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# Report of the Auditor General of Canada

## CHAPTER 7

Federal Search and Rescue Activities

OAG

Office of the Auditor General of Canada

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# CHAPTER 7

## Federal Search and Rescue Activities

## Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the *Auditor General Act*.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- report both positive and negative findings,
- conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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# Federal Search and Rescue Activities

## Main Points

### What we examined

Search and rescue (SAR) takes many forms in Canada: for example, receiving distress alerts, coordinating and conducting searches for people in distress, administering emergency medical aid at crash sites, and transporting injured people to hospital. Search and rescue activities draw on the resources and capabilities of various levels of government, the private sector, and volunteers in order to prevent tragedies and to quickly respond to the needs of people in distress. In Canada, marine and air search and rescue are federal responsibilities, while responsibility for ground SAR is shared with the provinces, territories, and municipalities, except for federal Crown lands.

We examined whether federal organizations adequately oversee search and rescue activities, are ready to respond to SAR incidents, and have implemented prevention activities to reduce the number and severity of SAR incidents. Our audit included National Defence and the Canadian Forces, Fisheries and Oceans Canada and the Canadian Coast Guard, and Transport Canada. Our audit also examined the National Search and Rescue Secretariat, established in 1986 to develop and coordinate a national search and rescue policy framework. We did not audit provincial, territorial, and municipal search and rescue activities, or the activities of other federal organizations involved in search and rescue activities.

Audit work for this chapter was completed on 15 February 2013. Further details on the conduct of the audit are in **About the Audit** at the end of the chapter.

### Why it's important

Cooperation and collaboration are essential to the success of search and rescue activities, especially considering Canada's size, topography, and climate. Effective management and support, including adequate human resources, reliable equipment, and information systems, make it possible to carry out efficient search and rescue activities.

## What we found

- Overall, federal search and rescue activities have met established minimum standards of readiness to respond when people in distress need assistance. However, two factors present significant risks to readiness: the continued availability of sufficient numbers of trained search and rescue personnel, and the maintenance of aging equipment. Significant improvements are needed if the Canadian Forces and the Canadian Coast Guard are to continue to adequately respond and provide the necessary personnel, equipment, and information systems to deliver SAR activities effectively.
- The Canadian Forces and the Canadian Coast Guard adequately respond to air and marine SAR incidents. However, ongoing staffing and training challenges are impacting the sustainability of SAR operations. SAR activities have also been affected by the Royal Canadian Air Force's continued use of older airplanes that require extensive maintenance and of helicopters that are either insufficient in number or less capable of responding to incidents. The Canadian Coast Guard has replaced a number of its lifeboats and has a maintenance schedule for its SAR vessels.
- The information management system used to manage search and rescue cases does not adequately support operational requirements and is nearing its breaking point. System failures, such as the one experienced in 2009, could delay responding to an incident. A replacement system is not expected until 2015–16, and National Defence does not have a plan to address this gap.
- While roles and responsibilities are clear at the operational level for the Canadian Forces and the Canadian Coast Guard, the departments do not have a common set of principles for coordinating with other levels of government on national matters. In addition, the National Search and Rescue Secretariat has not implemented its 1986 mandate to establish a national policy framework, nor does it have the ability to measure overall federal program performance.

**The departments have responded.** The departments agree with all of the recommendations. Their detailed responses follow the recommendations throughout the chapter.

# Introduction

**7.1** Search and rescue (SAR) in Canada uses the resources and capabilities of various levels of government, the private sector, and volunteers in order to prevent tragedies and to quickly respond to the needs of Canadians in distress. Search and rescue activities include coordinating and conducting marine, air, and ground searches for people in distress; administering emergency medical aid at crash sites; and transporting injured people to hospital.

**7.2** Canada has one of the world's largest areas of SAR responsibility, covering 18 million square kilometres of land and water, more than 243,800 kilometres of coastlines, three oceans, the Great Lakes, and the St. Lawrence River system. Geographic and weather extremes also make it one of the most challenging locations.

### Roles and responsibilities

**7.3** In Canada, marine and air search and rescue are federal responsibilities, while ground SAR is the responsibility of the provinces, territories, and municipalities, except for federal Crown lands. Federal SAR activities are managed primarily by the Canadian Coast Guard for marine incidents and the Canadian Forces (Royal Canadian Air Force) for air incidents. They are coordinated from Joint Rescue Coordination Centres in Victoria, Trenton, and Halifax.

**7.4** The Minister of National Defence is the lead Minister for SAR and is responsible for coordinating federal air and marine SAR activities in Canada, providing dedicated SAR aircraft and personnel to aid in air and marine search and rescue incidents, and ensuring that SAR activities operate effectively. Military SAR helicopters and airplanes operate from five primary locations across the country; additional resources are also available when required.

**7.5** Fisheries and Oceans Canada is the only department to have a legislated mandate for search and rescue—defined in the *Oceans Act*. Its responsibilities are carried out by the Canadian Coast Guard, a special operating agency within the Department, which leads, delivers, and maintains marine SAR preparedness for Canada's 5.3 million square kilometres of ocean.

**7.6** The National Search and Rescue Secretariat (NSS) was established in 1986 to be a national coordinating authority for SAR policy in Canada. The NSS is an independent body within National Defence and is accountable to the Minister of National Defence.

The NSS Executive Director chairs the Interdepartmental Committee on Search and Rescue, which is composed of representatives from departments and central agencies involved in search and rescue activities.

**7.7** While Transport Canada plays no direct role in search and rescue incidents, it has a supporting role through its responsibility for regulating marine and air transportation and for implementing programs and activities to promote safety and prevent accidents in those sectors.

**7.8** In addition to their air and marine search and rescue duties, the Canadian Forces and the Canadian Coast Guard also assist in response to provincial and territorial SAR incidents, when available. This support is generally for humanitarian incidents. Examples include sending an airplane to drop supplies to sustain a person until ground assistance arrives, or sending an aircraft to carry out a medical evacuation.

### Search and rescue activities

**7.9** Exhibit 7.1 shows how Canada is divided for search and rescue activities. Each of the three SAR regions has a Joint Rescue Coordination Centre (JRCC) staffed around the clock by Canadian Coast Guard and Canadian Forces personnel. The JRCCs are responsible for planning, coordinating, conducting, and controlling search and rescue operations. Each JRCC responds to about 3,000 air, marine, and humanitarian incidents annually. At the time of our audit, the Canadian Coast Guard operated two Maritime Rescue Sub-Centres (MRSCs)—one in St. John's, Newfoundland, that closed in 2012 and one in Québec City, Quebec, that it planned to close in 2013. The MRSCs reduced the JRCCs' workload in areas of high marine activity. They have been responsible for coordinating marine SAR activities within their respective areas and working with the aeronautical coordinator at their JRCC to provide assistance to air search and rescue.

