THE STATE OF SEARCH AND RESCUE IN NUNAVUT

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JUNE 2024

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The authors wish to acknowledge the funding provided by:

Canada-Inuit Nunangat-United Kingdom Arctic Research Programme

- United Kingdom Research and Innovation
- Natural Environment Research Council (NERC)
- National Research Council of Canada

Social Sciences and Humanities Canada

Department of National Defence Research Initiative

Public Safety Canada, Search and Rescue New Initiatives Fund

- Project # EM-9101-22008 Maximum Time to be Rescued in Canadian Arctic Waters

North American and Arctic Defence and Security Network (NAADSN)

Irving Shipbuilding, Inc.

All photos, unless indicated in a caption, were shared at the Nunavut Roundtables on Search and Rescue. Cover image is of Kugluktuk SAR members Roger Hitkolok and Baba Pedersen. Photo courtesy of Baba Pedersen.

Designer: Jennifer Arthur-Lackenbauer

METR Maximum Expected Time of Rescue Research Project

Social Sciences and Humanities Research Council of Canada / Conseil de recherches en sciences humaines du Canada

Canada

IRVING Irving Shipbuilding, Inc.

Public Safety Canada / Sécurité publique Canada

NAADSN North American and Arctic Defence and Security Network

CINUK

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FOREWORD

"We have to go out. Those who know the land, know what they're doing. We have to go out. People depend on us."
– Jimmy Haniliak, Kitikmeot Roundtable on Search and Rescue, November 2022.



In June 2023, James Haniliak – or Little Jimmy, as he was known to most – passed away in Cambridge Bay at the age of 69. For more than 50 years, Little Jimmy served the people of his community as a search and rescue (SAR) volunteer.

Jimmy was an excellent hunter, experienced guide, active member of the Ekaluktutiak Hunters and Trappers Organization, former Canadian Ranger, and collaborator in many scientific research studies. He frequently served as a volunteer for his community, taking on a wide array of roles. At the Kitikmeot Roundtable on SAR in November 2022, however, Jimmy explained that he considered search and rescue to be his most important service.

At the roundtable, in front of SAR volunteers from across the Kitikmeot and responders from the Canadian Coast Guard, the Canadian Armed Forces, and Nunavut Emergency Management, Jimmy stood up to share his experiences. In 1967, he and a few others formed a SAR team in Cambridge Bay in response to the growing number of community members requiring assistance. "People were starting to get into trouble more, getting injured, getting lost. So we needed people who were ready to go look for them." Jimmy started searching then, and he never stopped.

"In at least a 200-mile radius of my community, I can get there. I know the land, the water, sometimes the sky," Jimmy explained. Over the years, he served as a searcher, coordinator of the ground SAR (GSAR) team, chairman of the community SAR committee, and member of the Cambridge Bay Coast Guard Auxiliary. Jimmy had a great ability to judge where to search for missing harvesters based on his knowledge of the area and environmental conditions. He was a gifted tracker on the land

and a strong helmsman for the Auxiliary unit. He rescued people on the land, water, and ice, on quad, by snowmachine, and by boat. Jimmy even responded to a downed aircraft in December 2008, organizing the SAR volunteers and bringing the 14 people on board to safety in the middle of a frigid, blowing snowstorm. As Jimmy weakened during his long battle with prostate cancer, he never lost his eagerness to go out on searches, at times requiring fellow responders to physically hold him back.

To be effective, Jimmy told the roundtable, SAR operations must "take the whole community" – family members, the volunteers, the hamlet office, and other partners all have roles to play. He talked about the "amazing people" who volunteer their time and personal equipment to go on searches, often at great personal risk. He explained the hard work and long hours that SAR coordinators and Auxiliary unit leaders put in, often going "night and day without sleep" during a search and completing all the administrative work required to keep a team operational. He highlighted the importance of communities coming together to support search efforts and discussed the negative impact that community criticism and slander can have on the morale and well-being of searchers. He also emphasized that it takes an all-hands-on-deck approach to prevent SAR cases from happening in the first place: people learning the required skills, taking the right equipment on the land with them, travelling in pairs or groups, and bringing a SPOT, inReach, ZOLEO, or other satellite safety device with them to help take the search out of SAR.

SAR in Nunavut is difficult. It has a harsh environment, with large search areas, few local resources, and a high likelihood that responders know the people for whom they are searching. As Jimmy said, "Another thing I've learned over the years since 1967 is that in part of your life as a volunteer, there will be trauma. And that is something to think about. It's very hard on a person. Really hard on people who go out and find something they don't want to see." Jimmy's words are a reminder of the toll that this trauma and tragedy take on the mental health of community responders.

Recognition can help, Jimmy told the roundtable. "One other important thing is that people in a community – there is so many that need to be recognized. We need to recognize these people while they are still alive. Others are ageing, like myself, and we need to recognize these people. It's really important." As he spoke, Jimmy was wearing the hat he had received from his community SAR group, complete with the inscription "The Man. The Myth. The Legend." At the roundtable, Jimmy was honoured for his service with a challenge coin presented by SAR Tech Sergeant Rob Featherstone and Major Marc Crivicich, the officer in command of Joint Rescue Coordination Centre Trenton. We are happy he received this well-deserved honour before he passed.

Every community in Nunavut depends on a Jimmy for search and rescue. Each has its own SAR legends. Jimmy's passing is an important reminder to honour them while they are still alive.

Tears streaming down his face as he reflected on his past searches – the good ones and the bad – Jimmy gave the roundtable some parting words: "One thing to think about is that we do what we do so that another may live." He meant those words, and he lived those words. Thank you, Little Jimmy, for your service and all the lives you saved.

This report is dedicated to Jimmy Haniliak and all SAR responders – from the community searcher going out on their snowmachine to the SAR Tech jumping out of a Hercules – who have risked life and limb to save the lives of Nunavummiut.

EXECUTIVE SUMMARY

In Nunavut, the SAR services delivered by community, territorial, and federal responders provide a safety net that allows Nunavummiut to live, travel, harvest, and work on the land, contributing to individual and community health and well-being. But it is a challenging task. "In my community, and probably in all the communities, searchers have to cover a lot of ground. There's a lot of space up here. And all the machines – the boats, the snowmobiles, even the quads – are so powerful now, it makes it easier to go further out. You got the big area, you got the weather, the ice, and it's all changing. It isn't easy." These words, from an experienced Nunavummiut community SAR volunteer, highlight some of the basic issues facing responders in the territory. Nunavut's vast size – more than 2,093,000 square kilometres in total area, including 157,077 square kilometres of water, 45,000 kilometres of coastline, and over 36,000 islands – and cold climate combine to make time the enemy of all responders.

Rapid responses are crucial, but the challenges emerging from the austere and changing environment, the limited local resources, and the close cooperation and coordination required by the array of actors involved at the local, territorial, and federal levels can complicate operations. Further, the substantial distances involved in responding with Canadian Coast Guard icebreakers deployed in the vast region, or Royal Canadian Air Force aircraft based in the South, mean that the arrival of federal resources on scene can take significant time. These aerial responses often pose their own unique challenges – flying a CH-149 Cormorant helicopter from Gander, Newfoundland, or Greenwood, Nova Scotia, to the High Arctic requires an impressive amount of planning and logistics.

Yet it is not only the space, distance, and cold that define search and rescue in Nunavut, but also its intimacy. As in the rest of Inuit Nunangat, the burden of search and rescue in the territory largely falls on the shoulders of community responders who usually know the people for whom they are searching. SAR in Nunavut is brothers searching for brothers, parents for children, children for parents. It is searches for cousins, best friends, neighbours, and Elders. Almost every responder has found loved ones deceased – from the cold, from accidents, or from self-harm. The toll of this trauma and tragedy on the mental health of community responders is extreme. But they keep on going out, driven by a desire to serve their communities, to save their friends and families, and, often, because they have the required skillset in a limited human power pool. They provide SAR services 24/7, 365 days a year, often with limited training, equipment, and support, and even as they struggle with burnout, anxiety, and post-traumatic stress disorder. These responders form the cornerstone of search and rescue in Nunavut, but cracks are forming in this foundation that will only worsen without sustained attention, funding, and support.

This report examines the state of search and rescue in Nunavut. Using the results of four Nunavut Roundtables on Search and Rescue (one in 2020 and three in 2022), interviews with community and government responders, and an extensive review of government documents, media stories, and scholarly literature, this report:

1. Provides an overview of the SAR system in Nunavut
2. Assesses the core strengths supporting and the challenges and problems hampering effective SAR operations in the territory, with a particular focus on the perspectives of community responders
3. Reports the suggestions for improvement offered by community and government practitioners and policymakers
4. Makes recommendations for next steps

The leadership, knowledge, skills, and passion of all-volunteer community responders are the greatest asset to SAR operations in Nunavut. Their efforts are supported both financially and morally by their communities and by innovative funding and programming initiatives developed by Nunavut Emergency Management (NEM) and, more recently, the Canadian Coast Guard. The responders in the Royal Canadian Air Force and the Canadian Coast Guard are also amongst the best in the world – when they bring their capabilities to bear on SAR operations in Nunavut, they often have a positive impact. Recent years have brought additional initiatives, partnerships, and supports that have improved search and rescue in the region, including the following:

the preventative SPOT (satellite communication device) program funded and supported by NEM

- NEM's provision of Garmin inReach and/or ZOLEO and GPS devices to community SAR teams
- the policy for the repair and replacement of equipment damaged during SAR operations
- Coast Guard Arctic Region's relationship building and SAR initiatives
- the expansion of the Coast Guard Auxiliary in the region
- the Indigenous Community Boat Volunteer Program
- greater support offered by some hamlet offices
- greater engagement by federal agencies and improved working relationships
- technological developments
- private sector support

More generally, when representatives from NEM or the Coast Guard have been able to visit communities, explain SAR policies and procedures, and recruit new searchers, the results are typically very positive.

Although significant progress has been made in recent years, substantial work is still required. Knowledge of the SAR system remains low in many communities, leading to slower responses and jurisdictional confusion. Community responders have also consistently highlighted the need for more sustained relationship building with Coast Guard, Joint Rescue Coordination Centre, Royal Canadian Air Force, and NEM personnel. Further, a wide array of significant challenges and areas in need of improvement continue to hamper the effectiveness of SAR prevention, preparedness, and response activities in Nunavut:

- The Case Load
  - the heavy SAR case load in many communities
  - the underreporting of SAR cases
  - the increasing risk factors
  - the need for more SAR prevention initiatives
- The Structure: Policy, Governance, and Organizational Issues
  - issues caused by the non-profit requirement for community SAR groups
  - the problem with Nunavut's private searches
  - the need to enhance NEM's SAR responsibilities
  - the need to formalize hamlet office and Royal Canadian Mounted Police (RCMP) roles
  - the jurisdictional issues in the SAR System
  - the need to clarify the role of the Canadian Rangers
  - limited understanding of the SAR system
  - the lack of consistent funding
  - the need to clarify search suspension and recovery procedures
  - the need to strengthen Nunavut's SAR policy

- Response Issues
  - the impact of austere and changing environmental conditions on SAR response
  - training issues
  - equipment and supply gaps
  - capability gaps
  - the need to better integrate Inuit Knowledge into SAR response
  - slow and challenging responses from federal assets
  - coordination, cooperation, and communication challenges
  - the need for stronger community-level plans and standard operating procedures/guidelines
  - limited local air support
  - the infrastructure deficit
  - responder safety concerns
  - concerns with spontaneous volunteers
  - public criticism and social media
- Post-Search Challenges
  - the impact of recovery operations on community responders
  - volunteer recruitment, retention, and burnout issues
  - the administrative burden
  - the need for debriefs and lessons management systems
  - critical incident stress and the lack of mental health supports
- Mass Rescue Operations

The challenges affecting SAR operations in Nunavut are multi-faceted, deeply rooted, and dynamic. There are few easy answers, and every issue will take time to address. There are, however, core strengths upon which to build, none greater than the skill and determination of the region's community responders. They have ideas for improvement, new approaches, best practices, and lessons learned that can have an immediate positive impact if they are acted upon. These responders are clear that the SAR system's challenges require "made-in-Nunavut" solutions and approaches.

The following recommendations represent solutions that have been co-developed with Nunavummiut responders. While several are broad solutions that address some of the ongoing challenges undermining the SAR system in Nunavut, they are not exhaustive. As a result, we also offer recommendations on the structures that might be put into place to begin working through the array of challenges and areas for improvement identified in this report.

Develop a Whole-of-Society Preventative SAR Program: To reduce the strain on community-based SAR organizations, greater investment in preventative measures needs to focus on whole-of-society SAR education and technological solutions. All community members must learn and be reminded about how to operate safely on the land, the dangers of going out unprepared, and how to respond appropriately when they get into trouble. Across the region, a wide array of actors, community-based organizations, non-governmental organizations (NGOs), and levels of government are providing programming that falls under SAR prevention. While there are many positive initiatives, there is little cohesion or overarching direction to these activities. A cohesive territorial-wide prevention program that makes space for local practices and knowledge could reduce the number of SAR cases in the region. Community responders highlighted the benefits of providing youth and young adults with survival training and involving young people more directly in SAR operations, and they suggested doing so directly through the school curriculum. Part of this program should include territorial and federal investments in innovative technological solutions that reduce travel risks, such as SMARTICE and improved weather forecasting.

Re-Organize Nunavut's SAR Teams: The territorial SAR policy is based on the formation of non-profit community SAR organizations. Community responders have consistently highlighted that the administrative burden required to maintain society status and secure funds, which includes submitting detailed budgets and activity reports, is too onerous. The annual funding that the Government of Nunavut provides to these groups is also insufficient and has gone down since the first societies were established in 2003 (from $2,500 to $1,000). There are other models. In the past, Nunavummiut have suggested that SAR groups should be formalized and fall under the jurisdiction of the hamlets, along the same lines as volunteer fire departments. Another possibility is to pair SAR groups with fire departments, similar to the structures used in certain Indigenous communities in Nunavik, Eeyou Istchee, and Northern Ontario (some of these groups also include Coast Guard Auxiliary units within one organization). Regardless, placing SAR teams within the governance structure provided by the municipalities would offer greater support and administrative capability, as well as streamlined funding opportunities.

Revise Nunavut's SAR Policy: The Government of Nunavut's community-based SAR contributions policy expired in 2022. There is opportunity to revise it to address some of the challenges identified in this report, including clarifying the policy's definition of SAR operations, moving on from the non-profit society approach, removing the private search category, providing clarity on search suspension and recovery procedures, establishing a list of eligible and ineligible activities for Nunavut's SAR volunteers, and explicitly laying out the coverage provided to SAR volunteers.

Establish a Nunavut Search and Rescue Advisory Council: Several provinces have established SAR advisory councils made up the key actors involved in SAR operations. Nunavut Emergency Management should create a Nunavut SAR Advisory Council, comprising personnel from the key agencies involved in providing SAR services in the territory and several representative community responders. This advisory council would facilitate higher level discussions on SAR in the territory and foster relationship-building on an ongoing basis. Council members could review and revise policies, develop and monitor standards, identify key resources, work through jurisdictional issues, and make recommendations aimed at improving SAR programming.

Support the Establishment of a Nunavut Search and Rescue Association: In both 2003 and 2007, efforts were made to establish a Nunavut SAR society to provide a regional framework for SAR, which would take the pressure off community groups and potentially open up new funding opportunities. A territory-wide association could be created with distinct branches for the Kitikmeot, Kivalliq, and Qikiqtani regions. A made-in-Nunavut SAR association could combine marine, ground, and aerial SAR. This association would represent the interests of and be the voice for all SAR teams in the territory, involved in soliciting and administering funding, strengthening relations between SAR partners, providing responder health and safety support, and developing new programming. Community responders at the roundtables suggested that this model could generate more support from Nunavut Tunngavik Incorporated, the regional Inuit associations, and the federal government. It would also help to build a "SAR culture" across the territory. Such an association, however, would require committed volunteers, who are willing to invest considerable time and shoulder a great deal of responsibility, leading some community responders to express concerns about the potential workload involved. Moving forward, NEM should work with community responders to develop an implementation plan to determine the scaffolding, supports, and resources required to establish an effective and sustainable association.

Create a Bi-Annual Nunavut Roundtable on Search and Rescue: A bi-annual roundtable should be established with a focus on community responders – GSAR coordinators, Coast Guard Auxiliary unit leaders, Rangers, Guardians and other community-based groups, with funding for their participation provided by their respective organizations. The roundtable would afford Nunavummiut with the opportunity to work through challenges, examine the SAR risks facing communities, develop standard operating procedures/guidelines, strengthen relationships, improve interoperability between teams, ensure that Inuit Knowledge is fully integrated into Nunavut's SAR system, and share best practices and lessons learned with respect to SAR prevention, preparedness, and response.

Enhance Nunavut Emergency Management's SAR Capacity: First, more personnel should be hired to advance NEM's SAR mandate, and they should be provided with high-level training to support their role as search commanders. It is essential that all NEM members have an in-depth understanding of the SAR system and that they are provided with high levels of search and rescue commander/mission coordinator training, preferably adapted to Nunavut's unique context. They should also have the opportunity to exercise regularly with SAR partners at the local, territorial, and federal levels, particularly the JRCCs. The goal of increasing the coordination capabilities of NEM personnel must not be to take any control or decision-making authority away from community SAR coordinators or teams – their local knowledge and skills make them ideally suited to manage searches. Instead, it is to ensure that NEM duty officers can provide required support, advice, and assistance when and if requested by community SAR teams. Second, NEM must develop clear policies and standard operating procedures/guidelines that clarify the department's roles, responsibilities, and activities. Third, NEM should deliver on the promise made when the SAR training officer position was first created in 2000 and develop GSAR manuals, training materials, and planning and management tools designed specifically for Nunavut's unique context. Most of the SAR training provided in Nunavut is contracted out. For cost efficiencies and to build off existing relationships

between NEM staff and community responders, this training should be brought in-house and prioritize a "train-the-trainer" approach. While in the community, NEM training officers could also perform the community outreach that community responders have highlighted as being an effective way of recruiting new volunteers, educating Nunavummiut about the SAR system, and building relationships and lines of communication that function well during SAR operations.

Continue to Strengthen the Coast Guard Auxiliary and Provide Alternative Marine SAR Training Opportunities: The expansion of the Coast Guard Auxiliary in Nunavut has been a much-needed improvement to the SAR system. Previous efforts to enlarge the Coast Guard Auxiliary in Nunavut, however, have failed due to a lack of sustained engagement, relationship building, and funding. This cannot be allowed to happen again. Since 2015, the Coast Guard and Coast Guard Auxiliary have built an impressive foundation for the Arctic units, and the consistent community support and in-person relationship building have served as its cornerstone. If this cornerstone is weakened or withdrawn, there is a strong possibility that many Coast Guard Auxiliary units will fail, particularly those that have been recently established. These units require sustained in-community engagement, maintenance support, and training opportunities, preferably on an annual basis. Although these activities are expensive to conduct, they will safeguard the considerable investment of time and resources already made into these units.

Moving forward, serious consideration should be given to moving these units from the Coast Guard Auxiliary's Central and Arctic Region into a new Arctic district with the same jurisdictional boundaries as the Coast Guard Arctic Region. Such a governance reform could provide Auxiliary members with greater autonomy, supporting regional decision making and offering more programming flexibility.

For communities that already possess a suitable marine SAR capability (e.g. those with Guardians organizations), the Coast Guard should continue to provide training opportunities to these groups, as it did to the Taloyoak Guardians in 2023.

Incentivize Volunteers: Pilot a SAR Equipment Usage Rate (EUR): Community responders rank concerns about equipment usage and the lack of volunteers as amongst the highest challenges that they face. Incentives could be offered to mitigate some of these issues and could include, for instance, high-quality SAR jackets, free equipment, and, perhaps, stipends. Still, this may not be enough. If modelled after the Canadian Rangers' fixed Equipment Usage Rate (EUR), the implementation of a SAR EUR would see SAR volunteers receiving a fixed amount of compensation for each specific piece of personal equipment used during authorized SAR training, exercises, and operations. Such a program would recognize that volunteers use their equipment for the public good – with all the wear and tear that involves – and ensure that they are not "out of pocket" for their participation in SAR activities. Although a SAR EUR for volunteers represents a significant departure from how SAR operations are conducted in Southern Canada, it offers a distinct and equitable solution that is suited to the unique context of Nunavut communities.

Pilot a Community Public Safety Officer Program: The Government of Nunavut should test the viability of a community public safety officer program. A community could be provided with full-time public safety officers who are responsible for all-hazards emergency management, fire prevention, land and marine safety, and SAR prevention, preparation, and response. Such a program would build off the officers' traditional local knowledge (Inuit Qaujimajatuqangit), existing skills, and community relationships, while providing space for the development of new capabilities. A tailor-made training program would ensure that the officers have shared competencies and skillsets. Community responders suggested that such a position could address many of the challenges currently facing Nunavut's SAR system, as well as its broader emergency management concerns.

Re-Establish the Northern SAR Roundtable: Relationships and collaboration constitute the foundation of an effective search and rescue system. Relationships allow for the multi-level horizontal and vertical coordination and cooperation that are required for the execution of SAR operations. They encourage mutual understandings of resources and capabilities, SAR risk, and community-specific needs. Relationships rooted in trust and respect also encourage honest dialogue about the challenges and obstacles that weaken the SAR system. When territorial and federal practitioners and policymakers have made greater efforts at relationship building in the past, they have improved search and rescue in Nunavut. These efforts have, however, been too ad hoc, intermittent, and short-lived. We propose the re-establishment of the Northern Search and Rescue Roundtable. Nunavut Emergency Management was instrumental

in establishing the first iteration of this roundtable, which ran from 2010 to 2016. This high-level working group, made up of practitioners and policymakers, proved useful for developing best practices, strengthening the collaborative relationships required for SAR operations across the North, and sharing information as well as operational challenges and solutions. Its re-establishment would allow for regular meetings between the key actors engaged in SAR in the Arctic (including the directors of a Nunavut SAR association, if created) to work through the coordination and cooperation challenges that can impede SAR operations. The roundtable would work to better integrate efforts, creating efficiencies and synergies that would improve the system in a cohesive manner. Crucially, this roundtable could be also used to identify and address key SAR capability gaps in the North, such as crevasse and high angle rescue. Finally, roundtable participants could also engage in planning and preparation for mass rescue operations that would cross jurisdictional boundaries and require an all-hands-on-deck approach. The roundtable should be funded and supported by the National SAR Secretariat at Public Safety Canada as a key component of the federal government's commitment in the *Arctic and Northern Policy Framework* to increase "Search and Rescue reaction and responsiveness to emergencies for Arctic residents and visitors."

The search and rescue system in Nunavut requires repair. The challenges are mounting, and the cracks in the system's foundation are increasing. The demand for SAR services will only intensify in the future. Strong relationships between SAR partners are more important than ever. Community responders need support. It is time to act.

