international bodies engaged in this endeavour. Specifically, the Programme collaborates closely with the following organizations.

International Maritime Organization

The International Maritime Organization (IMO) is the United Nations (UN) specialized agency responsible for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. Its overall objective is summed up in its slogan: safe, secure and efficient shipping on clean oceans. Specific to SAR, the IMO supports *the International Convention on Safety of Life at Sea (SOLAS)* which includes a wide range of measures designed to improve the safety of shipping. Additionally, the IMO, in consultation with the International Civil Aviation Organization (ICAO) publishes the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR) which outlines SAR requirements.⁸

International Civil Aviation Organization

The International Civil Aviation Organization (ICAO) is a UN specialized agency, established to manage the administration and governance of the Convention on International Civil Aviation (Chicago Convention). Aviation safety is ICAO's core objective. It strives to achieve this objective through the development of global strategies, standards, recommended practices and procedures, as well as by monitoring safety trends and indicators, the implementation of targeted safety programs and effective responses to disruptions in the aviation system. Additionally, ICAO, in consultation with the IMO publishes the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR) which outlines SAR requirements.⁹

International Telecommunications Union

The International Telecommunications Union (ITU) is the global forum through which parties work towards consensus on a wide range of issues affecting the future direction of the information and communication technologies (ICTs) industry. Specifically, for the Programme, the ITU provides the internationally accepted protection criteria for Cospas-Sarsat beacons, satellite instruments and ground stations and the associated uplink and downlink frequencies.¹⁰

As an international humanitarian program, the Programme provides SAR distress-alert and location data to SAR authorities around the world.

Response time is critical so data is automatically distributed to 200+ Search and Rescue Points of Contact (SPOCs).

⁸ Summary of content from *Introduction to the Cospas-Sarsat System (G-003)*

⁹ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

¹⁰ Summary of content from *Introduction to the Cospas-Sarsat System (G-003)*

The COSPAS-SARSAT System¹¹

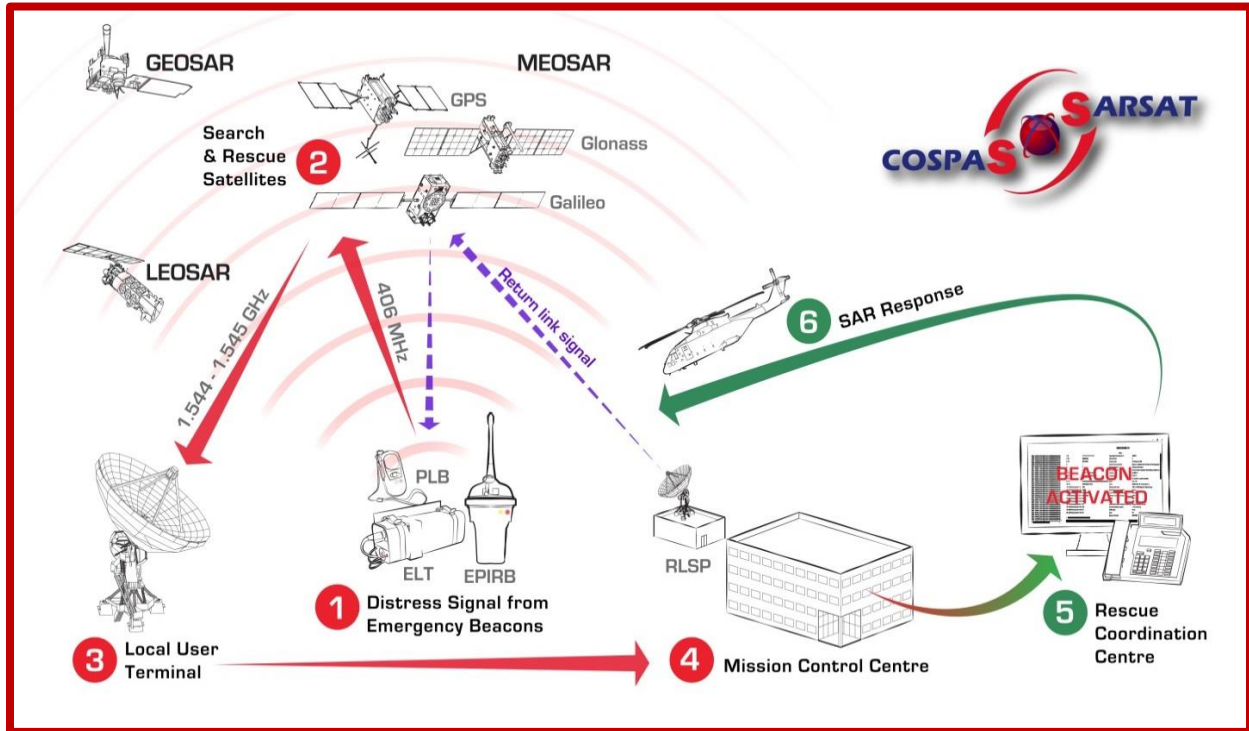
The COSPAS-SARSAT System (System) has three distinct segments that work together to provide distress-alerting and location data to SAR authorities. All Participants contribute to and/or maintain support for assets associated with the space, ground and beacon segments of the Programme.

SEGMENT	DESCRIPTION	ADDITIONAL INFORMATION
<i>Space Segment</i>	The on-orbit system components that relay distress alerts to ground stations. Currently, the System uses SAR satellites flying in three orbit types; low-altitude earth orbit (LEOSAR); medium-altitude earth orbit (MEOSAR) and geo-stationary earth orbit (GEOSAR). Satellites and their SAR payloads are provided by the Parties; Canada, USA, France, the Russian Federation. In addition, the European Union (EU) and the Indian National Satellite System (INSAT) provide space segments under special declarations of intent (DOI). The Programme is in the process of establishing a DOI with China to enable it to integrate its space capabilities.	Additional information on the current space segment is found in Annex B – Space Segment Details .
<i>Ground Segment</i>	The System components that receive, process and distribute information from the space segment. This includes the Local User Terminals (LUTs) and Mission Control Centres (MCCs) that distribute system data over the System’s data distribution network (DDN) to SAR authorities.	For additional information refer to Annex C – Ground Segment Details .
<i>Beacon Segment</i>	The distress alerting devices activated during a SAR incident. The beacon segment consists of three types of distress beacons – emergency locator transmitters (ELT) for aircraft, electronic position indicating radio beacons (EPIRB) for maritime vessels and personal locator beacons (PLB) for individuals (e.g. hikers, climbers, backcountry enthusiasts). A fourth beacon type, called special-purpose beacons, covers ship security alert system (SSAS) beacons and two types of system calibration/verification beacons called reference beacons and orbitography beacons. All Cospas-Sarsat approved beacons transmit on the assigned System frequency of 406 megahertz (MHz). Distress beacons, approved by the Programme are manufactured in several countries including Canada. To maximize the effectiveness of a beacon, owners are encouraged to register their beacons in either their national registry or in the international beacon registry database (IBRD). Canada has its own registry called the Canadian beacon registry (CBR).	Refer to the list of countries and their beacon manufacturers for additional beacon information please see Annex D – Beacon Segment .

¹¹ Summary of content from Cospas-Sarsat Programme Management Policy (P-011)

The following diagram illustrates how the three segments work together to form the System:

Diagram 1¹²: Overview of COSPAS-SARSAT System¹³



¹² Introduction to the Cospas-Sarsat System (G-003)

¹³ Return Link Service (RLS) is an option offered by the Galileo system. It is discussed in Annex D – Beacon Segment. (From Introduction to the COSPAS-SARSAT System (G-003))

Section 2: Programme Governance Framework and International Meetings¹⁴

As an international treaty-based organization, the Programme is managed and administered by the four founding Parties, all of whom are signatories to the ICSPA. Collectively the four Parties are known as the Cospas-Sarsat Council (Council). To facilitate and sustain international cooperation and coordination among the Parties, Participants, User States, international organizations and the manufacturing sector, the Programme has established a set of structures and series of meetings¹⁵.

In advance of participating in International Cospas-Sarsat meetings, Canadian delegates are advised to review documents related to the organizational structure and procedures of these meetings on the Cospas-Sarsat website.

International Meetings

Throughout the calendar year, the Programme operates through a set series of purpose-designed meetings. Because the Secretariat is located in Montreal the majority of meetings are convened there. However, participant nations frequently offer to host Programme meetings which are considered and, provided there are not any reasons to oppose it, approved by the Council. Hosting meetings outside of Montreal has the benefit of more evenly distributing the cost of travel and impact of time zones among all Parties and Participants. Meetings held in Asia, for example, are generally appreciated and better supported by Participants in that hemisphere including Parties such as the Russian Federation. It can also raise the profile of the Programme among governments that may be less familiar with its benefits. Participants who offer to host a meeting must not have any domestic restrictions that would hinder any other Programme participant from attending.

The Programme meetings are driven by the submission of discussion papers and information by Parties, Participants, and international organizations. The chair of the meeting, supported by the Secretariat, will confirm the admissibility of a paper and determine its priority in the meeting work plan/agenda. There is usually a deadline of four weeks¹⁶ before a meeting to submit a paper to the Secretariat which response papers are usually accepted up to two weeks before the meeting. All papers are posted on the Programme's webpage. During the meeting, the chair will invite authors to present before opening the floor to discussion. If consensus (among the four Parties) can be achieved the recommendations will be adopted.