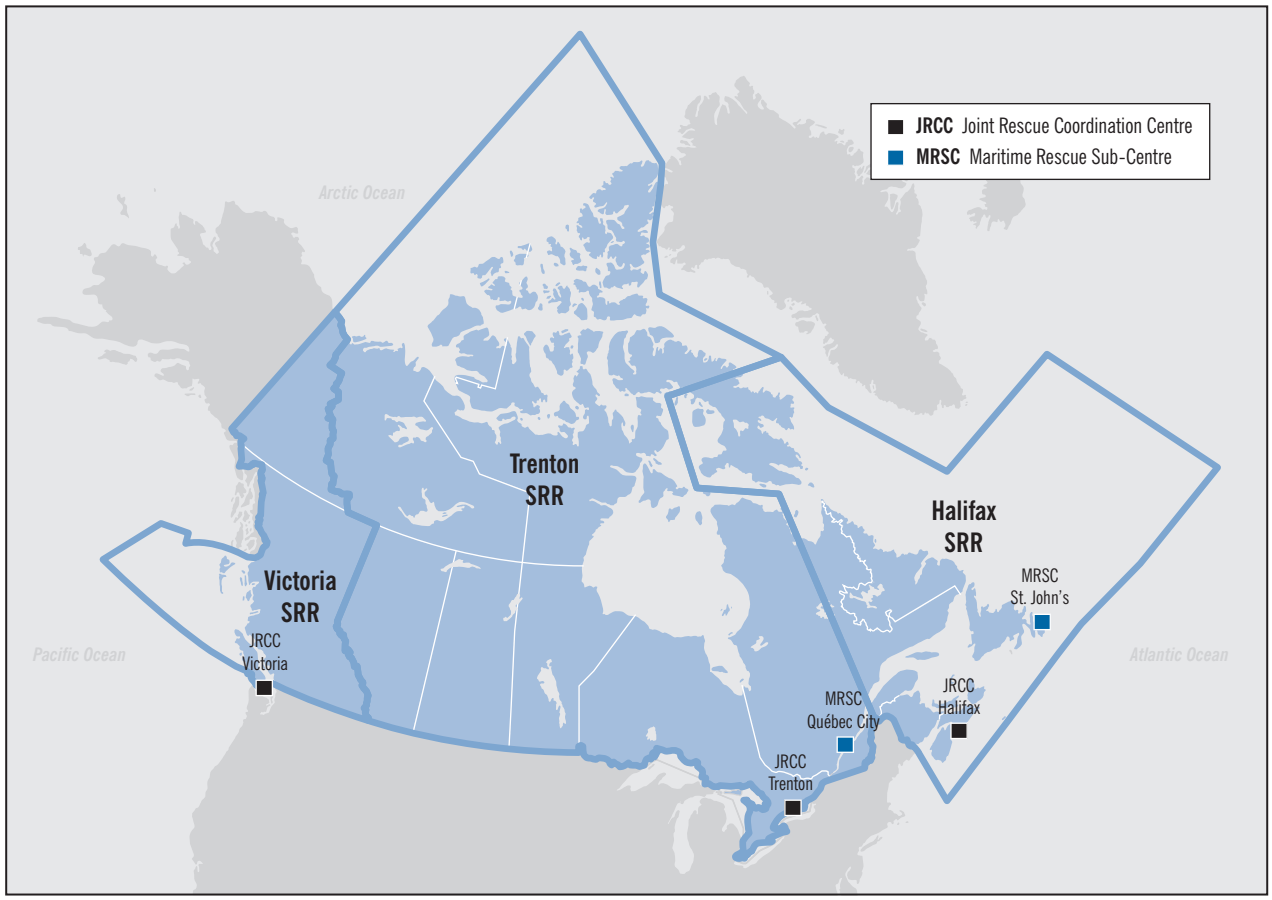
**7.10** A JRCC is notified that a person may be in danger by a call from a ship radio or telephone, or a distress signal transmitted from emergency locating beacons on aircraft or marine vessels. After receiving the distress call, the SAR coordinator at the JRCC investigates to determine the nature of the distress. Staff record all available information about the person(s) in danger and determine the location of resources that could assist.

**7.11** SAR coordinators use a vast network of resources, including police, harbour authorities, and other federal and provincial/territorial

response agencies. SAR coordinators are trained to evaluate various situations and send the most effective resources, public or private, to deal with them. A distress incident can sometimes be resolved almost as quickly as it started. Other incidents can evolve into complex situations that require many resources.

**7.12** Search and rescue works as a "system of systems." While the Canadian Forces and the Canadian Coast Guard coordinate the response to distress calls across Canada, they are not necessarily the first responders to SAR incidents. SAR response services are multi-jurisdictional and also rely on a range of primary, secondary, voluntary, and private resources. For example, the search and rescue system relies heavily on volunteer organizations such as the Civil Air Search and

**Exhibit 7.1** **Search and rescue regions (SRRs)**



Rescue Association, the Canadian Coast Guard Auxiliary, and the Search and Rescue Volunteer Association of Canada. In many cases, volunteers or others, including **vessels of opportunity** close to the scene of a SAR incident, will be the first to arrive and provide assistance. This may mean that federal resources may not be needed to resolve the incident. Assistance from volunteers or from private resources is a key element in maximizing the efficiency of SAR operations, prevention, and safety-related activities.

**Vessels of opportunity**—Vessels, whether government, military, or civilian, that are close enough and capable of responding to a search and rescue incident.

**7.13** Personal safety is an individual responsibility, but if all methods taken to prevent an accident are unsuccessful, the SAR system is available as a last resort. SAR is considered a **no-fail mission**, and Canadian Forces and Canadian Coast Guard personnel put their lives at risk in order to save others.

**No-fail mission**—A mission that must be undertaken and to which resources must be assigned and actions taken to minimize injury and loss of life.

### Focus of the audit

**7.14** Our audit examined whether federal organizations are ready to respond to incidents that require search and rescue, have implemented prevention activities to reduce the number and severity of such incidents, and adequately administer search and rescue activities. We examined federal organizations' state of readiness to respond to incidents, and whether human resources, equipment, and information technology systems are in place to respond.

**7.15** This audit focused on federal support to marine and air search and rescue activities. The federal organizations included in our audit were National Defence and the Canadian Forces, Fisheries and Oceans Canada and the Canadian Coast Guard, and Transport Canada. We did not audit provincial and municipal search and rescue activities, nor did we examine search and rescue activities of the Royal Canadian Mounted Police. Activities in the national parks were also excluded, because they are not a major portion of federal search and rescue expenditures.

**7.16** The audit covered the period between 1 April 2007 and 1 November 2012. More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

# Observations and Recommendations

## Readiness to respond

**7.17** We examined whether National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard meet their defined minimum state of readiness as measured by the time required to react to air and marine SAR incidents.

**7.18** The Canadian Forces and the Canadian Coast Guard use the National Search and Rescue (SAR) Manual to guide their operations. According to the SAR Manual, records of SAR incidents are an important part of managing the Canadian SAR system. We analyzed data that was available covering the period 2008 to 2012. Our analysis reviewed incidents in which primary SAR resources were the first **tasked**. The Canadian Forces and the Canadian Coast Guard measure **reaction time** as the time it takes for a search and rescue unit to depart after being tasked (Exhibit 7.2). We did not audit the travel time to arrive at an incident site (which is considered part of the **response time**), the performance of volunteer organizations and vessels of opportunity, or incidents where federal aircraft or vessels were not the first tasked. We understand that in some cases where the expected reaction times for the Royal Canadian Air Force (hereafter referred to as the Air Force) and the Canadian Coast Guard were not met, the delays were beyond each department's control—being due to, for example, bad weather, fuel requirements, or multiple incidents occurring at the same time.

**Task/tasked**—Specific instructions assigned to an aircraft or vessel to react to a search and rescue incident.

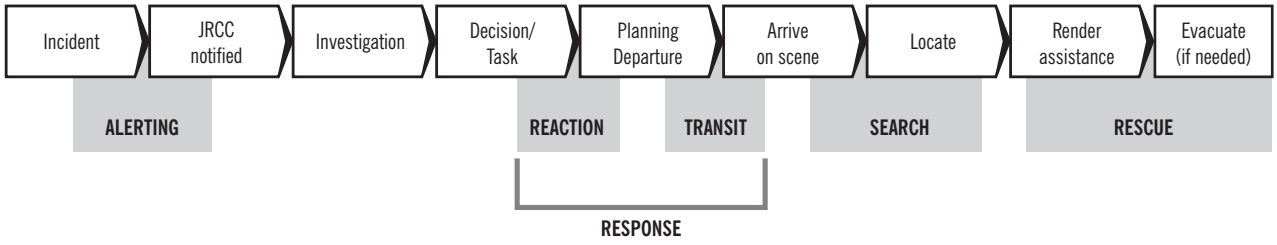
**Reaction time**—The time it takes for a search and rescue unit to depart after being tasked.

**Response time**—The time it takes a search and rescue crew after being tasked to reach an identified incident.

### The Canadian Coast Guard and Canadian Forces meet their reaction time standards in most cases

**7.19** **Canadian Coast Guard.** As part of its defined state of readiness, the Canadian Coast Guard's minimum standard is for its SAR-assigned vessels to react within 30 minutes of being tasked; this standard applies

**Exhibit 7.2** **Search and rescue incident timeline**



24 hours a day, seven days a week, throughout the year. As well, the Canadian Coast Guard modifies its operations in times of anticipated greater need. For example, it will move more ships to areas where the fishing season is active.