ᓯᕗᓪᓕᖅᑎᓄᑦ ᐅᓂᒃᑲᓪᓚᐃᑦ

ᓄᓇᕗᑦ ᐃᓕᓴᐃᓂ, ᑕᒪᒃᑯᐊ ᐸᕆᓴᐃᔨᑦ ᐃᓅᓪᓚᐊᖅᓴᖅᑎᕗᑦ ᐱᔨᑎᓯᑦ ᐊᑐᓂ ᓄᓇᓪᓕᐅᔪᑦ, ᐅᑭᐅᖅᑕᖅᑐᑦ ᑲᕐᒪᖓᓕᑦ, ᑲᓇᑕᐅᓪᓗ ᑲᕐᒪᑐᖅᑕᐊᖅᓯᒃᓴᓂᓕᑦ ᐱᑕᖅᑲᓂᕆᑎᑦᑕᑦ ᓄᓇᕗᑦᑎᒥᑦ ᐃᓅᓯᖅᑐᓂᒃ, ᐊᐅᓪᓚᑦᑎᓐᓂᒃ ᐊᒃᓴᖅᓯᒪᔪᑦ ᓴᖅᑭᑎᑕᐅᑎᑐᑦᑕ ᓄᓇᕗᒻᒥᔪᓂᒃ, ᑐᓂᓯᖅᓴᐃᖅᑕᐅᔪᑦ ᐃᓅᓯᒥᓂ ᓄᓇᓕᐊᑕᓗ ᖃᓄᐃᖅᑎᑦᑕᐊᓂᓕᓂ ᐃᓅᓯᖅᑎᑦᑕᐊᓂᖅᓯᒪᓂᑦᓗ. ᑭᓯᐊᓂᓕ ᒎᓂᓇ ᐊᒃᓯᑭᓂᓕᕆᑐᑐᖅ ᐱᓕᕆᐊᒃᓴᐅᔪᓂᒃ. “ᓄᓇᓕᕐᑎᓂᒃ, ᐃᓱᒪᖏᓄᓗ ᓄᓇᓕᓕᒫᓂᒃ, <ᖅᓴᐃᐃᓐᓇᑦ ᐊᖏᕐᕕᐊᓗᒻᒥ ᖃᑭᓂᕆᐊᖅᓴᓯᑦ ᐊᖏᐅᓯᕐᐊᖅᐳᑦᐳᓐᓂᑦᑐᓂᒃ. ᐅᖏᓪᓗᒪᑦ ᐅᖏᓯᓴᑐᐊᓕᓪᓗᓂᑐᓄ ᐃᓂᖏᓪ ᖃᑭᓂᕆᖏᓪᓂᒃ. ᑕᒪᒃᑯᐊᓗᑐ ᐅᓪᓗᒻᒥ ᐊᐅᓚᑦᑎᓐᓂᒃ - ᐅᒥᐊᓂ, ᓯᑭᑐᓂ, ᑕᒪᒃᑯᐊᓗᓐᓂᓂ ᑎᐊᒪᓪᓂ - ᓄᑭᖅᑎᓪᓕᓕᒪᓕ ᐊᐅᓪᓚᓐᓇᑎᖅᑎᓂ, ᐅᖏᓯᓴᑐᐊᓗᓚᒧᑐᓄᓯᖅᓴᓪᓕᐅᖅᑐᑦ. “ᐊᖏᑎᔨᔪᒥᒃ ᐊᖏᓇᓯᕐᐊᖅᐳᖅᑲᓇᑎᒃᓴᖅᑐᑦᑐᑎᒃ ᑕᓚᐅᖅ ᓄᓇᓗ, ᓯᓪᓚᖏᓐᓄ ᐅᓐᓄᓘᓚᐊᓪᓕᐅᒃ, ᓯᑯᖏᓐᓗ, ᑕᒪᓐᓇᐅᓗ ᐃᓪᓕᓴᐅᓚᐊᓪᓕᐅᒃ. ᑕᒪᓐᓇ ᐱᑐᐃᓐᓇᐅᔨᓂᕐᓂᖅ.” ᒎᑯᐊ ᐅᖏᓪᐅᓯᑦ, ᐱᓪᓕᒪᓚᓪᑐᑐᒃ ᓄᓇᕗᑦᑎᒥᐅᑕᖅ ᓄᓇᓪᓕᒥ ᐊᐸᓪᖏᓯᓚᐅᓂᒃᑐᓂᒃ ᐃᓪᓕᓯᓚᓪᓕᐊᖏᓯᓂᒃ ᐄᖏᓕᓴᐅᓯᑦ <ᖅᓴᐃᐃᓐᓇᒧᑦ, ᓴᖅᐸᑦᓴᖅᑐᑐᑦ ᐃᓪᓕᖏᓐᓂᒃ ᐃᓯᓂᑐᓕᓴᓚᐊᖅᓯᓂᒃ ᐄᖏᓕᓴᐅᓯᑦ <ᖅᓴᐃᐃᓐᓇᓂᒃ ᓄᓇᕗᑦ ᐃᓗᐊᓂ. ᓄᓇᕗᑦ ᐊᖏᕐᕕᐊᓗᓂᖏᓪᓕᑕ - ᐅᖏᓪᑕᒋᓐᓂᑐᓂ 2,093,000 ᑭᐸᓚᖏᓪᓕᐊᓂ ᑭᓪᓕᒥᓂᒃ ᑕᑯᐃᓐᓇᓚᓪᓕᑐᐃᔪ, ᐃᓪᓕᖅᑐᖅᓐᓇᑐᑦ 157,077 ᑭᐸᓚᖏᓪᓕᐊᓂ ᑭᓪᓕᒥᓂᒃ ᐃᓚᖅ, 45,000 ᑭᓪᓕᒥᓂᒃ ᓯᓴᓚᐃᖏᓂᒃ, ᐅᖏᓪᑕᒋᓚᐅ 36,000 ᖃᑭᑦᑕᐃᑦ – ᓂᒃᓪᓕᓯᓴᒃᑐᒥᐅᓪᓗ ᓯᓪᓕᖅᑐᖅᓐᓇᑐᑦ ᑲᑎᓓᓕᑦ ᑕᒪᐃᓐᓇᒃ ᓴᖅᑭᑲᐅᑎᑎᓯᖅᑐ ᐅᖏᓕᑦᑐᓪᓕᓕᐊᓂᖅᑐ ᐊᑭᕋᓚᐅᓕᓕᒪᓕ <ᖅᓴᐃᐃᓐᓇᓄᑦ.

ᓯᒃᑲᓴᒃᑯᑦ ᐅᐸᑲᑦᑐᐃᓐᓂᑦ ᐊᑐᒋᓱᓪᓕᓪᓯᑦ,ᑭᓯᐊᓂ ᐊᒃᓯᑭᓂᓇᓯᑦ ᐃᓴᖏᓴᒃᓴᓪᓕ ᑭᓯᓴᑦᑕᐅᓕᕆᓂᑦᑐᑎᒃ ᐊᓯᔨᓴᖅᐸᓪᓕᐊᓯᖅ ᐊᕐᑎᑎᑦᓴ, ᑭᖏᓪᖅᑲᐊᖅᑐᑦ ᓄᓇᓕᑦ ᓯᓇᒃᑯᒋᓐᓂᑕ, ᖃᑲᓪᑕᑐᒃᑯᓪᓗ ᑲᑐᔨᖅᑎᑦᖃᓂᓂᑕᒥᒃ ᑐᑭᔪᐊᓇᓴᐅᓪᓕᐊᓂᓂᓪᓗ ᐱᔨᓇᓯᖅᑲᐃᓚᓂ ᐊᒥᓱᓂᑭᓯᓚᐅᖅᑐᑦ ᓄᓇᕗᒻᒥᓂᒃ ᐱᔨᑕᖅᑕᐅᑕᓯᖅᑲᐅᑦᑐᓂ ᓄᓇᓪᓕᐅᑉᓗᒥᒃ ᐊᖏᓪᓂᖅᑐᑦᑐᓂᒃ ᐊᐅᓚᓯᖅᑐᓂᒃ, ᐅᖏᓪᑕᒋᓐᓂᑕ ᐅᐸᑲᑦᑐᐃᓐᓂᑦ ᓯᓚᑦᑐᓂᒃ ᐅᐸᓯᓂᓪᓗᒥᒃ ᐅᖏᓪᑕᒋᓐᓂᑕ ᐅᐸᓯᓂᓪᓗᒥᒃ ᐅᖏᓪᑕᒋᓐᓂᑕ ᐅᖏᓪᑕᒋᓐᓂᑕ ᐅᖏᓪᑕᒋᓐᓂᑕ

ᐊᒃᑐᐊᓂᖅᑎᓪᓗᓂᓚᓄᑦ ᐃᓕᑕᐅᔪᓄᑦ. ᑕᐃᒪᑐᐃᓐᓇᖅᑐᑦ ᐊᓯᑎᑦ ᐃᓄᐃᑦ ᓄᓇᖓᓕᕆᑐᑐᑦ, ᐅᖃᓯᒪᐃᑦᑐᐊᑐᒃ ᖃᐅᓂᓂᖅ <ᖅᑭᐃᓇᓯᓂᓪᓕᓐᓂ ᐅᓄᓭᒥᒃ ᑲᑎᒪᔨᓯᖅ ᑭᐊᓯᖏᓐᓄᓄᑦ ᓄᓇᓕᓐᓂ <ᖅᑭᐃᐃᓐᖏᑎᒃ ᑕᑯᓂᐊ ᖃᐅᔨᒪᓚᐅᖅᓯᒪᓂᒃ ᐃᓄᓐᓂᒃ ᖃᐅᓂᖅᑕᒥᓂᒃ. ᑕᒪᓐᓇ SAR ᓄᓇᕗᑦ ᐃᓗᐊᓂ ᓄᑲᓱᖅ ᖃᐅᓂᖅᑐᑦ ᐊᖏᓪᓚᐅᓂᒃ ᓄᑲᒥᓂᒃ,ᐊᖏᑦᓴᖅᑲᑦ ᖃᐅᑦᖏᓪᒥᓂᒃ ᖃᐅᓂᖅᑐᑦ,ᖃᐅᑦᖏᓪᑲᔨᓴᑦ ᐊᖏᑦᓴᖅᑲᒥᓂᒃ ᖃᐅᓂᖅᑐᑦ. ᖃᐅᓐᓇᓕᑦ ᐃᓕᓴᕐᓂᐊᕐᒥᔨᓴᑦ ᐃᓚᓗᓚᑦ ᐊᓐᓇᓴᖅᑎᑦ ᐊᖏᔪᓴᖅᑎᑦᓗᓐᓃ, ᐱᓴᓐᓇᓗᓪᓕᖏᑦᑐᑦ, ᐱᓐᓇᑐᓂᐊᖏᖅᑐᑦ, ᐃᓐᓇᑐᖃᖅᓴᓪᑲᑦᓗᓐᓃ ᓄᓇᓕᒥᐅᑦ ᐊᓐᓇᓴᖅᑎᑦᓗᓐᓃ ᐊᓐᓇᓴᖅᑎᑦᓗᓐᓃ ᓇᓕᓐᓂᒃᑐᓂᒥᒃ ᐃᓐᓇᓴᖅᑎᑦᓗᓐᓃ ᓄᓇᓕᒥᐅᑦ

ᐊᓗᒪ GPS ᑐᓴᐅᒪᔨᓇᑎᑕᓗᒃ ᐊᓗᐅᔪᓴᐃᖅᑯᑎᓪᓗ ᓄᓇᓕᓪᓕ SAR ᕿᖏᓴᐃᔨᖓᕐᓄᓪᓕ

- ᐊᑐᐊᓴᖓᕐᓕ ᓴᓇᔪᐅᓂᖓᕐᓄᓪᓕ ᑭᖑᙳᕐᓂᖓᕐᓄᓪᓕᓗ ᐱᖏᑯᑎᑭᖓᕐᓕ ᓗᕆᓂᐅᑯᔨ ᐅᒪᕐᓂᖓᕐᓄᓪᓕ ᕿᖏᓴᐃᓕᕐᓂ
- ᓗᓴᒥᐅᑕᓕᓚᐃᖅᑯᑦ ᐅᑭᐅᖏᑕᖏᑐᒧᑦ ᐊᐅᑐᐊᖏᑎᑭᓴᓕᒧᑦ ᓴᓇᖕᓕᓕᐊᓂᖓᕐᓕ ᕿᖏᓴᐃᔨᓄᓪᓕᓗ ᐱᑎᐊᖏᑎᓗᒍᓕᕐᓗᑦ
- ᐊᖏᑕᓕᒥᐊᖏᑕᐅᓂᖓᓴᖅ ᓗᓴᒥᐅᑕᓕᓚᐃᖅᑯᑦ ᐃᑲᔪᖏᑎᑕᖓᕐᓂᑦ ᓄᓇᖕᓂᖅ ᐃᓗᐊᓂ
- ᓄᓇᖏᖏᑲᖏᓪᓕᔪᑦ ᓄᓇᓕᖓᓄᓪᓕ ᐅᒥᐊᑦᓕ ᐊᑭᓕᖏᓪᓕᑐᑎᓪᓗ ᑕᑯᔪᐅᑎᒃᓴᖓ
- ᐊᖏᑕᓂᖏᓕᖅᑐᖅ ᐃᑲᔪᖏᓪᓴᑕᐅᓕᖅᑐᓗᑎᒃ ᐃᓕᖏᓄᓪᓕ ᐄᐊᒻᒪᓕᑕᐅᔪᑦ ᑎᑎᕐᓴᑎᒃᓂᖓᕐᓂ ᐱᐅᓪᓚᖏᑎᓂᐊᑕ ᐊᑐᐊᓂᖓᓴᖅ
- ᓴᖏᑭᑦᑦᓕᐊᔪᓂᒃ ᐱᓕᕐᓕᐊᔪᐅᓕᖅᓯᓂ
- ᓇᖏᒥᓂᖏᖏᑦ ᐊᒻᒧᖏᓪᓕᒪᓂᐊᓂᒃ ᑎᑎᕐᓴᑎᒃᓂᖓᕐᓂᓗ, ᓇᓂᓪᔪᕐᓂᖓᒪᒥᒃ ᕿᑭᓂᒃᑎᓂᒃ, ᓴᖏᑭᑕᑦ ᐱᐅᒪᔨᒪᓚᒃᑐᑦ.

ᑕᐃᒪᓕ ᐊᖏᑎᔨᒥᒃ ᓯᕐᔭᒪᑎᐊᖏᓪᓕᒪᓚᓂᐊᖏᖏᑐᒧᑦ ᐊᖏᖏᒧᐅᓂᒃ ᐊᓂᒧᑕᓴᖏᖏᑐᒧᑦ, ᓪᓕ ᐊᖏᑎᓱᕐᓴᖅ ᐱᓕᕆᓴᖏᖏᑕᐅᓕᖅᑐᓗᑎᒃ ᐱᐅᓪᓚᖏᑎᓂᐊᓘᓪᓚᑕ. ᖃᐅᐅᔪᒪᔭᐅᓂᖅ ᑕᒪᓐᓇ SAR ᐊᐅᑕᓵᔨᓪᓚᖓ ᐊᖏᖏᓂᒪᓕᕐᓗᑎᒃ ᓪᓕ ᐅᓄᖏᑐᒧᑦ ᓄᓇᐅᓕᖅᑐᓂ. ᖃᐅᑕᖏᓂ ᐊᖏᑎᓱᕐᓴᖅ ᐊᖏᖏᓂᒪᓕᕐᓗᑎᒃ ᐅᓂᒪᓕᖏᖏᑦ ᐊᒻᒪ ᑲᒪᓂᐊᖏᖏᑦ ᓇᓂᓪᔪᕐᓂᖓᒪᒥᒃ ᐱᓕᕆᓴᖏᖏᑕᐅᓕᖅᑐᓗᑎᒃ. ᓄᓇᕐᓂᓂ ᕿᖏᓴᐃᔨᑦ ᐊᓗᔨᓂᐊᖏᖏᓕᕐᓂᑐᒧᑦ ᓇᖏᖅᑭᖏᓂᓇᑦᑕᖏᓕᕐᓂᓚᐅᖅᑐᑦ ᐱᖏᑯᐊᖏᖏᓂᖓᕐᓂ ᑲᓇᑕᖏᓂᖓᕐᓂ ᐊᖏᖏᓂᒪᓕᕐᓗᑎᒃᓂᖓᓂᒃᑐᓂᖓᓂ ᐊᖏᖏᓂᒪᓕᕐᓗᑎᒃᓂᖓᓂᒃᑐᓂᖓᓂ ᑲᑎᒪᔨᖏᑦ ᐊᖏᖏᓂᒪᓕᕐᓗᑎᒃᓂᖓᓂᒃᑐᓂᖓᓂ

ᐅᐃᒍᓱᓂᒪᒥᖅ ᐃᓄᐃᑦ ᖃᐅᔨᓪᓚᕐᓇᖅᓂᖅ <ᖃᓄᐊᓕᑦ ᕿᓂᖅᓴᖃᖅᑕᕐᓂᒍᑦ

- ᓗᖅᑲᐃᓗᐊᖃᖅᑐᒥᖅ ᐊᒃᓱᕈᓐᓇᕿᒪᑎᓪᓗ ᐅᐸᑕᐃᓐᓇᓂᖅᓯᖏᓪᓕᓐᓂ ᓴᖅᓪᓗᑕᖃᖅᓯᒪᓂ ᐱᖓᓐᓄᐊᐊᕐᓇᖅᓂ
- ᑐᑭᓯᓚᐅᖅᑐᑦ, ᑲᑎᒪᔨᖃᑎᒌᓐᓂᖅᓱᒪᓂ, ᑐᓴᐅᒪᔨᐅᑎᒃᓯᒪᓂ ᐊᒃᓱᕈᓐᓇᕿᒪᑎᓪᓗᒍᑦ
- ᐱᑕᖃᑲᐊᖃᖅᓴᓂᐊ ᓴᖅᑭᑎᓂᖃᖅᑐᒃ ᓇᓗᓕᒃᑯᑦ-ᐊᒋᐊᓂᒃ <ᖁᓕᐅᑎᓂᒃ ᐊᓪᓚᕆᒃᑐᒥᓂ ᒪᓕᒐᓱᑦ ᐃᑲᔪᖅᑕᐅᓂᒃ
- ᐱᖓᓱᓇᖅᑐᓂ ᓇᓗᓀᑦ ᓇᓗᓕᐊᓂ ᖃᖅᖢᒪᑕᐅᓂᒃ ᐃᓕᓴᐅᒪᓂᒃ
- ᐱᖓᓱᓇᖅᑐᓂ ᓇᓗᓀᑦ ᐊᒥᓱᑲᓇᙱᑦᑐᓂ ᓴᓇᓂᒃᑯᓂᒃ
- ᐃᓕᓴᐃᑦᑕᐅᓂ ᑕᖅᑭᒫᖃᖅᑎᑦᑎᓂᒃᑯᑦ ᐃᓕᓴᐃᑦᑕᐅᓂ ᓴᓇᓂᒃᑯᓂᒃ
- ᐱᓕᕆᔨᒃᑯᑦ ᐅᖃᓕᒫᒥ ᐃᓕᓴᐃᑦᑕᐅᓂ ᓴᓇᓂᒃᑯᓂᒃ
- ᐃᓕᓴᐃᑦᑕᐅᓂ ᑕᖅᑭᒫᖃᖅᑎᑦᑎᓂᒃᑯᑦ ᐃᓕᓴᐃᑦᑕᐅᓂ ᓴᓇᓂᒃᑯᓂᒃ
- ᐱᓕᕆᔨᒃᑯᑦ ᐃᓕᓴᐃᑦᑕᐅᓂ ᓴᓇᓂᒃᑯᓂᒃ
- ᐊᑭᓚᖅᓴᖅᑕᐅᓇᑎᒃ ᓴᓇᓐᓂᒃᑯᓂ, ᐱᓕᒪᓐᓄᓐᓇᐅᑎᒃᓴᖅᑎᓂ, ᑕᓴᖅᓵᒥᓂᒪᒃᑯᓂ ᐊᑭᐅᓵᓂ ᐃᓕᓴᒪᑦᑎᖅᓴᖅ
- ᕿᐃᕻᒋᓕᓚᓂᐊᑕᒪ ᐱᓕᕆᑐᓂᒃᑯᓂ
- ᐱᑕᖃᑲᐊᖃᖅᓴᓂᐊ ᐅᓂᒃᑲᖅᑎᑕᐅᓂᒃᑯᓂ ᓴᓇᓂᖅᑲᑦ ᐃᓕᓴᐅᒪᓂᒃ ᐊᒃᓱᕈᓐᓇᕿᒪᑎᓪᓗᒍᑦ
- ᐃᓕᓴᐃᑦᑕᐅᓂ ᐱᓕᕆᑐᓂᒃᑯᓂ ᐊᒃᓱᕈᓐᓇᕿᒪᑎᓪᓗᒍᑦ
- ᐃᓄ

ᐃᓗᐃᑦᑐᓴᒥᒃ ᑐᖏᑎᒥᒃ ᓴᖅᑭᕐᖏᖅᖢᓴᓪᓕᐊᑎᒃ ᑲᒪᕐᓂᖓᓐᓂᕐᒥᒃ ᐃᓐᓇᐅᑉ ᐊᑐᖅᑐᑦ

ᐃᑲᔪᐃᓗᓪᑕ ᓴᖅᑭᕆᓴᐅᓕᕆᑐᓗᓄᑦ ᓄᓇᕗᒻᒥ ᖃᓄᖅᑎᑦ ᕿᖅᓴᐃᔨᑦ ᑲᑎᕐᓴᖅᑎᖓᓚᒋᑕ ᑎᒥᖓᓄᖅ: ᑕᒪᐃᐅᓄᖅ 2003 ᐊᓪᒪ 2007, ᑲᒪᒋᐅᕗᓂᑦ ᓴᖅᑭᓕᐅᖅᓯᒪᔪᓕᐊᑦ ᓄᓇᕗᒻᒥ ᕿᖅᓴᐃᔨᓄᖅ ᑲᑎᕐᓴᖅᑎᑯᓕᖅ ᐊᓗᔪᖅᓯᒪᔪᖅᑯᑦ ᑐᖓᔾᔪᓴᒋᓕᕐᑯᑦᓯᓂᑦ ᕿᖅᓴᐃᔨᑦ ᓄᓇᕗᒻᒥ, ᑕᒪᐅᓇ ᐊᖅᐸᓯᐊᓚᑦᓴᒪᓕᑦ ᓄᓇᓕᑦ ᐸᐃᑦᑕᓚᓴᔪᓯᖏᓐᓄᑦ ᐃᓗᒪᖁᓗ ᒪᑐᐃᓴᖅᓯᓄᑦᑕᓂᑐᓄᖅ ᑭᓇᐅᔨᖅᑲᕐᑎᑐᓄᖅᓴᖅᓂᖅ ᓄᓇᓕᖓᓂᑦ ᒪᑐᐃᖏᓐᓄᑦ. ᓄᓇᕗᒻᒥ ᑐᖓᔾᔪᑎᑦ ᑲᑎᕐᓴᖅᑎᑯᓕᖅ ᐊᓗᔪᖅᓯᒪᔪᖅᑯᑦ ᑲᑎᕐᓴᖅᑎᑯᓕᖅ ᓄᓇᕗᒻᒥ ᕿᖅᓴᐃᔨᑦ ᓄᓇᕗᒻᒥ, ᑕᒪᐅᓇ ᐊᖅᐸᓯᐊᓚᑦᓴᒪᓕᑦ ᓄᓇᓕᖓᓂᑦ ᐸᐃᑦᑕᓚᓴᔪᓯᖏᓐᓄᑦ ᐃᓗᒪᖁᓗ ᒪᑐᐃᖏᓐᓄᑦ ᓄᓇᕗᒻᒥ ᑲᑎᕐᓴᖅᑎᑯᓕᖅ

ᐊᐅᓪᓚᑎᓂᒪᓕᒃ ᒪᓪᑐᐱᓴᓂᐅ/ᑐᑭᒧᐊᑭᑎᓂᐅ ᓴᖅᑭᕐᑎᐊᖅᑐᑦ ᐱᓪᓗᖓᔾᔪᑕ ᐃᓂᖅᖓᔾᔪᖑᕐᓂ, ᐅᒪᑭᓯᖕᓂ, ᑕᒪᐅᔨᐊᓗ ᐱᒃᓴᓗᓯᖕᓂ. ᐱᖓᓱᐊᐊᒍᑦ, NEM ᓴᖅᑭᕐᓚᐊᓪᓕ ᐱᓂᐊᖓᓂᕆᐅᓕ ᐅᖅᑲᓪᐅᖅᑕᒥᓂᐅᐸ ᑕᐃᓴᓯᒪᓂ ᐸᖅᓴᐃᔨᓄᑦ ᐱᓪᓕᒪᒃᓴᐃᔨᐅᐸ ᐃᓂᖓᒃ ᓴᖅᑭᑕᐅᖅᑲᐅᖅᑲᕐᓂᓪᓚᒍ ᐊᖏᔪ 2000 ᓴᓇᖓᓪᓕᐊᓚᑐᖅ GSAR ᒪᓪᑐᐸᓪᓕᐊᔭᒃᓴᕐᓂᐅᓂᖅ, ᐱᓪᓕᒪᒃᓴᐅᑎᑦ ᐅᖅᑲᓪᒥᒃᓴᓕᒫᑦ, ᐸᖅᓯᐃᓚᐅᑦ ᐊᐅᓪᓚᑎᐅᓴᑎᒃᓴᓪᓕᒃ ᓴᓇᖅᑭᑕᐅᖅᑲᐅᑦ ᑐᑭᖅᑎᓕᒫᖅᑐᓪᓗᒍ ᐊᖏᔪ 2000 ᓴᓇᖓᓪᓕᐊᓚᑐᖅ ᐃᓕᓴᐅᔪᖅᑐᑦ ᐃᓕᓴᐅᔪᖅᑐᑦ ᐊᐅᓪᓚᑎᐅᓴᑎᒃᓴᓪᓕᒃ