The Council¹⁷

The Council is composed of one representative from each of the four Parties to the International Cospas-Sarsat Programme Agreement (ICSPA), namely Canada, France, the Russian Federation and the USA. The Council representative, known as the Permanent Representative (PR) is usually well supported at meetings by subject matter experts from their nation. Decisions of Council require the unanimous

¹⁴ Summary of content from *COSPAS-SARSAT Programme Management Policy (P-011)*

¹⁵ Find additional material on Cospas-Sarsat structures and meetings on the Cospas-Sarsat website.

¹⁶ five weeks for Joint Committee

¹⁷ Summary of content from *COSPAS-SARSAT Programme Management Policy (P-011)*

support by the four PRs. Accredited members of a national delegation may speak at meetings but they do so on behalf of, and with the permission of, their PR or accredited Head of Delegation. The Council is supported by a permanent secretariat comprised of 11 people and based in Montreal. The Council meets in both an open and closed format.

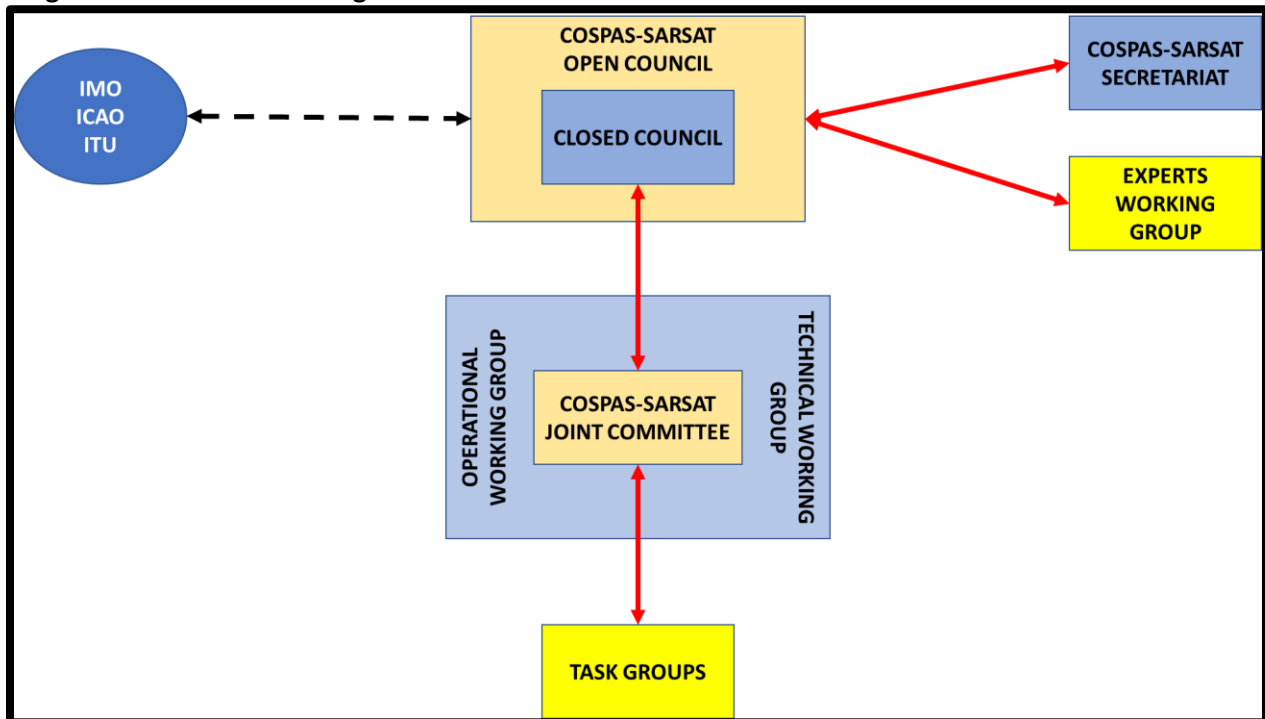
Closed Council

The closed council meetings are attended by only the Parties, the Secretariat and invited guests who may attend for a specific issue. The primary purpose of the closed council is to address the management of the Secretariat and the administration of the Programme. Its purpose is to “carry out the relevant policies and co-ordinate the activities of the Parties” per Article 9 of the ICSPA. This includes relations with prospective participants, system users, manufacturers and international organisations.

The closed council normally meets twice per year in the spring and fall, but may meet as often as necessary. The fall closed council meeting is generally immediately followed by an open council meeting.

The Council is supported by several committees and groups which conduct in-depth analysis of assigned issues or initiatives and then provide recommendations in support the Programme and the System. The following diagram provides an overview of the Programme’s governance framework:

Diagram 2: International Programme Governance



Open Council

At least once a year the Programme hosts an open council meeting during which the non-party States and organisations (the Cospas-Sarsat Participants) may address issues related to the administration of the Programme or the management of the System. This includes, but is not limited to:

- matters concerning the common costs of the Programme;
- the operation of the System;
- on-going or potential system enhancements and developments;
- issues related to the report and recommendations of the Joint Committee (JC);
- relations with international organisations; and,
- the Programme's schedule and meeting locations for the following year.

Additionally, open council is where amendments to System documents that have been developed by the various working groups and recommended by the JC over the past year are approved. While decisions are made by only the four Parties, open council provides an opportunity and a forum for Participants to review and comment on the proposed amendments before they are formally approved. It also provided a forum for participants to engage in discussion on strategic issues and policies related to on-going System developments.

Joint Committee¹⁸

The Joint Committee (JC) convenes when directed by Council, normally once a year. The JC consists of representatives from the Operations Working Group (OWG) and Technical Working Group (TWG). Its purpose is to address the technical and operational agenda items approved by the Council. The rules of procedure and terms of reference for the JC and its working groups (WG) are established by the Council.

The JC prepares, updates and coordinates the development of all System documents which are then submitted to Council for approval. It also coordinates and conducts studies on all aspects of the Programme as requested by Council and prepares a report for Council. The JC report includes a record of both working group activities, including specific recommendations to the Council.

The JC has a Chairperson as does each of the WGs, all of whom are appointed by the Council. The JC will normally begin with all papers being introduced in a one or two-day plenary session. The meeting will then separate into the two WGs before re-convening at the end for a second plenary session. Papers will be assigned to one, or in some cases, both WGs. In the case of the latter, it is incumbent on the JC Chair to ensure that the two WG chairs coordinate their efforts and, if necessary, to allow further plenary discussion to have a single position by the end of the meeting.

The rules of procedure for the JC, plenary session and working groups are outlined in Annex C of Cospas-Sarsat P.011, Cospas-Sarsat Programme Management Policy.

JCs are normally held in June and includes at least eight working days.

¹⁸ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

Operations Working Group¹⁹

The Operations Working Group (OWG) focuses on the data distribution plan (DDP) and the network of Mission Control Centres (MCCs) that manage the distribution of System data. The OWG's responsibilities include:

- Developing necessary plans and documents for the operation of the System;
- Coordinating all relevant aspects of the System's operation in support of timely and reliable System alerts from vessels, aircraft and personal distress beacons to SAR organisations;
- Preparing operational performance standards;
- Assessing the System's operational performance and status;
- Performing studies and;
- Making recommendations on the System's operation and performance.

Technical Working Group²⁰

The Technical Working Group (TWG) focuses on the specifications and technical aspects of all three System segments (space, ground and beacon). The TWG's responsibilities include:

- Developing technical plans and documents for the implementation of the Programme;
- Coordinating technical aspects of the Programme between participating States;
- Preparing the technical specifications and standards;
- Assessing the System's technical performance and status;
- Performing studies and;
- Making recommendations on all technical aspects of the Programme.

In addition to the standing JC, OWG and TWG, the Programme frequently creates smaller groups to provide advice and recommendations on specific issues. These include:

Experts Working Group Meetings²¹

An Experts Working Group (EWG) are established by Council when it is seeking information or recommendations on a specific topic. EWGs report directly to Council. Once the recommendations are approved, and when appropriate, the Council may refer the EWG recommendations to JC for recommended changes which will support implementation. The Council establishes the terms of reference (TOR) for each EWG, identifies a chairperson, and invites subject matter experts to participate. Invitation to participate is often limited to participants with the required subject matter expertise on the issue being addressed. The Council normally requests the EWG to report back at a certain time to the Council directly.

EWGs may meet at any location or virtually using any method as determined by Council. Normally there are one to two in person EWGs annually which address the most complex or pressing issues. EWGs also routinely meet virtually using "Base Camp" software, and via teleconference.

¹⁹ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

²⁰ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

²¹ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

Task Group²²

A Task Group (TG) meeting is convened by Council, usually at the request of JC, to address a specific issue. Any Participant of the Programme may send a delegation to a TG. The JC will normally propose the TORs and a chairperson which must be approved by the Council.

TGs will generally meet in person at facilities co-located with the Secretariat Headquarters or any location hosted by a Participant or Party.

