



# ANNUAL REPORT 2003

National Search and Rescue Program



Interdepartmental Committee on Search and Rescue

September 2004

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## NATIONAL SEARCH AND RESCUE PROGRAM ANNUAL REPORT 2003

### Introduction

This first Annual Report on the National Search and Rescue Program provides information for the Lead Minister for Search and Rescue, other Federal Ministers with responsibilities for search and rescue (National Defence, Fisheries and Oceans Canada, Environment Canada, Parks Canada, Public Safety and Emergency Preparedness Canada (RCMP) and Transport Canada), Parliament and the public.

It covers the organization of the program, activities during the past year, and the issues and trends that are being addressed. Overall, it highlights the federal resources devoted to the program and the results achieved. Provincial and volunteer SAR resources are not reported on in detail due to significantly different reporting procedures amongst jurisdictions and organizations.

The Annual Report is one of three key documents produced annually, which guide and report on the National Search and Rescue Program. It is complemented by a Strategic Directions document, which provides long-term direction, and an annual Program Plan, which focuses on issues to be dealt with in the coming year.

The Annual Report is produced by the National Search and Rescue Secretariat, under the direction of the Interdepartmental Committee on Search and Rescue.

## 1. SAR Environment

Canada covers an immense land mass of more than 10 million square kilometres. Canada's area of responsibility for Search and Rescue (SAR) extends even further - to the North Pole as well as 1000 kilometres west into the Pacific Ocean and 1300 kilometres east into the Atlantic Ocean.

Although Canada is large, it has relatively few people over much of its territory, with most of the population near the United States border. Remote SAR incidents are likely to occur far away from roads, airports and harbours.

Canadian terrain varies from permanently frozen icecaps north of the Arctic Circle to the almost impenetrable forest cover of British Columbia's west coast; temperatures range from -40°C in January to 35°C in July. These geographic extremes are both a cause of SAR incidents and a hindrance in responding to them. Canadians face some of the world's greatest SAR challenges. Overcoming them has been the impetus for building a SAR system that is respected worldwide. Over the years, Canadian organizations have responded to some of the world's most complex SAR incidents, such as the Prinsendam fire, the crash of Swiss Air Flight 111 and the loss of the Ocean Ranger oil drilling rig.

## 2. The SAR Community

### Who is Responsible for SAR

In Canada, the federal government and the provincial/territorial governments each have statutory responsibility for Search and Rescue within their own jurisdictions: they collectively make up the National Search and Rescue Program (NSP). Further cooperation agreements with municipalities and numerous non-government SAR organizations set out additional SAR Response and SAR Prevention activities for these organizations. The federal government's collective SAR activities make up the Federal Search and Rescue Program (FSP), which involves close linkages among the six federal department partners. The objective of SAR programs is to save lives by minimizing the number of people who get into distress, and providing effective response services.

Federal responsibility for SAR operations is shared among six partners:

Canadian Forces (CF), Department of National Defence  
Canadian Coast Guard (CCG), Fisheries and Oceans Canada  
Parks Canada Agency (PC)  
Royal Canadian Mounted Police (RCMP), Public Safety and Emergency Preparedness Canada  
Meteorological Service of Canada (MSC), Environment Canada  
Transport Canada (TC)

The National Search and Rescue Secretariat (NSS) is responsible for NSP policy, planning, co-ordination and reporting, working closely with the operational departments.

SAR incidents can be divided into three categories – marine, aeronautical and ground

Marine SAR refers to activities within Canada's oceanic area of responsibility as well as the St. Lawrence Seaway and the Great Lakes. Response to marine SAR is managed by the federal government through three Joint Rescue Coordination Centres (JRCC) and two Maritime Rescue Sub-Centres (MRSC). Marine SAR operations are carried out by

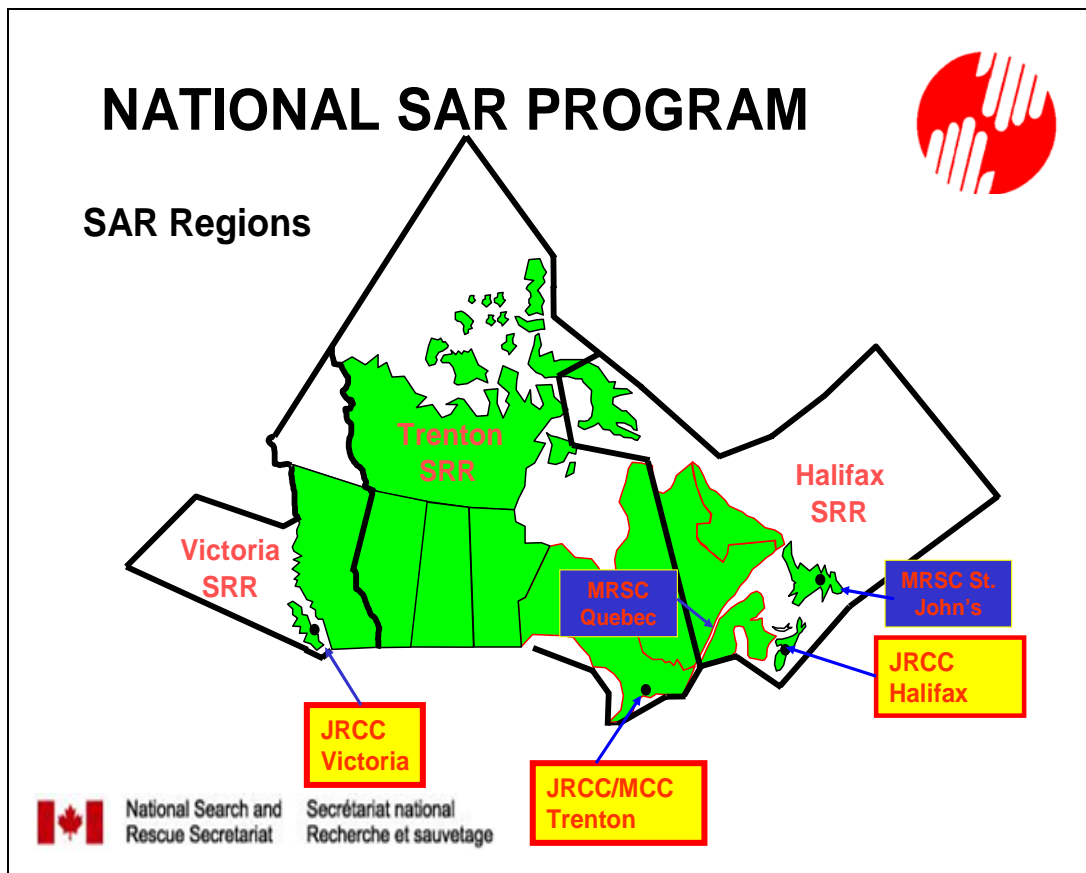
Canadian Coast Guard (CCG) and Canadian Coast Guard Auxiliary (CCGA) vessels and Canadian Forces aircraft.