ጋᖏᐅᕈᑎጋΔᵒᓇᓕ⊰ᓕᒃ. ⊰ᐊᓕᕈᑎᓂ⊰ᐊᑭᑎᒃ ᑲᓇᑕᐅᑦ ᐅᓇᑕᖅጋᑲᓴᔪᓐᖏᑕ ᐃᖅᑲᐅᓯᒪᔪᖅ ᐱᖅᔨᑎᖏᓂᒃ ᐊጋᖅᓯᓂᒪᒍᑦ ᐊᑭᓕᐅᑦ (EUR), ᐊጋᓕᖅᑎᑕᐅᔪᓂ <ᖅᑲᐃᐅᓄᑦ EUR ᓴᖅᑭᑌᔨᖅᓴᓂ ᑕᒪᔨძᐊ <ᖅᑲᐃᐅᑦ ᐊᑭᓕᖅᓯᖅᑕᐅᓯᓴᖏᖏᑐᑦ ᐃᖅᑲᐅᓯᒪᔪᒋᒃ ᐊᑭᓕᖅᓯᖅᑕᐅᕐᓂᓗᑎᒃᐊጋᓂ ᐱᖅᔨᑎᖏᓂᒃᐊጋᑦᓴᑌᒋᑎᑦᑕ ᐊᖏᑦᖅᑕᐅᓯᒪᔪᓄᑦ ᖃᓂᖅᑏᑦ ᐱᓕᒪᒃᑲᐃᓂᖏᓄᑦ, ᐊᔪᕐᓂᓵᖅᓴᐅᑎᖏᓄᑦ, ᐊᒪᓗᓗ ᖃᓂᓪᓕᒋᓕᓂᓂᓵᓂᖅᑕ. ᑕᐃᒫᒃ ᓴᖅᑭᔪᒍᑎᑕᒃ ᐃᓕᓴᖅᓯᒪᓂᖅᑐᖅᓴᖅ ᐊᑭᓕᖅᓯᖅᑕᐅᓄᒃ <ᖅᑲᐃᐃᑦ ᐊጋᓯᓄᖏᓕᑎᖏᓂᒃ ᐱᓕᕐᓂᖅᑎᑦᑕᕐᓂᒃ ᐃᑲᔪᑎᑦ - ᑕᐃᒫᒃ ᐊጋᖅᑕᐅᓂᖅᓴᓄᓂ ᓄᓯᓴᓂᓂᓂᖅᓂᓗ ᐊᐅᓪᓚᖅᑐᖅᓴᐅᓂ ᐃᓕᓴᖅᑎᑦᑕᕐᓂᒃ ᑲᑎᒪᔨᖅ "ᐃᓇᒥᒃძᑦ ᐃᒃᐱᐊᖅᓯᒪᔪᑦᑕᓂᒃ" ᐃᓕᐅᒃᑲᓂᓂᖅᓴᐅᑦ <ᖅᑲᐃᐃᑦ ᒃᓚᒋᔭᕐᓂᖅᓴᓂ. ᑕᐃᒪᓕ ᑦᓂᓇ <ᖅᑲᐃᐃᓄᑦ EUR ᐊᑭᓕᖅᓯᓚᐅᖏᑕᔪᓂ ᑭᓴᖃᖅᔪᐃᓚᐊᖅᑎᑦᔪᔪ ᐊᖏᕐᓴᒃ ᖃᑭᒪᐃᓂᒥᒃ <ᖅᑲᐃᐃᖏᑕ ᐊᐅᓕᓂᓵᓯᖏᓂᒃ ᖃᓄᑦᔪᐃᓂᖅ ᓄᓇᖏᓂ ᒃᓚᒋᑕ, ᐊᔨᐅᓂᒃᑐᖅᓴᐅᑦ ᓄᓇᖏᓂᒃ ᑲᑎᒪᔨᖅ ᐅᓇᑕᖅጋᑲᓴᔪᓐᖏᑕᔪᓂ ᐃᓕᓴᖅᑎᑦᑕᕐᓂᒃ ᐊᑭᓕᖅᓯᖅᑕᐅᓂᖅᓴ

ᐊᑕᐅᓯᒻᒥᒃ ᐱᓕᕆᓂᑦ ᐃᓂᒪᖏᑦᑐᐅᓂᖏᓐᓂᖅᓴᖅ ᐱᐅᓂᐅᓚᑦᖁᖏᑦᑐᑦ ᐊᐅᓪᓚᑦᑐᐃᓂᖅ ᑲᑎᖕᖏᓕᓕᒻᒥ ᐃᓕᓴᕐᕕᒃ. ᐊᑐᐊᓪᑲᖅᓂᐅᔪᖏᑦ, ᑲᑎᒪᔨᐊᖅᓂᖏᑦ ᐊᑐᐊᕆᐊᒋᐅᖏᑦ ᓇᓗᓇᐃᖏᓂᒻᒥᒃ ᓴᖕᒪᖏᑦᑲᖅᓂᒻᒥᓪᓗ ᐊᐅᑎᓪᓚᐃᓂᖅ <ᖏᑦᖃᐃᔨᑦ ᑲᒪᕈᑦᖃᐊᖏᓪᓂᕐᓂᖅᓂᖅ ᐅᑭᐅᖏᑦᑕᖏᑐᒥ, ᓂᓴᓗᓪ ᓄᖅᑭᑦ ᕿᑯᖕᓂᕐᓂᑦ ᐊᒻᒪᓗ ᓄᕐᔪᖏᑦᑐᐃᓂᖅ. ᑭᖓᔪᓪᓕᖏᑦᓯᒋᑦᓗ, ᑲᑎᒪᔨᐊᖅᑐᒥ ᐃᓚᐅᐊᖏᑦᑐᐃᓂᖅ ᐱᓕᕆᔨᐊᖅᑐᒥ ᐃᓕᓴᐅᓂᒡᒎᖅᑐᑦ ᐊᑐᐊᖅᑐᒥ ᐃᓕᓴᐅᑎᖅᑕᐅᔪᑦ ᐱᖓᑕᐅᔪᖓᓕᕆᓂᑦ <ᕿᓇᐃᔨᑕᐅᓂᓄᑦ <ᕿᓐᓇᖅᑭᖓᒪᔪᓪᓗ ᐊᑐᖅᑕᐅᓂᑦ ᐃᓄᐃᙱᑐᖓᓂᖅ ᐃᓐᓇᐊᖏᕐᕕᖓᓄᑦᑐᖅ <ᖏᑦᖃᐃᓂᓪᓕᐅᓐᓂᑦ ᑐᖕᒪᒪᕆᑦ ᑲᒪᒋᔨᖅᑭᖓᓂᖅᓴᖅ ᓄᖕᒪᖏᑦᑲᖅᖁᔭᐅᖓᓂᖅᓴᖅ ᐊᒻᒪᓗ ᐃᓕᐅᔨᓕᒫᑦ ᐱᖓᑕᐅᓗᑎᒃ ᑭᓄᐊᓂ ᐅᒪᒋᔭᖅᑎᒋᔪᖅ ᐃᓕᓴᐅᑎᖅᑕᐅᔪᖓᓂᖅᓴᖅ ᐊᐅᓚᑦᑐᐃᓂᖅᓴᖅ ᐃᓐᓇᐊᖏᕐᕕᖓᓄᑦᑐᖅ ᐃᓕᓴᐅᑎᖅᑕᐅᓗᑎᒃ ᑲᑎᒪᔨᐊᖅᑐᒥ ᐃᓕᓴᐅᑎᖅᑕᐅᓗᑎᒃ ᐃᓕᓴᐅᑎᖅᑕᐅᔪᖓᓂᖅᓴᖅ ᐊᒻᒪᓗ ᐃᓕᓴᐅᑎᖅᑕᐅᓕᖅᑐᑦ


Strenghthening the SAR System in Nunavut
Re-Establish the Northern SAR Roundtable
Pilot a Community Public Safety Officer Program
Develop a Whole-of-Society Preventative SAR Program
Re-Organize Nunavut's SAR Teams
Revise Nunavut's SAR Policy
Establish a Nunavut Search and Rescue Advisory Council
Support the Establishment of a Nunavut Search and Rescue Association
Create a Bi-Annual Nunavut Roundtable on Search and Rescue
Enhance Nunavut Emergency Management's SAR Capacity
Provide Alternative Marine SAR Training Opportunities
Continue to Strengthen the Coast Guard Auxiliary
Pilot a SAR Equipment Usage Rate (EUR)

INTRODUCTION

In the early morning hours of 24 August 2000, the *Avataq* left Churchill, Manitoba, bound for Arviat. Crewed by Rankin Inlet residents Louis Pilakapsi, Larry Ussak, Sandy Sateana, and David Kadjuk, the small converted fishing vessel routinely made the trip to Churchill, bringing back supplies to the Kivalliq communities. On this trip, however, the 12-metre *Avataq* was dangerously overloaded, carrying 12,096 kilograms of building materials – heavy steel frames used for the construction of social housing units – and 3,727 kilograms of propane tanks to Arviat. The vessel's freeboard – the distance from the waterline to the upper deck level – was approximately 16 inches. To keep water from seeping onto the deck, the crew blocked the vessel's scuppers with barrel plugs. This, however, meant that water collected on the deck and had no way to drain out.

Disaster struck when the vessel and crew encountered 30-knot winds blowing from the northwest when they were 10 nautical miles south of the community – winds that Environment Canada had predicted the previous day. At 0030 on 25 August, the captain, Pilakapsi, notified relatives in Arviat using CB radio channel 14 that the vessel was taking on water and that the bilge pumps were not working. The wind-driven waves pounded the little boat, and water poured onto its low afterdeck, pushing it deeper into the sea. With water sliding back and forth, the *Avataq* became increasingly unstable and threatened to roll over, which is likely what happened.

A last radio transmission at 0130 advised that the vessel was taking water over the bow and sinking. It must have happened quickly – the crew did not have time to launch the vessel's life raft. Several Arviat residents overheard the last radio call, and a group of searchers in ATVs proceeded south along the coastline to locate the vessel. Several small boats also attempted to make it to the *Avataq*'s last known location but were driven back by the sea state. The Arviat searchers did not inform Nunavut Emergency Services (NES) about the situation until 0255. In turn, while NES personnel asked the Marine Communications and Traffic Services (MCTS) Centre in Iqaluit if there were vessels in the area, they did not communicate the nature of the emergency to the Coast Guard or inform the Joint Rescue Coordination Centre (JRCC) in Trenton, Ontario, until 0519.

The decision to delay notifying JRCC Trenton ignored an agreement made after the *Qaosoq* sank in Frobisher Bay in 1994, resulting in the deaths of eight Inuk hunters. During this incident, authorities in Iqaluit had been slow to alert JRCC Halifax, and all involved had agreed that the JRCCs would be notified as soon as possible about any marine or air cases in the region. These new protocols were not followed during the *Avataq* incident.



The Avataq. (Transportation Safety Board of Canada, Marine Investigation Report M00H0008, 2000)

Due to the delay in reporting the case to JRCC Trenton, a Royal Canadian Air Force (RCAF) Hercules that was over Foxe Basin on a different search did not arrive in the Arviat area until 0810. Meanwhile, the first search plane, a privately owned Cessna from Rankin Inlet, took off at 0600. It found nothing. Between the time of the initial response and the time the SAR mission was reduced at 0935 on 30 August, a total of four helicopters, three Hercules aircraft, one private aircraft, two commercial vessels, and numerous community vessels participated in the search. Community responders tirelessly combed the sea and shore.

At 1908 on 25 August, a British Royal Air Force helicopter that had been training near Churchill located the debris field of the sunken vessel, as well as the body of Larry Ussak. The next day, a community vessel found Pilakapsi's body. Both victims were wearing full-length personal flotation device (PFD) coveralls, but Ussak's suit was not fully zipped up and the captain's still had a hanger stuck in the back. Evidently, the *Avataq* had foundered quickly. The coroner found that both men had died of hypothermia, not drowning. Given the estimated survival time for individuals wearing these suits, the two men may have survived in the 8°C water for at least five hours, leaving families wondering what might have happened had the Hercules over Foxe Basin been deployed to Arviat immediately.[1] A Transportation Safety Board report on the incident noted significant vessel safety issues, an inadequate understanding of the SAR system, and the poor communication and coordination between the various actors involved.[2]

Another desperate search unfolded 23 years later, this time off the shores of Sanirajak. In March 2023, three harvesters – Joey Sarpinak, Sandy Kunuk, and 15-year-old John Kirk Amagoalik – left the community in a small aluminum boat to hunt walrus near the floe edge. Spotting a walrus, Kunuk shot at it three times before preparing a harpoon. At that moment, however, the wounded walrus surfaced at the back of the boat and began climbing on board, perhaps mistaking it for ice. The weight of the walrus caused the boat to capsize, and the three hunters were thrown into the water. Incredibly, despite being bogged down by their heavy clothing, each hunter was able to climb aboard the overturned hull. Still within cell phone range of the community, the three men were able to report their situation.

Sanirajak's community SAR coordinator, George Innuksuk, immediately mobilized his volunteers. In his haste to deploy, one volunteer crashed his vehicle, injuring himself. Some Canadian Armed Forces personnel, along with Canadian Rangers, were conducting a training course in the community and were able to provide additional assistance. The rescue team could see the hunters stuck on drifting ice in the water, moving first south, and then north. The group's first thought was to get a boat in the water, but after getting a light watercraft ready, they could not get its engine to start in the plummeting temperatures. Meanwhile, part of the team followed the hunters on their snowmobiles in case the men drifted closer to shore and the rescuers could toss a rope and pull them ashore. With no ice rescue equipment or training, the community responders had few options but to wait.

Meanwhile, Innuksuk had informed the duty officer at Nunavut Emergency Management (NEM) about the evolving situation. According to Innuksuk, with the ice hardening and a marine rescue unlikely, the two men – who had worked together frequently during past searches – chose to treat the case as a ground search and rescue, which is NEM's responsibility. They brainstormed solutions for how to get a rope across to

the stranded hunters, while the duty officer looked for air support, though he could find no helicopters with the hoist capability required to pluck the men from the capsized boat. Unfortunately, JRCC Trenton was only informed of the case four hours after the first distress call, causing a significant delay in deploying RCAF SAR aerial assets to the case.



Image of the March 2023 Sanirajak search and rescue. (CBC News, 14 March 2023)

Fortunately, at around 1800, the hunters started to drift towards the edge of the solid ice on which the rescuers stood. The three men were able to spread their body weight and crawl over the shifting ice to the rescue team, which threw them a rope as they moved closer. All three were taken to the community's health centre, two with signs of hypothermia.[3]

Although these cases happened over two decades apart, they share core similarities. Both highlight several of the central strengths of Nunavut's SAR system, particularly the skill, dedication, and resilience of community SAR responders. At the same time, the searches underline some of the central challenges that continue to concern community responders: the austere environment and the risks it creates, the difficulties in coordination and communication between SAR partners, the strain placed on finite local capacities, gaps in training and equipment, issues with preparedness and boating safety, and the limited understanding of the SAR system.

Progress has certainly been made since the sinking of the *Avataq*. The expansion of the Coast Guard Auxiliary in recent years has both improved marine SAR capabilities and generated a stronger connection between community responders and their federal partners. The Civil Air Search and Rescue Association has trained more observers in the territory, while the Joint Rescue Coordination Centres have attempted to strengthen their relationships with territorial and community responders. Nunavut Emergency Management's GSAR programming has also evolved since the formation of the territory to provide better support to SAR volunteers at the local level. Critical gaps remain, however, and responders worry that recent territorial and federal initiatives to bolster SAR capabilities in Nunavut might prove unsustainable and fleeting.

Many of these challenges can only be properly addressed in partnership with a wide array of SAR actors. SAR funding and prevention, preparedness, and response activities in the region are extremely complex from a jurisdictional standpoint, involving local, territorial, Inuit, and federal agencies and organizations, including the following:

- community SAR groups
- hamlet offices
- Nunavut Emergency Management
- the Nunavut Municipal Training Organization
- Nunavut Tunngavik Incorporated
- the Qikiqtani, Kivalliq, and Kitikmeot Inuit Associations
- the Royal Canadian Mounted Police
- the Department of National Defence/Canadian Armed Forces
  - Joint Rescue Coordination Centres Trenton and Halifax
  - the Royal Canadian Air Force
  - the Canadian Army/1st Canadian Ranger Patrol Group
- the Civil Air Search and Rescue Association
- the Canadian Coast Guard Arctic Region
- the Canadian Coast Guard Auxiliary
- Public Safety Canada
- Transport Canada
- Environment and Climate Change Canada
- the private sector (e.g.,)
  - resource development companies
  - private aviation companies

Government and community responders have emphasized the need to consistently strengthen cooperation between these groups to ensure that the "SAR system of systems" operates at maximum effectiveness.

The primary objective of this report is to provide an assessment of the state of the search and rescue system in Nunavut. This assessment is based on the results of four Nunavut Roundtables on Search and Rescue (one in 2020 and three in 2022), interviews with community and government responders, and an extensive review of government documents, media stories, and scholarly literature. Split into five sections, this report explains how the SAR system works in Nunavut, examines its strengths, assesses the core challenges and areas for improvement that limit its effectiveness and threaten the efforts of responders, shares rightsholder and stakeholder suggestions for improvement, and offers recommendations.

1.1 THE NUNAVUT SEARCH AND RESCUE PROJECT

Building off the work completed for the Kitikmeot SAR Project (kitikmeotsar.ca), the Nunavut Search and Rescue (NSAR) Project is a partnership between Inuit community responders, academics, and practitioners and policymakers from government and non-governmental organizations, with the objective of strengthening SAR prevention, preparedness, and response in Nunavut. To do so, we are exploring several elements related to SAR, including the following:

- strengths and challenges
- best practices and lessons observed
- policies, plans, and procedures
- infrastructure needs
- future requirements
- solutions and new approaches

Data collection for the NSAR Project started with an extensive review of government documents, media stories, and scholarly literature, followed by four Nunavut Roundtables on Search and Rescue (2020 and 2022), interviews with community and government responders, and community-based search and rescue exercises.

The roundtables are at the heart of this project. Working with Nunavut Emergency Management and Inuit community responders, the project team organized and facilitated four search and rescue roundtables that reflected the territory's three distinct regions: the Kitikmeot (held in January 2020 and November 2022), the Qikiqtani (November 2022), and the Kivalliq (November 2022).[4] The roundtables brought together almost 100 Inuit responders and over 60 representatives from territorial, federal, non-profit, and Inuit agencies and organizations to discuss all aspects of the SAR system in the territory.

The idea for these roundtables came directly from community responders. These individuals highlighted the need to 1) share their knowledge with and learn from practitioners in other communities, 2) share their experiences and develop relationships with the territorial and federal agencies involved in SAR in Nunavut, and 3) work together to strengthen the SAR culture in the region. Such a roundtable approach also aligns with two of the guiding principles of Inuit Qaujimajatuqangit: piliriqatigiingniq, the concept of equal collaborative relationships or working together for a common purpose, and aajiiqatigiinniq, which means decision making through discussion and consensus, or building agreement through a fully inclusive and participatory group process.[5] Consensus-based decision making can only flow out of collaboration. Both Inuit community responders and government actors have highlighted the need to strengthen the relationships between the various actors involved in conducting SAR activities in Nunavut to overcome ongoing coordination and cooperation challenges.[6]

The roundtables provided the space required to develop mutual understandings of respective response capacities and gaps, examine the SAR risks facing communities, work through challenges, and brainstorm potential solutions in an inclusive and participatory environment. They facilitated the sharing of

KITIKMEOT SEARCH AND RESCUE

NUNAVUT SEARCH AND RESCUE PROJECT



Small group discussion at the Qikiqtani Roundtable on SAR.



Roger Hitkolok and Calvin Pedersen share at the Kitikmeot Roundtable on SAR.

strengths, challenges, lessons learned, best practices, and Inuit Qaujimajatuqangit with respect to SAR prevention, preparedness, and response in Nunavut. The roundtables provided an opportunity for community responders to learn from one another and develop a community of practice, while asking their government partners for clarity on policy, procedural, and operational issues. Most importantly, they offered an opportunity to strengthen the collaborative relationships required for SAR operations in the region.

The organizers designed the roundtables to be as collaborative and informal as possible – they were about starting conversations and sharing ideas.

The roundtables involved a mixture of all-participant discussions (with simultaneous translation provided) and small breakout groups to facilitate brainstorming and the sharing of perspectives. To encourage free-flowing and candid conversations, the roundtables followed the Chatham House Rule: while participants may use information from the proceedings, the identity of the speakers will not be revealed in any reports or briefings (unless specifically requested by participants). As a method of knowledge exchange, the roundtables prioritized unikkaaqatigiinniq (the Inuit philosophy of storytelling) and the sharing of stories concerning the factors affecting successful SAR operations.



Opening dinner at the Kitikmeot Roundtable on SAR.



Tabletop exercise conducted at the Kivalliq Roundtable on SAR.



Wesley Innukshuk presents at the Kivalliq Roundtable on SAR.



Community and government responders share stories at the Kitikmeot Roundtable on SAR.

Given that relationship building was a primary objective, the roundtables prioritized the personal conversations shared over coffee and meals as much as the broader discussions involving the entire group.

Each Nunavut Roundtable on SAR started with an opening dinner, during which the organizers provided a general introduction and a short overview of the state of search and rescue in Nunavut. Following this presentation, an introductory session was held, entitled "What Would You Like to Discuss?" Participants had the opportunity to lay out the main topics, issues, and questions they wished to examine in more detail over the course of the roundtable.

The first half of the second day focused on an Introduction to the SAR System and Discussion Period session. This involved short presentations from federal, territorial, non-profit, and Inuit organizations on their roles and responsibilities in the SAR system. Participants were invited to ask any questions and/or raise any concerns they might have about how the SAR system functions and to discuss the topics raised in the previous night's brainstorming session.

In Session 3, Sharing Best Practices and Lessons Learned, participants broke into small groups to share how SAR operations work in their communities/organizations, what they do well, and the challenges they face.

At the end of the session, the roundtables came back together, and the groups shared and discussed their main points. The last day of each roundtable kicked off with a discussion on how to strengthen the SAR system (Session 4). In small groups, participants discussed what they require to successfully conduct SAR operations, what they think would strengthen the system, new approaches and solutions to challenges and gaps, infrastructure needs, and future requirements. At the end of the session, the breakout groups again came together to share their findings.

The remainder of the roundtables involved discussion-based mass rescue tabletop exercises carried out by Coast Guard SAR specialists. These provided an opportunity to work collaboratively and explore "what if?" scenarios. Together, roundtable participants worked through alerting protocols, response procedures, and coordination issues.



Nick Dunphy, Nunavut Emergency Management, briefing on Ground Search and Rescue in the territory.

Each roundtable concluded with a wrap-up and discussion of next steps by the organizers and Nunavut Emergency Management. Following the roundtables, the researchers continued to build on the collaborative relationships established through the sessions via phone conversations, emails, digital engagement methods, and community visits.



Sgt. Robert Featherstone and Major Marc Crivicich, JRCC Trenton present challenge coins to Roger Hitkolok (Kugluktuk Search and Rescue), Paul Ikuallaq (Gjoa Haven Search and Rescue), Jack Himiak (Kugluktuk Search and Rescue), and Jimmy Haniliak (Cambridge Bay Search and Rescue).



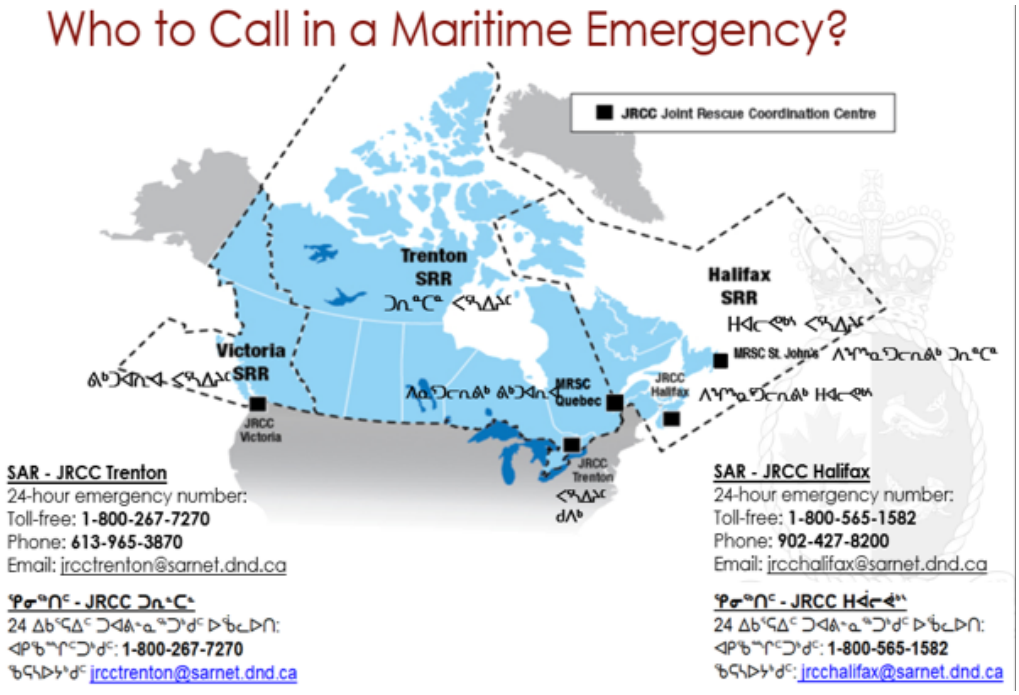


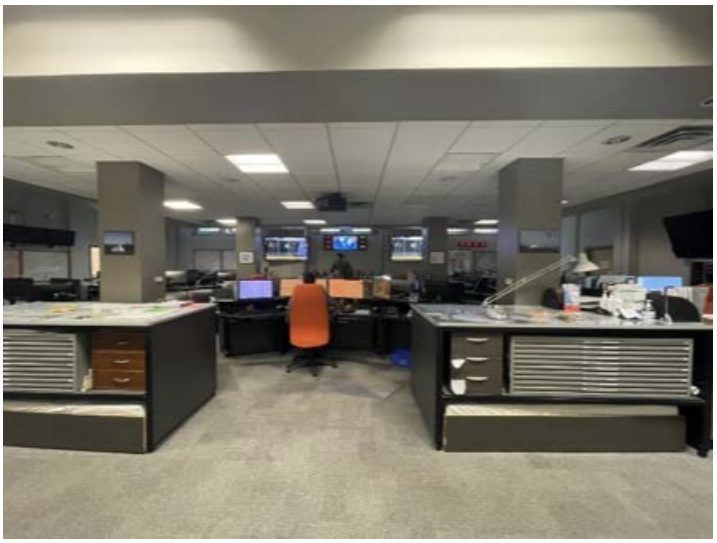


Group photos: Kitikmeot, Qikiqtani, and Kivalliq Roundtables on Search and Rescue 2022. See names of all participants in Appendix I.