Splinter Group Meetings²³

Splinter groups are less formal sub-meetings called by the chair of a formal gathering to address issues that cannot be dealt with during the full meeting. Splinters normally occur during a JC but can happen whenever deemed necessary by a meeting chair. When a splinter group is convened, the meeting chair will provide the TORs, name a splinter group chairperson and, normally ask for volunteers. Heads of Delegation (HOD) may assign individuals from their delegation. The splinter chair will be responsible for ensuring that a report is prepared and presented back to the main meeting.

Correspondence Working Groups/Unofficial Advisory Groups²⁴

From time to time, to help manage the workload, interested participants work together in inter-sessional correspondence working groups (CWGs) to address specific topics. These topics are usually in response to action items that have been identified by one of the formal working groups. These groups do not have a term of reference (TOR) unless the participants choose to develop them and participation is generally open to all who are interested. CWGs normally meet virtually, and are frequently supported by the Secretariat using its “Base Camp” software and teleconference facility.

International Preparatory Meetings²⁵

Within a delegation, preparatory meetings may be held in advance of a larger meeting²⁶ either to plan for the meeting itself or to consider in detail a specific issue for which there may not provide sufficient time for full discussion. International preparatory meetings may be limited to the chairs of the relevant groups or be restricted to selected delegates with particular expertise.

International preparatory meetings are not regularly scheduled but are held on an as-required basis.

²² Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

²³ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

²⁴ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

²⁵ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)*

²⁶ such as a JC or Open or Closed Council meeting

Section 3: National Significance

Cospas-Sarsat In Canada

Canada has one of the world's largest areas of responsibility (AOR) for SAR, covering 18 million square kilometres of land and water, more than 243,042 kilometres of coastline, three oceans, three million lakes (including the Great Lakes), and the St. Lawrence River system.

The challenges associated with such an enormous area are compounded by the varied and often austere terrain, extreme weather conditions and low population density that characterize many parts of the country, making Canada one of the most difficult environments in which to conduct SAR operations. Canada's federal SAR system responds to more than 15,000 calls a year and assists over 25,000 people. Within Canada's SAR system, the COSPAS-SARSAT System plays a critical role in alerting SAR authorities of a distress situation, particularly for aeronautical and maritime SAR incidents. In recent years, the System's ability to detect and locate PLBs has also increased support for ground SAR incidents. It should be noted that the first rescue with the support of the System took place in Canada when Jonathan Ziegelheim was rescued by Canadian SAR authorities after his plane crashed in British Columbia in September 1982. Authorities judged that Ziegelheim and his passengers would probably have perished of their injuries if it were not for the System.

The COSPAS-SARSAT System is an integral part of Canada's SAR system and is critical to saving lives and reducing the time between the detection of a distress alert to the delivery of SAR services. It is also vital to reducing the risk to SAR responders by reducing the number of false alerts and by providing accurate distress location data.

Linkage to the Canadian SAR System

The COSPAS-SARSAT System is linked to the Canadian SAR system through the Canadian Mission Control Centre (CMCC) which is the operations centre of Cospas-Sarsat activities in Canada. It is co-located with the Canadian Armed Forces (CAF) - Canadian Coast Guard (CCG) Joint Rescue Coordination Centre (JRCC) on Canadian Forces Base (CFB) Trenton and supports all three of Canada's JRCCs (Victoria, Trenton, and Halifax) and both Maritime Rescue Sub-Centres (MRSC) located in Quebec City and St. John's. The CMCC is staffed twenty-four hours per day, seven days per week.

The JRCC/CMCC mission statement includes a commitment to:

- Provide early alerting; and,
- Maintain and promote the highest standard in SARSAT monitoring systems

The CMCC routes alert and location information to the appropriate contact. In Canada, these contacts are the three JRCCs who in turn forward the information, as appropriate, to CAF and CCG rescue units, MRSCs, the Royal Canadian Mounted Police (RCMP) and/or another police service of jurisdiction, or Parks Canada Agency (PCA). The CMCC also forwards alert information internationally through other MCCs using the System data distribution network. For countries that do not have Cospas-Sarsat MCCs the SPOC for the country is contacted. As a minimum, the CMCC will alert both the country responsible for SAR where the alert has been detected and the country where the beacon is registered. The CMCC

also receives alert and location data for Canadian-registered beacons that are activated outside of Canada's AOR.

Linkage to Canadian Regulatory Framework for Transportation

Many of Transport Canada's (TC) transportation regulations are directly linked to Cospas-Sarsat type-approved beacons and the CBR.

To maximize the effectiveness of Cospas-Sarsat beacons, the Programme encourages all owners to register their beacons with either the registry of their home country or, for those countries that do not have a registry, with the IBRD. The CBR is co-located with the CMCC in Trenton, Ontario. In Canada, PLB registration is voluntary but ELT and EPIRB registration is regulated.

The *Canada Shipping Act* provides the domestic regulatory framework into which several international conventions and standards relating to radiocommunications are incorporated. One of these regulations, the Ship Station (Radio) Technical Regulations, outlines EPIRB carriage requirements and states, "An EPIRB transmitting on frequency 406 MHz shall have its digital message coded in the format of the Serialized User Protocol developed by Cospas-Sarsat and registered by the owner of the ship with the Canadian Beacon Registry....²⁷".

Canadian Aviation Regulations (CARs) 605.38 directs the carriage of ELTs. It requires that all aircraft be equipped with one or more ELTs registered with the CBR or the appropriate authority of the country identified in the coded message transmitted by the ELT appropriate authority. In addition, while the standards set out in TC's Airworthiness Manual allow for the carrying of ELTs that transmit on 121.5 and/or 406 MHz, the System has not monitored 121.5 MHz since 2009. As of the spring of 2020, TC was in the final stages of amending the regulation to make 406 MHz ELTs mandatory on most aircraft, including general aviation (with an appropriate phase-in period).

Linkage to Spectrum Management

The Department of Innovation, Science and Economic Development (ISED) is responsible for all policies that impact the use of the radio frequency spectrum used in Canada. The Canadian Table of Frequency Allocations provides frequency protection for Canadian Cospas-Sarsat equipment by protecting the 406 MHz detection (up-link) and 1544 MHz (down-link) frequencies at both the national and international levels.

ISED's Certification and Engineering Bureau protects Canadian consumers of emergency beacons in Canada through its certification of beacon manufacturer products.

²⁷ Ship Station (Radio) Technical Regulations, 1999 (SOR/2000-265) Section 25.

Section 4: Canadian Preparation for Meetings

Before an international Programme meeting, the HOD is responsible for coordinating the Canadian position and preparing the Canadian Delegation (CANDEL). As part of their responsibilities, the PR will:

- Review the minutes and action items from previous meetings;
- Name and accredit the members of the CANDEL; and,
- If necessary, name and accredit the HOD;

In collaboration with subject matter experts (SMEs) from cooperating federal departments and senior advisors, the HOD will:

- Determine the Canadian position in response to a submitted paper;
- Direct the development of Canadian papers, including Response Papers; and,
- Determine who will present and speak to any response/submission papers;

For matters deemed to be above the authority of the PR, the PR may seek the guidance of senior officials in the GC through the Interdepartmental Committee on Search and Rescue (ICSAR). In some instances, ICSAR may seek further guidance and direction from the Associate Deputy Minister Emergency Management Committee (ADM-EMC).

The PR has the authority to speak on behalf of Canada on matters related to the general management and administration of the Programme. This includes:

- Management and administration of the COSPAS-SARSAT Secretariat;
- The day-to-day operations of the COSPAS-SARSAT System;
- Management and administration of international Cospas-Sarsat Programme meetings; and,
- Management, coordination and administration of the Canadian delegation

The PR must seek the guidance and direction of either ICSAR or ADM-EMC for matters related to the following:

- Increasing Canada's financial contribution to the common costs of the Programme;
- Unresolved Programme matters that impact multiple federal departments;
- Programme matters that could significantly impact the operation or effectiveness of the System; and,
- Programme matters that may impact national security.

Federal senior management may also provide direction and guidance to the PR that are consistent with the GC priorities.

Schedule for National Preparation Meetings²⁸

The following table outlines the general schedule of events for the CANDEL as it prepares for Programme meetings. The PR and/or HOD may amend the schedule if required²⁹.

Weeks in Advance	Open Council	Joint Committee
8	PR is advised of any Canadian submissions regarding System document amendments, new System documents and papers exceeding 10 pages.	PR is advised of any Canadian submissions regarding System document amendments, new System documents and papers exceeding 10 pages.
7	PR, advisors and SMEs meet to review Canadian submissions related to new and/or amended system documents or submissions that exceed 10 pages.	PR, advisors and SMEs meet to review Canadian submissions related to new and/or amended system documents or submissions that exceed 10 pages.
6		PR is advised of and decides upon, any Canadian papers recommending changes to System technology, current operations or policies.
6	PR, advisors and SMEs begin reviewing posted system document amendments and new system documents.	PR, advisors and SMEs begin reviewing posted system document amendments and new system documents.
5	PR is advised of and decides upon, any Canadian papers recommending changes to System technology, current operations or policies.	
3	PR, advisors and SMEs meet for initial review of all published documents.	PR, advisors and SMEs meet for initial review of all published documents.
2	PR, advisors and SMEs meet to finalize their review of all published documents, confirm the Canadian response and identify the CANDEL member who will speak to each item.	PR, advisors and SMEs meet to finalize their review of all published documents, confirm the Canadian response and identify the CANDEL member who will speak to each item.
1	All CANDEL members monitor the website for any corrigendum and late submissions that may impact a Canadian position. Any concerns will be brought to the PR's immediate attention.	All CANDEL members monitor the website for any corrigendum and late submissions that may impact a Canadian position. Any concerns will be brought to the PR's immediate attention.