Aeronautical SAR covers any type of search for aircraft, over land or water. Response to this type of SAR incident is also co-ordinated by the three JRCCs. Aeronautical SAR operations are carried out by Canadian Forces and Civil Air Search and Rescue Association (CASARA) aircraft and by CCG/CCGA also when a missing aircraft's route includes portions over water.

Ground SAR services, such as locating lost, missing or distressed persons on the ground, are provided by provincial/territorial government organizations. This includes searches on inland waters such as lakes and rivers outside National Parks. In most cases, ground and inland water programs are managed by provincial or territorial emergency measures organizations, with search and rescue operations carried out by police, emergency services personnel and an extensive network of skilled volunteers.

Within Canada's National Parks, SAR incidents – rescues on ice fields, avalanches and wilderness searches, for example – are co-ordinated and conducted by specialists and volunteers from Parks Canada.

The Canadian Federal SAR Area of Responsibility is depicted in Figure 1.



- Figure 1 – Canadian SAR Area of Responsibility  
JRCC - Joint Rescue Coordination Centre  
SRR – Search and Rescue Region  
MRSC – Maritime Rescue Sub-Centre  
MCC – Mission Control Centre (Canadian SAR Satellite – SARSAT – Control Centre)

## **SAR Challenges and the Pressures of a Changing World**

Demographic changes in Canada's population pose an increased risk for SAR. Evidence in the Canadian Census 2001 and in the RCMP environment scan 2003 suggest that Canada's aging population, many of whom remain healthy and active well into their senior years, is devoting significant resources to more demanding leisure pursuits.

The face of the volunteer community, so essential to SAR, is also changing, with a significant movement of young people from regional to urban centres to pursue education and career opportunities. As a result, there is a decline in the number of SAR volunteers in rural areas.

New demands in SAR services also result from an increase in recreational activities, such as kayaking and rock climbing; increased travel to and across the Canadian North; and the growth in cruises, especially in more remote waters.

Recent natural disasters and recognition that volunteers provide a trained and organized resource are having an impact on SAR. The trained personnel (including volunteers), vessels, aircraft and vehicles that are used for search and rescue are increasingly required to have a multi-task function.

A key element of responsible use of SAR resources has been a growing emphasis on search and rescue prevention activity. However, SAR prevention is, to a large extent, dependant on volunteer participation, and is subject to pressure from demographic change, as well as from constrained finances of the public sector. This is expected to place more emphasis on voluntary resources such as the Civil Air SAR Association (CASARA), the Canadian Coast Guard Auxiliary (CCGA) and volunteer Ground SAR associations.

Canada is a signatory to several international agreements and participates with the world wide community in providing SAR services. Any changes at the International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO) level must therefore be considered and may affect the NSP. The high level of the terrorist threat over the past two years and the resulting reappraisal of Canada's security stance have again meant marine SAR assets have become more multi-tasked, and led to the need for more flexible use of all federal resources. This trend is certain to continue for some years to come.

Technological developments in satellite communications and position-finding equipment have increased the ability of persons in distress or difficulty to summon assistance. The number of demands for SAR response is likely to increase as technology becomes more affordable and more beacons, Global Positioning Systems, etc are carried. However, these advances in technology are also likely to reduce the need to undertake long searches based on limited intelligence, as locations of those in distress are more likely to be known.

Improving technology has introduced other related challenges. As the main federal SAR providers have received new and more capable equipment, including helicopters and lifeboats, over the past two years, SAR capability has increased but additional training has been required. All introductions of new equipment and technology come with a related training cost.

Interoperability, that is the need to co-ordinate equipment, training and procedures amongst SAR responders, continues to be a challenge. The diversity of provincial and territorial authorities and organizations which, together with the federal bodies, make up the national SAR safety net, means that effective co-ordination and more commonality of equipment are needed to achieve seamless SAR delivery. Reliable and commonly available radio communication is, based on experience in live operations and exercises, a basic requirement. Realistic exercises, simulating potential SAR incidents, are one of the most effective ways to ensure the system works when it is needed, but in a multi-jurisdictional environment they are expensive and require advance planning.

In addition to the challenges outlined above, financial constraints and other government priorities have also had an impact on SAR in Canada. The federal SAR community is compelled continually to review its commitments and to revise its plans to obtain best value for public money.

### **3. Federal Management of the National SAR Program**

The Federal Search and Rescue Program (FSP) consists of the individual and collective activities of the federal government departments and agencies having either primary or secondary roles and responsibilities with respect to the provision of search and rescue services in the federal mandate areas of Canada's search and rescue areas of responsibility.

#### **Lead Minister for Search and Rescue (LMSAR)**

In 1986 Cabinet designated the Minister of National Defence to be Lead Minister for Search and Rescue (LMSAR) in the Government and the federal spokesperson on national SAR matters.

#### **Interdepartmental Committee on Search and Rescue (ICSAR)**

The management of the FSP is accomplished through the Interdepartmental Committee on Search and Rescue (ICSAR). Membership of ICSAR includes senior representation from each of the six federal departments with SAR program delivery responsibilities plus observers from Public Safety and Emergency Preparedness Canada (PSEPC), Treasury Board Secretariat (TBS), the Privy Council Office (PCO), the Department of Indian and Northern Affairs (INAC) and Natural Resources Canada (NRCan). ICSAR is chaired by the Executive Director of the NSS and is accountable to the LMSAR for review, reporting and approval of FSP policies and plans on behalf of its member departments. ICSAR is supported by two sub-committees: Co-ordination and Review, consisting of managerial level representatives from the ICSAR member departments.

## **National Search and Rescue Secretariat (NSS)**

The NSS was established by Cabinet Decision in 1986 to provide leadership to the NSP through the Interdepartmental Committee on Search and Rescue. The NSS reports directly to the Lead Minister for Search and Rescue.

The NSS is accountable to LMSAR through ICSAR for the development, co-ordination, analysis and review of FSP policies, plans and specific components and activities. These components and activities include: administration of the New SAR Initiatives Fund (NIF); Canadian representation to the COSPAS-SARSAT program; maintenance of the Canadian Beacon Registry; publication of *SARSCENE* magazine and conduct of the annual *SARSCENE* Workshops.

In addition, the NSS provides leadership in enhancing co-ordination between provincial and territorial SAR programs and the FSP, as well as providing program level advice and information to the LMSAR.

The horizontal program environment requires the NSS to work in partnership with international, federal, provincial, and territorial clients and stakeholders toward the realization of the NSP Vision and Objectives.