2. THE CONTEXT: HOW SEARCH AND RESCUE WORKS IN NUNAVUT

Through the National SAR Program, federal, provincial/territorial, and municipal organizations share responsibility for search and rescue, with the support and assistance of volunteer organizations and private sector partners. The National Search and Rescue Secretariat (NSS), which is housed in Public Safety Canada, is responsible for coordinating the National SAR Program, provides policy advice to support SAR efforts, oversees SAR prevention activities, and manages Canada's contributions to the International Cospas-Sarsat Programme. The Canadian Armed Forces (CAF) bears overall responsibility for the effective operation of the federal coordinated maritime and aeronautical SAR system. The CAF provides aeronautical SAR services (e.g., responses to aircraft incidents and searches for downed aircraft) and can assist the Canadian Coast Guard (CCG), which is responsible for the maritime SAR program component, which includes incidents involving a vessel or person(s) from a vessel.[7] Humanitarian SAR and ground SAR cases, such as searches for missing hunters or boaters on inland waters, are a provincial/territorial responsibility, although authority for operational response is often delegated to police organizations. Nunavut is unique in that the territorial emergency management organization has been given authority for SAR operations in the territory. Parks Canada is responsible for SAR in national parks. Several other territorial and federal agencies are also occasionally called upon to provide support to SAR operations in Nunavut, such as Natural Resources Canada, through the Polar Continental Shelf Program.





Work stations at Joint Rescue Coordination Centre Trenton.

The following overview provides more information on the key actors involved in SAR operations in Nunavut and the diverse roles they play within the broader SAR system.[8]

2.1 THE CANADIAN ARMED FORCES

The CAF's primary support for SAR includes three Joint Rescue Coordination Centres in Halifax, Trenton, and Victoria, five aerial squadrons specifically trained and crewed for search and rescue activities, and the Canadian Mission Control Centre.

Commanded by experienced RCAF SAR pilots or navigators, the JRCCs are responsible for the planning, coordination, conduct, and control of SAR operations. Nunavut falls under the search and rescue regions covered by JRCC Trenton and JRCC Halifax. The centres receive and interpret distress alerts, assess requirements, and develop response plans, including the identification and tasking of the most suitable response resources (such as community assets and vessels or aircraft of opportunity) to locate the incident, stabilize the situation, and recover survivors to a place of safety.[9]

Under the JRCCs' direct tactical control are the five primary SAR squadrons, consisting of CH-149 Cormorant helicopters, CH-146 Griffon helicopters, and CC-130 Hercules aircraft, the latter of which are set to be replaced by the CC-295 Kingfisher in the coming years.[10] In 2023, the Kingfisher completed all test points to satisfy the Polar Navigation test campaign, a key step in its certification process. While critics continue to highlight issues that might detract from the Kingfisher's capabilities in the Arctic – particularly speed and range issues – supporters argue that its advanced sensor and communications suite will improve search effectiveness in the region.[11]

Most aerial responses to SAR incidents in Nunavut come from the squadrons based in Winnipeg, Manitoba; Trenton, Ontario; Gander, Newfoundland and Labrador; and Greenwood, Nova Scotia. In aerial SAR operations, airplanes are search platforms, while helicopters are rescue platforms. The Cormorant is a fantastic SAR platform for Arctic operations. It is all-weather and has effective de-icing capabilities, redundant communications and navigation systems, and an exceptional long-range capability, as it can fly over 1,000 kilometres without refueling. 424 Transport and Rescue Squadron/8 Wing in Trenton, Ontario, which is responsible for much of Nunavut, currently does not have Cormorant helicopters, however, and its Griffons lack the speed and endurance to respond to incidents in the region. As a result, SAR operations in Nunavut





that require rotary support generally involve the dispatch of Cormorants from Gander and Greenwood.

Each primary aircraft or helicopter on standby is fully crewed and includes search and rescue technicians or SAR Techs. The 145 SAR Techs in the CAF are highly trained personnel who can deploy by parachute or hoist to an incident and perform emergency trauma care procedures, stabilizing victims for evacuation. SAR crews are obligated to respond within a set Response Posture (RP) standard, "measured as the time from when a tasking is received to the crew being airborne." Currently, a fully operational aircrew is to be airborne within two hours of the receipt of an alert (in the recent past, the RP standard called for a response within 30 minutes during normal working hours and within two hours at all other times).[12] Other CAF air and naval assets can be called upon to serve as secondary SAR resources, although they respond only as available and are not kept on standby.[13] The CC-138 Twin Otters of 440 Transport Squadron, stationed in Yellowknife, are good examples of these secondary assets.







The Canadian Mission Control Centre (CMCC), stationed at JRCC Trenton, runs the Cospas-Sarsat program, upholding Canada's commitments to the International Cospas-Sarsat Programme Agreement (ICSPA). The ICSPA is a satellite-aided SAR initiative focused on detecting and locating emergency locator radio beacons that have been activated by persons, aircraft, or vessels in distress.[14] When a Personal Locator Beacon (on a person), Emergency Locator Transmitter (on a plane), or Emergency Position-Indicating Radio Beacon (on a boat) is activated, it sends a signal, which is picked up by satellites (LEOSAR – Low Earth Orbit Synthetic Aperture Radar; MEOSAR – Medium Earth Orbit Synthetic Aperture Radar; GEOSAR – Geosynchronous Earth Orbit Synthetic Aperture Radar). The distress beacon data is sent to the Canadian Mission Control Centre for processing, which then sends the distress notification and location to the appropriate JRCC.

The CAF must also have its primary SAR assets and secondary resources prepared for low-probability, high-consequence scenarios that could result in the *large-scale* loss of life, namely major aeronautical disasters (MAJAID) and major marine disasters (MAJMAR). To address these scenarios, the CAF must be prepared to undertake mass rescue operations, "characterized by the need for immediate response to large numbers of persons in distress, such that the capabilities normally available to SAR authorities are inadequate."[15] During major air and marine disasters, the CAF provides initial care and survival support, medical evacuation, and, possibly, the deployment of its four MAJAID kits (plus an additional training kit that can be deployed if required). Each kit can be air dropped and contains tents, sleeping bags, clothing, medical supplies, heaters, generators, water, and rations to support 80 people for up to 24 hours.[16] In normal conditions, the CAF anticipates that it can accomplish an entire MAJAID operation within 72 hours of initial notification.[17] In the case of a large passenger plane crashing or a major marine accident in Nunavut, this rapid CAF response would prove vital and, if successful, could save many lives.

2.1.1 CASARA

In support of its SAR mandate, the CAF provides funding for the training, insurance, administration, and operations of the volunteers who make up the Civil Air Search and Rescue Association (CASARA/SERABEC).[18] This federally incorporated non-profit volunteer association provides private aircraft, trained volunteer crews, and spotters for military aircraft during search missions. CASARA volunteers participate in search taskings for downed aircraft and other humanitarian missions, while also conducting SAR awareness and training programs. CASARA has been operational in Nunavut since 1996 and has trained spotters in Iqaluit, Pond Inlet, Resolute Bay, Arctic Bay, Sanirajak, Rankin Inlet, Cambridge Bay, and Gjoa Haven. The annual re-certification requirement makes it difficult for community spotters to maintain their status, however.

CASARA members are expected to spot objects half a mile away from 500 feet above the ground, one mile away from 1,000 feet up, and two miles away from 1,500 feet in the air. During past searches in the region, CASARA spotters have deployed on aircraft from Kenn Borek Air, Adlair Aviation, Ookpik Aviation, and the RCAF.

In 2019, CASARA launched its Remotely Piloted Aircraft Systems (RPAS) Program, which puts drones (DJI Matrice 30 RPAS) with advanced search imaging software (Loc8) into the hands of CASARA volunteers. Initial training was attempted for the Rankin Inlet CASARA group in 2023.







2.1.2 THE CANADIAN RANGERS

Through the Canadian Rangers, the CAF provides local SAR capacity to many of Nunavut's communities. Canadian Rangers are part-time, non-commissioned Canadian Armed Forces Reservists who serve as the "eyes, ears, and voice" of the CAF in remote parts of the country "which cannot conveniently or economically be covered by other elements of the CAF."[19] They lead and support territory protection operations (including surveillance patrols), conduct and support CAF operations, and ensure a CAF presence in local communities. Rangers in Nunavut are part of the 1st Canadian Ranger Patrol Group (1CRPG), which is headquartered in Yellowknife.

The CAF provides Canadian Rangers with flexible training that is tailored to the local terrain and environmental conditions but that generally involves several elements directly related to SAR capabilities, including first aid, wilderness first aid, GSAR, constructing emergency airstrips on land and ice, and communications. Much of the equipment supplied to individual Rangers and their patrols also supports SAR operations: communications equipment, navigation and geolocation gear, first aid kits, etc. Within their communities, Rangers often serve as SAR volunteers who know how to work effectively as a group or, when formally activated by the CAF, as a team on an official military tasking for which they are paid. When officially activated, the Rangers are compensated for the use of their personal equipment through an Equipment Usage Rate and can have their equipment replaced if it is damaged during a search.[20]

Over the years, Ranger support to GSAR operations in Nunavut has fluctuated, hampered by an overly convoluted and complicated process through which NEM formally requests Ranger assistance. Recent efforts to clarify and streamline the Ranger activation process for short-term searches should help this issue. Currently, in the event of a SAR case that is deemed a life or limb emergency, the commander of 1CRPG can quickly approve the activation of a Canadian Ranger patrol to save lives.[21] This policy and process is not, however, well understood at the community level, or by members of the territorial government (see section 4.2.6).







2.2 THE CANADIAN COAST GUARD AND COAST GUARD AUXILIARY

The primary responsibility for the provision of the maritime component of the federal search and rescue program rests with the Canadian Coast Guard. The Coast Guard's SAR activities include the provision of maritime distress and safety communications and alerting services, as well as distress monitoring, communications, and SAR operations. The Coast Guard's participation in SAR encompasses coordination, response, planning, training, and exercises. In the Joint Rescue Coordination Centres, Coast Guard personnel sit across from their CAF colleagues to conduct maritime SAR operations within the Canadian area of responsibility. Given its vital role in the SAR system, the Coast Guard also works on the formulation and review of federal SAR policy, in collaboration with its partners on the Interdepartmental Committee on Search and Rescue. In addition, the Coast Guard contributes to the establishment of levels of service and performance, as well as operating standards.

The Coast Guard's SAR program is delivered with the support of its fleet and using the communications and alerting services provided through its Marine Communications and Traffic Services (MCTS) program. The Coast Guard has primary SAR assets that are designed, equipped, and crewed for search and rescue and that maintain a 30-minute SAR departure standby time. Other fleet vessels, such as icebreakers, serve as secondary SAR assets, which maintain all SAR operational standards and have a 60-minute SAR departure standby time. In these icebreakers, the Coast Guard employs rescue specialists who service the waters of Nunavut – highly skilled professionals capable of administering emergency pre-hospital care in challenging marine environments, generally serving aboard ships and at coastal SAR stations.

Starting in 2015 with the launch of the Coast Guard's Arctic Search and Rescue Project, and accelerated through the creation of the Canadian Coast Guard



Arctic Region, the Coast Guard agency has dramatically transformed its approach to search and rescue across the North, including in Nunavut. The Arctic SAR Project was a response to increasing maritime activity, the need to improve marine safety, and the requirement to meet the "unique challenges of SAR in the Arctic." It entailed a two-year study (starting in 2015) of marine risks and SAR requirements in coastal Arctic communities (the Risk-Based Analysis of Maritime SAR Delivery, or RAMSARD), better support for existing Auxiliary units, and the establishment of new units.[22] The Coast Guard developed the project around community engagement and sustained relationship building, which started with the agency's Arctic RAMSARD team visiting over 45 communities, including those in Nunavut. In June 2017, the agency formed its Arctic Community Engagement and Exercise Teams (ACEET), which began visiting communities to connect with existing Auxiliary units, introduce the program to communities without an Auxiliary unit, and provide the support and training required for the establishment of new units.[23]

The Coast Guard is responsible for the organization, coordination, and administration of Canadian Coast Guard Auxiliary (CCGA) activities. Coast Guard Auxiliary units are made up of trained local volunteers who use their own vessels or community vessels (such as those provided under the Indigenous Community Boat Volunteer Program) to respond to SAR incidents. CCGA members receive specialized training, insurance coverage, and reimbursement for certain operational costs, but they also fundraise to purchase additional equipment. Through the Indigenous Community Boat Volunteer Program – an Oceans Protection Plan initiative – the Canadian Coast Guard has been providing communities in the Arctic with funding (generally between $250,000 and $350,000) to purchase community SAR vessels and marine safety equipment. Since 2017, the Canadian Coast Guard has awarded community boats to ten Nunavut communities to enhance local response capacity.[24]



While the new vessels provide a welcome boost to community marine SAR capabilities, they would have limited value without the training required to use them effectively. To support these units, the Coast Guard Arctic Region and its Auxiliary partners engage in a robust training cycle. These efforts have been bolstered by the hiring of Indigenous SAR response officers to assist in SAR operations, liaise with the Auxiliary units, conduct training and exercise activities in the field, and assist with equipment and vessel maintenance. Coast Guard Auxiliary members learn how to coordinate with the Joint Rescue Coordination Centres, Royal Canadian Air Force aircraft that might be on the scene, and other vessels. They further learn about safe boat handling, navigation, marine first aid, marine firefighting and emergency duties, radio communications, search patterns, and CCG operations.[25]

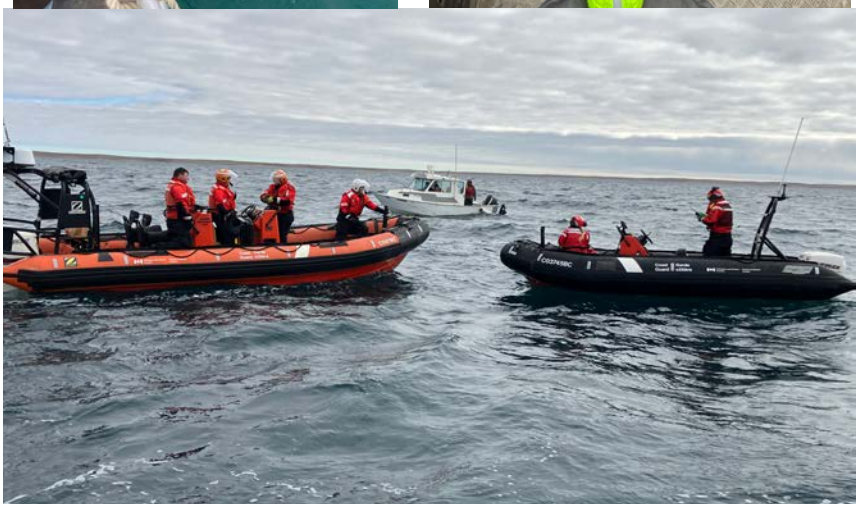


There are currently Coast Guard Auxiliary units in Kugluktuk, Cambridge Bay, Gjoa Haven, Naujaat, Rankin Inlet, Arviat, Sanirajak, Igloolik, Pond Inlet, Clyde River, and Pangnirtung. In communities without Auxiliary units, the CCG has provided marine SAR training to other community-based organizations, such as the Taloyoak Guardians and the Qikiqtani Inuit Association's Nauttiqsuqtiit.

Other major initiatives in the Coast Guard Arctic Region that have directly improved the SAR system in Nunavut include the Training and Exercising Industry Program and the Arctic Marine Response Station in Rankin Inlet. Launched in 2019, the Training and Exercising Industry Program works to improve interoperability and preparedness amongst key stakeholders in the event of a mass rescue incident in the Canadian Arctic. In 2018, the CCG established the Inshore Rescue Boat Station in Rankin Inlet, which provides 24/7 search and rescue services to the Nunavut communities of Rankin Inlet, Chesterfield Inlet, and Whale Cove. The station was upgraded to an Arctic Marine Response Station for the 2023 season. The upgrade includes the hiring and training of additional crew from local communities, the extension of the station's operational season by one month, the procurement of an additional SAR vessel, and other infrastructure improvements.[26] While the response station can only provide SAR coverage to three communities in Nunavut, the Coast Guard has hired Nunavummiut youth to work at the station, learning SAR skills that they can bring back to their home communities or transition into careers in the Coast Guard.











Members of Cambridge Bay Coast Guard Auxiliary Unit participate in SAR exercise in August 2022.

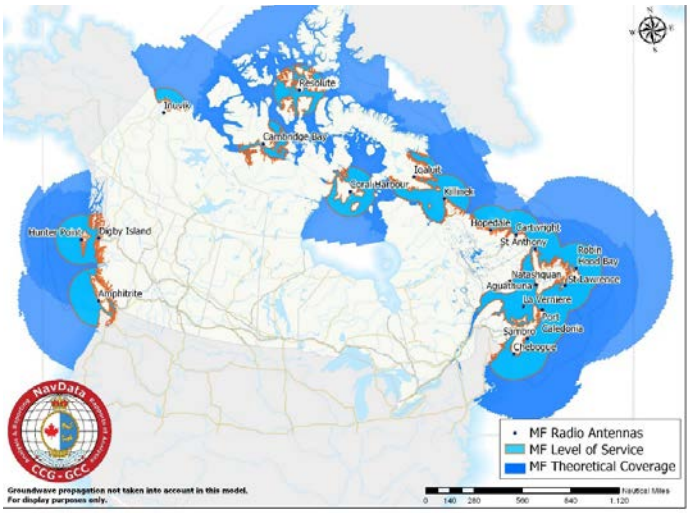




The Coast Guard's provision of distress and safety communications in Nunavut is limited. It provides Very High Frequency (VHF) band coverage by radiotelephony and digital selective calling (DSC) to those waters within a 40-nautical-mile radius of Iqaluit, Resolute Bay (Quasuittuk), and Cambridge Bay. Medium Frequency (MF) band coverage by (2MHz) radiotelephony is provided within a 150-nautical-mile radius of Iqaluit, Coral Harbour, Resolute Bay, Cambridge Bay, and Killiniq Island, on the extreme northern tip of Labrador between Ungava Bay and the Labrador Sea.[27] On a seasonal basis, High Frequency (HF) band coverage is provided to the Arctic Ocean and Hudson Bay, within an 800-nautical-mile radius of Iqaluit, Killinek, Coral Harbour, Resolute Bay, and Cambridge Bay.[28]



Arctic VHF Radio Coverage Channel 16 - 156.8 MHz

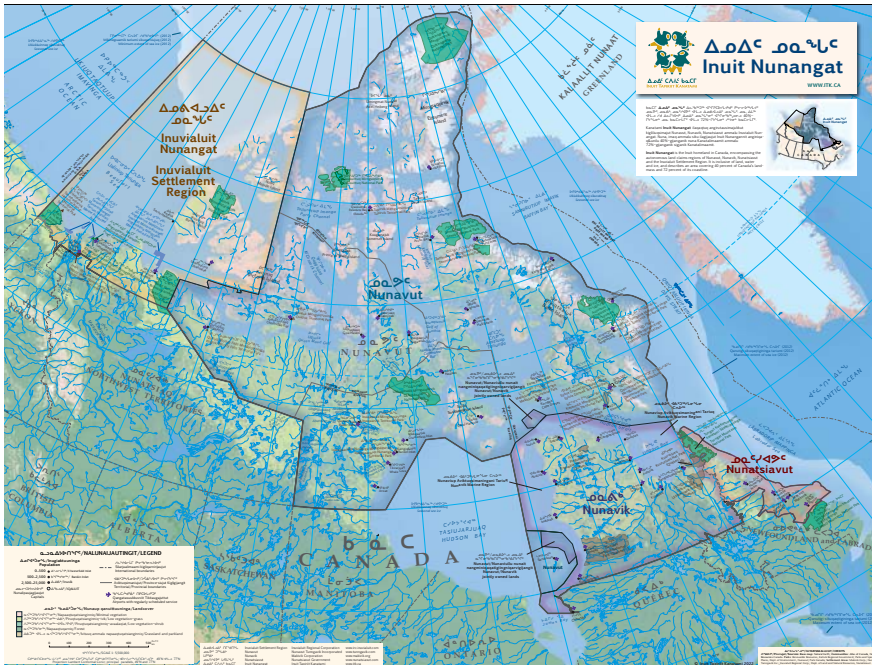


Arctic MF Radio Coverage



Arctic HF Radio Coverage

2.3 PARKS CANADA



Parks Canada is responsible for search and rescue and visitor safety in the country's national parks and historic sites, including the Ukkusiksalik, Quintipara, Qausuittuq, Auyuittuq, and Sirmilik National Parks, as well as the Wrecks of HMS *Erebus* and HMS *Terror* National Historic Site in Nunavut. Parks Canada engages in "visitor risk management and visitor safety planning, builds and maintains facilities (such as hazard signs and fenced compounds), and works with other government departments and nongovernmental agencies to provide trip planning and safety information, as well as search and rescue services."[29] The Nunavut Field Unit (NFU) is responsible for coordinating any emergency responses within the territory's national parks. Parks staff will assist with medical evacuations, the investigation of missing or overdue people, ground searches, and marine SAR when and where possible. In each park, there are duty officers on call 24/7 during the peak season (1 April-30 September). Even if NFU staff lack the capability to complete a SAR operation, they will reach out to other available resources to assist or lead, depending on the level of rescue. Parks Canada Public Safety Specialists based in Banff and Jasper National Parks are, for instance, capable of ice rescue, high-angle rescue, and glacier rescue, and they could deploy to Nunavut's parks.



2.4 NUNAVUT EMERGENCY MANAGEMENT

Prior to the creation of Nunavut, there was little formal SAR training or organization provided to community responders. While some communities established their own SAR committees or teams, the Government of the Northwest Territories offered almost no material support. The creation of Nunavut, however, brought an impetus to strengthen SAR response capabilities in the territory. In May 1999, Jack Anawak, Minister of Community Government, Housing and Transportation, announced the government's intention to "ensure that we enhance our search and rescue training and become more supportive to local authorities during local community search operations."[30] In April 2000, Nunavut Emergency Services (NEM's former designation) announced its intention to hire a search and rescue training officer whose job would be to put together training packages for each community and work in partnership with other federal agencies to provide specialized local training.[31] While this objective proved slow to accomplish, those first years did see significant investment in community capacity and prevention efforts, including $1.38 million for training to Inuktitut-speaking operators for the marine radio service, in addition to the provision, to each community, of four global positioning systems and a set of land maps and water charts. Promises to develop "a Nunavut specific training manual dealing with ground search and rescue techniques," however, went unfulfilled.[32]

In 2003, the Government of Nunavut held a Territorial Search and Rescue Conference that set the foundation for the territory's current approach to community-based SAR. The government laid out its plan to establish non-profit community SAR groups registered under Nunavut's Societies Act. Once registered as a non-profit society, SAR groups received a start-up grant of $2,500 and, if they maintained their status, annual contributions of $2,500 (the last version of Nunavut's SAR policy only provides $1,000).[33]

The 2003 SAR policy also set a ceiling of $5,000 to support community organized searches. At that time, the RCMP led public searches, while the Government of Nunavut allowed communities to apply for funding to launch or extend a search in the absence of or after the suspension of a public search (essentially copying the NWT's Community-Organized Searches Policy). With a tasking number from Nunavut Emergency Services, community SAR groups could be reimbursed for emergency supplies, groceries, lubricants, and minor machine parts. Some costs, however, were ineligible, including wages and loss of income, equipment rental fees, and the expense of repairing equipment to its pre-search condition.[34] Communities could also request air support for SAR operations from Nunavut Emergency Services, which evaluated the requests based on search requirements, located fixed- and/or rotary-wing aircraft in the territory, and chartered them, if available.

Over the years, public dissatisfaction with the RCMP's lead role in public searches grew at the community level. Responders often felt like RCMP officers had little interest in SAR operations and generally knew too little about the land and waters outside of the communities to be able to adequately provide assistance. Why, they asked, were "local knowledgeable experts, capable of initiating searches, having their authority usurped"?[35] As early as January 2001, Minister Anawak announced his intention to review SAR mandates and policies in the territory, "because some of the members of the RCMP are not knowledgeable enough in the communities."[36] Gradually, NEM assumed more responsibility for SAR operations, with its duty officers providing taskings and support to community responders on a 24-hour basis. In 2017, the Government of Nunavut's new SAR policy made NEM responsible for ground search and rescue in the territory. NEM duty officers now play the role of search commander during GSAR operations, bearing the responsibility for declaring a search, ensuring it is conducted legally and responsibly, and working with the search coordinator/manager at the community level.