Notes:

1. The PR sets the preparation meeting timelines for closed council meetings.
2. TG and EWG meetings follow the same schedule as open council.
3. Earlier deadlines may be imposed by the Council in specific circumstances.

²⁸ Summary of content from *Cospas-Sarsat Programme Management Policy (P-011)* Section 2.4

²⁹ see note below for Closed Council, Task Group and Expert's Working Group meetings

Section 5: National Participation

Canada's participation in the Cospas-Sarsat Programme requires the support, contribution and collaboration of multiple federal departments. Public Safety has been designated as Canada's lead department for the Programme. It does not, however, operate the System and it does not have all of the expertise required to independently provide everything that the Programme requires. Consequently, it is essential that other departments, which are stakeholders in both the running of the Programme and its output, provide their specialized experience in regulatory, operational and technical matters.

The roles and responsibilities of key federal departments for Canada's participation in the Programme are described below.

Public Safety and Emergency Preparedness Canada

The Minister of Public Safety and Emergency Preparedness is responsible for coordinating Canada's participation in, and contribution to, the Programme.

PS is the organization responsible for the National Search and Rescue Secretariat (NSS). Established in 1986, the NSS is responsible for the management and coordination of SAR activities at the federal level. The NSS collaborates with other federal departments with SAR responsibilities, provincial and territorial governments and the broader SAR community to support, strengthen and advance SAR related issues.

In 1988, the NSS was designated the Cooperating Agency for Canada for the ICSPA. As the Cooperating Agency, the NSS is responsible for managing and coordinating all Canadian commitments and input to the Programme. This includes the provision of the Canadian PR to the Programme.

The NSS provides the policy support for Canada's domestic and international activities related to the Programme, with guidance and support from federal partners when required.

A specific Programme task undertaken and administered by the NSS (via the PR) is the vetting of System type-approvals for distress alerting beacons recommended by the Secretariat in collaboration with the other Parties. The NSS is also the organization responsible for the maintenance and application of the Canadian standard for PLB.

Department of National Defence/Canadian Armed Forces

The Department of National Defence/Canadian Armed Forces (DND/CAF) is the primary operator and maintainer of Canadian assets that contribute to the System.

DND/CAF is the Government of Canada's lead for aeronautical SAR response. In partnership with the Canadian Coast Guard (CCG), DND/CAF operates three Joint Rescue Coordination Centres (JRCCs) (Halifax, Trenton and Victoria) that coordinate Canadian SAR operations associated with aeronautical and maritime emergencies.

DND/CAF has several organizations involved in the operation, maintenance, development and usage of Canada's contributions to the Programme. These include:

- a. The Director-General Space (DGSpace): Identifies the Project Director who is responsible for maintaining the statement of requirement (SOR) on behalf of the operational community for the Medium-altitude Earth Orbit Search and Rescue (MEOSAR) project.
- b. The Directorate of Project Delivery Communications and Sense (DPDCS): Responsible for the project management, development, procurement and delivery (Implementation) of Canada's commitments to the MEOSAR project;
- c. The Director-General Information Management Operations (DGIMO)/Remote Sensing and Satellite Systems (REMSSAT): Is responsible for the life cycle materiel management (LCMM) of the Canadian Cospas-Sarsat space, ground and beacon segments. This involves the operation and maintenance (O&M) of the Canadian Technical Evaluation Centre (CTEC); O&M of the LEOLUTs, GEOLUTs, MEOLUT and reference beacon; and, maintenance of the Canadian Mission Control Centre (CMCC);
- d. The CMCC, located at 8 Wing Trenton, operates the MCC and operates, manages and maintains the Canadian beacon registry (CBR) as well as the Search and Rescue Network Operations Communications Centre (SARNOCC). The SARNOCC provides information technology and communications systems and support to the CMCC, JRCCs and MRSC; and,
- e. 103 SAR Squadron, 413 Transport and Rescue Squadron, 424 Transport and Rescue Squadron, 435 Transport and Rescue Squadron, and 442 Transport and Rescue Squadron use System location information in support of SAR missions.

Transport Canada

TC is responsible for the development and enforcement of regulations related to marine and aviation transportation in Canada. This includes regulations that govern the carriage of 406 MHz EPIRBs and ELTs on Canadian aircraft and vessels. TC is also Canada's representative at IMO and ICAO.

TC proposes and updates policies, laws and regulations related to transportation. It also conducts inspections, enforcement activities and surveillance of the transportation industry's equipment, operations and facilities. Specifically, the *Canada Shipping Act* provides the domestic regulatory framework into which several international conventions and standards that relate to radio communications have been incorporated. An annex to this Act, named Ship Station (Radio) Technical Regulations (25), outlines EPIRB carriage requirements while section 26 outlines transmission requirements.

For aircraft, TC's Canadian Aviation Regulation (CARs) 605.38 directs the carriage of ELTs. It adds that if an aircraft is equipped with one or more ELTs capable of broadcasting on the frequency of 406 MHz, each ELT shall be registered with the CBR or the appropriate authority of the country identified in the coded message transmitted by the ELT.

The Safety and Security Group of TC is responsible for the development of regulations and national standards, as well as for the implementation of monitoring, testing and inspection of beacons or ELTs.

This includes the System approved ELTs carried on Canadian aviation and beacons carried on marine transport equipment.

As Canada's cooperating agency at IMO and ICAO, TC works for the development of international standards for aeronautical and maritime transportation. This includes the implementation and domestic codification of the provisions found in the *International Convention on Maritime Search and Rescue*, the *Convention on International Civil Aviation* (Chicago Convention), and the *International Convention for the Safety of Life at Sea* (SOLAS).

Innovation, Science and Economic Develop Canada /Canadian Space Agency

Innovation, Science and Economic Development Canada's (ISED's) Spectrum Management and Telecommunications Branch is responsible for the development, management and administration of Canada's radio frequency spectrum. To ensure that the spectrum is available and used reliably, ISED establishes technical and non-technical requirements for licenses, standards, and operating certificates. Through these standards and by monitoring spectrum use in Canada and addressing reported interference, ISED protects the up and downlink frequencies used by the Programme. ISED is also responsible for the regulation of radio transmitters, including Cospas-Sarsat capable distress beacons. If required, ISED raises concerns at the international level with the International Telecommunications Union (ITU). ITU representatives regularly attend JC as observers.

The Canadian table of frequency allocations (Canadian Table) assigns the spectrum and establishes the frequency allocations available for radio services in Canada. The Canadian Table is intended to respond to Canadian domestic spectrum requirements, and consequently reflects ISED's spectrum allocation and utilization policies. This is critical for the protection of both the 406 MHz beacon to satellite uplink signal and the satellite to LUT 1544-1545 MHz downlink signal.

The Canadian Space Agency (CSA) is a federal agency responsible for managing all of Canada's civil space-related activities. It is requested to provide support to Canada's commitment to the Programme. This assistance is usually in the form of technical, programmatic, and operational advice to the PR and CANDEL.

Department of Fisheries and Oceans/Canadian Coast Guard

The Canadian Coast Guard (CCG) is a special operating agency of the Department of Fisheries and Oceans (DFO). It is the agency primarily responsible for the delivery of maritime SAR response within Canada's AOR. In partnership with DND/CAF, DFO/CCG operates three Joint Rescue Coordination Centres (JRCC) (Halifax, Trenton and Victoria) which coordinate aeronautical and maritime SAR operations. The CCG also unilaterally operates MRSC at Quebec City and St. John's. The function of the MRSC is to reduce the JRCC's workload in areas of high marine activity. All JRCCs and MRSCs operate 24 hours a day.

On behalf of TC, the CCG is also responsible for, conducting ship radio inspections regarding the carriage of distress alerting beacons on maritime vessels.

Global Affairs Canada

Global Affairs Canada (GAC) provides foreign policy advice to the PR and CANDEL. Additionally, GAC's Legal Affairs Branch, Economic Law Section provides legal advice on the interpretation of international treaties including the ICSPA.