## **National SAR Program Vision and Objectives**

The NSP focuses on the achievement of a seamless SAR system in Canada via a Vision statement and two Objectives:

### **SAR Vision Statement**

A Canada where the critical importance of Search and Rescue is reflected in a multi-jurisdictional approach to promoting individual, collective and organizational behaviour that minimizes the risk of injury or loss of life while maintaining timely and effective response services

### **SAR Response Objective**

To ensure an effective SAR response (capability) in all areas of Canada

### **SAR Prevention Objective**

To educate individuals and organizations on the assessment of risks and the importance of acquiring and using the knowledge, skills and equipment needed to minimize injury and/or loss of life



## Resources

### Federal Search and Rescue Program costs (\$000) by participating department

Department or Agency	2000-01 Actual	2001-02 Actual	2002-03	
			Planned	Actual
National Search and Rescue Secretariat	8,711	10,267	10,389	10,499
Environment Canada	985	985	985	985
Department of Fisheries and Oceans*	90,870	94,108	103,493	86,295
Department of National Defence	339,364	220,802	296,128	181,095
Parks Canada	4,929	4,929	4,929	4,929
Royal Canadian Mounted Police**	N/A	N/A	N/A	N/A
Transport Canada	903	970	985	985
<b>Total</b>	<b>445,762</b>	<b>331,091</b>	<b>416,909</b>	<b>284,788</b>

Source: Department of National Defence Departmental Performance Report 2002-2003

#### Notes:

\* The difference between the Planned and Actual figures in 2002-03 is a result of lower than anticipated SAR helicopter project costs and to an improved allocation of these and other operating costs based on actual SAR activity levels. 2000-01 actual figures revised to include more recent information.

\*\* As most of the financial and resource allocations for Search and Rescue (SAR) are provided under provincial auspices, costs and Full Time Equivalent identification are difficult to gauge in terms of a federal program. The RCMP does not have any primary resources dedicated at the federal level to SAR. RCMP services may be requested through multi-tasking of vessels/air services, and support other departments to the extent possible when lives are at stake.

### Federal Search and Rescue Personnel Requirements (FTEs)

Department or Agency	2000-01 Actual	2002-02 Actual	2002-03	
			Planned	Actual
National Search and Rescue Secretariat	16	19.5	19.5	19.5
Environment Canada	14	14	14	14
Department of Fisheries and Oceans*	717	N/A	N/A	N/A
Department of National Defence**	760	737	746	637
Parks Canada	67	67	64	64
Royal Canadian Mounted Police***	N/A	N/A	N/A	N/A
Transport Canada	7	7	7	7
<b>Total</b>	<b>1,581</b>	<b>844.5</b>	<b>850.5</b>	<b>741.5</b>

Source: Department of National Defence Departmental Performance Report 2002-2003

#### Notes:

\* As CCG operations involve multi-tasking, FTE figures were not available.

\*\* 2000-01 and 2001-02 actual figures revised to include more recent information.

\*\*\* As most of the financial and resource allocations for Search and Rescue (SAR) are provided under provincial auspices, costs and Full Time Equivalent identification are difficult to gauge in terms of a federal program. The RCMP does not have any primary resources dedicated at the federal level to SAR. RCMP services may be requested through multi-tasking of vessels/air services, and may support other departments to the extent possible when lives are at stake.

Financial resource information is based on the fiscal year (April-March), which is the federal government's financial cycle. This Annual Report and the Program Plan are based on the calendar year (January-December), which is most meaningful for SAR activities.

### **Federal Search and Rescue Primary SAR Resources**

The following summary lists the federal primary SAR resources deployed to conduct SAR operations in 2003:

- **Canadian Forces**
  - 15 Cormorants at *Comox, Trenton, Greenwood and Gander*, (replacing Labradors), to be fully operational in 2004.
  - 6 Buffalos – *Comox*
  - 3+ Hercules – *Winnipeg, Trenton and Greenwood*
- **Canadian Coast Guard**
  - 105 total vessels available
  - 35 lifeboats *on primary SAR alert (30 minutes;24/7)*
  - 1 hovercraft at Vancouver
  - 8 large patrol vessels on primary SAR alert
  - 23 Inshore Rescue Boats in summer
- **National Volunteer Organizations**
  - CASARA (Civil Air Search and Rescue Association)  
3077 members, 389 aircraft at 40 + airports across Canada  
(*\$2.3M 03/04 federal contribution*)
  - CCGA (Canadian Coast Guard Auxiliary)  
5100 members, 1500 vessels (*\$4.5M federal contribution*)

In addition, many other governments and organizations contribute to Canada's SAR system, including provincial and territorial governments, over 13000 ground SAR volunteers and many safety organizations such as the Red Cross, Royal Lifesaving Society and the Canadian Power and Sail Squadrons.

## **4. Activity Levels 2003**

### **Marine SAR**

Canada is a maritime nation. More than half of Canada's trade travels by sea or on the Great Lakes. Maritime trade and travel are vital for Canada's economic well being.

Additionally half of all Canadians are involved in water-based recreation: sailing, power boating, canoeing, fishing, swimming and diving. Canadians own an estimated 3.4 million pleasure craft of all types. Cruise ships (over 1.5 million passengers will visit or cruise from Canada by sea each year) and domestic ferry operators (34 million passengers annually) transport large numbers of persons. As well, there are approximately 22,000 registered commercial fishing vessels in Canada. This gives some context to the level of marine activity in Canada, and to the following information on marine SAR incidents.

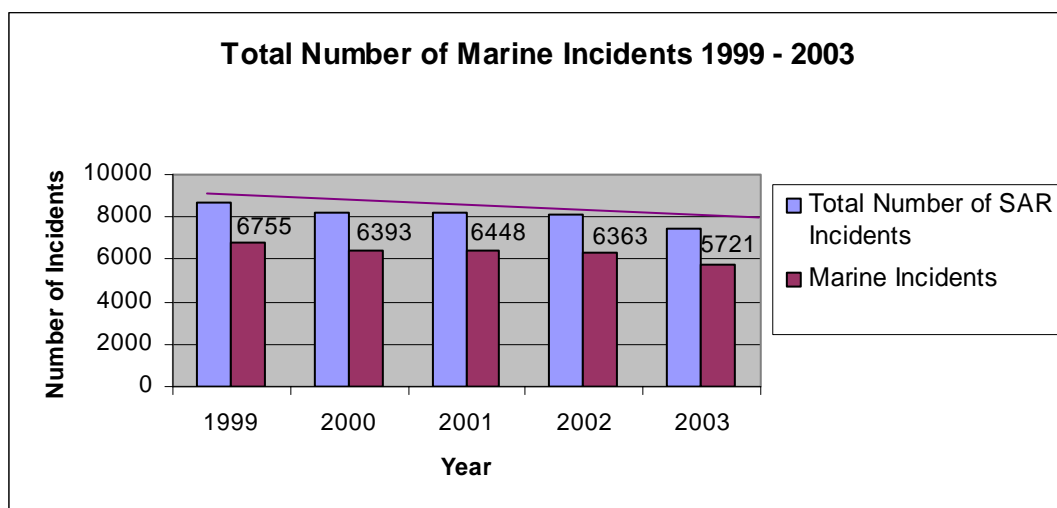
2003 proved to be another busy year for Marine SAR. There were 5721 federal marine incidents, down by 486 on 2002 and continuing the general downward trend of the past

five years. Marine incidents comprised 70% of SAR incidents. The largest proportion of incidents continued to be in recreational boating, with 65 % of marine incidents, followed by the fishing industry with 22 %. The total number of lives lost in marine - related SAR incidents was 71, down from the 79 of the previous year.