Meanwhile, NEM continued to develop innovative programming around GSAR. The organization purchased satellite phones for community SAR groups, with annual activation and user fees generally falling between $55,000 and $85,000 a year.[37] In 2012, NEM became the first organization in Canada to use the Canadian Inland Search and Rescue Incident System (CISARIS), a new federal tool to track search and rescue operation data. Although flaws kept the system from being NEM's long-term solution, the organization continues to track cases and manage SAR activity through EMwerx emergency management software.[38]



In 2010, NEM handed out 500 SPOT devices to community hamlet offices and Hunters and Trappers Organizations, to be made available to residents free of charge. The satellite safety devices provide users with reliable location-based tracking and the ability to activate an emergency response by pushing the SOS button. When a person presses the SOS button on their SPOT device, the notification goes to NEM personnel on duty, who then contact the local SAR coordinator to initiate a SAR operation. In 2016, NEM launched a two-year replacement program, providing 200 new devices with latches to prevent accidental activation – a recurring problem with the first devices. In 2018, NEM replaced some of the Generation 1 SPOT devices with 375 new Generation 3 units, complete with information booklets in Inuktitut, English, Inuinnaqtun, and French. Today, SPOT devices can be signed out for free in each community – the issue is convincing people to use them and, when they do, to return them. The SPOT loan-out program costs the Government of Nunavut approximately $75,000 per year in annual activation fees, which is roughly equivalent to the expenses incurred during a four-day search in the territory.[39]



A major positive change for community responders occurred with the release of the territorial government's new SAR policy in 2017, which included a new clause "to support community search and rescue volunteers who may damage or lose equipment during a tasked search and rescue." All recreational vehicles used in a SAR operation are now covered for possible damages. Search and rescue volunteers are eligible for this compensation when they have registered themselves on the official log sheets prior to going out on a search and have had an equipment condition report completed and signed off by the SAR coordinator, the senior administrative official, or the RCMP.

NEM orchestrates GSAR training opportunities through the Nunavut Municipal Training Organization, providing a basic SAR course and a coordinator course. Upon completion of basic training, NEM provides SAR teams with Go-Bags (two per community), Garmin inReach devices, and GPS units.[40]

2.5 THE NUNAVUT MUNICIPAL TRAINING ORGANIZATION (MTO)

The Nunavut Municipal Training Organization (MTO) is a non-profit society formed in 2003 as a partnership between the Nunavut Association of Municipal Administrators (NAMA) and the Government of Nunavut's Department of Community and Government Services. Working with NEM, the MTO offers a basic GSAR course – a four-day course that consists of three days of classroom time for theory training and one day of field work – as well as a coordinator course, which focuses on basic SAR skills and administrative tasks, including report writing, vehicle check forms, and invoicing.[41] In the past, training allowances have been provided for participants who are not employed or who are taking unpaid leave to complete the training.[42]



2.6 THE LOCAL LEVEL

Each community has an all-volunteer GSAR team, often supported by a formal SAR committee. Some communities also employ an Elders' council to advise on traditional knowledge of areas and conditions. While team members volunteer their time and typically use their personal equipment, NEM provides funding to cover expenses such as training, fuel, lubricants, emergency supplies, food, and equipment repair. While on a search, SAR volunteers are considered to be employees of the Government of Nunavut and are covered under the Workers' Safety and Compensation Commission. They are covered for the duration of the search operation once the SAR coordinator registers them in their log (and thus are not covered while in transit to the command post).



Arctic Bay Search and rescue

There are a few basic standard operating procedures (SOPs) guiding GSAR operations in Nunavut. Essentially, when advised of a missing person, SAR coordinators are to call NEM, provide basic search information to the duty officer (who, what, where, when, and how), receive a tasking number through which to purchase fuel and food for the search party, complete the Pre-Search Vehicle Condition report, and, after the conclusion of the search, finish the after-action reports and invoices. Beyond these steps, however, community SAR teams organize, plan, and execute searches using an array of different approaches. Most will establish a formal command post from which to run the SAR operation. Some teams have their own





building or office for this purpose, while others set up in available space, often in the hamlet office. SAR coordinators will then take on their roles as "SAR detectives," gathering information about the search subject, their travel plans, and their capabilities. Part of this information gathering involves engaging with the family and friends of the search subject. SAR teams will also ask Elders to share their knowledge about specific locations and the best search tactics to use. Many SAR groups provide updates to their communities and solicit more information through the community radio station.

Most SAR coordinators have a small group of experienced searchers that they will activate first, deploying them out in pairs or in parties of four. Some communities will pair experienced searchers or Elders with younger volunteers, which reduces risk and helps with the transmission of knowledge and skills. Often, SAR teams will start their searches at known cabins, where someone might be expected to seek shelter. They then conduct sweeps by spreading into a long line, retaining visual sight of one another, or begin grid searches. The coordinator keeps track of these movements from the command post and maintains hourly communication check-ins. During extended searches, some groups will establish base camps on the land, and, if there are enough responders, searchers will work in shifts. As the search extends and expands and more searchers are required, the coordinator will often issue a call out through social media or the community radio station.

During GSAR operations, community SAR teams make the decision about whether to request air support. Requests are made directly to NEM. While these requests can be made verbally, they need to include details on the missing person, the length of time they have been missing, the weather conditions, the survival equipment in the possession of the missing person, the justification for the request, and the community responders who can serve as spotters (the request is later followed up in writing).

On the marine side, Nunavut's Coast Guard Auxiliary units are guided by the Canadian Coast Guard Auxiliary National Guidelines. Many units have crew members on standby throughout the summer – ideally two crews of between three and four trained members. When they hear of a possible marine case in the community, Auxiliary units report directly to the appropriate JRCC or to the Arctic Director of the Coast Guard Auxiliary to receive a tasking. Likewise, when a JRCC receives an emergency notification, it tasks the Auxiliary unit directly.

Before launching a SAR mission, units are taught to check the condition of the Auxiliary vessel and equipment, ensure that every crewmember has their PFD and additional personal protective equipment, and closely monitor environmental conditions (e.g., weather and ice). Once the crew is assembled for a search mission, the unit leader delivers a clear briefing of the incident, including the number of persons involved, type of incident, type of vessel, and location, in addition to any other pertinent information. Auxiliary members highlight the need to take a moment to share knowledge about the incident's location/search area. Given the lack of charting in Nunavut, this knowledge sharing is key to safe operations.

During search operations, units decide which search patterns to employ (for instance, track crawl, expanding square, creeping line, parallel, or sector search),



often in consultation with the JRCC. When they arrive at the scene of an incident, units are taught to Stop, Assess, Plan (SAP). Auxiliary units must observe a scene carefully, taking note of all the details, and agree on the most effective plan before acting.

2.7 THE PRIVATE SECTOR AND OTHER ORGANIZATIONS

Private sector partners are key supporters of SAR operations in Nunavut. In the past, mining companies such as Baffinland and Agnico Eagle have donated equipment to community SAR groups and offered aircraft to support searches, often free of charge. Aircraft from Canadian Helicopters, Kenn Borek Air, and Ookpik Aviation, as well as those servicing the North Warning System and those working for exploration companies, have regularly provided air support. On the marine side, the JRCCs often request assistance from private vessels of opportunity operating near a SAR incident.

In some communities, Inuit Guardians and Marine Monitors constitute other local resources occasionally used in SAR operations. In the Kitikmeot Region, a team of Inuit Guardians from Gjoa Haven protect and monitor the Wrecks of HMS *Erebus* and HMS *Terror* National Historic Site and offer an emergency response capability, enabling a prompt reaction to any accidents or SAR incidents that occur in the surrounding area.[43] In the Eastern Arctic, the Qikiqtani Inuit Association, with the support of Parks Canada and the Government of Nunavut, has established a Guardians (Nauttiqsuqtiit) program to monitor and manage the Tallurutiup Imanga National Marine Conservation Area (Lancaster Sound).[44] In addition, the Coast Guard has provided marine search and rescue training to the Taloyoak Guardians and Nauttiqsuqtiit stewards. In past years, Nunavut Tunngavik Incorporated's Inuit Marine Monitoring Program (IMMP), an Inuit-led initiative that aims to collect information on shipping activities in the region, has participated in SAR operations. The IMMP employs Inuit Marine Monitors during the shipping season to observe vessel activity and report on environmental conditions and wildlife.[45]



Nauttiqsuqtiit guardians from Arctic Bay pose on the cover of a 2019 Qikiqtani Inuit Association report. (Qikiqtani Inuit Association)

The JRCCs and NEM also occasionally request assistance from other federal and territorial agencies if they have a capability that could support SAR operations in Nunavut. Conservation officers with the territorial Department of Environment, for instance, have provided support in past GSAR operations. On the federal side, Natural Resources Canada's Polar Continental Shelf Program, which coordinates over 50 fixed- and rotary-wing chartered aircraft in the North, is occasionally called upon to provide aerial support to SAR operations. Its key aircraft include one Twin Otter and one Bell 206 LongRanger (LR) helicopter in Iqaluit, one Bell 206LR in Pond Inlet, three Twin Otters and one Bell 206LR in Resolute Bay, one Bell 206L-4 helicopter in Eureka, and one Bell 206L-3 helicopter in Cambridge Bay.

3. SAR IN NUNAVUT: THE STRENGTHS

Search and rescue responders who operate in Nunavut identified several core strengths that support effective SAR operations.

3.1 COMMUNITY RESPONDERS

Community responders form the foundation of the SAR system in Nunavut. On a volunteer basis, the community groups responsible for conducting search and rescue operations in the territory are *generally* able to recruit enough skilled and dedicated people to carry out response operations. Many are driven by a desire to serve their communities and by a deep sense of responsibility – they have the required skills and experience in a limited human power pool. Further, they almost always know for whom they are searching – they are family, friends, and neighbours. These close bonds are a powerful motivating factor, compelling them to keep going back out, often with limited training, equipment, and support, and even as they struggle with stress, anxiety, and critical incident stress.

Community responders match their dedication with their intimate knowledge of the land, local environmental conditions, and their fellow community members. They often know the habits and capabilities of search subjects, their equipment, and where they may have travelled. Their service facilitates the integration of Inuit Knowledge into the broader SAR system.



When community participants are asked to reflect on the strengths of their organizations, they typically offer illustrative stories that showcase the skillsets that make them effective. For example, Ranger Sergeant Roger Hitkolok and Jack Himiak, the founders of Kugluktuk's GSAR team, shared the story of how a lone hunter went missing one November, when it was dark and the ice was still thin. He had no GPS or SPOT device with him, and he had told no one where he planned to go. Kugluktuk's GSAR team was notified, and together they drew upon their knowledge of the land,



Kugluktuk responders and Roger Hitkolok. (Photos courtesy of Baba Pedersen)

ice, and hunting grounds to determine where to look. They speculated that the man had gone seal hunting along the coast towards High Lake and Bathurst Inlet. Hitkolok and Himiak led a small team of GSAR volunteers down the coast. After 130 miles of travelling in terrible weather and treacherous ice conditions, they spotted the hunter's snowmachine. The man had shot a seal and went to retrieve it on his snowmachine, only to hit some rough ice, fall off, and hit his head. This left him disoriented and confused. The GSAR team provided first aid to the injured and near-hypothermic man. Hitkolok reported his position using his Ranger-issued satellite phone and requested a Twin Otter from 440 Transport Squadron in Yellowknife to evacuate the hunter. Next, he used his Ranger training to instruct his GSAR team on how to prepare an austere ice strip for the airplane. The team filled pots, pans, and plates with whatever they could light on fire to illuminate the improvised airstrip. The Twin Otter landed and successfully evacuated the hunter. As Hitkolok concluded (in his typically understated fashion), "It was a hard one."[46] This story highlights the level of skill and knowledge required to safely execute SAR operations in Nunavut. The individuals that make up community-based SAR organizations are comfortable reading the snowbanks and technology like inReach Explorer+ devices, constructing airstrips and snowhouses (iglus), and communicating with community members and the Canadian Armed Forces.

If community responders constitute the foundation of the SAR system in Nunavut, their leaders – particularly the SAR coordinators and Coast Guard Auxiliary unit leaders – are the cornerstone. These leaders devote a great deal of time and energy into ensuring that their communities are prepared for SAR operations. They strive to do the following:

- facilitate training opportunities for their teams
- sustain relationships with local, territorial, and federal SAR partners
- ensure that, at all times, enough volunteers are on standby and ready to participate in a search if required
- establish a command post at the beginning of a search and coordinate responders
- contact all individuals who might be involved with a search at the community level
- facilitate the gathering of information about missing persons, including by working with their family members, and share this information with partners
- organize SAR teams and get them ready to deploy
- organize the purchase of supplies and fuel for the SAR teams
- ensure that proper procedures are followed
- liaise with the NEM, JRCC, Coast Guard, and RCAF personnel
- complete expense forms, damage reports, and other required paperwork in the aftermath of a search
- Effective leadership is a core ingredient of an effective SAR system. Without these volunteer leaders, SAR would not function in Nunavut.

"We know the local weather. We know the conditions. We know the water and ice, the rocks. We know how the ice works. We know the best routes to take, the fastest, the safest routes to take. We know things that you can't get from a GPS or a weather report. We know how the tides work…. You have to listen."

- Community responder, Kitikmeot Region.

"In at least a 200-mile radius of my community, I can get there. I know the land, the water, sometimes the sky."
- Jimmy Haniliak, community responder, Cambridge Bay.

3.2 ROYAL CANADIAN AIR FORCE AND COAST GUARD SAR PERSONNEL

The RCAF pilots, crews, and SAR Techs and the Coast Guard icebreaker crews, rescue specialists, and helicopter pilots who respond to SAR incidents in the Arctic are amongst the very best SAR professionals in the world, and the Northern environment puts all their skills to the test.

While concerned about how long it takes for federal assistance – whether it be aircraft or icebreakers – to arrive on scene during a SAR operation, every Nunavummiut involved in the Nunavut SAR Project highlighted the skill and courage of the RCAF and Coast Guard personnel who respond to incidents in the Arctic. Almost all of them know of someone who has been rescued in the water or evacuated from the land by a Coast Guard icebreaker. Canada generally deploys eight icebreakers to the Arctic each summer. The vessels are admittedly aging, but they are still capable. When they are not undertaking icebreaker operations, the Coast Guard deploys them to areas of increased risk. Similarly, many responders know someone who has benefitted from the warm clothes, equipment, and even medications that RCAF SAR crews can airdrop with incredible accuracy. They are all familiar with the work of the SAR Techs, who jump into some of the worst conditions imaginable, whether it be into a winter storm or onto the ice floes of Hudson Bay.

When the JRCCs are notified of an air or marine search, or they receive a request for assistance for a humanitarian SAR case, their personnel can provide a great deal of assistance, including the following:

- the JRCCs use the Canadian Search and Rescue Planning Program (CANSARP), which is an automated search-planning tool, to determine the search area (accounting for environment, current, winds, etc.)
    - Coast Guard personnel at the Nunavut Roundtable on SAR emphasized that local and Inuit Knowledge on such topics as how the currents work, the wind, the unique drifts, and on-scene weather serves to strengthen CANSARP
- coordination and support
- assisting with information gathering
- determining the "datum" of the search (the estimated position of the target at the time the search starts)
- reimbursing operational costs and/or processing insurance
- assuming some administrative pressures
- incorporating the search into the national SAR data, which guides SAR planning and is used to justify the allocation of resources at the federal level



"When you see a Herc arrive, it's pretty cool. The back-up is much appreciated during a search…. I've seen them drop gear to stranded people – it's crazy, they can get it right where it needs to go…. We've got nothing but respect for those SAR guys that jump out of the planes and the pilots that fly through some pretty bad conditions. We really appreciate them."
- Baba Pedersen, community responder, Kugluktuk.

"There were some missing community members – a young family that caught a seal and went onshore to cut it up. The boat wasn't tied up well and drifted away with some people on board. The family began a search, and, at the same time, I [the community SAR coordinator] called the JRCC. Our GSAR couldn't go right away because it was a marine case, but [the] JRCC began moving assets towards the area to support the search. In the end, the grandfather and two others successfully located the missing people by themselves, and the search was called off. It was important to get the support from [the] JRCC as soon as possible in case we couldn't find them."
- Community responder, Qikiqtani Roundtable on Search and Rescue, 2022.

3.3 COMMUNITY SUPPORT

Community responders often enjoy considerable material and moral support from communities during searches. During SAR operations, communities pull together to assist the searchers, making meals and donating money and essential supplies. The moral support received from communities is equally important. At times, this involves formal recognition of the services that first responders provide. Community appreciation can play a major role in improving morale and helping with the stress of SAR operations.

"Support from the community helps. Sometimes they will drop off meals or even donations. Sometimes we will have a celebration after a good search. That makes a big difference."
- Community responder, Kivalliq Roundtable on SAR, 2022.

3.4 NUNAVUT EMERGENCY MANAGEMENT'S ENGAGEMENT AND INNOVATIVE PROGRAMMING

Nunavut Emergency Management has developed innovative funding and programming initiatives in support of SAR prevention, preparedness, and response, often to address major problems and gaps in the SAR system.

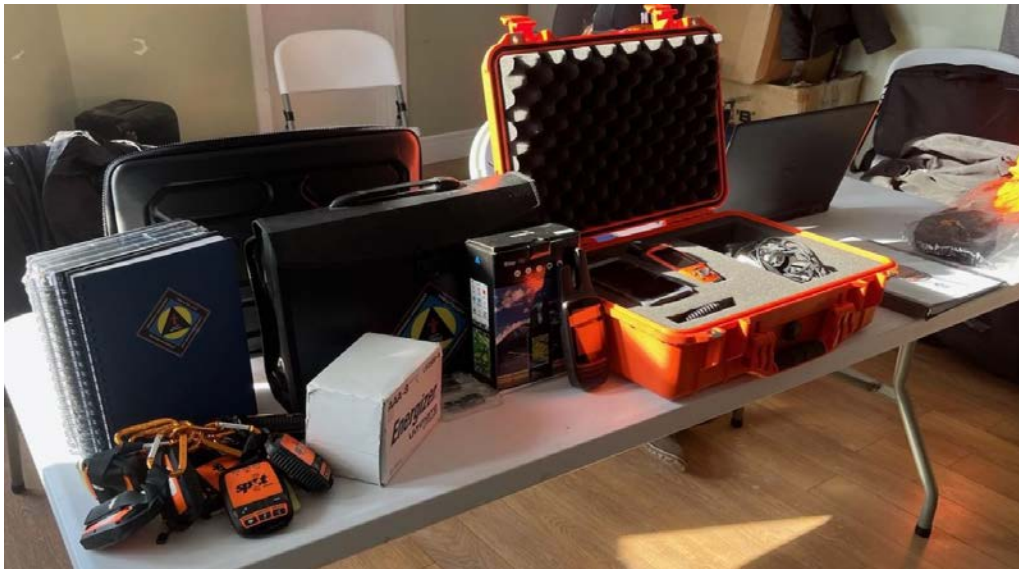
During the revision of Nunavut's SAR policy in 2017, NEM advocated for and inserted a new clause providing



compensation for community SAR volunteers who may damage or lose equipment during a search. Volunteers are eligible for this compensation when they have registered on the official log sheets prior to going out on a search and have had an equipment condition report completed and signed off by the SAR coordinator, the senior administrative official, or the RCMP. While the system for initiating this compensation is overly complicated and slow, this is still a positive policy development that has benefitted community responders.

The SPOT program outlined in the previous section is an example of innovative SAR prevention. With 15 to 20 devices available for free in each community, people can sign them out and take them on the land. When a SPOT is activated, an on-call NEM staff member receives the notification, and they activate the local search and rescue team.

NEM listened to feedback from Nunavummiut and worked with Arctic Response Canada to "Nunavutize" the territory's basic and coordinator GSAR courses. Previous versions of the training program had been far too "Southern focused" and involved too many components geared towards SAR practices below the treeline, with little emphasis on Nunavut-specific



content. Efforts to update the training curriculum led to new course content being offered in January 2020. While there is still ample room to bring in more material specifically designed for Nunavut (e.g., lost person behaviour above the treeline) and better incorporate local Inuit Qaujimajatuqangit, the revised courses have been a step in the right direction.

Both the basic and coordinator GSAR courses also include a significant Garmin inReach component, given that these devices are intended to become the main tools used by Nunavut's GSAR teams. These devices function as GPSs, emergency beacons, and two-way communicators, allowing users to send and receive text messages and emails – a pivotal function during a search. They also allow SAR coordinators and NEM duty officers to monitor each unit from their computers and track the search area covered. Upon completing basic GSAR training, each GSAR team receives two NEM-issued SAR pelican cases, each containing one Garmin GPSMAP 276Cx (a large unit with a user-friendly screen and buttons that can be utilized easily in the cold), one Garmin inReach Explorer+, user manuals, attachments, and equipment for both Garmin devices. These tools are not just for SAR operations but can also be used every day by people while travelling or hunting on the land to record frequently travelled routes, which could prove useful during a search.

The inReach devices are "a SAR game changer," one community responder noted at the 2020 Kitikmeot Roundtable on SAR. "They are the Connor McDavid of searches." In the field, they provide access to weather forecasts, instant messaging, and "all the tracking capabilities that a searcher needs." Unfortunately, the devices do not work effectively in every community. As a result, NEM is experimenting with other satellite communication devices. ZOLEOs, for instance, have been tested and given to communities where inReach devices are not working optimally.



NEM has also produced a set of "Go Bags" for every GSAR team, each of which includes a Coleman multifuel stove, Coleman fuel funnel, Stanley camp pot set, Petzl headlamp, signal mirror, sleeping bag, sleeping mat, blue tarp, survival blanket, machete (snow knife), survival shovel, and Stanley thermos, as well as waterproof matches, mittens, and a toque. The bags offer each GSAR team ready-to-use basic necessities that they can quickly access during SAR operations and which are intended to supplement their own equipment and resources.



In their role as search commander, NEM's duty officers *can* provide assistance to community teams in the management of searches. Over the years, some community SAR coordinators report that certain NEM personnel have offered them support with investigations, search planning, determining search tactics, locating additional regional resources, and liaising with other SAR partners, including the JRCCs as required. Several coordinators explained that NEM duty officers have helped them to brainstorm solutions, particularly during prolonged or complex searches. It should be noted, however, that other coordinators shared stories of NEM personnel unable or unwilling to offer a high degree of assistance during searches, leaving community responders feeling unsupported and alone. Some communities only engage with NEM to secure a tasking number, preferring to handle all other elements of a search at a local level. Several community coordinators reported past incidents in which they struggled to secure tasking numbers from NEM in a timely manner.

During the 2022 roundtables, each community that had been the recipient of a recent visit from NEM personnel reported positive interactions and noted the importance of this face-to-face relationship building. During these visits, NEM personnel were able to explain complicated parts of the SAR policy, recruit additional searchers, and offer best practices for SAR operations. On the flipside, NEM personnel reported those communities' greater willingness to communicate, both during searches and more generally.

"We've heard your concerns about the GSAR training. For too long, the training has been "Southern based" – better for below the tree line. Learning how to build a lean-to using branches isn't going to help you very much [in Nunavut]. We agree. So we've been working to "Nunavutize" the GSAR training. We've gathered input from community GSAR teams, from Elders, from a wide array of knowledge holders, and have put a course together that will address many of the past issues – designed for Nunavut by Nunavummiut, that incorporates traditional knowledge. That said, you know, this is a work in progress. We've just started rolling the training out. Just had the first session in Iqaluit, but it's coming to Kugluktuk and Cambridge Bay in the next few weeks. You don't like something, tell us. You think something is missing, tell us. We have experts in every community, and we have a lot to learn. We will build this thing together."
- Mike Kendall, SAR Training Officer, Nunavut Emergency Management, Kitikmeot Roundtable on SAR, 2020.

3.5 COAST GUARD ARCTIC REGION RELATIONSHIP BUILDING AND SAR INITIATIVES

Over the last few years, government officials and community responders have observed greater efforts by the Coast Guard at community engagement, relationship building, and maintaining long-lasting partnerships with communities, municipal governments, and Nunavut Emergency Management.

In 2015, the Coast Guard had a team of three members dedicated to search and rescue in the North, and it often had to focus only on large population centres. The team now has over 30 members – including Nunavummiut – focused on improving SAR services across the Coast Guard's Arctic Region, including in the smaller communities.