**7.20** The Canadian Coast Guard's objective is to meet its reaction standard in 99 percent of incidents. In the period covered by the audit, we found that 96 percent of the time (in 16,644 out of 17,394 cases), the Canadian Coast Guard left within 30 minutes or less. In 2 percent (353 cases) of all incidents, crews left within 40 minutes. We found that information on reasons for delays existed at the time of the audit; however, while the Canadian Coast Guard has conducted analysis on a case-by-case basis, it did not systematically analyze this information to determine whether improvements were needed or possible.

**7.21** **Recommendation.** Fisheries and Oceans Canada's Canadian Coast Guard should systematically analyze its search and rescue data, so that its provision of service is based on current and expected search and rescue needs.

**The Department's response.** Agreed. The Coast Guard will continue to take the appropriate steps to mitigate the risks. The Coast Guard is in the process of improving the methodology of its risk-based approach to more systematically define search and rescue needs. Improvements will be implemented shortly. Results of this improved risk-based approach will also be shared with National Defence through the Canadian Coast Guard/National Defence Search and Rescue Operational Governance Committee.

**7.22** **Canadian Forces.** The minimum state of readiness for Air Force rescue squadrons as measured by reaction time is to have the tasked assets depart within 30 minutes, from Monday to Friday between 8 a.m. and 4 p.m., and within two hours on evenings and weekends.

**7.23** The Air Force's objective is to meet its reaction standard in 100 percent of incidents. In the period covered by the audit, we found that in 85 percent of incidents (in 2,281 out of 2,675 cases), the Air Force met its reaction standard; the aircraft left within the required 30 minutes or 2 hours, or left earlier than the standard. In 5 percent of all incidents (129 cases), the Air Force went beyond the reaction standard by 10 minutes or less. We found that information on reasons for delays existed at the time of the audit; however, while the Canadian Forces has conducted analysis on a case-by-case basis, it did not systematically analyze this information to determine whether improvements were needed or possible.

**7.24** In 2007 and subsequently in 2012, the Canadian Forces reviewed whether its state of readiness supports effective and efficient SAR operations. The 2012 study included an analysis of the optimal scheduling of busy periods. The study concluded that the current state of readiness does not reflect the busy periods of commercial fishing and recreational activity. The study also concluded that shifting the current 8 a.m. and 4 p.m. schedule by an hour or more could improve coverage.

**7.25** Our audit work found that, without increasing the number of hours worked, shifting the regular weekly schedules could have increased readiness for SAR alerts by 9 percent in the Victoria SAR region, 32 percent in the Trenton region, and marginal amounts in the Halifax region. While the currently scheduled states of readiness do not coincide with the time of greatest need, we note that search and rescue region commanders do modify the schedule for such things as the opening of fishing season.

**7.26** We also found that the Canadian Forces does not regularly review whether its states of readiness are still appropriate to meet expected needs. Furthermore, current readiness standards were set using the resources available rather than a needs analysis. If standards continue to be based on available resources, and this capacity declines, this will result in a reduction of readiness standards and service levels.

**7.27** **Recommendation.** National Defence should systematically analyze its search and rescue data, including its states of readiness, so that its provision of service is based on current and anticipated search and rescue needs.

**The Department's response.** Agreed. National Defence will review its approach to ensure that it captures and systematically analyzes data and, through Defence and Research Development Canada, will continue to examine the performance of Royal Canadian Air Force search and rescue (SAR) assets in order to ensure that SAR response meets the aeronautical and maritime SAR needs of Canadians, now and in the future. The recently initiated National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard Search and Rescue Operational Governance Committee will improve on the analysis and annual report of aeronautical and maritime SAR incidents in Canada so that provision of services continues to be based on current and anticipated aeronautical and maritime needs.

## Human resources

**7.28** Providing SAR services across Canada requires that the Canadian Forces and the Canadian Coast Guard have a sufficient number of qualified personnel. Search and rescue personnel coordinate and conduct searches, carry out rescue operations, assist and provide aid for persons in distress, administer emergency medical aid at incident sites, and transport injured people to hospital.

**7.29** We examined whether National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard have human resource systems and practices so that they have the appropriate number of qualified people to carry out their SAR mandate.

### Air Force personnel shortages make it difficult to meet minimum crew levels

**7.30** As we have noted in previous audits over the past 10 years, the Air Force continues to experience personnel shortages. In this audit, we examined whether National Defence has the appropriate number of qualified SAR technicians, pilots, controllers, and flight engineers. We found that the Air Force continues to experience personnel shortages, particularly among pilots and flight engineers. The number of SAR technicians has increased in recent years. SAR is competing for limited resources against other Air Force priorities. Any increase in search and rescue personnel would require a reduction of personnel in other areas of the Air Force. These factors affect the Air Force's ability to recruit, train, and retain staff for search and rescue operations.

**Air crews**—One air crew is comprised of the number of qualified personnel needed to operate a given aircraft for a particular task. Multiple crews are needed to operate around the clock.

**7.31** The number of **air crews** required to operate search and rescue aircraft is based upon historical requirements. The Air Force established that to maintain coverage around the clock, it needs to have at least 5.5 trained air crews for each aircraft. However, over the last decade, the Air Force has assessed, more than once, that 6.5 is the minimum number of air crews needed for each aircraft to sustain search and rescue operations. This increase in air crews has not been implemented by all squadrons, even though more personnel are needed because of

- a decrease in the average number of years of experience;
- an increase in the number of SAR-related activities; and
- an increase in leave, administrative, and training requirements.

A 2008 National Defence study found that while three out of four squadrons with airplanes had 6.5 air crews per airplane, none of the four squadrons with helicopters had 6.5 air crews per helicopter. We found that this is still the case.

**7.32** The Air Force has experienced a number of staffing challenges over the past decade. Many experienced pilots have retired; recruiting, training, and managing SAR helicopter flight engineers is becoming increasingly difficult; and maintaining the number of available SAR technicians remains a challenge due to injuries and various training requirements. The same challenges apply to the Joint Rescue Coordination Centre (JRCC) air controllers and air assistant controllers. The required number of controllers was established more than 30 years ago. However, the total number of controllers has decreased, information technology has become more complex, and SAR responsibilities have increased. These factors result in a heavier workload during peak season, minimal capacity for training, and insufficient support for both information technology and administration. Staffing levels are not sufficient to cover absences due to training or sick leave. This adversely affects rest periods for the remaining controllers.

**7.33** The number of crew members per aircraft is at the minimum requirement that the Air Force has set for itself and it is losing experienced people. While SAR crews conduct their missions with available resources, the loss of experienced personnel results in more pressure placed upon less experienced air crew to perform supervision, operations, and training. It also makes it more difficult for air crews to be scheduled for operations and still obtain necessary training, as well as professional development.

**7.34** Our recommendation is found at paragraph 7.39.

### The Air Force has faced difficulties in training search and rescue air crews

**7.35** Search and rescue crews need to meet training requirements and keep their certifications up to date. At the same time, the Air Force must be ready to respond to the next call for help. Adequate and up-to-date SAR training is needed for a no-fail mission. Errors during a SAR incident may result in loss of life or injury to rescuers and people in distress, or loss of aircraft.

**7.36** Search and rescue technicians are highly trained specialists who provide on-scene medical aid and evacuation from some of the harshest and most remote areas of Canada. Their trade is specialized and they must frequently update their varied qualifications (including diving, parachuting, mountain climbing, and medical qualifications). We found that it is difficult for SAR technicians to be available for duty while updating their qualifications.

**7.37** In addition to personnel shortages, there have not been enough aircraft available for training air crews. This has delayed training of both new recruits and existing personnel. New recruits cannot carry out their functions until they complete their training, so the current active crews have to assume a heavier workload in the meantime. While this is a general challenge for the Air Force, it has a particular impact on SAR activities. We found that in order to be available for SAR missions, pilots, flight engineers, and operational crews have experienced delays in maintaining their ongoing mandatory training due, in part, to the lack of available aircraft.