Noteworthy incidents this year included the sinking of two fishing vessels during hurricane Juan in September: the EVAN RICHARD, with the loss of two lives but three rescued, off Anticosti Island, and the PACIFIC ATTITUDE on the Grand Banks, with the loss of all three crew. In January a rescue helicopter from 103 Squadron, Gander rescued all 16 crew of the distressed Finnish vessel CAMILLA. On a smaller scale, the loss of a canoe with four occupants in Ungava Bay, Northern Québec in August remains newsworthy: one body and the wreckage of the canoe were recovered after a search which lasted four days. In the recreational boating field, CCG records show one of the most common causes of alerting the SAR system is machinery failure in small motorboats. 89% of drowning victims in recreational boating incidents were not wearing a personal flotation device (PFD) (SmartRisk study 2003).

In the cruise industry in Canadian waters, overall passenger embarkations and disembarkations fell by 11 % in 2003 after 21 years of unbroken growth, the most significant drop being 15 % in Vancouver. Montreal and Québec also showed slight reductions, whilst Halifax and St. John's increased. The number of vessels and passengers visiting Canada, and in particular Northern and Arctic Canada, provides both an opportunity for improved commercial income for the region, and the challenge of increased risk of a major maritime incident in a remote area of the Canadian search and rescue region. During the summer months there are, on average, 12 vessels operating on the West Coast, offering 19 separate cruise itineraries, and 6 ships operating on the East Coast, offering 15 cruises in every month from June to September.

The busiest ports for cruise vessels remain Vancouver, which is also Canada's busiest freight port, with around one million passengers, and Halifax with over 150,000. Although the safety level in modern passenger ships is high, the potential for a major incident is always a factor to be considered.



In 2003, 97% of lives were saved over lives at risk in the marine sector.

## Aeronautical SAR

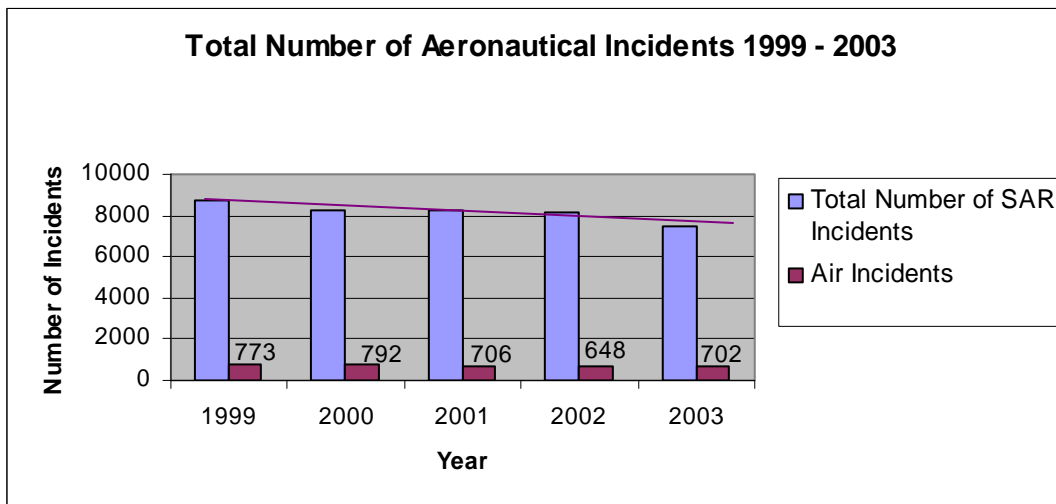
Canada's geography and population distribution make air transportation a key mode of travel, incorporating the commercial airline sector, smaller light aircraft commercial operators (e.g. charter float planes), and privately-owned light aircraft.

In 2003, the commercial airline industry recorded just over 54 million passengers moved (including domestic, Canada - USA, and Canada - international). In the light aircraft sector there are 29,110 registered aircraft and 78,742 licensed pilots operating from 1,746 airports across the country. This sector represents a wide variety of flying activities, including such things as remote hunting/fishing excursions, commercial heli-logging, access to isolated communities, private sightseeing flights, and many other types of flying operations. Canada does indeed have a vibrant aviation environment.

The 2003 activity level with regard to the number of aeronautical incidents that the SAR system responded to was typical of the level experienced in recent years at 702 incidents, up on 2002 but the same as 2001. There was an increase in the number of air searches which resulted in the deployment of the SAR squadron for extended periods of time.

Aeronautical incident numbers form a relatively small portion of the total (compared to marine incident numbers). For the most part, these aeronautical incidents are generated by the general aviation sector (private piloted light aircraft) rather than the commercial aviation sector. Although there are occasional exceptions, the serious cases involving loss of life are generally confined to light aircraft carrying four or fewer persons.

The Civil Air Search and Rescue Association (CASARA), Transport Canada and other agencies continue education/training efforts to reinforce the requirement for operators of light aircraft to file accurate flight plans and to carry robust, effective Emergency Locator Transmitters (ELTs). Search aircraft can home directly to an ELT signal, thereby easily locating the crash site providing assistance quickly. An extended search involving more resources may be required when the missing aircraft's emergency locator beacon does not activate.



## **Ground and Inland Water SAR**

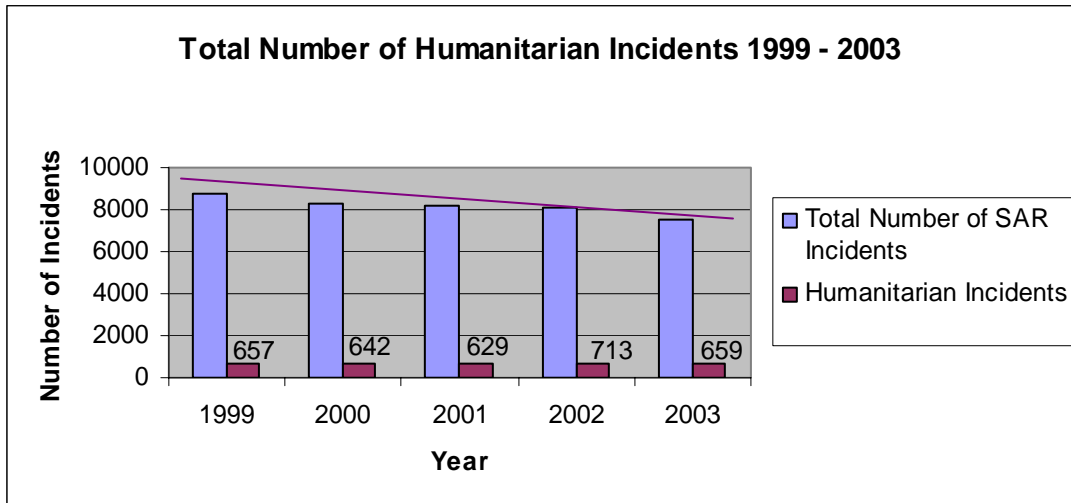
In 2003, an estimated 1,800 ground and inland water SAR missions were conducted across the country by provincial and territorial authorities. These operations responded to climbers, hunters, people with Alzheimer's disease, recreational boaters, families on camping trips, and hundreds of other Canadians and visitors who found themselves in need of SAR services. Considerable time and resources are also invested each year in public education and awareness campaigns, intended to prevent future SAR incidents from occurring. These provincial and territorial SAR resources are also an important complement to federal responsibilities, as many aeronautical and marine SAR cases require the assistance of land-based resources. A Joint Rescue Coordination Centre may ask local police to check remote airstrips for aircraft, or request the assistance of a volunteer ground search team to conduct a marina or shoreline search for an overdue vessel. This cooperation greatly increases the overall effectiveness of the NSP, as it can quickly resolve cases at the local level before a more expensive resource is tasked. This not only reduces the cost of searches, but also helps ensure that the aeronautical and marine crews are better rested and ready to respond when required for more serious cases.