Section 6: National Governance

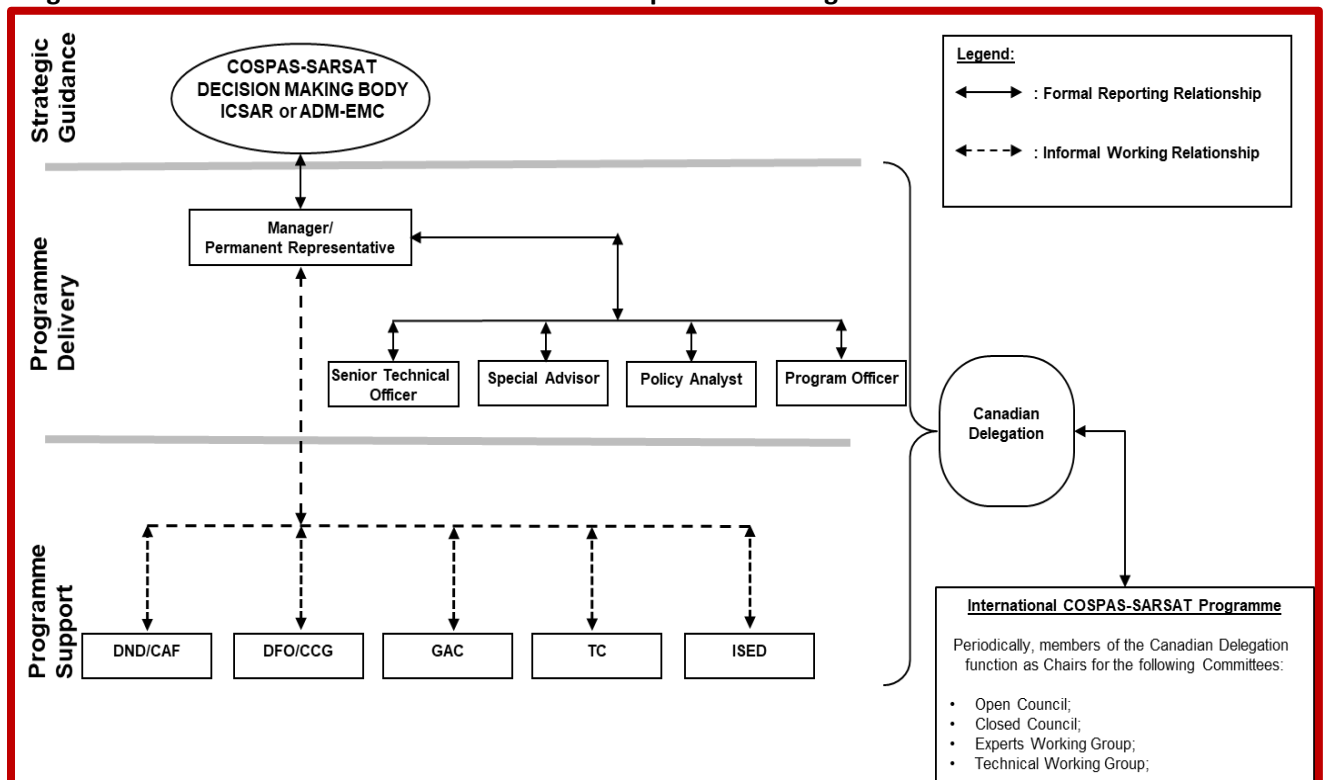
Governance for Canadian Participation

Diagram 3 depicts the current Canadian Cospas-Sarsat governance structure and how Canada manages and administers its participation in the Programme. Based on the recommendations of an interdepartmental sub-committee of ICSAR co-chaired by PS and DND, PS has begun to realign the structure in accordance with diagram 4 in Annex F. Roles and responsibilities, as outlined below, have been divided into the five core functions of: Manager/PR; operational support; technical support; regulatory support and; programmatic support.

Overview of Current Governance

The following diagram provides an overview of Canada's governance framework for Cospas-Sarsat.

Diagram 3: Governance Framework for Canadian Cospas-Sarsat Programme



Strategic Guidance

Oversight and management of Cospas-Sarsat in Canada is provided by the PS ADM responsible for the EMPB supported by ICSAR which is chaired by the PS Director General of POD. The PR is the link between the strategic guidance and Programme delivery elements of the framework.

ICSAR is regularly briefed by the PR on Programme activities and issues. Issues which cannot be resolved by ICSAR are elevated to ADM EMPB who, if required, engages their counterparts in other government departments.

Programme Delivery

Overall responsibility for coordinating the delivery of the Programme in Canada belongs to the NSS as the designated cooperating agency. The PR reports to the director of the NSS and is supported by a senior technical officer, a special advisor, a policy analyst and a program officer.

Headed by the PR, the Programme delivery component coordinates the technical, programmatic, operational and regulatory segments of Canada's participation in the Programme. The regulatory work is currently divided amongst the PR, the technical officer and the special advisor. This includes, but is not limited to, the coordination of meetings associated with Canada's participation.

The PR is the primary link to the SMEs located throughout multiple other government departments. They maintain a level of expertise within their areas of responsibility to enable the PR to provide holistic policy guidance and recommendations.

Programme Support

The Programme Support component of the framework is comprised of the other federal departments and agencies who operate and support the various aspects of the Programme. This includes O&M of Canada's Cospas-Sarsat space and ground segments; administration of the CBR; radio frequency (RF) spectrum protection; beacon carriage regulation and approvals for sale in Canada; support for establishing a Canadian position on international matters; and, administering travel and requests for local, national and international meetings.

Coordination Meetings

In advance of each international meeting, or as required to ensure the smooth operation of the Programme, the PR will often convene a meeting, either in person or virtually, with all of the departments which support the Programme to ensure that the Canadian position for any issue is established and coordinated. The role and timeline of these meetings is outlined in Section 4.

Interdepartmental Committee on Search and Rescue

ICSAR acts as a conduit to the senior leadership of departments outside PS on Programme initiatives and activities. It advises the PR if authority for a specific activity is required from the ADM. The PR will brief ICSAR at least quarterly.

ICSAR generally meets six times a year but may meet more or less as requirements prevail. Ad-hoc meetings can be called as required at the discretion of the Chair or at the request of ICSAR members.

Other Government Department Support to National Preparatory Meetings

National level preparation meetings, usually start three weeks in advance of each Programme meeting³⁰ and can vary in length from two to six hours one day a week. The three-week advance window ensures that all papers published on the Programme’s website are reviewed by Canadian stakeholders before the international meeting. Where an “urgent matter” paper is submitted after the deadline and after the final Canadian national preparation meeting, the PR will determine how the matter is addressed.

Advisors will normally call a meeting of SMEs from stakeholder departments and agencies before the PR led preparation meeting to respond to published response papers or to discuss a Canadian submission. SMEs are welcome to attend the PR led preparation meeting in support of the appropriate advisor, who must be able to speak to all issues in their area of responsibility. All national Programme meetings chaired by the PR require all advisors to be involved.

³⁰ Earlier if any response papers require more attention

Section 7: Functions of Public Safety Cospas-Sarsat Section

The Cospas-Sarsat section of the NSS is responsible for the coordination, management and administration of Canada's participation in the Programme. The section is currently comprised of five personnel, with the manager of the section reporting to the director of the NSS. The manager is supported by a senior technical officer, a special advisor, a policy analyst and a program support officer. The team works with SMEs from other federal departments and agencies to coordinate Canada's participation in the Programme.

Given the complexity of Canada's participation in the Programme including the impact of Programme decisions on Canada's transportation and telecommunications regulations, SAR operations, domestic and international policy (i.e. Canadian space policy and foreign relations) and the interdepartmental nature of Canada's participation, the Cospas-Sarsat section maintains the following functional roles and responsibilities:

Manager/Permanent Representative

The Manager of the Cospas-Sarsat Section of the NSS is responsible for the overall management of Canada's participation in and contribution to the International Programme. The manager normally serves as the PR and as Canada's HOD for Council and JC meetings. For meetings other than Council, the PR may delegate the HOD role to another Canadian delegate as warranted.

The PR serves as one of four Council members who together provide executive oversight of the Programme.

The PR's responsibilities include:

- a. Serving as Canada's representative on the Council;
- b. Speaking on behalf of Canada, at international meetings and in correspondence;
- c. Representing Canada at all Programme functions;
- d. Establishing a Canadian position on all Programme issues and ensuring it is accurately represented in Canadian working or response papers that are presented at international meetings. The presentation and any required response during the meeting may be done directly by the PR or by delegating the responsibility to a CANDEL member;
- e. Directing and approving the preparation and submission of any Canadian papers;
- f. Defending, or selecting a speaker to defend, Canada's position on all matters related to Programme;
- g. Selecting and accrediting delegates for the CANDEL to international meetings and confirming their registration for each meeting by following the procedures laid down on the Programme's Professional website;

- h. Monitoring Canadian compliance with the ICSPA and all System standards related to system availability and CMCC operations (international matters only);
- i. Communicating with the international Programme community about any planned non-conformance of any portion of the Canadian space and/or ground segments;
- j. Ensuring that all Canadian positions are consistent with the Programme's policies and strategies such as the *Cospas-Sarsat Programme Management Policy* and the *Cospas-Sarsat Strategic Plan*;
- k. Identifying, selecting and proposing Canadian candidates for vacant Officer positions with the Cospas-Sarsat Secretariat;
- l. Working with the other PRs and the Head of Secretariat to amend, adjust, create and/or eliminate positions in the Cospas-Sarsat Secretariat;
- m. Working with the other Party Representatives to adjust Cospas-Sarsat Secretariat staff compensation and benefits packages as required;
- n. Naming and accrediting a HOD and providing the named HOD with guidelines to prevent any departure from any Canadian position on Cospas-Sarsat. The accreditation procedure for individual meetings is found on the Programme's Professional website;
- o. Ensuring that the description of all Canadian 406 MHz payloads used in the System is current and accurate;
- p. Ensuring the Canadian inputs to the Handbook of Beacon Regulations held by the Cospas-Sarsat Secretariat is current;
- q. Ensuring that the Cospas-Sarsat Secretariat is advised, real-time or as soon as possible, of the status of all Canadian 406 MHz payloads used in the System;
- r. Preparing and submitting an international destination travel (IDT) report following each international meeting held outside Canada and attended by an accredited Canadian delegation; and,
- s. Developing and submitting annual budget requirements for travel, hospitality and contract support.