**7.38** While previous internal reports have included recommendations approved by the Chief of Air Staff to increase the number of SAR crews per squadron, we found that these recommendations have not been implemented. Without an adequate number of available personnel, coverage around the clock is achieved at the expense of training new recruits, professional development of SAR personnel, and leave.

**7.39** **Recommendation.** National Defence should assign a sufficient number of search and rescue personnel to continue to meet operational needs and provide for the necessary training, professional development, and leave of search and rescue personnel.

**The Department's response.** Agreed. The Royal Canadian Air Force currently staffs its search and rescue (SAR) squadrons to 100 percent of the target personnel levels and will continue to ensure that SAR services are delivered effectively. National Defence will continue its assessment of relevant policies and their applications in relation to SAR squadrons' staffing levels, and will determine options to address any identified concerns.

### The Canadian Coast Guard faces staffing and training challenges

**7.40** We examined whether the Canadian Coast Guard had a sufficient number of qualified personnel to conduct SAR activities. We found that this was not always the case.

**7.41** **Recruiting marine coordinators.** In the 1970s, the government created two Maritime Rescue Sub-Centres (MRSCs), one in St. John's, Newfoundland, and one in Québec City, Quebec. The main function of these MRSCs was to reduce the JRCCs' workload in areas of high marine activity. In June 2011, the government announced the consolidation of the MRSCs into the Trenton and Halifax JRCCs.

**7.42** As a result of the decision to consolidate the Québec City MRSC with the Trenton and Halifax JRCCs, the Canadian Coast Guard must recruit bilingual staff in order to deliver a fully bilingual service. Distress calls must be responded to in either English or French. The Québec City MRSC received the majority of its calls in French.

**7.43** We found that the Canadian Coast Guard has not been able to recruit and train enough bilingual coordinators, which has delayed the consolidation of the Québec City MRSC into the Trenton JRCC. The Canadian Coast Guard told us that the transfer will not be implemented until trained bilingual coordinators are in place to ensure public safety. The date for consolidation has been revised for later in 2013.

**7.44** In addition, the JRCCs have had difficulty maintaining an appropriate number of marine coordinators for almost 15 years. In 2009, the Canadian Coast Guard conducted a workload review at the JRCCs; its report included a recommendation that the minimum staffing level be increased to two coordinators at all times, along with appropriate support staff. This recommendation has been partially met with the consolidation of the MRSC coordinators into the JRCCs.

**7.45 Maintaining an adequate number of rescue specialists.** Canada is a signatory to the International SAR Convention of the International Maritime Organization, a United Nations agency. Signatory nations are responsible for providing medical advice and assistance to mariners in distress. The Canadian Coast Guard's policy is to carry trained rescue specialists on board all SAR vessels. Trained rescue specialists are responsible for rescues and pre-hospital emergency care.

**7.46** The Canadian Coast Guard has defined the number and type of crew that must be on board a SAR vessel in order to operate it safely, such as having at least one rescue specialist. If the requirements are not met, the vessel must obtain an exemption to proceed. We found that over the past five fiscal years, for SAR lifeboats, more than 265 exemptions to this policy were approved for them to proceed on a mission without a rescue specialist. An exemption does not mean that a mission will be cancelled, but not having a rescue specialist may reduce the mission's effectiveness. The lack of trained rescue specialists on SAR lifeboats has been known since at least 2007, when the Canadian Coast Guard identified the problem in its SAR needs analysis. However, no action has been taken to improve the situation. The Canadian Coast Guard collects information at the regional level but we could not verify that all exemptions had been reported and recorded.

**7.47** **Training commanding officers.** The Canadian Coast Guard has identified two required courses to qualify a commanding officer to carry out SAR duties: the small vessel command course and the on-scene coordinator course. However, we found that the small vessel command course had not been delivered for at least six years and the on-scene coordinator course had not been delivered for three years. The on-scene coordinator course was reintroduced in 2010. We found that the Canadian Coast Guard does not track whether commanding officers have taken these required courses.

**7.48** **Providing information to JRCCs.** In addition, we found that there were inconsistencies in providing information to the JRCCs when a vessel is lacking either rescue specialists or commanding officers with the required SAR courses. This is important because it affects the JRCCs' ability to assess what resources are available and whether they are appropriate for a specific SAR incident.

**7.49** **In summary.** We found that the Canadian Coast Guard faces difficulties in recruiting marine coordinators at the Joint Rescue Coordination Centres, maintaining an adequate number of rescue specialists, and delivering SAR training to commanding officers.

**7.50** **Recommendation.** To identify and implement staffing and training needs, Fisheries and Oceans Canada's Canadian Coast Guard should review its search and rescue training requirements to ensure that they are in alignment with crewing profiles, and track the number of exemptions granted for vessels to proceed without a rescue specialist.

**The Department's response.** Agreed. The Canadian Coast Guard will ensure that cyclical reviews are conducted of the fleet crewing profiles and changes processed to ensure that competencies are reflective of current regulatory and operational requirements. Compliance or non-compliance with the identified requirements will be tracked using the exemption process and monitored through the Coast Guard's Safety Management System review and audit process.

## Vessels and aircraft

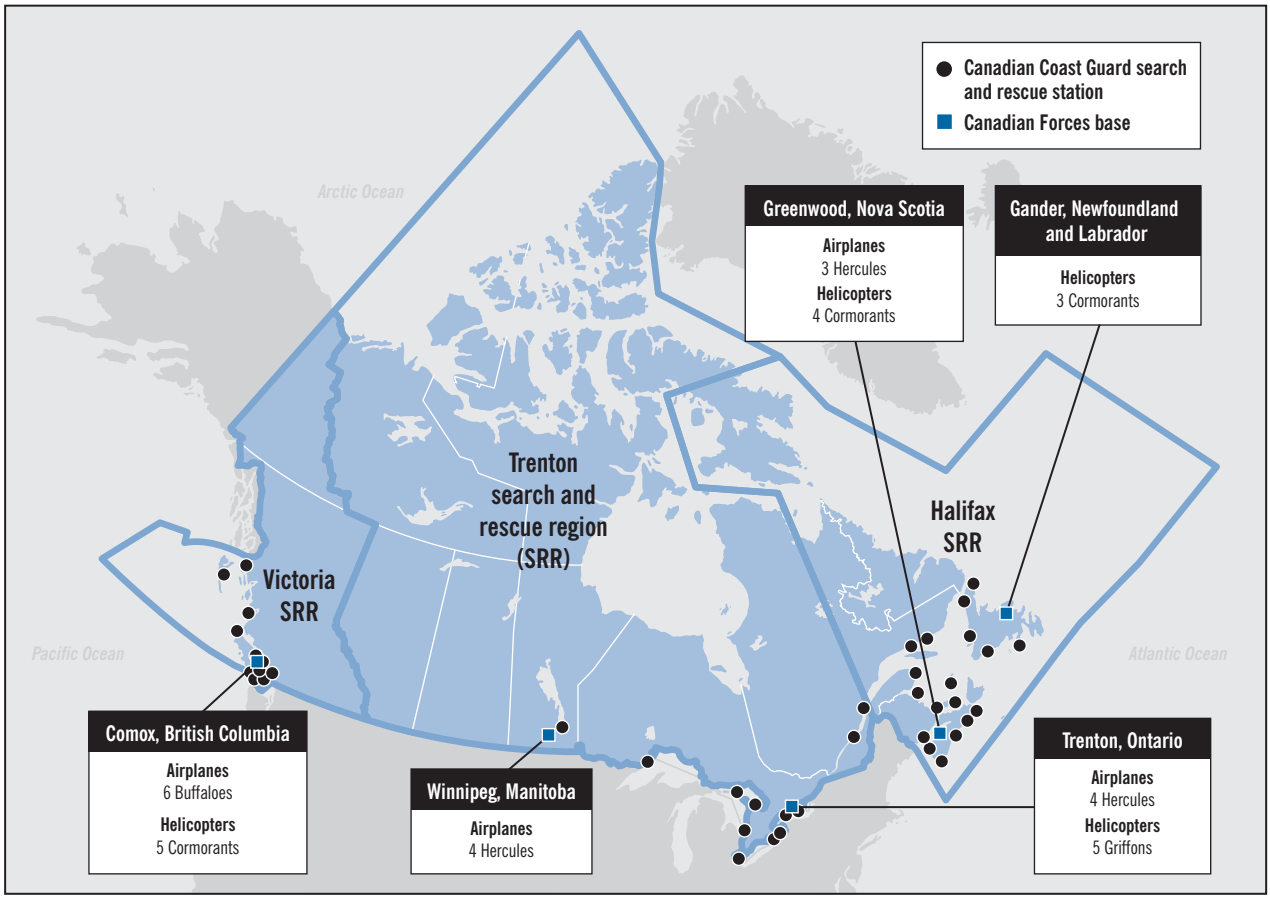
**7.51** We examined whether Fisheries and Oceans Canada/Canadian Coast Guard and National Defence/Canadian Forces have defined, and regularly assess, the number and type of vessels and aircraft required to meet the demand for marine and air SAR services in Canada. We looked at marine vessels and aircraft that are the primary resources for search and rescue activities (Exhibit 7.3).