The federal government through the FSP has direct responsibility for ground and inland search and rescue in Canada's National Parks, and its military bases and training areas. In 2003, Parks Canada's public safety specialists responded to 372 search and rescue incidents, ranging from injured hikers, to canoeists stranded by poor weather, to skiers caught in avalanches. In addition to responding to SAR events, Parks Canada's public safety specialists also work actively to promote public safety and increase awareness of risks in the backcountry.

The Canadian Forces maintains seven Ground SAR teams in support of base operations: 3 Wing Bagotville, Québec; 9 Wing Gander and 5 Wing Goose Bay, Newfoundland and Labrador; 4 Wing Cold Lake, Alberta; 15 Wing Moose Jaw, Saskatchewan; 17 Wing Winnipeg, Manitoba; and Canadian Forces Northern Area, based in Yellowknife, Northwest Territories. These teams primarily cover military training activities, but may also be tasked as a resource to assist in aeronautical or marine cases. In September 2003, the 4 Wing team located a civilian aircraft that crashed enroute to Calgary. The Canadian Rangers – a skilled group of reservists living in northern Canada – also provide assistance to ground SAR operations in some of this country's most isolated regions.

The federal government also provides assistance to its provincial and territorial partners who have the mandate for ground and inland water SAR. In 2003, a total of 659 requests for humanitarian assistance were received by the federal JRCCs. While most of these requests involved critical medical evacuation and transportation assistance, some were an integral part of front-line SAR missions, often involving helicopter hoists from cliffs, glaciers, mountains, and other challenging locations.

The following graph depicts the number of humanitarian incidents over the last 5 years. On average this represents approximately 8% of federal SAR cases.



## 5. Planning and Reporting

Three key documents are produced annually by the NSS under ICSAR direction to guide and report on the National SAR Program. The Strategic Directions document provides long-term direction; the annual Program Plan focuses on issues to be dealt with in the coming year; and the Annual Report reports to Ministers, Parliament and the public on activities and results achieved.

The Program Plan and Annual Report are based on the calendar year (January-December), which is most meaningful for SAR activities. The resource information is based on the fiscal year (April-March), which is the federal government's financial cycle.

The following strategic directions have been developed for the NSP:

- **Seamless SAR**  
To develop, through improved partnership arrangements, standards that would improve the effectiveness and efficiency of SAR services and promote greater cooperation.
- **Marine SAR**  
To identify and implement solutions to reduce the number and the severity of incidents.
- **Northern SAR**  
To review existing services and recommend possible adjustments in the approach to SAR service delivery, given increasing activity in the North.
- **Volunteers**  
To support volunteer organizations in playing an active and essential role in the NSP.

## 6. The 2003 Program Plan – A Report Card

The 2003 Program Plan was a prototype. The first full cycle of the Program Plan and Annual Report begins in 2004 with a focus on key operational issues organized around three themes of Seamless SAR, Marine SAR and the North.

This section of the 2003 Annual Report focuses on the SAR issues identified in the 2003 Program Plan as warranting program level attention by various (or all) ICSAR departments. It should be noted that many of these issues reflect matters that are multi year in scope, and will continue to be worked on in subsequent years.

### **Seamless Search and Rescue**

SAR operations routinely involve resources from more than one of the ICSAR departments, along with volunteer groups, and provincial/territorial and municipal organizations. This is especially evident in larger scale incidents. Effective co-ordination and communications among these service providers will continue to present challenges. To move towards the goal of Seamless SAR, it is essential that the prevention and response activities of all stakeholders be aligned.

### **SAR Alerting by Cell Phones**

Cell phones are increasingly being used to alert authorities of SAR incidents (via 9-1-1). Call centres receiving these alerts are operated by a variety of police and municipal authorities in different parts of the country, some without direct links to the Joint Rescue Coordination Centres (JRCCs).

Many people use, and rely on, cell phones. In remote areas, however, coverage is not always available and a cell phone cannot be relied upon as a means of SAR alerting. Other more reliable means of alerting are often ignored. Appropriate alerting equipment such as an EPIRB (Emergency Position Indicator Radio Beacon) or a PLB (Personal Locator Beacon) has the advantage of being able to pinpoint the person's location.

Efforts continue to educate the public about acquiring and properly using appropriate SAR communications equipment such as marine band radios on the water. In addition, the NSS is working with 9-1-1 call centre umbrella organizations to improve the links between these centres and the JRCCs.

### **SAR Data Availability/Quality**

Due to varying departmental requirements SAR data is not always collected in consistent formats, making meaningful comparison of information and statistics difficult. New and different information systems to track SAR incidents, resources used, outcomes, costs and other data, are being planned and implemented, including those at the JRCCs, Parks Canada and the RCMP.

The introduction in 2003 of the Search Mission Management System (SMMS) at the JRCCs/MRSCs will enhance data collection. Efforts also continue to assist the ICSAR departments in the development of high quality databases and other information products that will enhance analysis capabilities.

### **New SAR Helicopter Introduction**

By the end of 2003, the introduction of Canada's new SAR helicopter, the CH-149 Cormorant (replacing the CH-113 Labrador) was complete at three of Canada's four SAR helicopter bases, with the last base to undergo the conversion to the new aircraft planned for 2004. There are significant differences in the two aircraft owing to size and rotor configuration which will affect any personnel working in close proximity to the aircraft.

There is a comprehensive training program for all Canadian Forces personnel. However, until all SAR providers have a chance to become familiar with the new helicopter and its features, there are some risks involved. Efforts are underway to ensure that the broader SAR community who will be working with the Cormorants understands the different characteristics of the new aircraft as well as the safety measures required.

### **Multi-Jurisdictional Exercises (MJX)**

SAR response services are inherently multi-jurisdictional in nature and rely on a range of primary, secondary and voluntary resources. This pooling of resources has a synergistic effect in that the combined impact will be greater than the efforts of each SAR partner acting alone. However, working together in a high-risk and stressful situation takes practice if the response is to be a co-ordinated one. The responders need to mesh different nomenclature, procedures, skills and equipment and to have a common understanding of lines of communication and chain of command.