The Coast Guard's launch of the Arctic SAR Project in 2015 and its establishment of the new Arctic Region emphasized the importance of relationship building. In 2018, CCG Director General of Operations Gregory Lick explained that "[t]hese partnerships afford us the chance to learn at their feet so that we can better serve them and their communities, and to allow the communities to become actively involved in the search and rescue system… [O]ne of the big revolutions in our thinking is that we shouldn't be bringing southern solutions to the North. The North should absolutely be asking and developing those solutions with our support, but they should be the leaders in developing those solutions."[47] His comments encapsulate the Coast Guard's approach: it is not just about "made-in-the-North solutions but made-with-the-North solutions." In 2018, Ed Zebedee, Nunavut's former director of protection services, explained that the Canadian Coast Guard had "been doing some very good consultation in the last 18 months to two years. We have done a lot of work with them. I have actually sent staff of mine with the Canadian Coast Guard into the communities to smooth the waters, lead the way, do some translations where needed. In the rollout of the Coast Guard Auxiliary program, they listened to what we've recommended, and they have done that."[48]

The process required effort. There were stumbles at first and a steep learning curve. It has taken time to develop trust with community and government practitioners in Nunavut, and it will require a sustained effort to maintain that trust.

"When Nick and Jakob visited, that made a big difference. More people came to the meeting because they were there. They could answer their questions. They were able to sign them [up] to be members of the SAR team. They gave us some training. If they could visit more, I really think they'd get more people involved."
- SAR coordinator, Qikiqtani Roundtable on SAR, 2022.

"NEM's visit made a big difference in Gjoa. People don't really understand how SAR works, and it was nice to have someone explain all the policies."
- Community responder, Gjoa Haven, 2023.

"It should be the people we call at NEM who should be giving training in the communities. It should be the people we have to work with during searches. These kinds of face-to-face meetings builds trust when you have the same people visiting regularly. Why can't one of them come every year? It would show that we are respected and would build trust. It would also help for them to understand our local problems. Face-to-face meetings are important."
- Community responder, Kivalliq Roundtable on SAR, 2022.

The Coast Guard's community engagement and relationship-building efforts have been bolstered by the fact that it has been the same people carrying out these activities throughout the year (not only during the summer months) and for extended periods of time. To Northerners used to federal agencies sending new personnel up every year, who often ask the same questions again and again, this is a positive development.[49]

The relationship-building efforts have formed the foundation of an impressive array of new initiatives, including the Arctic Marine Response Station in Rankin Inlet, the Training and Exercising Industry Program, the expansion of the Coast Guard Auxiliary, and the marine SAR training provided to various Inuit organizations, such as the Taloyoak Guardians and the Qikiqtani Inuit Association's Nauttiqsuqtiit (detailed in section 2.2).

The training of the Taloyoak Guardians is a great example of the Coast Guard's community engagement and flexible programming. By developing relationships, the Coast Guard is able to understand unique community needs, preferences, and possibilities. An Auxiliary unit is not the answer in every community that requires a community-based marine SAR capability. The Taloyoak Guardians – "trained local experts who act as the eyes and ears of traditional lands and waters" – provided an answer for their community.[50] In the fall of 2022, the Coast Guard brought six Guardians to its small-craft training centre in Parry Sound, Ontario, for two weeks of intensive training in marine SAR, emergency response, and marine first aid. In November 2023, the Coast Guard followed this initiative with a visit to Taloyoak, where it launched the "first SAR training course designed specifically for Arctic Responders" in Taloyoak. "CCG personnel and the Taloyoak Guardians worked together to complete a three-day SAR fundamentals course, covering essential skills in risk assessment and mitigation, search planning and tactics, and rescue operations." The training culminated in a joint SAR exercise with CCGS *Sir Wilfrid Laurier*.[51] These examples highlight why the Coast Guard Arctic Region's initiatives have been successful in recent years: they are built on in-person community engagement, sustained relationship building, and the co-development of flexible programming that reflects the unique contexts of Arctic communities.

"For years and years, it seemed like the government had forgotten about the Coast Guard Auxiliaries up here. In the past, it has been hard to keep the unit up and running. We have never received the attention we are getting now. We have training on a regular basis now, funding for a new boat and equipment. We feel supported."

- Canadian Coast Guard Auxiliary Unit Leader, Kitikmeot Region, 2019.

"Before, I'm not really sure they understood what we were facing here, and just how many searches we were doing."

- Canadian Coast Guard Auxiliary Unit Leader, Kitikmeot Region, 2019.



Under the instruction of Canadian Coast Guard trainers, Taloyoak guardians John Neeveacheak (piloting) and Raymond Mannilaq train in Parry Sound, Ont. *(Canadian Coast Guard)*

3.6 THE EXPANSION OF THE COAST GUARD AUXILIARY

In the 1980s, the CCGA first expanded into the Canadian North, with units established in Yellowknife and Hay River. Under the leadership of Jack Kruger, a former RCMP officer who had served in the Northwest Territories and Nunavut, the Auxiliary expanded to Inuvik, Aklavik, and Tuktoyaktuk in the 2000s, and slowly started making inroads into the Eastern Arctic.[52] The creation of Nunavut in 1999 provided greater impetus to improve the new territory's marine SAR capabilities. In 2001, the Government of Nunavut secured $645,000 in federal funding to establish, in cooperation with the Coast Guard, CCGA units in each of Nunavut's 25 communities. The ambitious plan envisaged units made up of two or three local boats and five or six trained members for each vessel.[53] Unfortunately, a lack of funding and community engagement, coupled with crew and vessel standards that were unachievable in and inappropriate for the realities of Nunavut's communities, hampered these efforts.[54] Nevertheless, the CCGA established new units in Cambridge Bay, Pangnirtung, Rankin Inlet, and Kugluktuk, although the latter two occasionally struggled to find the crews and equipment necessary to remain operational.

Since the launch of the Coast Guard's Arctic SAR Project in 2015, however, seven new units have been established. There are currently 11 operational units in Kugluktuk, Cambridge Bay, Gjoa Haven, Naujaat, Rankin Inlet, Arviat, Sanirajak, Igloolik, Pond Inlet, Clyde River, and Pangnirtung.

To support these units, the Coast Guard Arctic Region and its Auxiliary partners engage in a robust training cycle. These efforts have been bolstered by the hiring of Indigenous SAR response officers to assist in SAR operations, liaise with the Auxiliary units, conduct training and exercise activities in the field, and assist with equipment and vessel maintenance. A major milestone in 2021 was the completion of the first coastal SAR course in Rankin Inlet, in which all-Inuit participants combined their technical and traditional knowledge. Alianai Niviatsiak, a course participant and the coordinator of the Arctic Youth Council, explained that "the level of respect and reliance on the expertise and traditional knowledge of the Community Liaison, Wesley Innukshuk, was a highlight."[55]

The benefits that these CCGA units will bring to the broader SAR system are great. In laying out its mission and mandate, a draft Coast Guard Arctic SAR Project report explained that "developing Auxiliary capacity represents an opportunity to marry the strengths, skills, and knowledge of the CCG SAR framework with the strengths, skills and knowledge of the Arctic coastal communities with centuries of local experience."[56] These Coast Guard Auxiliary units will be able to deliver faster marine SAR response times (as they have been doing since they were stood up as marine rescue stations), encourage the reporting of SAR cases, and provide a platform through which to integrate the Inuit Knowledge of community responders into the broader SAR system. Units will be provided with consistent training opportunities funded by the Auxiliary, augmented by dedicated training staff from the Coast Guard Arctic Region. Armed with this training, reliable boats, their knowledge of local geography and environmental conditions, and the ability to work with the JRCCs and other federal SAR assets, Auxiliary members can effectively and safely deliver SAR services. These units can reduce communities' reliance on CCG icebreakers, which are often situated hours or days away from the location of an incident, and on RCAF fixed- and rotary-wing aircraft, which are based thousands of miles to the south.

Participation in Auxiliary units encourages skill building and intergenerational knowledge exchange through training and collective responses on the land. As a new member gains experience, they can pass along their acquired knowledge to another recruit, all of which strengthens the overall SAR system.

Across the country, CCG Auxiliary members play important roles as "SAR detectives" by collecting information about SAR cases and providing that information to the Joint Rescue Coordination Centres. In the North, however, this service becomes even more important given the JRCCs' lack of familiarity with the region and the hunting, fishing, and travel activities of its residents, as well as the few alternative resources available to investigate search and rescue cases. Auxiliaries' knowledge of local conditions, marine spaces, and the marine activities of their fellow community members makes them uniquely suited to be SAR detectives. During SAR operations, they gather local intelligence on the condition of missing vessels, the skill of crews, and potential travel routes, which they relay to the JRCC. In the case of an overdue boat, for instance, Auxiliary members can call the overdue person's/persons' family/families, friends, or other witnesses to gather more information, including about their travel plans and preferred hunting/fishing areas. Such detective work can also identify false alarms and prevent the JRCC from unnecessarily deploying icebreaker or RCAF assistance, thus saving resources that can be used for other SAR cases.

CCGA members also make essential contributions to marine safety in their regions and communities. Many units educate their communities about boating safety, the importance of having a sail plan, and the need to bring proper gear.[57]

> **"We never had any training on marine searches. Never had any training or equipment. We'd always have to waste time looking for a boat and people to go on it. There would always be delays. You couldn't rely on the boats. We didn't know much about searching on the water…. That's really changed."**
>
> ***- Community responder, Qikiqtani Region, 2023***

Moving forward, further discussions may be required to determine whether these units fit best in the Coast Guard Auxiliary's Central and Arctic Region, or in a new Arctic Auxiliary chapter with the same jurisdictional boundaries as the Coast Guard's Arctic Region.

3.7 THE INDIGENOUS COMMUNITY BOAT VOLUNTEER PROGRAM

The Coast Guard's initial community outreach and RAMSARD study concluded that many Northern communities would struggle to find suitable SAR vessels that met all applicable regulatory requirements. As a result, the agency used funding from the Oceans Protection Plan to launch the Indigenous Community Boat Volunteer Pilot Program (ICBVPP) in 2017, which has since been re-named the Indigenous Community Boat Volunteer Program (ICBVP). The program allows communities to apply to purchase a new SAR vessel (generally between $250,000 and $350,000), buy required equipment (such as communications and navigation gear), and construct proper storage facilities for their boats.[58] Since 2017, Cambridge Bay, Kugluktuk, Gjoa Haven, Clyde River, Pond Inlet, Arviat, Naujaat, Igloolik, Sanirajak, and Pangnirtung have participated in the program.



In Nunavut, the majority of communities have used these funds to purchase a dedicated SAR vessel for their CCGA units. Auxiliary members are involved in the design and outfitting process, and most vessels have been 28-foot aluminum, twin-engine patrol boats manufactured in Canada. With the new boats, communities feel empowered that they can better execute a search and rescue operation and are less reliant on Southern intervention. "[For] many years Pond Inlet SAR struggled to find boats for search and rescue missions," Eric Ootoovak, a member of the Pond Inlet CCG Auxiliary, told a reporter. "Now with the Indigenous boat funding program, we got funding, we now have a boat and will no longer need to look for a boat for missions."[59]

> **"This [is] a good boat. It's a very smooth ride. It certainly makes searching easier. It's nice to have a really good piece of equipment."**
> ***- Coast Guard Auxiliary Unit Leader, Kivalliq Region, 2023.***

3.8 THE BENEFITS OF HAMLET OFFICE SUPPORT

Some of Nunavut's community SAR groups receive support from their hamlet offices during SAR operations. This assistance ranges from involvement in organizing searchers to completing the complicated and time-consuming administrative tasks associated with SAR operations.

Cambridge Bay is a good example. Chief Administrative Officer Jim MacEachern helps with the organization and administrative side of a search, supports the SAR coordinator in the command post, and acts as a conduit for information sharing and communication between the GSAR team, the RCMP, and other agencies. He calls NEM for a tasking number, pays for gas, distributes it to the searchers, and takes care of all reimbursements. He fills out damaged equipment forms and facilitates compensation. Even though this is not technically part of his job description, MacEachern has been involved in SAR for years and considers it one of his essential roles. "Before Jim, there was no one to help us," one responder from Cambridge Bay explained at the 2020 Kitikmeot Roundtable on SAR. MacEachern's involvement allows the GSAR coordinators and Auxiliary unit leaders in Cambridge Bay to focus on getting their teams ready to respond and alleviates much of the administrative burden.

Arviat also provides a good model of cooperation – search and rescue is run out of the community's public works department and the SAR coordinator is the department's manager. The municipality has provided the search team with four snowmachines and four ATVs dedicated to SAR, two storage sea cans, office space in the hamlet office, administrative support, and assistance completing the financial paperwork involved in a search.

3.9 GREATER ENGAGEMENT FROM FEDERAL SAR PARTNERS

Several of the community responders and government practitioners interviewed for this project noted general improvements to their working relationships with certain government SAR partners, even as much work remains to be done to improve coordination and cooperation. In particular, they noted increased engagement from the Coast Guard, CASARA, the Joint Rescue Coordination Centres, and Public Safety Canada's National Search and Rescue Secretariat. Examples include more face-to-face visits with NEM personnel, better information sharing, and occasional community visits. One of the suggestions coming out of the 2022 Nunavut SAR Roundtables was that the JRCCs and NEM should start a formal personnel exchange program to foster communication and cooperation, as well as to teach participants how each organization operates. JRCC Trenton and NEM implemented this recommendation in the summer of 2023, with an RCAF officer spending a few days at NEM's office in Iqaluit.

3.10 TECHNOLOGY

Community responders often highlight the impact that evolving technology is having on SAR prevention and response. They highlight satellite communication devices, particularly those with two-way texting, and newer capabilities, such as Starlink's Roam and Maritime services. These devices can facilitate emergency notifications and effectively take the search out of SAR. The new emergency SOS functions on iPhones that allow for access to 911 services via satellite where there is no cellular service or Wi-Fi coverage are a promising development, although concerns continue around satellite coverage (e.g., iPhones use Globalstar satellites, which have poor or no coverage in the Arctic).

Many community responders are excited by the impact that SmartICE is having on SAR prevention and response. SmartICE provides community members with the situational awareness required to plan for safe on-ice travel and boating routes. The social enterprise has developed two remote environmental monitoring systems to determine the thickness of sea ice: the SmartBUOY and the SmartQAMUTIK. The SmartBUOY is a stationary sensor that is inserted into the ice to measure the temperature of the air, snow, ice, and water, as well as to collect other data. Towed behind a snowmobile, the SmartQAMUTIK is a mobile sensor that measures ice and snow levels. "Once collected, the nearly real-time data is combined with local community observations such as the location of cracks or seal holes in the ice, and traditional knowledge passed down through generations on how to identify and test sea ice conditions. Combined, this information is used to create ice travel hazard maps which are posted online, as well as on the mobile app, SIKU, and shared via social and broadcast media."[60] Several SAR coordinators highlighted how SmartICE has reduced the number of searches in their communities.

Responders from Cambridge Bay emphasized the SAR value of the Oceans Protection Plan's Enhanced Maritime Situational Awareness (EMSA) Initiative. Co-developed by the Ekaluktutiak Hunters and Trappers Organization (Cambridge Bay), the Tuktoyaktuk Hunters and Trappers Committee, the Nunatsiavut Government, and ten other groups nationally, as well as Transport Canada, the Coast Guard, and other federal agencies, EMSA is a web-based platform that displays a real-time common operating picture. This platform allows communities to access and share information on vessel traffic (including what can be gathered from space- and terrestrial-based Automatic Identification System coverage), weather, ice, and traditional knowledge to improve local marine safety, environmental monitoring and protection, and the management of waterway activity.



The SmartQAMUTIK is towed behind a snowmobile and provides real-time ice and snow thickness measurements to the operator. (SmartICE)

3.11 PRIVATE SECTOR RESOURCES

The generous support that private sector entities in Nunavut provide can have a significant impact on SAR operations. The air support furnished by private companies such as Baffinland is a great asset during searches (see section 2.7). In the past, Sabina has donated refurbished laptops to the SAR committees in Kugluktuk, Gjoa Haven, Taloyoak, and Kugaaruk. Agnico Eagle has provided support to SAR organizations in several communities in the Kivalliq. In 2019, for instance, the company offered a "donation of $150,000 to Baker Lake Search & Rescue for the acquisition of sophisticated drone technology and other equipment related to implementing more effective search and rescue operations – a critical need in remote northern communities – and to provide the required technical training and certification for the operators."[61] Agnico Eagle's Emergency Rescue Team has also supported several searches conducted by Baker Lake Search and Rescue.



4. SAR IN NUNAVUT: CHALLENGES AND AREAS FOR IMPROVEMENT

Search and rescue operations on the water, land, and ice of Nunavut are often difficult. The tyranny of time, distance, and space are major issues. Nunavut covers more than 2,093,000 square kilometres of total area, encompassing 157,077 square kilometres of water, 45,000 kilometres of coastline, and over 36,000 islands – representing 21% of Canada's total area. When combined with the cold climate, this space makes time the enemy of all responders. These are significant challenges – and the most obvious. Search and rescue responders operating in Nunavut, however, have identified a wide array of other difficulties that hamper effective SAR operations. The following issues and areas for improvement are divided into four categories: policy, governance, and organizational issues; response challenges; pre- and post-search difficulties; and mass rescue operations. They are not listed in order of importance, but community responders have identified critical incident stress as the most significant and pressing issue they face.

4.1 THE CASE LOAD

Generally, Nunavut's communities have a heavy SAR case load. While the official record shows that certain communities experience far more SAR incidents than others, the underreporting of cases is widespread. Risks are mounting, and community responders anticipate that SAR cases will increase in the years to come.

4.1.1 THE HEAVY SAR CASE LOAD IN MANY COMMUNITIES

The large number of people who regularly go out on the land in Nunavut, combined with the region's austere environmental conditions, means that on-the-land accidents and lost people are frequent occurrences. The rapidly changing environment, increased outside activity, and a range of other factors are intensifying the risk. Still, the number of searches ranges dramatically between communities. Some communities have dozens of searches a year – and these are only the ones that are reported. The chart below is illustrative, although it should be emphasized that these are only the cases reported through NEM. That is, they do not include all marine or air cases reported through the Coast Guard and JRCCs. Further, as will be discussed in the next section, some of the communities may not be reporting every incident to which they respond. This underreporting is common in Nunavut.

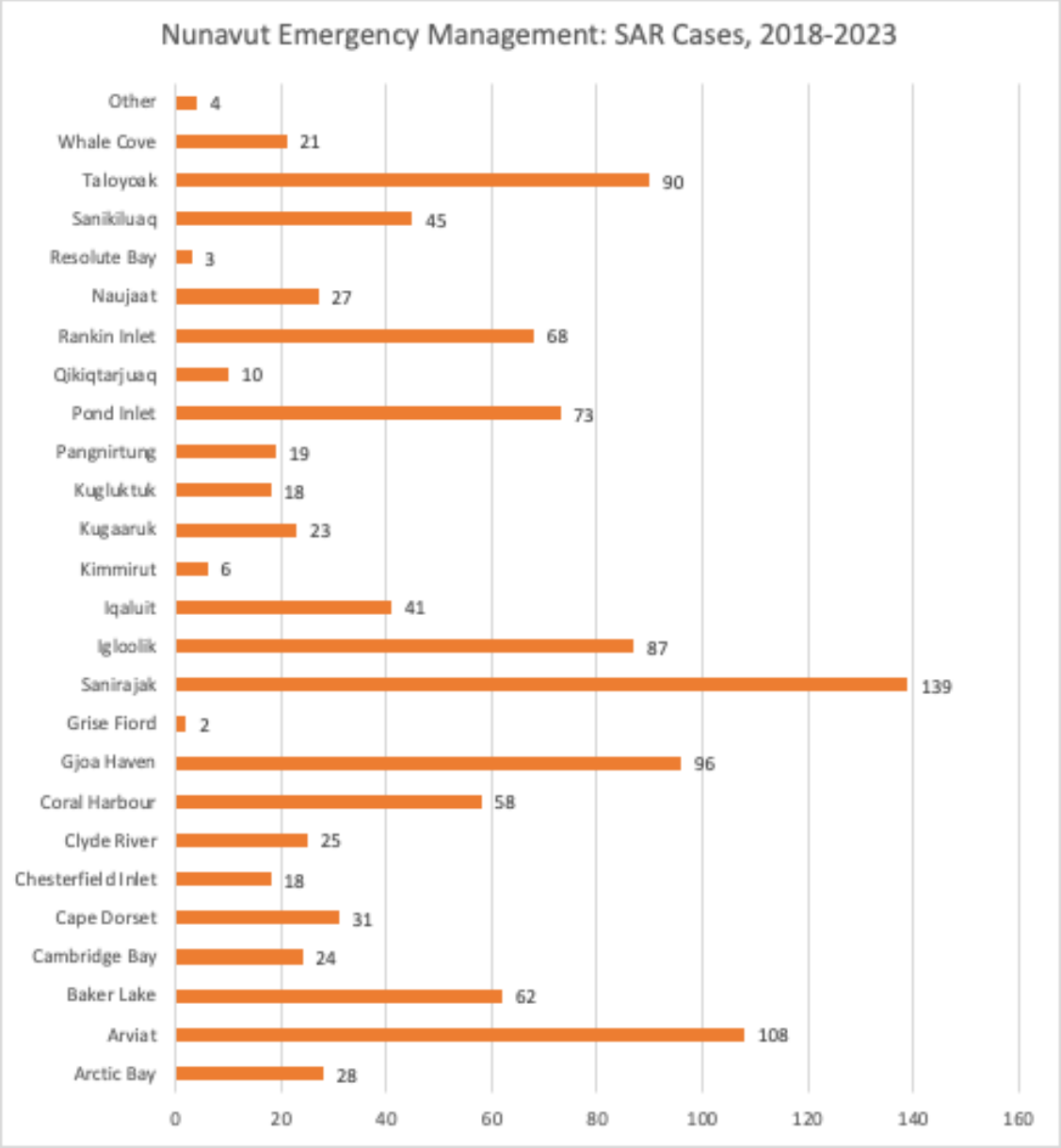
It should also be noted that the number of cases does not correspond with the number of search subjects. In 2014, for instance, NEM recorded 217 searches, which involved 450 individuals. The next year, NEM tasked out 251 searches, comprising over 400 search subjects.[62]

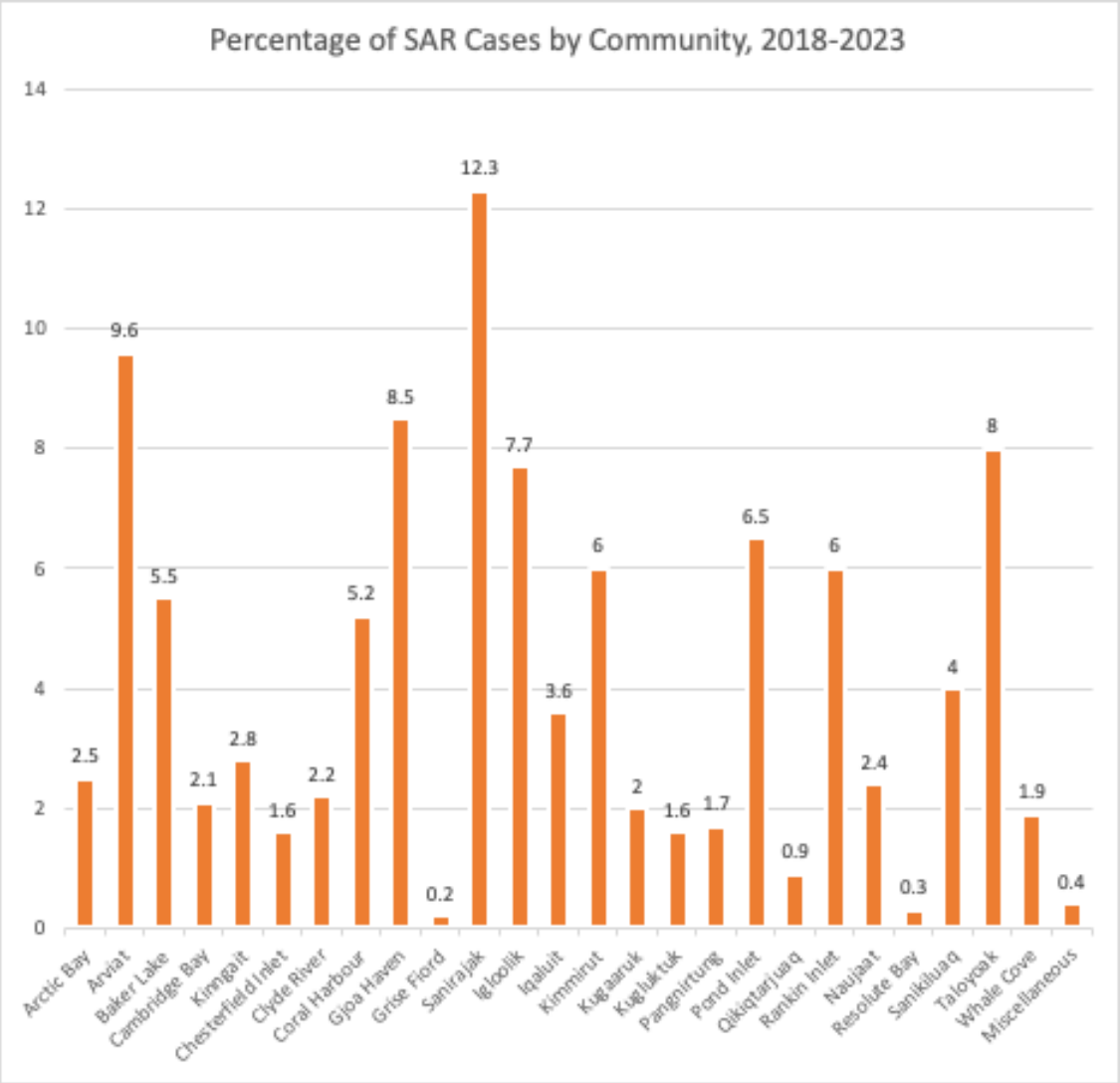
Sanirajak, Igloolik, Arviat, Gjoa Haven, and Taloyoak consistently have the most annual ground searches, highlighting the need for further investigation into the causes of these incidents and investment into evidence-based local prevention strategies.