### Canadian Coast Guard lifeboats are adequate to meet search and rescue demands

**7.52** The Canadian Coast Guard has 48 SAR lifeboat vessels operating from stations across the country that are specially designed, equipped, and crewed. During the summer, SAR service is supplemented with small craft that are used close to shore. In addition, any Canadian Coast Guard vessel, including those that operate farther off shore for longer periods of time, can be tasked as a SAR vessel.

**7.53** We found that the Canadian Coast Guard conducts a periodic SAR needs analysis and an annual capability gap analysis to determine if its vessels continue to meet its needs. We also found that the Canadian Coast Guard has a regular maintenance regime for its lifeboats. The Canadian Coast Guard uses these plans to regularly update the expected life of its vessels and their need for replacement.

**Exhibit 7.3** **Locations of Canadian search and rescue stations and bases**



**7.54** In addition, improvements have been made in recent years. Five new SAR lifeboats (the Cape class) have been acquired to replace three older vessels, and there are plans to replace other SAR lifeboats.

### National Defence does not have enough suitable search and rescue aircraft

**7.55** The Air Force operates two types of helicopters (Cormorant and Griffon) and two types of airplanes (Hercules and Buffalo) for search and rescue. This equipment is located at squadrons across the country. In addition to these resources, all other squadrons can be called on for search and rescue operations when needed. We found capability and availability challenges exist for each type of dedicated SAR aircraft.

**7.56** **The Cormorant helicopter.** In 2001, the Air Force acquired 15 Cormorants to replace its aging fleet of Labrador helicopters. The Cormorants were intended to be the only helicopters dedicated to SAR, and 15 was the minimum number required. However, the Air Force now has only 14 Cormorants, since one was lost in a training accident in 2006 and was not replaced.

**7.57** Increased inspection and maintenance to deal with cracks in the tail rotor had reduced the number of Cormorants available to carry out SAR missions. This issue has now been addressed, and the Air Force has also purchased used helicopters for spare parts, improving availability. However, corrosion from salt water is increasing maintenance needs, with at least two helicopters always in maintenance. Therefore, the number of aircraft available for the coming years will be reduced.

**7.58** The Air Force has stated that the Cormorant is a very capable helicopter for search and rescue activities and has increased the number of planned flying hours for its Cormorants.

**7.59** Following the Cormorants' problems in the early years of fleet operation and the loss of one helicopter, the Air Force reassessed its needs based on existing fleet capacity. In 2005, it relocated the Trenton-based Cormorant helicopters to the three other bases in order to support SAR service at those bases. It reassigned Griffon helicopters to Trenton to fill the gap on a temporary basis.

**7.60** **The Griffon helicopter.** The Griffon has been used as a primary SAR helicopter at Trenton since the departure of the Cormorant fleet in 2005. However, both external experts and Canadian Forces personnel have recognized that the Griffon is inferior to the Cormorant for search and rescue. The helicopter is too small for certain SAR missions and cannot reach remote sites in northern Ontario and Quebec without refuelling. In addition, the Griffon has no

de-icing system, which is a significant deficiency. The Air Force has taken steps to upgrade the Griffons so that they are used as primary SAR helicopters.

**7.61** Due to its limitations, the Griffon has been unable to accept certain missions and therefore is not suitable for all SAR needs. For example, in August 2010, the Griffon was not able to accept a mission to rescue people on Baffin Island due to the time it would have taken to get to the scene.

**7.62** Nonetheless, the Air Force plans to continue using the Griffon for SAR in Trenton as a temporary solution. An options analysis is underway regarding the helicopter fleet and, once completed, will inform decisions regarding future helicopter capacity at Trenton.

**7.63** **The Hercules airplane.** The 13 Hercules airplanes used for SAR can meet most operational requirements, but are not equipped with sensors and data management systems found on modern SAR airplanes.

**7.64** All of the SAR Hercules airplanes are over 20 years old, and National Defence has difficulty in obtaining spare parts for them, which reduces their availability. Two aircraft are in extensive maintenance at any time and it takes all 11 available remaining SAR Hercules airplanes to maintain SAR operations. Consequently, the Air Force has little flexibility to meet operational demand and must from time to time call upon other aircraft.

**7.65** **The Buffalo airplane.** According to the Air Force, the ability of the Buffalo airplane to fly in almost any weather conditions and to take off or land on very short distances makes it particularly suited to the rugged terrain of the west coast. After 45 years of service, these airplanes are more difficult to support because spare parts are scarce.

**7.66** As the age of the Buffalo fleet has increased, maintenance costs have gone up. It now costs about $20 million per year to maintain the aircraft, including obtaining or making replacement parts. Extensive maintenance reduces the number of airplanes available. In 2011, Buffalo airplanes were unavailable for SAR on 119 occasions, and in five of these cases there were no SAR replacement airplanes to perform SAR missions.

**7.67** **Aircraft replacement.** Work on a project to replace the Buffalo and Hercules with a new aircraft has been ongoing since 2002. Delivery of the new SAR aircraft has been delayed from 2007 to 2017. This delay has forced the continued use of the Hercules and the Buffalo, requiring the Air Force to extend their lives.

**7.68** The oldest aircraft have required upgrading, including installing new wings on two Hercules. If the Buffalos are used beyond 2015, they may require new engines at a substantial cost. National Defence is aware of the issue and is reviewing its options to address this problem. It has recognized that the risk associated with aircraft replacement is significantly lower than the risk of maintaining the old fleet.

**7.69** **In summary.** National Defence has not sufficiently replaced and has had difficulty maintaining its SAR aircraft at the level necessary to respond to SAR incidents effectively.

**7.70** **Recommendation.** National Defence should give priority to the acquisition of new aircraft that are best suited for search and rescue activities and ensure that it has sufficient numbers of these resources to meet search and rescue needs on an ongoing basis.

**The Department's response.** Agreed. National Defence has a project underway to buy new SAR aircraft. The project remains a high priority. It is currently in the definition phase and is expected to be in the implementation phase upon contract award in 2014–15. This new aircraft will replace the Hercules and Buffalo aircraft currently performing SAR in Canada. With respect to SAR helicopter fleets, improvements have recently been made to the availability of the Cormorant fleet, allowing it to fly a record number of hours in 2012, and the Griffon fleet has undergone enhancements, which are allowing it to provide a more robust SAR capability.

## Information management and technology

**7.71** Search and rescue managers at all levels need accurate, timely, and complete information to support their decisions for current and future needs. We examined whether the current SAR information systems provide quality information, support strategic requirements, and help decision making and reporting to support day-to-day operations.

### The search and rescue information management system does not adequately support daily operations and is near the breaking point

**7.72** The Search and Rescue Mission Management System (SMMS) is used jointly at the operational level by Canadian Forces and Canadian Coast Guard personnel. This system records information from the initial call to a mission's closure, including the sequence of events, resources used, maps, pictures, voice calls, and the outcome. National Defence manages SMMS and the Canadian Coast Guard manages the additional statistical reporting system.

**7.73** While data is available from the SMMS to help Joint Resource Coordination Centre (JRCC) coordinators make operational decisions during a mission, SMMS has limitations. These include limited electronic map quality, lack of automated date and time capture, and lack of consistency in how data is entered by coordinators at JRCCs. These limitations mean that staff have to use other systems (such as free Internet tools) to help them make decisions to manage the search process. There is a risk in relying on third-party software that is not within the JRCCs' control.