SAR exercises can simulate a SAR incident requiring a multi-agency response, building teamwork and trust. In 2003, the NSS facilitated two SAR exercises: one 'live' outdoor simulation in Toronto and one 'table top' or indoor simulation in Prince Rupert. The lessons learned from these exercises were disseminated to the SAR community through the NSS website, magazine and annual workshop.

### **Major Air Disaster/ Major Marine Disaster (MAJAID/MAJMAR)**

The likelihood of a major aeronautical or marine incident, defined as one which is beyond the normal capability of a single region to resolve without calling on the assistance of other regions and other authorities, continues to increase. The cruise industry has grown significantly over the past 20 years, with more cruises to Canadian and Arctic waters, more passengers and larger ships, often with over 2,500 people aboard. As well, polar route utilization by commercial airline traffic is increasing. The response to a catastrophic incident involving a vessel or aircraft requires special planning and preparation.

In 2001 a project was initiated to update and upgrade the MAJMAR and MAJAID response plans. The final report issued in August 2001 proposed modifications to both plans.

There are still differences between the MAJMAR plans of the three Canadian SAR regions. In 2003 a renewed effort to achieve a standard framework was undertaken, and plans were developed to organize a workshop in 2004, to be attended by representatives of the Canadian Forces and the Canadian Coast Guard from Ottawa, Winnipeg and the three Joint Rescue Coordination Centres. This workshop will lead to the development of a National MAJMAR Plan.

The MAJAID plan incorporates all necessary and available military assets, and focuses on the delivery of aid to a remote crash location. Links with other federal departments, the province or territory involved, and the affected airline are incorporated. The MAJAID plan was exercised in Canada at the International SAREX held in Gimli, Manitoba in September 2002; this exercise (which rotates between Russia, Canada and the USA) was held in Russia in 2003, and will be held in Alaska in 2004.



MAJAID also includes completion of the Arctic Cache Project. Six caches, consisting of cold weather survival clothing, sleeping bags and other supplies, were acquired with assistance from the New Search and Rescue Initiatives Fund (NIF). Two of these caches were delivered to Iqaluit and Yellowknife in 2003, with the remaining four to be delivered in 2004 to Rankin Inlet, Resolute Bay, Inuvik and Whitehorse.

### **Interoperability**

Although progress has been made on improving interoperability, there remain some gaps in co-ordination and communication among the variety of organizations involved in the NSP, including areas which deal with SAR equipment and procedures.

In January 2003, the NSS finalized an Interoperability Study which identified issues that crossed departmental boundaries and had an impact on the NSP. To address these issues, an 'Interoperability Summit' was held at the SARSCENE Workshop in October 2003.

In February 2003 the NSS discussed radio communications spectrum management issues with the National Ground SAR Council, representatives from the provinces and territories with responsibility for SAR. During the GSAR Council meeting at the SARSCENE workshop in October 2003 it was recommended that the NSS pursue, on behalf of all the Canadian provinces and territories, a project to carry out an Interoperability Feasibility Study relating to a 'National Calling Frequency' for SAR. NSS has co-ordinated the creation of a working group to identify a cost-effective and reliable national GSAR calling frequency. This working group is comprised of federal/provincial/territorial SAR representatives as well as other stakeholders such as Industry Canada.

### **Marine SAR**

Marine distress cases accounted for 76% of the incidents that the federal SAR system responded to in 2003.

### **Large Passenger Ship Activities**

There are increasing numbers of cruise lines operating in Canadian waters, particularly cruises to Arctic waters. A significant number of cruise ship passengers are advanced in age and thus represent an increased risk of requests for 'Medevacs' from such vessels. The world-wide cruise industry has grown by an average of 8.4% annually over the last 20 years. The size of cruise ships continues to increase to the point where a total of crew and passengers exceeding 2,500 is becoming common.

At the same time, many large ferries operate on the West and East Coasts of Canada.

Recognizing these trends, the NSS and CCG have included large passenger vessel operators in multi-jurisdictional exercises and major marine disaster plans.

### **Medium Passenger Ship and Tour Boat Activities**

There are growing numbers of whale-watching and marine eco-tours being conducted. Typically, the industry will utilize smaller vessels with high passenger to crew ratios. Such tours are of short duration, generally lasting only 2-4 hours.

The short duration of these tours means that passengers are less likely to become fully familiar with the vessel and its emergency equipment and procedures. This, coupled

with the high passenger to crew ratios, represents an increased risk of loss of life in the event of an incident. As an example, the passenger to crew ratio on an ocean-going cruise liner is about 2 to 1, whereas onboard a day cruise vessel it can be as high as 50 to 1.

Major marine disaster plans have been updated to take these activities into account.

### **Small Pleasure Craft and Kayak Activities**

In 2003, pleasure craft were involved in 71% of all marine SAR cases nationally, 80% in British Columbia. The Quebec Maritime Rescue Sub-Centre (MRSC) reported that 76% of SAR cases involved small pleasure craft. Approximately 75% of those numbers were vessels less than eight metres in length.

The use of small craft and individual watercraft has increased dramatically. Kayaking, for example, is attracting participants from a broad range of ages, knowledge and skill levels, who now practice the sport in a variety of locations, including oceans and remote areas. Group kayak excursions to the isolated British Columbia mid-coast have increased significantly. The trend indicates an increased risk of SAR incidents.

In 2003, NSS analyzed SAR case data to assess educational approaches and regulatory changes that could help mitigate this increasing risk. These activities are ongoing, and are being addressed regionally as well. For example, on the British Columbia coast, JRCC officials have met with the B.C. umbrella organization of kayak guides and outfitters to enhance SAR prevention activities and communications standards. The Transport Canada operator competency program, a number of prevention projects funded by the New SAR Initiatives Fund, and the Canadian Safe Boating Council's work on promoting PFD wear, should mitigate risk in this area.

### **Evolution of SAR Prevention Activities**

With continuing funding limitations in federal departments, the role of non-profit organizations and volunteers in prevention activities is increasing. The December 2003 consolidation of marine regulatory and associated prevention functions in Transport Canada will facilitate sharing of prevention best practices across the aviation, fishing and recreational boating sectors.

### **Fishing Vessels Further Offshore**

Data indicates that over half of all Transportation Safety Board (TSB) reported marine accidents involve fishing boats. Within the Atlantic Region, these boats are now fishing further offshore as traditional species of fish become exhausted or restricted in availability closer to the coast.

Longer response times for SAR resources combined with longer transit times back to port for vessels to avoid bad weather represent an increased risk of loss of life. The greater distances that SAR resources must travel results in a decrease in their availability to the SAR system and a corresponding increased risk in the event of concurrent SAR incidents.

Regulatory and SAR response authorities are continuing to focus on fishing vessel safety, to address this issue.