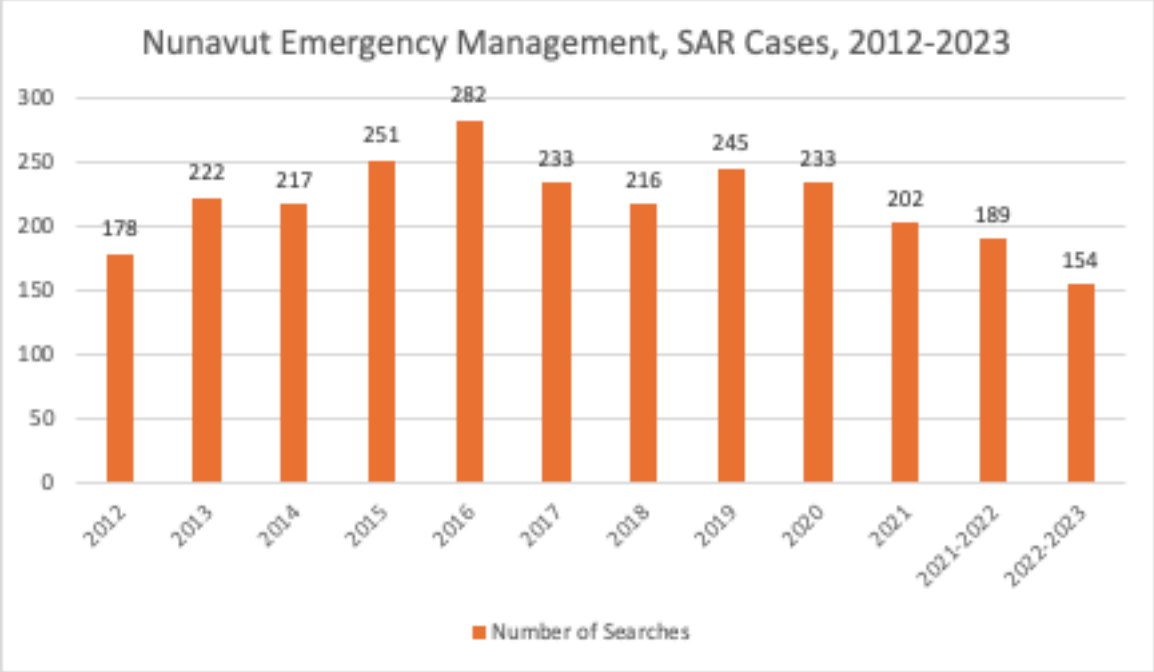
Many SAR operations in Nunavut also stretch over multiple days. In cases where the location of the search subject is unknown, there are few clues as to the direction in which they went, or the individual has access to a powerful snowmobile or boat, the search area is vast. So, the heavy case load reported by responders stems not only from the number of incidents but from their length as well.

The lower number of SAR cases reported to NEM in 2021, 2022, and 2023 is an interesting development. There are several factors that may be contributing to a lower number of cases:

- Many of Nunavut's SAR coordinators have been in their positions for several years. With experience comes a willingness to wait to initiate searches. For instance, if a hunter is only overdue a few hours, many coordinators will hold off on launching a search, even if the family asks them to do so.







Please note that statistics for 2012-2021 were recorded by calendar year, whole those from 2021-2023 were recorded by fiscal year.

- This may be the product of the better communication of Nunavut's SAR policy, which does not provide taskings or compensation for the recovery of equipment that has failed or the supply of fuel or other items necessary for the operation of the equipment. Many SAR coordinators explained that they are really pushing family and friends to deliver fuel to people who run out while on the land, provided there is no risk involved.
- People may be going out on the land more prepared. The SAR prevention programs and on-the-land skill-building programs are having an impact.

Many community responders were doubtful that this downward trend will continue, but they are eager to see the data in future years. Most anticipate that the number of cases will increase, for the reasons outlined in section 4.1.3.

On the marine side, according to the data collected by the Coast Guard's Risk-Based Analysis of Maritime SAR Delivery (RAMSARD), there were 137 marine SAR cases in western Nunavut and Hudson Bay between 2006 and 2016. In eastern Nunavut and Hudson Bay, there were 182 marine SAR cases in the same period. The Coast Guard's RAMSARD team found that over 50% of marine cases in the Arctic region were never reported through the federal SAR system, so these numbers may be too low by half.[63] Since 2016, increased outside traffic, particularly by pleasure craft and adventurers, has led to more cases. Further, the number of cases reported by communities has increased alongside the expansion of the Coast Guard Auxiliary in Nunavut (see section 4.1.2). Between January and November 2022, the Coast Guard documented over 30 marine SAR cases in Nunavut.

> **"In my community, and probably in all the communities, searchers have to cover a lot of ground. There's a lot of space up here. And all the machines, the boats, the snowmobiles, even the quads are so powerful now, it makes it easier to go further out."**
> ***- Community responder, Kivalliq Roundtable on SAR, 2022.***

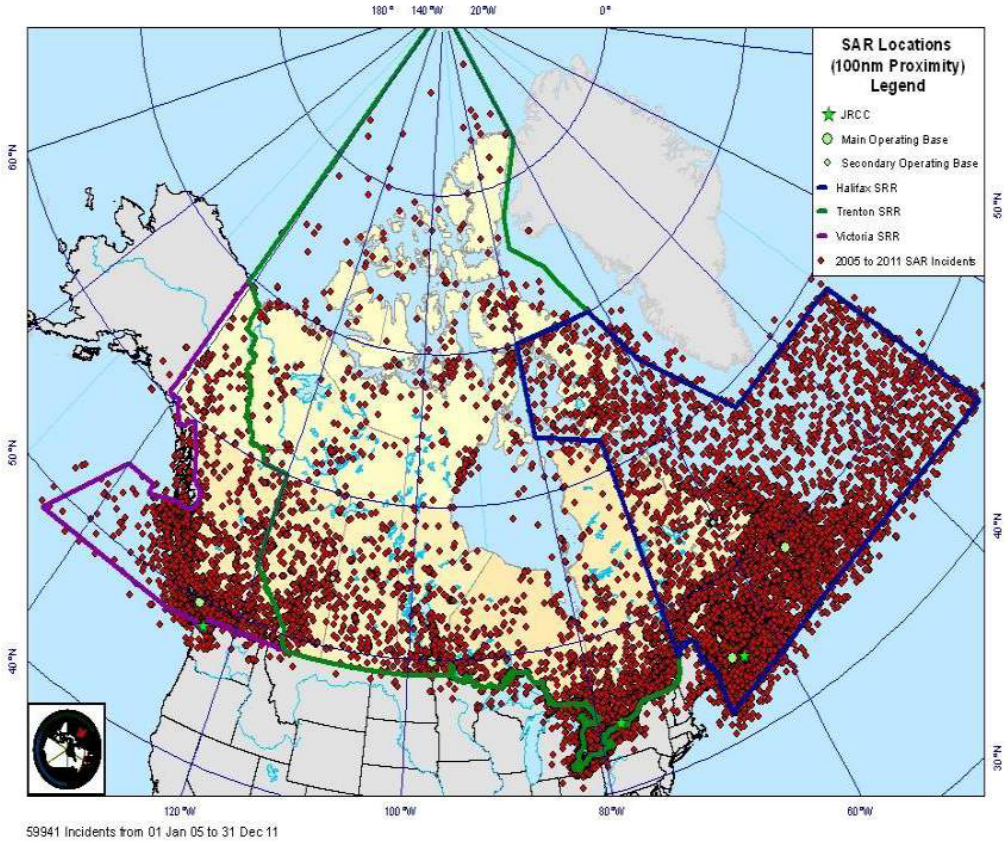
4.1.2 THE UNDER-REPORTING OF SAR CASES

The high number of SAR cases that community responders face is not reflected in the official record. SAR cases in Nunavut are often not reported to the responsible government agency but are instead handled at the community level. This was confirmed at every regional roundtable.

Communities that do not have well-trained coordinators sometimes handle searches informally, without activating the SAR system. Confusion over the threshold between a private and public search and when to report to NEM for a tasking number also accounts for the hesitancy to report cases. In addition, some communities rarely report rescues in which there is no search required and they know where the subject is located. Others rarely report shoulder season rescues involving stuck ATVs, because there is less risk and coordinators doubt that NEM will approve taskings for equipment extraction. Further, prior to the expansion of the Coast Guard Auxiliary, many communities never reported marine searches (possibly over 50% of cases), either not knowing how or figuring that this gesture was pointless without official local resources to task.[64] Several community responders highlighted that they have sometimes chosen to go it alone and not report cases (both ground and marine) because this approach allows them to avoid red tape and bureaucracy, sidestep confusion over jurisdiction, and remain in control of the searches. While the reporting of SAR cases is becoming far more common and consistent, the SAR data for the region, which guides SAR planning and is used to justify the allocation of resources at the federal level, remains incomplete and inaccurate.

There was agreement at the roundtables that more needs to be done to collect data and maintain accurate records to support decision making. The processes need to be simple and intuitive. The importance of data collection and maintaining accurate records to SAR planning and resource allocation needs to be made clear to community responders. Roundtable participants highlighted that the presence of Coast Guard Auxiliary units that require official taskings to respond will improve reporting through the federal SAR system.

"The dots on that map are essential for SAR planning and resource allocations. I know, you know, those dots don't capture all of the searches you are doing. Confusion over what constitutes a public, private, or community-organized search, who to call, and concern over working with the authorities – they all keep people from reporting cases. We need these numbers to make better decisions."
- Academic participant, Kivalliq Roundtable on SAR, 2022.



SAR Incident Analysis (2015-2022), shared by JRCC Trenton at the Nunavik Roundtable on SAR.

4.1.3 INCREASING RISK FACTORS

At the regional SAR roundtables, community responders echoed previous research findings establishing links between changing environmental conditions and greater SAR needs in Nunavut and across Inuit Nunangat (the Inuit homeland in Canada).

In discussing the relationship between search and rescue and climate change in the Arctic, commentators often focus on how the region is becoming more accessible, particularly to outside activity like cruise ships, which is increasing the risk of accidents. This is a valid concern. But, in many ways, the region is becoming less accessible, particularly to those travelling, harvesting, and working on its land and ice. Across the region, climate change has diminished the ice coverage on lakes and rivers, contributed to thawing permafrost, and caused the extent, thickness, and volume of sea ice to decline. Community observations have reported thinner, less stable, and rougher ocean, lake, and river ice, with ice coverage developing later in the fall and melting sooner in the spring, producing stronger waves and currents in the summer as the waters are less impeded by ice.[65]

At the community level, the rapidly changing and increasingly unpredictable ice conditions have elevated the dangers of personal travel, affecting safe access to harvesting grounds, disrupting travel between communities, and causing high SAR incident rates, injury, and death.[66] As Wilson et al. highlighted, Inuit are now having to navigate new, longer, and more dangerous routes on sea ice to access country food, leading to an increased risk of becoming lost in unfamiliar areas.[67] Changes to traditional sea ice routes have also led to increased fuel use, running out of gas, breaking through unexpected areas of thin ice, and having to travel over rough ice and/or land, resulting in snowmobiles and other equipment being lost and damaged. A case study of 202 search and rescues in Nunavut from 2013 and 2014 showed a link between sea ice, temperature, and the probability of an incident.[68] Thawing permafrost is also making travel by all-terrain vehicles (ATV) more challenging in the summer months, while the early melt and late freeze up of lakes, rivers, and sea ice in the shoulder seasons (spring and fall) make travel routes more difficult and dangerous.[69]

Community responders at the regional roundtables highlighted that changing environmental conditions have intersected with the failure of some Nunavummiut to take sufficient fuel and equipment on the land, the loss of traditional skills and knowledge (IQ), and the overreliance on technology to increase the SAR case load in their communities.[70] A responder from the Kitikmeot Region noted that, "With climate change and bad ice, machines are getting damaged and more people are getting hurt and getting lost. Even with the most experienced people, things happen."[71] A SAR coordinator from the Kivalliq explained that "[b]ad ice, rough ice, can make things worse. You get someone out there without skills, they don't know how to handle it. So they can get into trouble with the ice." People will often leave a community to travel or go hunting without shelter, rations, emergency kits, or additional fuel. Some are forced to go on the land without the necessary equipment and supplies because of the extreme expense involved in purchasing those materials. At times, however, even the SPOT devices or other satellite communication tools that are provided free of charge to those going on the land are not used. Some people have a mindset that they are only going 60 kilometres from home, and thus they do not need to take anything with them. This is "a recipe for disaster." Many searches could have been avoided if people had been better prepared.

Many responders explained that some community members see search and rescue as a "gas service." These individuals purposely go on the land with insufficient fuel, knowing that a search will be declared and that someone will bring them gas for their machine. Of the 217 searches that NEM recorded in 2014, for instance, 50% were the result of either running out of fuel or a mechanical breakdown.[72]

> **"Most of our searches are for young men. It's the backpack hunters. They go out with nothing: no safety equipment, no SPOT, no inReach, no shelter, no food. They don't have the skills, the knowledge, the equipment, but they have powerful machines."**
> ***- Community responder, Arviat, November 2022.***

> **"People don't trust SPOT devices."**
> ***- Community responder, Kivalliq Roundtable on SAR, 2022.***

SAR coordinators report that the majority of those going out unprepared are young males between the ages of 20 and 45. Some coordinators are concerned that this problem will grow worse given Nunavut's young and growing population, fearing that more inexperienced and unskilled people going out on the land will lead to more cases. Others, however, point out that there is more on-the-land youth programming available now than in the late 1990s and early 2000s, which should improve skills and have a positive impact over time.

GSAR responders identified a number of other factors leading to riskier behaviour on the land. They confirmed how the pressures of food insecurity often force harvesters to travel further afield and in poor conditions, increasing their risk. All highlighted the power and endurance of new snowmachines, which allow travellers to go vast distances at speeds that often make it difficult for them to follow trails. Alcohol and drug abuse also contribute to cases, although this is often not reported by community responders.

On the marine side, sea ice reduction has led to longer boating seasons, with boaters travelling earlier in the spring and later in the fall, risking exposure to more severe environmental conditions. As one CCG Auxiliary unit member from the Qikiqtani Region explained, "People are going out on their boats earlier in the spring and later in the fall, getting into the winter because ice just isn't there anymore. Conditions are worse. You got bigger winds, bigger waves. People used to be hunting on the ice [at] this time, but now they are in boats, and conditions are worse. This will lead to more cases." The longer boating season also means that Nunavummiut are operating in dangerous waters before the Coast Guard icebreakers deploy to the Arctic in June and after they leave in November. With less sea ice, community boats also travel further

> **"One of the main issues is if someone decides to go out hunting and doesn't say where they are going. It is extra work we have to do to guess where they are going. Some of us don't even tell their family member where they are going, so we have to guess where they are. Depending on the season, and where the animals are."**
> ***- Community responder, Qikiqtani Roundtable on SAR, 2022.***

afield, with increased risks of running out of fuel or experiencing mechanical failure. These factors, combined with limited safe boating culture in many communities, is leading to more incidents on the water.

The impacts of climate change are also drawing increased outside activity to the region – from more marine traffic, to adventurers and researchers. Often, these groups or individuals venture into difficult to reach and potentially unsafe areas – uncharted waters, remote locations, unstable glaciers – increasing the risk of SAR incidents and the complexity of rescue operations. In 2014, for example, Taloyoak Search and Rescue had to rescue a French adventurer when he developed frostbite on his feet nine days after he left the community on the start of a planned 80-day unassisted and unsupported expedition to Qaanaaq, Greenland.[73] The successful search took 12 hours. Similarly, the Norwegian adventure tourism company Ousland Polar Exploration often takes a group of tourists on a 400-kilometre trek over the sea ice from Cambridge Bay to Gjoa Haven. On several of these expeditions, the Cambridge Bay GSAR team has had to pick up expedition members and transport them back to the community after they complained of exhaustion and other minor injuries.

Marine traffic, including bulk carriers, fishing vessels, pleasure craft, and cruise ships, has grown significantly in Canada's Arctic waters as the ice coverage decreases and summer accessibility increases – nearly tripling over the last decade and placing a growing strain on the region's SAR resources.[74] Of particular concern are the adventure cruise ships that are following the diminishing ice coverage into uncharted waters, increasing the risk of a major marine accident. Roundtable participants highlighted the risks posed by the unpredictability of sea ice as it appears in new places, the choke points it forms that can trap and strand vessels, and the presence of hard multi-year ice amongst first-year ice, which can be difficult to detect and cause great damage in the case of a collision. As vessels operate in the Arctic waters longer into the fall and the air temperature drops, icing on superstructures can create instability. Pleasure craft, often operated by inexperienced sailors with little ice experience, are also a growing concern. In August 2018, for instance, two Argentines sailing through Nunavut's Bellot Strait became trapped in the ice and started to sink, forcing them to abandon their sailboat and await rescue on an ice floe.

"They [back-pack hunters] take too many risks."
-Community responder, Rankin Inlet, November 2022.

"Should people who simply run out of gas receive GSAR assistance? This happens a lot. We have to respond, but it can be frustrating." -
Community responder, Kitikmeot Roundtable on SAR, 2020.

"[We had a search] this spring – guy went up to a camp by dog team. He was good for [a] couple of weeks, then [his] dogs turned on him, he said. NEM were ready to respond, but when the family went out, he just had a little cut. He'd totally exaggerated his injury. So we returned our assets. Next time, he sent another SOS and [the] JRCC almost sent a Hercules to drop a communication device, icebreaker was almost turned, then it turned out that he just needed food. Once again, the family dealt with it." -
Community responder, Kitikmeot Roundtable on SAR, 2022.

"Everyone thinks they are an explorer when they come up to our communities. This can lead to trouble."
- Community responder, Kitikmeot Roundtable on SAR, 2020.

"At one point this year, we had four searches in one week. Usually Sept., Oct., part of Nov. is our busiest period. Because of caribou migration, lots of people going up inland."
-Community responder, Kivalliq Roundtable on SAR, 2022.



While changing ice conditions lead to higher risk, several roundtable participants highlighted that even when experienced crews encounter Arctic sea ice in areas where it is to be expected, accidents can still happen. In February 2016, while proceeding to Nuuk, Greenland, the *Saputi*, a fishing vessel with 30 people on board, struck and was holed by a piece of ice 167 nautical miles east-northeast of Resolution Island, Nunavut, developing a severe list and requiring assistance from Canadian and Danish SAR aerial assets. The vessel's master was experienced, the crew had detected the ice through radar and visual observation, and they had assessed it as being non-threatening first-year ice. The Transportation Safety Board report on the accident concluded that "the smaller, non-threatening first-year ice pieces were likely covering a harder piece of multi-year ice or a growler."[75]

The lack of environmental data, particularly on ice and weather conditions, also makes travelling more challenging. Robert Way, an assistant professor of geography at Queen's University, has recently drawn attention to the fact that "there are fewer stations



across Canada collecting information about all four key weather variables: precipitation, snow depth, air temperature and wind speed…. Since there can be hundreds of kilometres between weather stations in Northern Canada, many small communities lack accurate information about the weather, which can be dangerous for people travelling on the land."[76] The lack of reliable information on ice and weather conditions can create risks for Nunavummiut travelling on the land, ice, and waters of Nunavut – and lead to additional SAR cases.

4.1.4 THE NEED FOR MORE SAR PREVENTION INITIATIVES

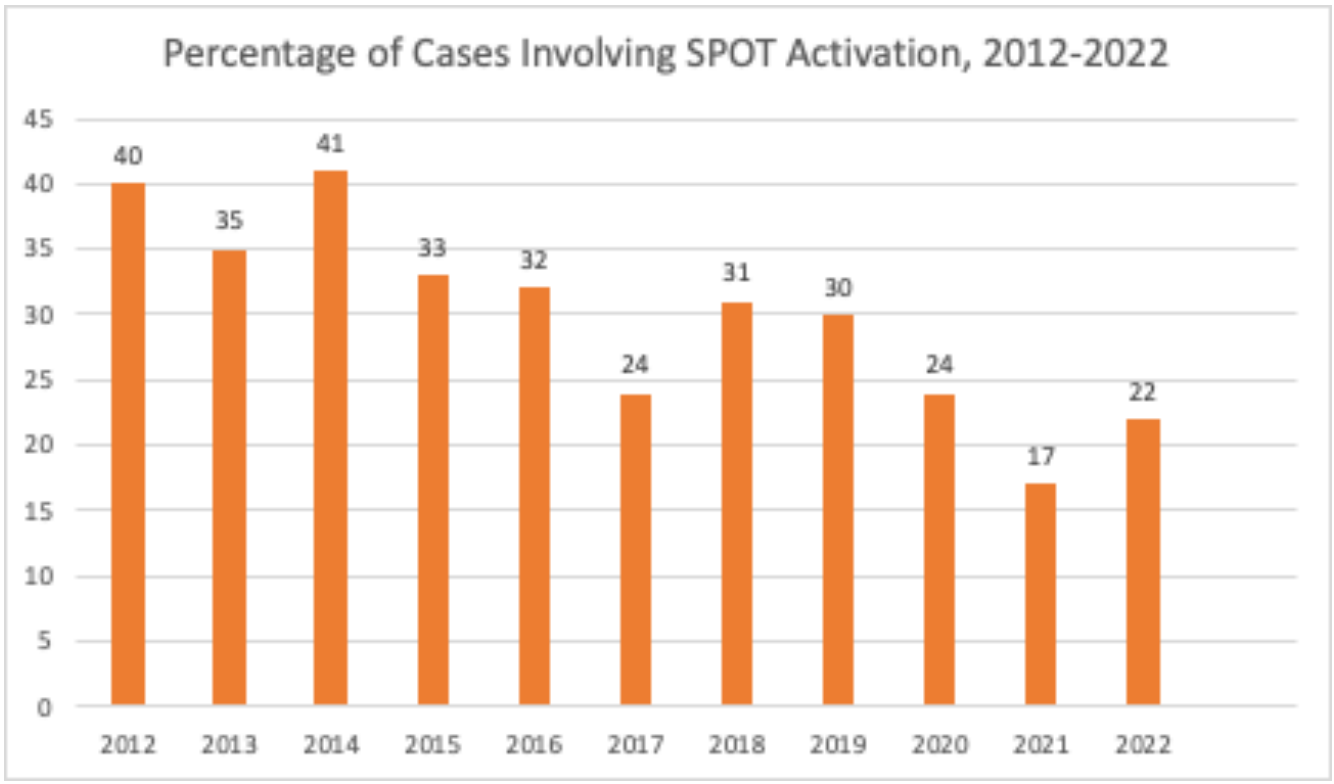
To reduce the strain on community-based SAR organizations, greater investments in preventative measures should focus on whole-of-society SAR education, the intergenerational exchange of traditional skills and knowledge, and technological solutions. In Nunavut, there is a consensus amongst community responders that SAR prevention activities need to be amplified. They highlighted how many cases are caused by limited land and marine safety knowledge, by people going out unprepared, and by individuals using alcohol and drugs. More initiatives are required to promote on-the-land skills, vessel safety, and boating safety culture. Many responders insist that on-the-land survival skills should be a part of the school curriculum. Those going out on the land and water also need better access to weather and environmental data, which can reduce risk. Several community responders highlighted the need to improve boating safety in the region, develop new certification standards for vessels, and establish a Nunavut-specific Small Vessel Operator Proficiency Program.

Across Nunavut, a wide array of actors, community-based organizations, and non-governmental organizations (NGOs), as well as all levels of government, are providing programming that falls under SAR prevention. Examples include the construction of additional VHF towers by various communities and organizations, the building of safety cabins on the land, the marking of popular trails, programs that provide community members with SPOT or GPS devices, youth programs aimed at on-the-land skill development and intergenerational knowledge transfer (e.g., young hunters programs and the Junior Canadian Rangers), poster and sticker campaigns, a vast range of boating safety initiatives, and several past Search and Rescue New Initiatives Fund projects. While there are many

positive initiatives, there is little cohesion or overarching direction to these activities. There is also little knowledge about the effectiveness of these programs and whether they are reducing the number of SAR cases in the region. Mapping out what various actors are doing in the preventative SAR space and discussing best practices should be a priority moving forward.