**7.74** Limitations of the SMMS also have an impact on the quality of data that can be used for statistical and performance reporting. For example, once a mission is closed, the data is transferred to the statistical reporting system so it is available for performance measurement and management. However, inconsistent data entry causes delays in obtaining needed statistical information.

**7.75** The SMMS is integral to the business of search and rescue. However, we found that the system is not managed as one of National Defence's mission critical systems; for example, there is no identified system owner and there is no ongoing IT support. Rather, the system is managed at the operational level by SAR personnel, with the result that integration, strategic vision, long-term planning, and management is secondary to their operational work.

**7.76** In addition to these limitations, the SMMS is nearing its breaking point. There was a system failure in April 2009, resulting in severe destabilization of the software. Another failure would make it difficult for the JRCC to effectively manage SAR missions in a timely manner. National Defence recognized the need to replace the SMMS in April 2011; however, the project was only initiated in November 2012. Implementation of a new integrated system is not expected until the 2015–16 fiscal year. We did not see a plan to cover the gap between now and the implementation of the new system.

**7.77** **Recommendation.** National Defence, in consultation with Fisheries and Oceans Canada, should develop an information system that meets current and future requirements and develop a plan to cover the gap until the system is replaced.

**National Defence's response.** Agreed. The project to develop a new, integrated Search and Rescue Mission Management System (SMMS) was approved in November 2012. In the meantime, National Defence is working with Fisheries and Oceans Canada to provide better technical support to the current system and will review the current

processes used to ensure that, should the system become unavailable, SAR services can continue to be managed at the Joint Rescue Coordination Centres (JRCCs) until a replacement system is implemented.

## Prevention activities

**7.78** Prevention aims to improve safety and reduce the number and severity of accidents, which, in turn, may reduce the need for search and rescue missions. Prevention involves educating people about how to reduce risks by using knowledge, skills, and equipment to minimize injury or death. Search and rescue is a last resort when safety and prevention measures fail.

**7.79** We examined whether National Defence, including the National Search and Rescue Secretariat and the Canadian Forces, have designed and implemented prevention programs and activities to try to reduce the number and severity of SAR incidents. We also examined whether Transport Canada, as the federal regulator of air and marine transportation, has designed and implemented programs and activities to promote safety and prevent accidents.

### A search and rescue prevention framework is missing

**7.80** At its inception in 1986, the National Search and Rescue Secretariat (NSS) was given the objective of developing a SAR prevention framework and strategy for regulation, enforcement, and education. We found that the NSS has not accomplished this objective.

**7.81** In 1997, the National SAR Prevention Working Group, which includes the Canadian Coast Guard, Transport Canada, and National Defence, was established under the authority of the Interdepartmental Committee on Search and Rescue. To date, the working group has not developed a coordinated approach to SAR prevention. A framework that includes an agreed-upon goal, objectives, and defined roles and responsibilities for SAR prevention will help to coordinate efforts. In our opinion, the SAR prevention framework is long overdue.

### Prevention project results are not used to improve the federal contribution program on search and rescue

**7.82** The National Search and Rescue Secretariat (NSS) administers the Search and Rescue New Initiatives Fund (SAR NIF), a contribution program established by the federal government in 1986. The objective of the program is to enhance the effectiveness of the SAR response in federal, provincial, and territorial jurisdictions; promote and support projects designed to develop and improve SAR prevention; and share

SAR response and prevention best practices throughout the SAR community. The three departments we audited participate in SAR NIF. We focused on SAR NIF prevention initiatives.

**7.83** The annual budget for SAR NIF is $8.1 million and has not changed for over 20 years. The funding is allocated by the NSS to other federal government departments and agencies, as well as to provincial and territorial governments, profit and not-for-profit Canadian organizations, various associations, and individuals.

**7.84** The NSS requires SAR NIF program recipients to produce quarterly progress reports and a summary report at the end of their projects. We found that program recipients produced reports, but the NSS did not use these reports to determine whether projects have the potential to reduce the number and severity of SAR incidents, nor were they used to improve future prevention programs.

**7.85** **Recommendation.** National Defence should ensure that Search and Rescue New Initiatives Fund project results are used to improve future search and rescue activities.

**The Department's response.** Agreed. National Defence and the National Search and Rescue Secretariat (NSS) recognize the value of prevention in reducing the number and/or the severity of search and rescue–related incidents. As such, NSS will ensure that prevention-related projects funded through the Search and Rescue New Initiatives Fund are used to improve future search and rescue activities in a manner consistent with program objectives. Using past project reports, the NSS will analyze current processes and mechanisms to ensure that funding from the Search and Rescue New Initiatives Fund is directed to projects that maximize their potential in the improvement of future search and rescue activities and share the results of this work so that all parts of the system can benefit.

### Emergency beacons reduce search time but are not required on all aircraft and vessels

**7.86** An emergency beacon helps to identify the location of an air or marine incident. It can reduce the time it takes for search and rescue crews to locate survivors. In this way, emergency beacons help to maximize the use of limited SAR resources. For those in distress, an emergency beacon may mean the difference between life and death. Older beacons transmit analog signals; newer beacons transmit digital signals.

**7.87** In October 2000, following an international decision, Canada stopped processing analog signals effective 1 February 2009, because digital beacons offer more rapid, reliable, and accurate position information and identify the specific vessel or aircraft to which the beacon is registered. Aircraft or vessels still using analog signals are no longer supported by satellite monitoring.

**7.88** Transport Canada is responsible for regulation of beacons, including the requirement that they be registered with federal authorities. While all commercially operated vessels and aircraft must be equipped with a type of distress beacon, Transport Canada has not required all boats and airplanes to have digital beacons on board. Despite the fact that analog beacons are no longer monitored by SAR satellites, Transport Canada has not required all classes of boats and airplanes to have digital beacons on board.

**7.89** Often, beacons are accidentally triggered, and each alert must be investigated. In 1992, we reported there was no ongoing analysis of the causes of aircraft and marine beacon false alerts. We found that the Canadian Forces now analyzes the causes of false alerts. The Canadian Forces informed us that the number of air and marine false alerts from 2009 to 2012 was about 2,800 out of a total of 3,000 alerts, taking time and resources to resolve.

**7.90** Of the new digital beacons on boats and airplanes, about 86 percent were registered with federal authorities in both 2010 and 2011. Because there is contact information about the owner, we found that it is easier to resolve false alerts for these beacons—it takes less time to contact the owner by phone. Data from the Canadian Forces showed that in 2009, about 54 percent of false alerts were resolved by phone, improving to about 71 percent in 2012. Mandatory use of digital beacons for aircraft and additional classes of boats may further help reduce the resources needed to determine whether an alert is real or false.

**7.91** **Recommendation.** Transport Canada should consider whether requirements for the use of digital emergency beacons should be applied to additional classes of boats and airplanes.

**The Department's response.** Agreed. The Department will review the requirements for the use of digital emergency beacons on additional classes of boats and airplanes. In support, the Department will consult with owners and operators on the applicability of emergency locator transmitters to more classes of general aviation aircraft by the end of 2013. The Department will also consult with

marine stakeholders on additional carriage requirements for emergency position indicating radio beacons by the end of 2013. Concurrently, the Department will continue with existing related safety measures, such as regulatory requirements for life-saving equipment, marine safety training and awareness initiatives, to mitigate safety risk. Combined, these safety approaches are expected to reduce the frequency and severity of incidents, thereby reducing the need for search and rescue.

## Governance of federal search and rescue

**7.92** We examined whether the government has developed a search and rescue policy and whether there is an appropriate governance structure to plan, coordinate, monitor, analyze, and report on current and future SAR activities and needs.

### There is no policy to guide federal search and rescue activities

**7.93** The government identified the need for a national SAR policy framework in 1976 and restated this need a number of times over the years, including with the 1985 Royal Commission on the Ocean Ranger Marine Disaster. While roles and responsibilities are clear at the operational level for the Canadian Forces and the Canadian Coast Guard, the departments do not have a common set of principles for coordination with other levels of government on national matters.