### **Offshore Oil and Gas Activities**

East Coast offshore oil and gas exploration and production activities are increasing and there is public debate whether the moratorium on West Coast exploration in this sector should be eased or lifted. A change in status on the West Coast would represent a significant shift in the regional risk dynamic where no such exploration/ production activities currently exist. Additional drilling rigs result in more vessel and helicopter traffic to service rigs and support facilities, which may increase the likelihood of incidents. On the other hand, this traffic augments surveillance and response resources, and offshore platforms such as Hibernia can provide SAR helicopter refuelling capability.

### **Northern SAR**

Canada's north is vast, sparsely populated and characterized by extreme environmental conditions. Increasing activity levels in the region, in the areas of tourism, resource extraction, and airspace utilization will highlight the challenges of responding to distress incidents in this part of the country.

### **Increasing Arctic Overflights**

The number of overflights of remote northern Canada is expected to continue to increase, particularly with the broader utilization of Polar Routes serving Asia. More and larger aircraft will spend longer periods of time in Canadian airspace, much of which is over very remote areas.

While such an increase in traffic may be perceived as an increase in risk, the improvement in reliability of aircraft and equipment mitigates this perceived risk. Therefore, additional SAR response capability is not warranted. Nevertheless, a credible rapid disaster response capability will be maintained commensurate with the assessed risk.

### **Arctic Weather Monitoring**

There are very few weather monitoring stations in the Arctic and the Meteorological Services of Canada (MSC) has limited resources to operate and maintain these stations. This could compromise weather forecasting for SAR responders, potentially having a negative effect on SAR response.

In 2003, MSC, with the support of ICSAR, obtained limited new resources to augment the network, but ongoing maintenance and sustainability of the network remains a major challenge.

### **Arctic Communications**

Communications in the Arctic are inherently problematic, with significant gaps in coverage for those relying on traditional radio equipment.

As a result, notification of incidents and their locations may be delayed. Communication challenges with responders, ground facilities and distress victims may hamper the effectiveness of response activities and incident co-ordination.

Together with local partners, ICSAR and the NSS are assessing the extent of the communications problem with the objective of developing cost effective solutions.

### **New National Parks and Marine Conservation Areas**

In October 2002, the Government announced an Action Plan calling for the creation of 10 new national parks and 5 national marine conservation areas (NMCA) in Canada by 2008, including new parks in remote Northern areas. As of December 2003, Parks Canada had signed agreements to create two new national parks: Ukkusiksalik National Park in Nunavut and the Gulf Islands National Park Reserve in British Columbia.

More visitors, combined with increased light aircraft and watercraft traffic levels in remote regions, may lead to increased SAR incidents and personal locator beacon activations. These new protected areas will add significant federal SAR mandate land areas across Canada. Generally, the impact on the NSP will be an increase in the federal SAR resources available locally and a potential increase in the number of SAR incidents at these sites.

### **7. Other Results Achieved**

In addition to the Program Plan activities mentioned in the previous section, the NSP advances other major activities that benefit the SAR community in Canada. The following list provides information and results.

#### **New SAR Initiatives Fund**

The New SAR Initiatives Fund (NIF) has an annual budget of \$8.1M to enhance SAR in Canada. The NSS manages the Fund, on behalf of the Lead Minister for SAR, in partnership with federal, provincial and territorial sponsors, and works with them to manage and monitor program success and report program results to Canadians. Since the program began in 1988, the Secretariat has managed the investment of more than \$180M in over 750 projects.

The NIF budget for 2003-04 was \$9,166,000, which included the annual \$8.1 million plus \$1,066,000 which was approved for rollover from 2002-03. In 2003-04, 48 new projects were approved, while 54 projects were continued from the previous year.

The NIF program is accessible to all Canadians with an eligible idea, through a NIF-approved sponsor. Each year, the NSS distributes a NIF Call Letter to all sponsors; it is also posted on the NSS website, and e-mailed to various SAR organizations in the country. Presentations to promote the program were conducted at the *SARSCENE* 2003 workshop, and a NIF webpage was developed on the NSS website to create an identifiable portal.

At the end of the fiscal year, the NSS creates a NIF Final Report to communicate the results to the public, and to share lessons learned. In 2003, the Secretariat issued the NIF Final Report that documented the results of 25 projects that were completed in FY 2002-03.

The Secretariat continues to work with project sponsors to promote the program and disseminate new project results.

## **Best Practice Prevention Initiative**

SAR Incident Prevention is one of the main pillars of the NSP. As a topic it is often neglected, lacking as it does the excitement of SAR response. A successful prevention program will mean fewer lives are at risk, and prevention costs are frequently outweighed by the savings in avoiding a SAR response. For many years, federal, provincial and territorial agencies, as well as many non-profit organizations, have been conducting SAR prevention work but there has been no easily quantifiable method of measuring their success.

Ongoing prevention activities include the RCMP 'Hug a Tree' campaign, the TC sponsored courtesy inspection of pleasure craft safety equipment, carried out largely by the CCGA, safety advice given to private aviators by CASARA and avalanche warning education provided by Parks Canada. In addition there are a huge number of smaller scale provincial and local initiatives on lakes and rivers throughout the country, and many other organizations such as the Red Cross, Lifesaving Society and the Canadian Safe Boating Council make a major contribution.

In a country as large and diverse as Canada, coordinating prevention activities is an almost impossible task, but one which must be addressed to avoid waste and duplication of effort. For this reason NSS instituted a Federal SAR Incident Prevention Working Group, under whose auspices Best Practice Research is carried out and disseminated to all key partners. In 2003, the NSS conducted and published a review of Prevention Best Practices, and discussed the findings with prevention community at the SARSCENE workshop.

2003 saw the publication of a comprehensive research paper by SmartRisk, commissioned by the Canadian Safe Boating Council (CSBC) and funded by the Cook-Rees Memorial Fund, on the effect of mandatory wear of personal flotation devices (PFD). The resulting document makes convincing reading and is most relevant as marine incidents account for over 70 % of SAR activity and recreational boating is the origin of the vast majority of that percentage.

Presentations on the report were given by CSBC representatives at various boating safety fora in Canada and internationally during 2003, and work will continue to develop consensus around the need for mandatory wear. This is probably the most significant new step in SAR prevention in the past year.

## **Levels of Service and Readiness**

The different manner by which the various departments that provide search and rescue services articulate their respective levels of service and capabilities is an issue. The resources these departments have assigned to provide SAR services have also changed over time, as has the way services are provided in some cases. The need exists for level of service standards that indicate to Canadians the response they can expect from the NSP; provide a yardstick for measuring program performance; and guide SAR investment and resource deployment decisions. At the same time, there needs to be a way to identify clearly the impact of changes in resources, either financial or equipment, on program outputs.

Different approaches to level of service definitions among federal SAR providers could create unrealistic response expectations of the SAR system, or leave Canadians unaware of the services available to them. Clearly understood levels of service would

contribute to an improved appreciation of the requirement to be prepared for emergency situations.