PR is selected by the ADM EMPB who advises the Secretariat and GAC, by letter, using the template provided on the Programme's professional website.

Operational Systems Advisor

The operational systems advisor's responsibilities are currently assumed by a contractor, who is supported by the senior technical officer and manager of the Cospas-Sarsat section. The operational responsibilities include:

- a. Overseeing Cospas-Sarsat A.000 series documents. Specifically, the data distribution plan, standard interface description, system monitoring and reporting, MCC performance specifications and guidelines, MCC commissioning standard. Here the advisor is supported by DND/CAF;
- b. Monitoring the status of Canadian Cospas-Sarsat assets. Here the advisor is supported by DND/CAF;
- c. Monitoring issues related to the distribution of Cospas-Sarsat alert data. Here the advisor is supported by DND/CAF, CCG, RCMP and PCA;
- d. Monitoring issues related to the management and maintenance of the CBR. Here the advisor is supported by DND/CAF;
- e. Monitoring the operation of the ground segment. Here the advisor is supported by DND/CAF; and,
- f. Overseeing the reporting to the Secretariat on Canadian segments of the System. Additionally, providing input to the Cospas-Sarsat quality management system (QMS), the test-approval certificate (TAC) database, provision of input to and use of Programme's website content and the international beacon registry database. Here the advisor is supported by DND/CAF.

Technical Advisor

The technical responsibilities are currently assumed by the senior technical advisor, who is supported by SMEs from other federal departments. The technical responsibilities include:

- a. Normally serving as HOD for Cospas-Sarsat TWG and EWG. Should the senior technical advisor not be available to serve as HOD, they may recommend an alternate HOD from within PS or another federal department.
- b. Providing project updates on the Canadian commitments to the Programme. Specifically, the development and delivery of repeaters, the development and delivery of the Canadian ground segment. Here the advisor is supported by DND/CAF;
- c. Monitoring/coordinating beacon type approval of first- and second-generation beacons (FGB, SGB) and ship security alert system beacons (SSAS). Specifically:
 - I. Developing, approving and implementing performance specifications, a certification standard and interim procedures;
 - II. Maintenance of the Cospas-Sarsat TAC database;
 - III. Establishing standards for the use of Li-Ion rechargeable batteries and temperature-controlled oscillators in beacons; and,
 - IV. Approving beacon certification facilities.
 - V. Here the Advisor is supported by DFO/CCG, ISED and TC;
- d. Monitoring LUT performance specifications, commissioning standards and maintenance of the operational system. Here the advisor is supported by DND/CAF;

- e. Monitoring issues related to the Spectrum Frequencies used by the System. Here the advisor is supported by DND/CAF, TC and ISED;
- f. Maintaining and updating Canadian space segment instrument descriptions and commissioning standards. Here the advisor is supported by DND/CAF; and,
- g. Overseeing the development of system tools, guidelines and directives that included the orbitography network specification, the 406 MHz frequency management plan, frequency requirements and coordination procedures and the MEOSAR reference beacon network design guidelines. Here the advisor is supported by DND/CAF and TC.

Programme Advisor

The programme advisor's responsibilities are generally shared by the manager of the Cospas-Sarsat section, the technical advisor, the operational systems advisor, and the policy analyst. The programme advisor's responsibilities include monitoring:

- a. Issues related to the enforcement of Canadian regulations. Specifically beacon carriage requirements on vessels and aircraft. Here the advisor is supported by TC and CCG;
- b. Issues related to ELTs, EPIRBs, and PLBs. Specifically, beacon matters involving technical acceptance certification, carriage requirements and inspection. Here the advisor is supported by TC and CCG;
- c. Issues related to Canadian beacon segments' (reference and test) adherence to System standards. Here the advisor is supported by DND/CAF;
- d. Issues related to beacon standards and evolution as determined by RTCM, RTCA, EUROCAE, IMO and ICAO. Here the advisor is supported by TC;
- e. Frequency band protection for beacons, ground stations and satellites. Here the advisor is supported by ISED for national matters and the ITU through ISED for international matters;
- f. Changes and/or amendments to the space segment implementation plan as a result of any problematic interference; and,
- g. Changes and/or amendments to the standards for PLB identified as NSS-PLB11.

Policy Advisor

The policy responsibilities are generally assumed by the policy advisor, who is supported by the operational systems advisor and manager of the Cospas-Sarsat section. The policy responsibilities include:

- a. Advising the PR on matters relating to domestic policy implications for Canada's ongoing participation in the Programme;

- b. Monitoring issues related to Cospas-Sarsat documents - G.000 General, P.000 Programme and S.000 Secretariat.
- c. Reviewing and analysing meeting documents as directed by the PR;
- d. Providing Cospas-Sarsat inputs and updates to annual PS reports, ICSAR and the ADM-EMC;
- e. Ensuring consistency in reporting Canada's activities, participation and contribution to the Programme;
- f. Contributing input on behalf of the Cospas-Sarsat team to the Departmental Plans and Priorities and department performance reports, access to information requests (ATIP) and the communications plans and strategies related to SAR in Canada
- f. Developing and delivering of documents in support of Canada's participation in the Programme including assessing the impact of decisions made by the Programme on Canadian resources and budget allocations;
- g. Drafting and delivering of documents for central agencies, including Treasury Board and Cabinet submissions; and,
- h. Collaborating with GAC to advise the PR and CANDEL on any potential foreign policy implications of Canadian position(s) on Cospas-Sarsat matters.

Program Officer

The program officer's responsibilities are generally assumed by the program officer, who is supported by the policy advisor. The program support responsibilities include:

- a. Providing administrative, coordination and analytical support in the development and administration of plans, policies, activities, regulatory initiatives, agreements, contracts and funding arrangements;
- b. Tracking the status of Canada's quarterly payments to the Programme;
- c. Booking conference/meeting rooms for preparatory sessions and, when required, international meetings hosted by Canada after receiving the annual meeting schedule from the Secretariat. This work includes writing briefing notes to obtain hospitality funding approval for conference space and the development and staffing of contracts for the conference space;
- d. Sending out invitations to preparatory meetings and official international Cospas-Sarsat meetings based on the PR's and advisors' directions;
- e. Providing information to the Secretariat and/or the hosting administration, as required, on behalf of the CANDEL to support visa letters;
- f. Creating SOW and contract staffing in support of, and as directed by, the PR to obtain specialized Cospas-Sarsat expertise;

- g. Maintaining current Cospas-Sarsat related contact information for colleagues in other federal departments and agencies and the Canadian private sector;
- h. Maintaining and contributing to the development of a knowledge base on specific areas of the Programme³¹;
- i. Assisting in the research and development of ministerial briefings and other documents³²;
- j. Providing information and logistical support to project teams and working groups;
- k. Conducting the financial administration of budgets, monitoring and reporting on expenditures and forecasting financial requirements related to travel, R&D³³ and hospitality;
- l. Developing summaries and reports;
- m. Participating in studies, analytical projects and programme administration activities;
- n. Providing coordination services and support for specific program activities and initiatives, including development and administration of funding agreements, support contracts and memberships (RTCM), and providing administrative and logistics support and secretarial services to committees and the Secretariat; and,
- o. Maintaining and coordinating networks of national stakeholders to promote and support partnerships.

Subject Matter Experts

SMEs, usually by virtue of their position within stakeholder departments, have specific and/or unique expertise in Programme matters. In terms of the System this expertise may refer to CMCC operations, Canadian SAR payload design, ground segment maintenance, national and international radio frequency regulation, beacon carriage regulation or the international treaty process. Generally, SMEs are identified and provided by the appropriate department³⁴.

Periodically, SMEs may be requested by the PR to serve as the HOD for OWG, TWG and EWGs.

Canadian industry may also be called upon to provide expertise. (e.g.: space and/or ground segment hardware/software design). In such cases, the PR will authorize a contract with the appropriate policy advisor who will be named as the technical authority.

³¹ creating a TAC and Canadian Cospas-Sarsat paper database.

³² a combination of data sources to show, on one image, the Cospas-Sarsat layout

³³ as determined by the technical advisor

³⁴ e.g.: GAC provides treaty process expertise and DND/CAF provides CMCC Operations expertise

Attachments:

Annex A: Participating Administrations

Annex B: Space Segment

Annex C: Ground Segment

Annex D: Beacon Segment

Annex E: Glossary

Annex F: Proposed Governance

Annex A: Cospas-Sarsat Participating Administrations³⁵

The Programme has four Parties and, currently, 41 participating nations and/or administrations.