**7.94** In spite of the many reports and recommendations for a national SAR policy, we found that there is still no such policy nor an overall federal policy, planning framework, clear statement of expectations for federal SAR services, or ability to measure overall federal SAR effectiveness. The national SAR system involves federal, provincial, and territorial organizations, so the development of a policy framework would need to include all of these stakeholders. The National Search and Rescue Secretariat (NSS) has made efforts over the years to establish a policy and governance framework, but it has not been successful.

**7.95** In the absence of a formal policy, the Canadian Forces and the Canadian Coast Guard have used the National SAR Manual to guide their activities. The Manual presents common procedures, techniques, and terminology for marine and air SAR operations but does not include essential elements of a policy, such as policy principles, common priorities, service requirements, and standards. The Manual is meant to guide only the federal air and marine SAR partners and does not address the principles of how federal entities are to coordinate with other levels of government in national SAR matters.

**7.96** Without a policy to articulate federal priorities and performance expectations for search and rescue, the Canadian Forces and the Canadian Coast Guard each set their own priorities and make their own resource allocation, delivery, and procurement decisions. Each department sets reaction or readiness standards based on the availability and capability of its resources rather than on needs analyses.

**7.97** Effective performance measurement establishes clear targets and indicators, then collects and analyzes data for reporting and improving future performance. NSS was given responsibility to develop a national performance measurement framework. However, we found that there is no such performance measurement framework in place. Without performance targets and indicators, it is difficult for federal departments to measure, conclude, and report on federal SAR response activities and their performance.

**7.98** In 1987, the government committed to preparing an annual consolidated report on federal search and rescue activities. The NSS produced the National Search and Rescue Program Annual Activity Report 2008–2010, which examined national SAR activities. However, this report does not contain financial and human resource figures for each of the federal departments involved. The last time consolidated SAR costs were reported was in the 2005–06 fiscal year.

**7.99** National Defence and Fisheries and Oceans Canada each have separate reporting structures for both operational and administrative information. The structure for SAR is complex and decentralized and there is no comprehensive picture of SAR needs for decision makers in either department. A lot of information is collected within the SAR system, but it is not being systematically used for ongoing performance measurement, monitoring, or reporting on federal SAR activities. Coordination among SAR partners requires the ongoing sharing of high-quality information to gain efficiencies, apply lessons learned, and improve prevention initiatives.

**7.100 Recommendation.** National Defence, in consultation with Fisheries and Oceans Canada, Transport Canada, and other federal departments, and the provinces and territories, should take steps to improve the governance structure, including developing objectives, performance indicators, and reporting that would enhance search and rescue service and coordination.

**National Defence's response.** Agreed. National Defence acknowledges that search and rescue (SAR) is a shared responsibility across all levels of government and is delivered with the support of the private/

commercial sector and volunteers. As such, effective governance and coordination among federal departments and with provinces and territories is essential. As noted in response to recommendation 7.27, a recently initiated National Defence/Canadian Forces and Fisheries and Oceans/Canadian Coast Guard Search and Rescue Operational Governance Committee will work to enhance coordination of their respective federal responsibilities for aeronautical and maritime SAR activities. This, in turn, will assist overall coordination. Furthermore, National Defence/Canadian Forces, with the support of relevant federal departments, will assess the SAR governance structure at the federal level to determine whether it is optimally designed to effectively execute the SAR mandate across departments and to ensure appropriate coordination with federal-provincial and other responders.

## Conclusion

**7.101** We concluded that the Canadian Forces and the Canadian Coast Guard adequately respond to air and marine search and rescue (SAR) incidents. However, we noted that significant improvements are needed if they are to continue to adequately respond and provide the necessary personnel, equipment, and information systems to deliver SAR activities effectively.

- Personnel shortages and training challenges could limit the ability of the Canadian Forces and the Canadian Coast Guard to maintain SAR operations.
- The Canadian Coast Guard has replaced a number of its SAR lifeboats and has a maintenance schedule for its SAR vessels. However, Canadian Forces' search and rescue airplanes are older and require frequent extensive maintenance, and helicopters are either insufficient in number or less capable for responding to SAR incidents.
- The information system used to manage search and rescue cases does not adequately support operational requirements, and a replacement system is not expected until the 2015–16 fiscal year.

**7.102** National Defence, the Canadian Coast Guard, and Transport Canada participate in the Search and Rescue New Initiatives Fund, a contribution program intended to reduce the number and severity of search and rescue incidents. Transport Canada has a regulatory framework that promotes safety in transportation. However, there is no coordinated federal prevention strategy to reduce the number and severity of SAR incidents.

**7.103** While roles and responsibilities are clear at the operational level for the Canadian Forces and the Canadian Coast Guard, the departments do not have a common set of principles for coordination with other levels of government on national matters. In addition, the National Search and Rescue Secretariat has not implemented its 1986 mandate to put in place a national policy framework, nor does it have the ability to measure overall federal program performance. Therefore, these entities do not have the framework in place to adequately oversee search and rescue activities.

## About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

As part of our regular audit process, we obtained management's confirmation that the findings reported in this chapter are factually based.

### Objectives

The audit had three lines of enquiry with individual audit objectives:

- To determine whether National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard have the necessary trained personnel, equipment, and information systems available to support SAR operations as needed.
- To determine whether National Defence/Canadian Forces (including the National Search and Rescue Secretariat) have designed and implemented prevention programs and activities to reduce the number and severity of SAR incidents; and whether Transport Canada's programs and activities are designed and implemented to reduce incidents that may impact the need for SAR.
- To determine whether National Defence/Canadian Forces (including the National Search and Rescue Secretariat) and Fisheries and Oceans Canada/Canadian Coast Guard adequately administer SAR activities.

### Scope and approach

The audit focused on the primary activities of air and marine federal search and rescue and assessed how these activities are strategically and operationally coordinated. Air and marine search and rescue are conducted by National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard, respectively. Transport Canada is responsible for air and marine transportation regulations and for promoting safety and accident prevention across these domains. The National Search and Rescue Program is managed and coordinated by National Defence's National Search and Rescue Secretariat.

The audit approach involved reviewing selected departmental policies, systems, practices, and relevant documentation. We analyzed search and rescue incident data from 2008 to 2012 to establish compliance with minimum readiness standards and to determine appropriateness, accuracy, and completeness of performance measurement and reporting. We also interviewed responsible departmental officials at headquarters and in the regions during on-site visits to the three search and rescue regions located in Halifax, Trenton, and Victoria.

Excluded from the scope are provincial, territorial, and municipal SAR activities involving humanitarian missions and all ground search and rescue activities, including those conducted by the Royal Canadian Mounted Police and Parks Canada. We did not examine the professional judgments made by departmental staff at the operational level.

## Criteria

| Criteria | Sources |
|---|---|
| **To determine whether National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard have the necessary trained personnel, equipment, and information systems available to support SAR operations as needed, we used the following criteria:** | |
| National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard have defined, and regularly assess, the number and type of aircraft and vessels required to meet the demand for air and marine SAR services in Canada. | • National Search and Rescue Manual, National Defence/ Canadian Coast Guard<br>• Policy on Management of Materiel, Treasury Board |
| National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard meet the minimum state of readiness to respond to air and marine SAR incidents. | • National Search and Rescue Manual, National Defence/ Canadian Coast Guard |
| National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard have human resource systems and practices in place to ensure that the appropriate number of qualified people is in the right place at the right time to carry out their SAR mandate. | • Policy on Learning, Training and Development, Treasury Board<br>• Office of the Chief Human Resources Officer, Integrated Planning Handbook for Deputy Ministers and Senior Managers, Treasury Board |
| SAR information systems adequately support operational requirements, are properly managed, and are available and usable when required. | • Policy Framework for Information and Technology, Treasury Board |
| **To determine whether National Defence/Canadian Forces (including the National Search and Rescue Secretariat) have designed and implemented prevention programs/activities to reduce the number and severity of SAR incidents; and whether Transport Canada's programs/activities are designed and implemented to reduce incidents that may impact the need for SAR, we used the following criteria:** | |
| National Defence/Canadian Forces (including the National Search and Rescue Secretariat) and Transport Canada work to reduce the number and severity of marine and air SAR incidents through SAR prevention education and the enforcement of relevant regulations. | • National Search and Rescue Manual, National Defence/ Canadian Coast Guard |
| **To determine whether National Defence/Canadian Forces (including the National Search and Rescue Secretariat) and Fisheries and Oceans Canada/Canadian Coast Guard adequately administer search and rescue (SAR) activities, we used the following criteria:** | |
| Roles and responsibilities for federal SAR activities are clearly defined and implemented:<br>• to develop policy and an appropriate governance structure;<br>• to plan, coordinate, monitor, analyze, and report on current and future SAR activities and needs. | • National Search and Rescue Manual, National Defence/ Canadian Coast Guard |
| SAR information systems provide quality information, support strategic requirements, and facilitate decision making and reporting. | • Policy Framework for Information and Technology, Treasury Board |

Management reviewed and accepted the suitability of the criteria used in the audit.