ICSAR departments are working on common approaches to defining the levels of service to produce an integrated and cohesive picture of response services provided, and to allow the effect of resource changes to be defined more clearly.

## **SARSCENE**

### **SARSCENE Workshop**

The workshop is held annually with approximately 650 search and rescue professionals, paid and unpaid, from across Canada and around the world, to share information and best practices and build a sense of community and cooperation. It is managed by the NSS and co-hosted by a local SAR organization.

The 2003 workshop, held in Kingston, included 70 presentations on topics such as partnerships and interagency cooperation, innovative technologies and techniques, and prevention projects. The trade show involved 52 exhibitors. Marine and air SAR demonstrations, as well as a heavy urban search and rescue demonstration in which a team of experts extract three victims from a collapsed building, attracted a large public audience. The workshop co-hosts, the Ontario Provincial Police, showcased this demonstration.

### **SAR Games**

The annual SARSCENE Games provide an opportunity for teams to learn from one another in a friendly competition of basic SAR skills. In 2003, Toronto's Heavy Urban Search and Rescue (HUSAR) team won a very close race for first in the traditional competition, while in the canine event Cliff Neuman and his dog Nanook shared top honours with Caroline Maisonneuve and Morgan. Although the traditional SAR games normally attract paid and unpaid professionals (volunteers) from the ground SAR community, this year also saw excellent performances by a Canadian Coast Guard cutter crew from Ontario, and a team of air rescue specialists from Iceland. Particularly notable in 2003 were the monsoon-like weather conditions, which challenged organizers and competitors alike with high winds, cool temperatures, and driving rain. As many noted, however, it was "perfect SAR weather" and added realism to the 2003 SAR challenge.

### **SARSCENE Magazine**

SARSCENE magazine is Canada's only magazine for all facets of search and rescue. It is published online by the NSS three times a year.

## **COSPAS-SARSAT**

Canada is one of the founders of COSPAS-SARSAT, the international satellite system for search and rescue, and is still a major user and equipment supplier for this system. The National Search and Rescue Secretariat represents Canada's international interests in the COSPAS-SARSAT System from the program perspective and relies on support from National Defence for operation of Canada's Mission Control Centre (CMCC) as well as for system maintenance and testing, engineering and design work for flight

instruments. The Communications Research Centre provides NSS with crucial technical support.

The NSS participates in meetings on a regular basis to fulfill its role in this international program and during 2003 attended, chaired and provided briefing notes to meetings in Russia, the United Kingdom and Norway. The NSS also represented Canada's interests in bilateral meetings with the US to discuss ongoing enhancements to the existing program.

All of Canada's Low Earth Orbit Local User Terminals (LEOLUTs) were replaced in the fall of 2003, with final commissioning to take place at a later date. The new LEOLUTs are located at Edmonton, Churchill, Goose Bay and Ottawa. These LEOLUTs are designed to process emergency beacon signals through a low earth orbit satellite assisted tracking system for search and rescue. The information is then relayed to Canada's Joint Rescue Coordination Centres (JRCCs) for dissemination to search and rescue responders.

### **Beacon Registry**

Beacon information is held in the Canadian Beacon Registry, maintained by the NSS for use in search and rescue operations.

The Registry contains basic owner information on the following types of emergency beacons:

Emergency Locator Transmitters (ELTs) (air)  
Emergency Positioning Indicator Radio Beacons (EPIRBs) (vessels)  
Personal Locator Beacons (PLBs) (land-based)

The introduction of the new, more effective 406 MHz aircraft ELT to the aviation community is in its early stages, and is ongoing. In 2003, there were approximately 29,000 light aircraft and helicopters registered in Canada, and these currently utilize the older type 121.5 MHz ELTs.

In December 2003, the National Beacon Registry had a total of 8,103 beacons as follows:

- 269 ELTs (406 MHz)
- 6430 EPIRBs
- 1404 PLBs

Registry and updating of information can be done directly by the owner over the Internet at <http://beacons.nss.qc.ca>.

### **Directory of Canadian SAR Organizations**

The search and rescue directory on the NSS website provides the public with access to more than 500 government and volunteer organizations. The directory is a primary source of information for those who are already involved or are interested in becoming involved as a search and rescue volunteer.

## **Awards Program**

SAR providers from across the country are recognized each year by the NSS for their courage and dedication, through the annual SAR Awards Program. The 65 recipients to date have made significant contributions to search and rescue in Canada.

Constable Paul Olmstead of the Edmonton Police Service was the recipient of the 2003 Award for Outstanding Search and Rescue Achievement for his tireless efforts in helping to build community-based search and rescue, and for strengthening the ties between volunteers and SAR agencies.

Seven other individuals received Certificates of Achievement in 2003. They are as follows:

- Dave Brewer, North Vancouver, BC
- John Chaffey, Ottawa, ON
- Staff Sergeant Tim Charlebois, Orillia, ON
- Stuart "Stu" Meeks, Belleville, ON (posthumous)
- Major Graham Newbold, Trenton, ON
- Corporal John Rotheisler, CFB Cold Lake, AB
- Daniel Tremblay, Québec, QB

## **8. Accountability Framework**

### **SAR Results-Based Management Framework/ Risk Based Audit Framework**

ICSAR recommended that the NSS pursue the development of a five-year Results-Based Management Accountability Framework (RMAF) as well as a five-year Risk-Based Audit Framework (RBAF) to support the FSP in compliance with Treasury Board requirements.

The RMAF will represent a clear understanding between partners on what they aim to achieve, the level of cooperation necessary to achieve their objectives, and how they will proceed to measure their results. It will be an effective tool for better management, learning and accountability throughout the lifecycle of the program.

The RBAF will provide senior officials involved with SAR with a better appreciation of key risk areas and the potential impact of these risks. In addition, the RBAF will lead to the development of solutions to mitigate these risks.

Work started on the development of these Frameworks in 2003, with completion scheduled for 2004. They will be integrated into the Program Plan and Annual Report cycle to improve performance information.

### **NIF Project Audits**

The NIF is constantly keeping abreast new and improved policies and best practices surrounding the management of government grant and contribution programs. To ensure due diligence and to be able to provide senior management with the confidence that the funds are being spent wisely, the Secretariat audits a selection of completed NIF projects each fiscal year. These audits assist the Secretariat in better managing the program. In 2003-04, audits were conducted on 5 NIF projects. NIF managers address and implement audit recommendations to ensure the continued improvement of the program.



## **9. Conclusion**

Search and rescue is about saving lives: managing prevention programs to prevent people getting into trouble in the first place, and providing seamless response services, to help them if they do. Canada has major SAR challenges: a vast area of responsibility, a harsh climate, low population density, and limited resources. Yet our SAR system is among the best in the world. Our success is based on organization, technology, equipment and, most of all, on people: governments at all levels, non-profit organizations, the private sector, and thousands of volunteers working together to save lives.

The Interdepartmental Committee on Search and Rescue is committed to working with the broad SAR community to provide seamless search and rescue throughout Canada, and to continue to improve planning and reporting to Canadians on the results achieved.