The Parties are:

Canada France	United States of America Russian Federation
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The current Participants are:

Algeria	New Zealand
Argentina	Nigeria
Australia	Norway
Brazil	Pakistan
Chile	Peru
China (P.R)	Poland
Cyprus	Qatar (State of)
Denmark	Saudi Arabia
Finland	Serbia
Germany	Singapore
Greece	South Africa
Hong Kong	Spain
India	Sweden
Indonesia	Switzerland
Italy	Thailand
ITDC Chunghwa Telecom Co., Ltd. (Taiwan)	Togo
Japan	Tunisia
Korea (Republic of)	Turkey
Malaysia	United Arab Emirates
Netherlands (The)	United Kingdom
	Vietnam

A comprehensive listing by Space Segment and Ground Segment providers, participants and special space segment contributors is available in Cospas-Sarsat P.010.

³⁵ Summary of contents Introduction to the COSPAS-SARSAT System (G-003) Figure 8.1

Annex B: Space Segment³⁶

The Cospas-Sarsat international satellite system was initially structured around a four-satellite constellation in low-altitude earth orbit (LEO), and grew to encompass geo-stationary orbit (GEO) and medium-altitude earth orbit (MEO) satellites. The satellites themselves do not belong to the Programme but rather host the SAR payloads provided by the Cospas-Sarsat Space Segment Providers as described below.

The original LEOSAR SARSAT satellites were provided by the USA's National Oceanic and Atmospheric Administration (NOAA) that hosted SARSAT payloads on their LEO weather satellites. NOAA continues to host SARSAT payloads.

Each SARSAT payload consists of two separate units provided by Canada's DND/CAF and France's Centre national d'etudes spatiales (CNES) provides the second.

The unit from France is called the search and rescue satellite processor (SARP). SARPs receive the beacon signal, measure the Doppler effect, time-tag it and create a processed data stream (PDS). The PDS is stored and broadcast multiple times as the satellite orbits the earth every 101 minutes. By doing this the SARP's data can reach ground stations that may not have been in the satellite's view when the beacon was initially detected thus allowing the System to be considered as a truly global system.

Canada supplies the search and rescue satellite repeaters (SARR). SARRs detect distress signals and repeat the signals to ground stations in the satellite's footprint viewing area. Each SARR also provides the transmitter unit for its associated SARP.

Russia, as the former USSR, provide all the units for its COSPAS satellites. The Russian Federation satellites were provided by Morflot, the Ministry of Merchant Marine of the former USSR. Russia continues to provide LEOSARs through Morsviazputnik, a subsidiary of Morflot.

In 1998, the Programme added GEOSAR satellites to the space segment to supplement the LEOSAR system. Because of their much higher altitude, GEOSARs can cover much larger portions of the earth. However, because they do not move, they cannot independently determine a beacon's location. The combined LEO/GEO processing technique is used when a LEO satellite detects a beacon but cannot acquire enough information to produce a location and the information from a GEO satellite is used to calculate the position. GEO satellites may also provide a location if the distress beacon is equipped with a global navigation satellite system (GNSS) receiver and can include its GNSS position in its distress transmission.

GEO satellites and their associated repeaters are provided by the USA (NOAA), the European intergovernmental organization called the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), India's Indian National Satellite System (INSAT) and Russia's Roscosmos State Corporation for Space Activities (Roscosmos).

The Programme is in the process of migrating to a new MEOSAR system. The MEOSAR system payloads will be hosted on a variety of GNSS satellites including the European Union's (EU) Galileo system, the

³⁶ Summary of content from COSPAS-SARSAT Programme Management Policy (P-011) Section 5.1

Russian Globalnaya Navigazionnaya Sputnikovaya Sistema (GLONASS) and the USA's global positioning system (GPS). Currently, the USA provides MEOSAR data via its distress alerting satellite system (DASS) which is hosted on GPS-II satellites. The DASS constellation operates on a different downlink frequency, S-band, and is primarily intended for developmental purposes and not intended to become a core system. However, the Programme has not ruled out using it operationally. The next generation of USA GPS satellites (GPS-III) will carry Canadian provided SARRs³⁷ which will use the common System, L-band, downlink frequency and is intended to become the primary USA MEOSAR system.

³⁷ Starting with GPS-III Satellite # 11 – expected to be launched in 2025.

Annex C: Ground Segment³⁸

Beacon transmissions detected and processed by the Space Segment are transmitted to the Ground Segment. The Ground Segment consists of ground stations, mission control centres, beacon registries and communication links.

The Space Segment transmissions are received by ground stations called local user terminals (LUTs). There are three types of LUTs – low-altitude earth orbit (LEOLUT), geo-stationary (GEOLUT) and medium-altitude earth orbit (MEOLUT). Canada owns and operates all three types. The LEO and GEO systems will be operated until the MEO system reaches full operational capability (FOC). MEOSAR is currently in its early operational capability (EOC) state.

The LUTs further process the information and forward it to MCCs. MCCs route the information to the appropriate contact. In Canada, those contacts are the three JRCCs who in turn forward the information, as appropriate, to MRSC, the RCMP, the PCA and/or the police service of jurisdiction. MCCs also forward information, internationally, to other MCCs and, where no MCC exists, the SPOC for that country.

Each MCC distributes messages according to A.001, Cospas-Sarsat data distribution plan (DDP), which defines the Cospas-Sarsat ground communication network. Most Cospas-Sarsat messages are sent in formats that permit data to be automatically processed and transmitted. The message formats are described in A.002, Cospas-Sarsat mission control centres standard interface description (SID). The DDN and SID form the communications backbone of Cospas-Sarsat.

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

Three other features provided by nodal MCCs are:

- a. Coordination of the operations and system quality management system for their data distribution regions.
- b. Offering a gateway for return link service equipped beacons to notify the return link service provider (RLSP) of their activation. This service is intended to provide acknowledgement of the reception of the alert message to persons in distress; and,
- c. The provision of alert data to the ICAO operated location of aircraft in distress repository (LADR) for a detected emergency locator transmitter (distress tracking) (ELT(DT)).

³⁸ Summary of content from COSPAS-SARSAT Programme Management Policy (P-011) Section 5.2

Annex D: Beacon Segment³⁹

The beacon segment consists of three types of distress beacons – ELT for aircraft, EPIRB for vessels and PLB for individuals (hikers for example). A fourth beacon type, called special purpose beacons, covers SSAS, reference beacons and orbitography beacons. Specific beacon information can be found [here](#), on the Programme’s website, Detailed Beacon Types.

All Cospas-Sarsat approved beacons transmit on the assigned Cospas-Sarsat frequency of 406 MHz. Within the three distress beacon groups there are sub-groups⁴⁰. A description of the various sub-groups of the distress beacon types is available in the latest version of the Cospas-Sarsat system document G.004 glossary.

The level of precision needed of the transmitted beacon signal cannot be overstated. Therefore, Cospas-Sarsat approvals of both beacons and beacon test facilities are critical. The detailed technical specifications of Cospas-Sarsat beacons are available in the Cospas-Sarsat system document T.001. Information on the five approved test facilities is available on the Cospas-Sarsat website.

Cospas-Sarsat compliant beacons transmit a digital message unique to each beacon. This allows the System to identify the beacon and therefore its owner’s identification. This information is invaluable to first responders telling them if they are searching for an individual or a certain vessel/aircraft type. The information may also include the vessel/aircraft colours and markings. To take advantage of this feature though, the beacon must be registered.

Generally, each Participant has its own registry. In Canada, the CBR is co-located with CMCC. However, beacon owners in countries that have no registry may register their beacons in IBRD. The IBRD is operated, maintained, and managed by the Cospas-Sarsat Secretariat. Registration in the IBRD and Participant registries is free to beacon owners. More information on the IBRD is available on the Cospas-Sarsat website, IBRD User Information.

Despite the ease of beacon registration and its benefits, many beacon owners overlook the registration step. While some 1.6 million beacons are registered, the Programme estimates that approximately 400,000 are not. In addition, registration information helps resolve false alerts before mobilizing SAR resources. By supplying the beacon owner’s contact information, when a beacon is accidentally activated, one phone call can prevent a costly SAR response.

Another feature provided by some beacons is a return link service (RLS), offered by a return link service provider (RLSP). This feature allows those in distress to know that their emergency signal has been received. Further information on the RLS is provided in documents: Cospas-Sarsat [T.001](#) and Cospas-Sarsat [R.012](#).