### Period covered by the audit

The audit covered the period between 1 April 2007 and 1 November 2012. Audit work for this chapter was substantially completed by 15 February 2013.

### Audit team

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# Appendix List of recommendations

The following is a list of recommendations found in Chapter 7. The number in front of the recommendation indicates the paragraph where it appears in the chapter. The numbers in parentheses indicate the paragraphs where the topic is discussed.

| Recommendation | Response |
|---|---|
| **Readiness to respond** | |
| **7.21** Fisheries and Oceans Canada's Canadian Coast Guard should systematically analyze its search and rescue data, so that its provision of service is based on current and expected search and rescue needs. **(7.19–7.20)** | **The Department's response.** Agreed. The Coast Guard will continue to take the appropriate steps to mitigate the risks. The Coast Guard is in the process of improving the methodology of its risk-based approach to more systematically define search and rescue needs. Improvements will be implemented shortly. Results of this improved risk-based approach will also be shared with National Defence through the Canadian Coast Guard/National Defence Search and Rescue Operational Governance Committee. |
| **7.27** National Defence should systematically analyze its search and rescue data, including its states of readiness, so that its provision of service is based on current and anticipated search and rescue needs. **(7.22–7.26)** | **The Department's response.** Agreed. National Defence will review its approach to ensure that it captures and systematically analyzes data and, through Defence and Research Development Canada, will continue to examine the performance of Royal Canadian Air Force search and rescue (SAR) assets in order to ensure that SAR response meets the aeronautical and maritime SAR needs of Canadians, now and in the future. The recently initiated National Defence/Canadian Forces and Fisheries and Oceans Canada/Canadian Coast Guard Search and Rescue Operational Governance Committee will improve on the analysis and annual report of aeronautical and maritime SAR incidents in Canada so that provision of services continues to be based on current and anticipated aeronautical and maritime needs. |
| **Human resources** | |
| **7.39** National Defence should assign a sufficient number of search and rescue personnel to continue to meet operational needs and provide for the necessary training, professional development, and leave of search and rescue personnel. **(7.30–7.38)** | **The Department's response.** Agreed. The Royal Canadian Air Force currently staffs its search and rescue (SAR) squadrons to 100 percent of the target personnel levels and will continue to ensure that SAR services are delivered effectively. National Defence will continue its assessment of relevant policies and their applications in relation to SAR squadrons' staffing levels, and will determine options to address any identified concerns. |

| Recommendation | Response |
|---|---|
| **7.50** To identify and implement staffing and training needs, Fisheries and Oceans Canada's Canadian Coast Guard should review its search and rescue training requirements to ensure that they are in alignment with crewing profiles, and track the number of exemptions granted for vessels to proceed without a rescue specialist. **(7.40–7.49)** | **The Department's response.** Agreed. The Canadian Coast Guard will ensure that cyclical reviews are conducted of the fleet crewing profiles and changes processed to ensure that competencies are reflective of current regulatory and operational requirements. Compliance or non-compliance with the identified requirements will be tracked using the exemption process and monitored through the Coast Guard's Safety Management System review and audit process. |
| **Vessels and aircraft** | |
| **7.70** National Defence should give priority to the acquisition of new aircraft that are best suited for search and rescue activities and ensure that it has sufficient numbers of these resources to meet search and rescue needs on an ongoing basis. **(7.55–7.69)** | **The Department's response.** Agreed. National Defence has a project underway to buy new SAR aircraft. The project remains a high priority. It is currently in the definition phase and is expected to be in the implementation phase upon contract award in 2014–15. This new aircraft will replace the Hercules and Buffalo aircraft currently performing SAR in Canada. With respect to SAR helicopter fleets, improvements have recently been made to the availability of the Cormorant fleet, allowing it to fly a record number of hours in 2012, and the Griffon fleet has undergone enhancements, which are allowing it to provide a more robust SAR capability. |
| **Information management and technology** | |
| **7.77** National Defence, in consultation with Fisheries and Oceans Canada, should develop an information system that meets current and future requirements and develop a plan to cover the gap until the system is replaced. **(7.72–7.76)** | **National Defence's response.** Agreed. The project to develop a new, integrated Search and Rescue Mission Management System (SMMS) was approved in November 2012. In the meantime, National Defence is working with Fisheries and Oceans Canada to provide better technical support to the current system and will review the current processes used to ensure that, should the system become unavailable, SAR services can continue to be managed at the Joint Rescue Coordination Centres (JRCCs) until a replacement system is implemented. |

| Recommendation | Response |
|---|---|
| **Prevention activities** | |
| **7.85** National Defence should ensure that Search and Rescue New Initiatives Fund project results are used to improve future search and rescue activities. **(7.82–7.84)** | **The Department's response.** Agreed. National Defence and the National Search and Rescue Secretariat (NSS) recognize the value of prevention in reducing the number and/or the severity of search and rescue–related incidents. As such, NSS will ensure that prevention-related projects funded through the Search and Rescue New Initiatives Fund are used to improve future search and rescue activities in a manner consistent with program objectives. Using past project reports, the NSS will analyze current processes and mechanisms to ensure that funding from the Search and Rescue New Initiatives Fund is directed to projects that maximize their potential in the improvement of future search and rescue activities and share the results of this work so that all parts of the system can benefit. |
| **7.91** Transport Canada should consider whether requirements for the use of digital emergency beacons should be applied to additional classes of boats and airplanes. **(7.86–7.90)** | **The Department's response.** Agreed. The Department will review the requirements for the use of digital emergency beacons on additional classes of boats and airplanes. In support, the Department will consult with owners and operators on the applicability of emergency locator transmitters to more classes of general aviation aircraft by the end of 2013. The Department will also consult with marine stakeholders on additional carriage requirements for emergency position indicating radio beacons by the end of 2013. Concurrently, the Department will continue with existing related safety measures, such as regulatory requirements for life-saving equipment, marine safety training and awareness initiatives, to mitigate safety risk. Combined, these safety approaches are expected to reduce the frequency and severity of incidents, thereby reducing the need for search and rescue. |

| Recommendation | Response |
|---|---|
| **Governance of federal search and rescue** | |
| **7.100** National Defence, in consultation with Fisheries and Oceans Canada, Transport Canada, and other federal departments, and the provinces and territories, should take steps to improve the governance structure, including developing objectives, performance indicators, and reporting that would enhance search and rescue service and coordination. **(7.93–7.99)** | **National Defence's response.** Agreed. National Defence acknowledges that search and rescue (SAR) is a shared responsibility across all levels of government and is delivered with the support of the private/commercial sector and volunteers. As such, effective governance and coordination among federal departments and with provinces and territories is essential. As noted in response to recommendation 7.27, a recently initiated National Defence/Canadian Forces and Fisheries and Oceans/Canadian Coast Guard Search and Rescue Operational Governance Committee will work to enhance coordination of their respective federal responsibilities for aeronautical and maritime SAR activities. This, in turn, will assist overall coordination. Furthermore, National Defence/Canadian Forces, with the support of relevant federal departments, will assess the SAR governance structure at the federal level to determine whether it is optimally designed to effectively execute the SAR mandate across departments and to ensure appropriate coordination with federal-provincial and other responders. |