³⁹ Summary of content from Cospas-Sarsat Programme Management Policy (P-011) Section 5.3

⁴⁰ e.g. for EPIRBs, there are float free and non-float free

Annex E: Glossary⁴¹

A Docs	Cospas-Sarsat operational documents
ADM EMC	Assistant Deputy Ministers Emergency Management Committee
AI	Action item (Refers to action items in meeting minutes)
AOR	Area of responsibility
BDS	BeiDou Navigation Satellite System (China)
CAD	Canadian dollars
CAF	Canadian Armed Forces
CARs	Canadian Aviation Regulations (Controlled by TC)
CBR	Canadian Beacon Registry
CCG	Canadian Coast Guard
CFB	Canadian Forces Base
CMCC	Canadian Mission Control Centre
CNES	Centre national d'études spatiales (France - National Centre for Space Studies)
COSPAS	Cosmicheskaya Sistema Poiska Avariynich Sudov (Russian acronym meaning Space System for the Rescue of Vessels in Distress)
CSA	Canadian Space Agency
CTEC	Canadian Technical Evaluation Centre
D Docs	Cospas-Sarsat documents describing the IBRD
DASS	Distress Alerting Satellite System (US MEOSAR system based on GPS)
DDN	Data distribution network
DDP	Data distribution plan
DFO	Department of Fisheries and Oceans
DG	Director General
DGIMO	Director General Information Management
DND	Department of National Defence
Doppler effect	The change in frequency in relation to an observer

⁴¹ From COSPAS-SARSAT GLOSSARY (G.004)

DPDCS	Directorate of Project Delivery, Communications and Sense
DSpaceR	Directorate of Space Requirements
EC	European Commission
ELT	Emergency locator transmitter
ELT(DT)	Emergency locator transmitter/distress tracking
EMPB	Emergency Management and Programs Branch
EPIRB	Emergency position-indicating radio beacon
EU	European Union
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EUROCAE	European Organization for Civil Aviation Equipment
EWG	Experts working group
FGB	First generation beacon
G Docs	Cospas-Sarsat general documents (e.g.: Introduction, History)
GAC	Global Affairs Canada
Galileo	Global Navigation Satellite System (EU)
GEO	Geo-stationary orbit (may be suffixed with LUT or SAR)
GLONASS	Globalnaya Navigazionnaya Sputnikovaya Sistema (Global Navigation Satellite System (Russia))
GNSS	Global Navigation Satellite System
GPS	Global Positioning System (USA)
Hertz	One cycle per second (Named after Heinrich Rudolf Hertz)
HOD	Head of delegation
Hz	Hertz (Named after Heinrich Rudolf Hertz)
IBRD	International Beacon Registration Database
ICAO	International Civil Aviation Organization
ICSAR	Interdepartmental Committee on Search and Rescue
ICSPA	International Cospas-Sarsat Programme Agreement
ICT	Information and communication technologies (Term used by ITU)
IMO	International Maritime Organization

INSAT	Indian National Satellite System
IOC	Initial operating capability
ISED	Innovation, Science and Economic Development
IT	Information technology
ITU	International Telecommunications Union
JC	Joint Committee
JRCC	Joint Rescue Coordination Centre
LEO	Low-altitude earth orbit (may be suffixed with LUT, SAR or SARR)
LUT	Local user terminal (Cospas-Sarsat ground receiving station, may be prefixed by LEO, GEO or MEO)
MCC	Mission control centre (often prefixed by a national identifier, such as CMCC for Canada)
Mega	Denotes a factor of one million
MEO	Medium-altitude earth orbit (may be suffixed with LUT or SAR)
MHz	Megahertz
MRSC	Maritime Rescue Sub-Centre (Operated by CCG)
NASA	National Aeronautics and Space Administration (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
NOCR	Notification of country of beacon registration (NOCR).
NSS	National Search and Rescue Secretariat
O&M	Operation and maintenance
OWG	Operations working group
P Docs	Cospas-Sarsat programme documents
PCA	Parks Canada Agency
PLB	Personal locator beacon
POD	Policy and Outreach Directorate
PR	Permanent representative to Cospas-Sarsat
PS	Public Safety
QMS	Quality management system
R Docs	Cospas-Sarsat reports documents

RCAF	Royal Canadian Air Force
REMSSAT	Remote sensing and satellite systems
RLS	Return link service
RLSP	Return link service provider
ROSCOSMOS	Russian State Space Corporation
RTCA	Radio Technical Commission for Aeronautics
RTCM	Radio Technical Commission for Maritime Services
S Docs	Cospas-Sarsat Secretariat documents
SAR	Search and rescue
SARNOCC	Search and Rescue Network Operations Communications Centre
SARP	Search and Rescue Processed Data Stream transmitted by a SARP)
SARR	Search and Rescue Repeater
SARSAT	Search and Rescue Satellite-Aided Tracking
SGB	Second Generation Beacon
SME	Subject Matter Expert
SOLAS	Safety of Life at Sea
SPOC	SAR point of contact
SRR	Search and rescue region
SSAS	Ship security alerting system
T Docs	Cospas-Sarsat technical Documents
TC	Transport Canada
TWG	Technical working group
UN	United Nations
USA	United States of America
USSR	Union of Soviet Socialist Republics
WRC	World radio communication Conference

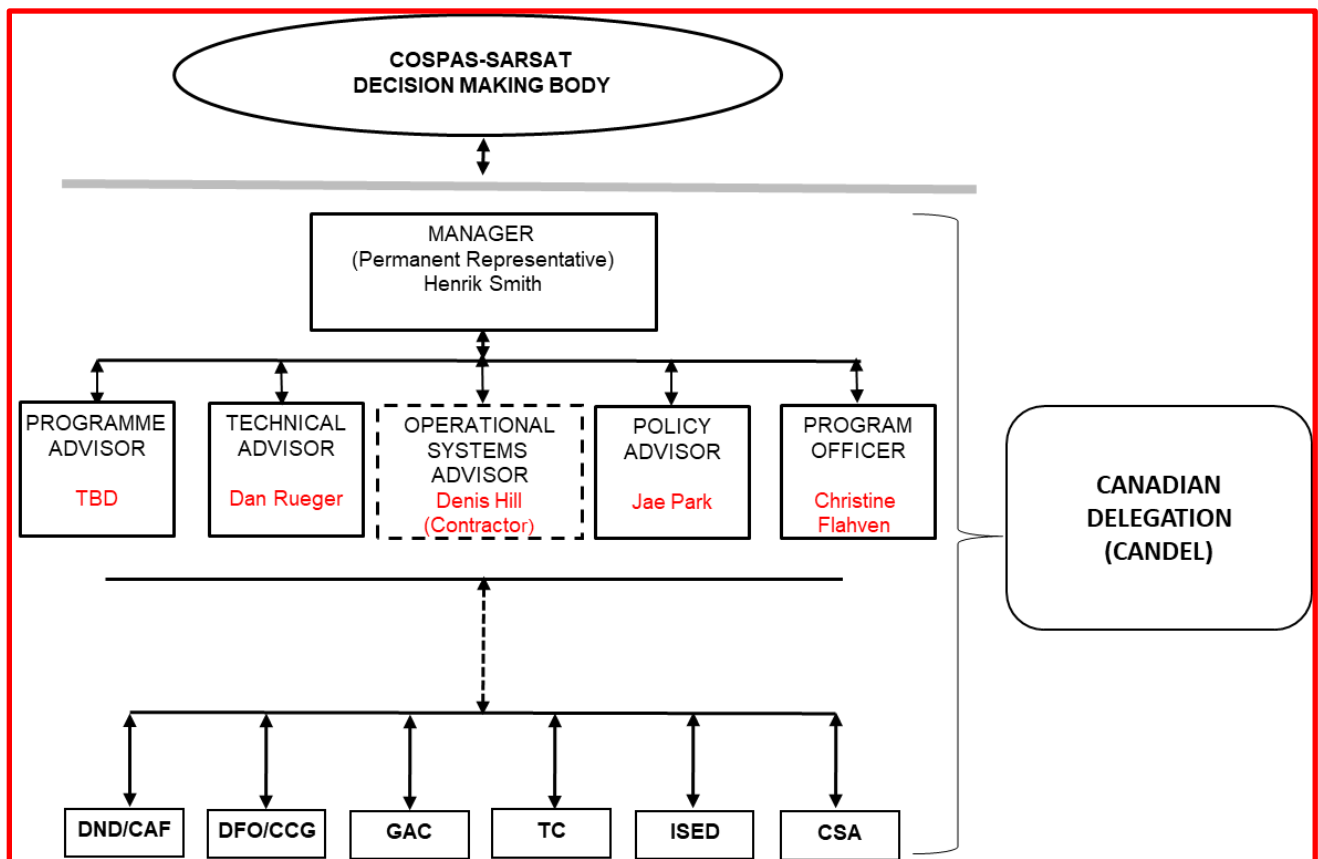
Annex F: Propose Governance

PS is reviewing how the Government of Canada manages and administers its participation in the Programme. An interdepartmental committee co-chaired by PS and DND has developed and proposed the following structure. PS has accepted the recommendation and has begun implementation. Canadian Cospas-Sarsat functions have been divided in accordance with the proposed positions identified below. Pending completion of HR/staffing activities many of the duties are shared by multiple individuals.

Overview of Proposed Governance

The following diagram provides an overview of Canada’s proposed governance framework for Cospas-Sarsat.

Diagram 4⁴²: Proposed Governance Framework



⁴² Note: This model reflects the functional relationship. It is not reflective of the current HR management model for NSS Staff.