Roundtable participants highlighted the need to start teaching community members how to survive on the land and water at an early age. The more traditional skills and SAR training that can be provided in the elementary and high schools, the less strain on a community's SAR system. One participant noted that he had had the chance to do a survival skills course when he was in high school, but that this is no longer in the curriculum. "On-the-land survival skills should be part of the school curriculum, and everyone should have to pass," he concluded. Some SAR volunteers visit the schools to explain to students what they need when they go out on the water or on the land. They tell them what to look out for and be aware of when they are out. They also teach the students to observe who is leaving the community, to track the direction in which they are going, and to note the equipment that they are taking with them. In one SAR case in Kugluktuk, two children who had been present for a presentation from the community's SAR team had watched their uncles go out on the land, so they reported to the





team what their relatives were wearing and driving, as well as where they were going, when the men were late coming back.

Other SAR groups have invested in signs and posters reminding people what to bring out with them on the land, while some regularly take to the community radio stations to provide reminders to go out prepared or to warn of possible bad weather. Kugluktuk's team emphasized the value of a sign that the GSAR team put up at the community's old gas station (it has since moved), as the gas station is usually the last place people go before they head out on the land. The sign tells people to be prepared, to complete a trip plan, to be aware of ice and weather conditions, to take emergency supplies, and, if they become lost, to "stop, sit, think, observe, plan," and not leave their machines.

The Rangers present at the roundtables highlighted their role in educating and preparing youth through the Junior Canadian Ranger (JCR) program. This program teaches the JCRs traditional skills and even has them participate in SAR exercises.

Community responders expressed their frustration that more people do not take out the SPOT devices that NEM provides free of charge or the inReach devices that some Hunters and Trappers Organizations (HTOs) offer. Since 2012, the highest percentage of SAR cases initiated by a SPOT notification has been 41% in 2014. Generally, the percentage is around 30%, and that proportion has gone down in recent years (e.g., 17% in 2021 and 22% in 2022). Community responders suggested that both NEM and HTOs publicize their SPOT programs more extensively so that community members know the benefits of borrowing them. If people have these devices with them on the land, they can more readily "take the search out of SAR."

Participants also recommended that the territorial and federal governments invest in innovative technological solutions to reduce travel risks, such as SmartICE and the Enhanced Maritime Situational Awareness Initiative (see section 3.10). Although preventative technologies may require significant short-term investment, participants emphasized that they should reduce the burden on the SAR system and build individual and collective confidence when heading out on the land.

"In my opinion it is time Nunavut establishes a Small Vessel Operator Proficiency [SVOP] Program in all communities within Nunavut to give our hunters, young and old alike[,] the boater safety education that is needed for them to be safe on Nunavut's water ways. Also it should be legislated that any retailer in Nunavut selling watercrafts/boats/marine vessels, kayaks, canoes[,] etc. [,] that the retailer must also have Personal Flotation Devices (PDF) for sale[,] just like retailers who sell ATV's [have] to also stock ATV helmets for sale as well. Do not let these two young men die in vain and [not] be a learning lesson for all Nunavut residents. We can only reduce and try to prevent these types of tragic accidents th[r]ough boater safety education and training. We are seeing a larger increase in Canadian Coast Guard presence in Nunavut communities each year and it would be great if they can send SVOP trainers into Nunavut communities annually to hold courses that promote SVOP safety and education courses to residents of Nunavut. Department of education should also consider making SVOP safety courses part of their high school curriculum, each year before school is out in June high schools can promote boater safety and the Canadian Coast Guard could and should also be involved by providing the resources they have to the schools. NTI [Nunavut Tunngavik Incorporated,] th[r]ough our KIA [Kivalliq Inuit Association,] QIA [Qikiqtani Inuit Association,] & KIA [Kitikmeot Inuit Association,] should also get involved to provide resources to local Hunter's and Trappers Organizations to also promote boater safety to Inuit hunters a[n]d fishers."

- Anonymous comment, 21 July 2023, on Jeff Pelletier, "Two boaters die in Gjoa Haven incident," Nunatsiaq News, 20 July 2023.

4.2 THE STRUCTURE: POLICY, GOVERNANCE, AND ORGANIZATIONAL ISSUES

Policy, governance, and organizational issues threaten the effectiveness of SAR operations in Nunavut. These issues weaken the support provided to community responders and impede cooperation between SAR partners.

4.2.1 THE NON-PROFIT STATUS OF COMMUNITY SAR ORGANIZATIONS

Nunavut's search and rescue policy is based around the local formation of Search and Rescue Organizations (SAROs): "A community based non-profit society that has been designated as an authority by the Local Authority or Mayor of the respective community (as per the Emergency Measures Act) to act as the sole agent for collecting funds for and carrying out a community-based search."[77]

This is how most volunteer GSAR groups are organized in the South: as non-profit organizations incorporated under the provincial Societies Acts. Generally, however, these Southern groups have larger volunteer pools, support from broader provincial associations, and more fundraising possibilities. Communities in Nunavut do not have these resources. This approach to the organization of volunteer GSAR groups was not designed for or with Nunavummiut and is not working effectively in the territory. Community SAR coordinators and responders have highlighted that the administrative burden to maintain status and secure funds, which includes submitting detailed budgets and activity reports, is too onerous. Most roundtable participants reported that their non-profit status had lapsed.

The funding provided to these SAROs is also limited, consisting of a $1000 start-up fund, followed by $1000 in annual funding. To receive this funding, NEM must receive proof from Nunavut's Legal Registries that the community SAR organization is registered as a non-profit society and has provided annual financial statements. The organization must also provide a detailed budget outlining anticipated expenditures and revenues, as well as a schedule of activities for the year. It can be difficult for community SAR organizations to maintain their good standing with the territory's Registrar of Societies because they struggle to meet the reporting requirements set by the Government of Nunavut. This, in turn, makes them ineligible for

"Education and prevention are vital. This should be a big part of what we do.… With climate change and bad ice, machines are getting damaged, and more people are getting hurt and getting lost. Even with the most experienced people, things happen. If people know how to survive, they can. They just need the knowledge and education."
- Community responder, Kitikmeot Roundtable on SAR, 2020.

"Everyone needs to know how to read a trail, how to identify what type of machine is used. This will let them know who has been lost. Everyone needs to pay attention, needs to learn how friends act on the land. [By educating the community,] they could "deal with the problem before it becomes a problem"."
- George Angohiatok, Cambridge Bay GSAR Team, 2020.

"It's all about persistence. We have to keep on telling people every chance we get, on Facebook [and] on the community radio."
- Community responder, Kitikmeot Roundtable on SAR, 2020.

"The thing that concerns me the most, Mr. Chairman[,] is that Search and Rescue groups in the communities do not seem to have the facilities and the training[,] and that comes in similar amounts of the volunteer Fire Departments. They seem to have to rely on their own wits to keep their organizations together. I do not think many of the organizations, Search and Rescue groups in Nunavut[,] are formerly organized[,] and volunteers around town have to bring their own snowmobiles and equipment…. In the communities, the Fire department[s] have fire halls, they have practice facilities, they have vehicles, they have equipment, and they have [a] whole range of things to support their volunteer work. Those Search and Rescue folks, in many cases, do not seem to have facilities. They have to bring their own equipment. People's lives depend on those guys and those folks and in the wintertime and in the summertime as well. I think we have to really look hard to provide more support to all those Protection Services. Look at that group in particular[,] since they do plan for all their communities. The Fire Departments are getting their support, they are getting more, and they deserve more.… In my opinion, I think search and rescue organizations should be formalized and fall under the jurisdiction of the hamlets, similar to the fire departments that receive that support from the hamlet. Many search and rescue organizations are set up as non-profit societies, which require a board of directors and a lot of paperwork for them, and they have to do fundraising and other things. I am wondering if the minister or her officials could comment whether there are any initiatives underway to consider bringing search and rescue organizations[,] as an essential service to the community, bring[ing] them more under the jurisdiction of the hamlet councils[,] similar to the way the fire department operates."

- Keith Peterson, Nunavut Legislative Assembly, 26 March 2007.

government funding. Further, designation as a non-profit society may actually limit the amount of funding that can be provided through NEM and other government sources.

Many responders wonder why ground search and rescue teams could not be formalized and fall under the jurisdiction of the hamlet offices, along the same lines as volunteer fire departments. They argue that this would create clearer lines of funding and facilitate more consistent access to training and new equipment.

> **"It is too hard to keep society status. I don't think we've had it for years."**
> ***- SAR Coordinator, Qikiqtani Roundtable on SAR, 2022.***

4.2.2 THE PROBLEM WITH NUNAVUT'S PRIVATE SEARCHES

Community responders are uncomfortable with the existing SAR policy provision for private searches, or searches "for a missing person(s) conducted by individuals or groups of friends and family members performed without benefit of government assistance."[78] Such a search can be traumatic for the family and friends, who, in some situations, might not even have the skills, knowledge, or equipment to undertake this kind of endeavour. While responders are comfortable with family and friends being asked to deliver gas or supplies to people on the land whose locations are known and who are in no immediate danger (provided that the family members are capable of doing so), they argue that this provision simply wastes time in most SAR operations. The policy concerning private searches also generates confusion amongst some SAR coordinators who are unclear about the point at which a private search should transition into a public search with an official NEM tasking number.

There is also considerable confusion around the nature of this requirement. Just like many other Canadians, some Nunavummiut, including those on SAR teams, believe the myth that someone must be missing for 24 hours before they can be officially reported missing. That is, of course, not true, but including a requirement for a private search in the Government of Nunavut's official SAR policy needlessly complicates the issue.

"It's not clear to me how a private search is supposed to work. How long are we supposed to do a private search? What if no family is able to go looking or they don't know how to look?"
- Community responder, Kivalliq Roundtable on SAR, 2022.

4.2.3 THE NEED TO ENHANCE NEM'S SAR CAPABILITIES

Community responders appreciate the programming that NEM provides: the community SPOT devices, the tools supplied to SAR teams, and the support offered during searches. That said, there are several core areas in which NEM's SAR activities should be improved.

Many Nunavummiut responders would like to see NEM personnel visit the communities more regularly to assist with recruiting volunteers, provide additional training opportunities, and engage in SAR prevention work. They think the SAR complement in NEM should be expanded to facilitate these efforts.

Further, while the trainers that NEM hire to deliver SAR training are adequate, community responders would prefer that training be provided directly by NEM staff – the people they will be working with on actual searches. They argue that NEM's provision of more frequent training could also take a "train-the-trainer" approach, providing community groups with the capability and knowledge to train on an ongoing basis. Eventually, an expanded NEM training program could deliver on some of the objectives set in 2000, when the organization first announced its intention to hire a SAR training officer (primary goals at that time included compiling community-specific training packages and a Nunavut-specific training manual). The growth of NEM's training program could also serve to provide basic searcher, team leader, and SAR manager training at the community level.

As detailed in section 3.4, NEM personnel play a significant role as search commanders assisting in the coordination of searches, but the support they provide can be uneven. Responders shared stories of past SAR cases in which they felt ignored, disrespected, or poorly advised by NEM duty officers. Duty officers provide varying qualities of advice and, at times, inconsistent information and decisions.

NEM duty officers have a great deal of responsibility. In some ways, NEM is meant to function as a mini rescue coordination centre for GSAR in Nunavut. It is essential that all members receive the highest levels of SAR training. As a foundation, they should take and, eventually, be able to teach the basic searcher, team leader, and SAR coordination/manager training offered at the community level. Further, a search commander course should be developed that is specifically adapted to Nunavut's unique context and NEM's SAR responsibilities. Topics covered should include the following:

- the national SAR system
- working with the JRCCs
- working with community SAR coordinators
- working with hamlet offices and the RCMP
- the incident command system
- the legal aspects of SAR
- search planning
- Arctic lost person behaviour
- risk assessment and management
- resource management
- information management and documentation
- briefing and debriefing
- dealing with next-of-kin and the media
- search suspension
- the transition to recovery operations
- demobilization
- the technology used in Nunavut (SmartICE; satellite communication devices)

Duty officers should have the opportunity to exercise regularly with SAR partners at the local, territorial, and federal levels. Community responders agree that the goal of increasing the capabilities of NEM personnel must not be to take any control or decision-making authority away from community SAR coordinators or teams – their local knowledge and skills make them ideally suited to manage searches. Instead, it is to ensure that NEM duty officers have the ability to provide required support, advice, and assistance when and if requested by community SAR teams.

Clear standard operating procedures/guidelines should also be established to bolster training. Such procedures would promote efficiency and effectiveness, maintain consistency, and improve communication.



NEM personnel work with community responders and federal practitioners during a tabletop exercise at the Kitikmeot Roundtable on SAR.

"We want them to do more than give a tasking number." – *Community responder, Kivalliq Region, November 2023.*

"While most of the [duty officers] I've worked with try to help, I've sometimes gotten different answers from them about the same kind of thing during a search. They are not always consistent."
- Community responder, Kivalliq Region, November 2023.

"It should be the people we call at NEM who should be giving training in the communities. It should be the people we have to work with during searches. These kinds of face-to-face meetings [build] trust when you have the same people visiting regularly. Why can't one of them come every year? It would show that we are respected and would build trust. It would also help for them to understand our local problems. Face-to-face meetings are important."
- Community responder, Kivalliq Roundtable on SAR, 2022.

4.2.4 THE NEED TO FORMALIZE THE ROLES OF THE HAMLET OFFICES AND THE RCMP

While some hamlet offices provide administrative and organizational support to local SAR teams, the nature and extent of this assistance differ from community to community. Community responders suggested that the development of guidelines or standard operating procedures might be helpful, to lay out how the hamlet offices can best help community SAR groups.

Community responders expressed more confusion and some concern over where the RCMP fits into Nunavut's SAR system. During the roundtables, participants reflected on the various roles that RCMP officers have played in past searches, from the days when the RCMP was the lead agency for GSAR in the territory to today's system. Positively, some responders recounted incidents in which officers had spearheaded investigation efforts, assisted with public and media relations, and provided support at the command posts. Others, however, discussed officers who tried to take control of search efforts or who refused to assist altogether, even when asked. The common theme is that the detachments in Nunavut have assumed no consistent role in SAR operations. Indeed, the RCMP's involvement in search and rescue has been very piecemeal and largely based on the decisions and community relations of individual officers.

Contributing to this problem are the vague references to the RCMP in the territory's current SAR policy:

- "Nunavut Emergency Management and the Royal Canadian Mounted Police shall be notified of the search and the details around the search before the search begins."
- "In the case of a public search the Royal Canadian Mounted Police (RCMP), shall be notified of the search and will investigate the circumstances leading up to the search."
- "A condition report was completed and signed off by a local RCMP member."
    - (Some of these statements may be leftovers from previous SAR policies, when the RCMP was the lead agency for GSAR in Nunavut)[79]

Clearly, the policy leaves plenty of room for partnership and collaboration between NEM and the RCMP, but it provides no clear guidelines on how this cooperation should work in practice – or on the objectives of this cooperation. It leaves many key questions unanswered. What circumstances are the RCMP investigating "leading up to the search"? Are officers working with community SAR coordinators during this investigation? Are they channelling investigative information back to community SAR teams and/or NEM? What should the relationship be between the RCMP and community search teams? Should RCMP officers be tasked with assessing the condition of the SAR equipment that SAR volunteers use, a move that could create significant tension? How can NEM personnel best work with the RCMP officers to support searches?

While some community responders expressed interest in greater RCMP support for local SAR operations, others worried that it might lead to the loss of community decision-making and control. Further discussions should be held between community responders, NEM, and the RCMP to determine what roles the police should play in SAR operations.

"Some of the officers have been great. They help with some of the coordination, do some of the work with the families or the hamlet. They try and support the search teams however they can. They'll work with us during recovery operations and do it right, handle it well. The ones who've been around a while can be good to work with. Others have really gotten in the way – like the green horns straight from depot. It's not clear they know much about search and rescue or the community, and they can get in the way. I don't think they all have SAR training or experience coming up here. Sometimes they have tried to direct local responders, even though they don't know the land. Some have tried to take over. Some have handled recoveries badly. So, yes, I think we could work more with the RCMP, but it should probably be clearly laid out."

- Community responder, Kitikmeot Roundtable on SAR, 2022.

"As I stated earlier, I want to be clear in my understanding, especially why the RCMP are even involved when they have absolutely no knowledge of the outlying lands and waters. I used to think that the search and rescue groups in the communities were the foundation for searches and I wondered why the RCMP was appointed as the lead agency, yet here are the local knowledgeable experts, capable of initiating searches having their authority usurped. I imagine it was due to some SAR groups not having the legal capability to properly organize their societies, as you stated in English as being 'orderly.' Apparently, the RCMP is the only orderly group. Can't the communities be orderly in their management of the searches? Can't they be also one of the lead agencies or is this due to the lack of government not having faith in them? ... The RCMP, even in our community, sometimes gets requests to get involved, but their refrain tends to be that they have too much work on their plate. They have sometimes not even bothered to show up at meetings. I wonder how better to appoint a lead agency since there have been cases where their presence is requested for searches, but they rarely attend even if the community feels it is a dire situation."

- Joe Enook, Former Representative for the District of Tununiq in the Legislative Assembly of Nunavut, 1 March 2016.





Hunters from Arctic Bay, Nunavut make their way home after getting stranded on an ice floe in Admiralty Inlet. (CBC News, 14 July 2014)

4.2.5 THE JURISDICTIONAL ISSUES IN THE SAR SYSTEM

Search and rescue in Canada is a complex "system of systems." That complexity, combined with the limited understanding of how the system works amongst community members, responders, and government personnel, can cause delays and complications. Given the number of actors involved, many community members find it difficult to know which agency should be contacted to respond to various SAR scenarios. As noted above, even amongst government partners like NEM and the RCMP, there can be confusion over jurisdiction, roles, and responsibilities.

Community responders raised questions and concerns about jurisdiction and mandates. How flexible is the boundary between a ground search and a marine search? Will Coast Guard Auxiliary units be tasked to execute GSAR operations if it is suspected that the missing people are near the coast? Who decides? If harvesters go up on the shoreline on ATVs and go missing, could the Auxiliary be tasked? How does NEM assess that local and territorial resources are exhausted and it is time to request assistance from the federal government for GSAR (Humanitarian) SAR cases? How much room is there for local decision making if a search is being coordinated by the JRCC?

Responders at every roundtable underlined the jurisdictional confusion around SAR operations centred on land-fast ice and the floe edge, particularly when this ice breaks away as an ice floe – a common cause of SAR cases in the territory. They questioned which organizations had responsibility: "NEM and local GSAR teams or is it handled by JRCC and Coast Guard?" If a snowmachine or ATV is used to reach the ice, it is a ground search and rescue. This is, however, a situation in which capabilities do not align with mandate. Often, a search on the floe edge and, more obviously, when ice breaks away from shore, would be best handled as a marine SAR case by the JRCCs and the Coast Guard.

"This happened a few years ago. Two boaters were out, and then the wife called in worried about them. We tried to ask for a tasking number from NEM, but they said I had to call [the] JRCC. They tried to help, but it was too dark and they couldn't send any planes and the Coast Guard was too far away. I called NEM again, but they wouldn't give a tasking and said it wasn't GSAR. We should have sent people out right away. I could have sent boaters. We found them a few days later, but it was too late."

- SAR coordinator, Qikiqtani Roundtable on SAR, 2022.

"When I was coordinating for GSAR, we had to work with our health centre. There was no search going on, but we had [a] call from [the] health centre asking if we could send two SAR guys to take meds to someone on the land. We first asked why they were asking for help from us. We didn't think we could help because it wasn't a search. But who else is going to do it? We did agree to do it, but by then it was really stormy out, so we had to delay. I felt really guilty about not responding right away. A week later that person passed away."

- Community responder, Kivalliq Roundtable on SAR, 2022.

"We're from the North, and everybody knows that if the ice breaks off, us GSAR [volunteers] can go search to the floe edge, but we can't go into the ocean from there. If the ice breaks, and there's people on the ice, who do we call then?"

- Community responder, Qikiqtani Roundtable on SAR, 2022.

4.2.6 THE NEED TO CLARIFY THE ROLE OF THE CANADIAN RANGERS

Some roundtable participants noted confusion over how, when, and why a Ranger patrol can be officially activated to help with SAR and wondered who makes that decision. The Canadian Rangers do not have an official mandate for SAR, so what is their role? What is the threshold for their official involvement? What tasks can Rangers be assigned, and who/what organizations can assign them?

Ranger support to GSAR operations in Canada's northern territories has been plagued for decades by an overly convoluted and complicated process through which a territorial emergency measures/management organization (EMO) or the RCMP requests the 1st Canadian Ranger Patrol Group's (1CRPG's) assistance to support a local GSAR. A Ranger participant at the 2020 Kitikmeot Roundtable observed that "[t]he Taloyoak Ranger Patrol has taken part in many SAR operations around the community, with Kugaaruk and Gjoa Haven. Rangers [are] called up when there are not enough volunteers or the search goes long. They should be involved in SAR discussions. Sometimes it takes too long for the Rangers to be activated in SAR situations. It is a very confusing process, and sometimes people don't seem to know how it works. This slows everything down, and when someone's life is in danger, it doesn't make sense."

Recent efforts to clarify and streamline the Ranger activation process should help to address community concerns, if effectively communicated. The CAF's Force Employment policy for the Canadian Rangers states that Rangers can provide an immediate response to an "urgent situation." The policy defines an urgent situation as a "rescue and evacuation of individuals in emergency situations, emergency life saving treatment, the safeguarding of public health." In this kind of emergency situation, the commanding officer of 1CRPG "may deploy a Ranger patrol immediately to save lives." Following the initial deployment, the commanding officer must seek approval from the commander of Joint Task Force North. During a regular GSAR operation, which the policy defines as a "search for missing persons on land and not resulting from an aeronautical or maritime incident," a Request for Assistance must be received from NEM or the territorial government, after which the commander of Joint Task Force North can activate and deploy Canadian Rangers.

This process is not, however, well understood at the community level, or by members of the territorial government. There is also confusion over what constitutes an "urgent situation" and how risk is assessed for each GSAR case.

While Canadian Rangers serve as volunteer members of the GSAR teams in many communities, this is not always the case. Some SAR coordinators highlighted challenges in getting Rangers to volunteer for searches before they are officially activated. The response that coordinators have received from Rangers is that they are not permitted to volunteer for a search unless they are officially activated by 1CRPG. Other community responders suggested that some Rangers will choose not to volunteer, instead waiting in the hopes that they will be officially activated and paid.

Some Rangers reported that part of the issue is the inconsistent messaging received from the commanding officers (COs) of 1CRPG. They suggest that while certain COs have encouraged the activation of Ranger patrols for SAR purposes, others have discouraged official Ranger involvement.

Continued efforts to clarify when and how the Rangers are activated, how their training as Rangers fits with that provided by other SAR organizations, and under what conditions Rangers and their equipment are protected while on searches are important to sustaining trust and building capacity.

> **"Sometimes, when we talk to Rangers and ask if they can help, it feels like an excuse when they say [they] have to go through Iqaluit or whatever. We're a volunteer group; can't we change something so that Rangers can come out with us? Ticks me off – we have a hard time finding enough people. Who can we ask for help? We know Rangers have snowmobiles. If they can change their mandate on helping with ground search, please do."**
> ***- Community responder, Kivalliq Roundtable on SAR, 2022.***



Kugluktuk Ranger Patrol on the land. (Photo courtesy of Baba Pedersen)

4.2.7 LIMITED UNDERSTANDING OF THE SAR SYSTEM

Participants at the Nunavut Roundtables on SAR highlighted their confusion over how the SAR system works. They are unsure about which agencies are responsible and uncertain about how to contact them. Many would like more education on how the different components of the SAR system function and work together. There is also a limited understanding of the value that government partners bring to the table, which contributes to why some communities choose to "go it alone." Community responders do not always know, for instance, the value that working with the JRCC can bring to a SAR operation (e.g., primary SAR assets, information, planning, coordination support, reimbursement and/or insurance, data reporting, the assumption of administrative pressures, etc.).

Nunavummiut require effective information about the SAR system, how it functions, and how partners work together (e.g., if this type of SAR incident occurs, call this number, and this is what will happen). They also require clear information on the responsibilities of local, regional, Inuit, and federal governments with respect to funding, training, equipment, and the provision of other kinds of support. Moreover, there is a need for education on the benefits of working with the JRCCs and other partners.

"The federal government just gave the Coast Guard Auxiliary units in the Kitikmeot brand new SAR boats and equipment, at a cost well over $200,000 a piece. That's great program. I'm a member of the Auxiliary and it has had a huge impact. But, what about GSAR? If the reason for the new boats is that communities don't always have safe equipment, that more outside boats are coming in, that more marine SARs will happen, couldn't the same be said about GSAR? What about those Norwegian tourists between Cam Bay and Gjoa? Volunteer GSAR rescued them. What if they had died out there on the ice – that would not be a good result for Canada. We have to stop treating the ice differently than the water. What I'm saying is that if the Coast Guard can buy new boats for the Auxiliary, can't the feds provide funding for GSAR equipment, so we don't use our own?"

- Community responder, Kitikmeot Roundtable on SAR 2020.

4.2.8 THE LACK OF CONSISTENT FUNDING

Nunavummiut responders identified the lack of sustained and substantive funding for SAR activities in the region as a major barrier to improving the system. Communities are generous and provide significant funding and support to community SAR organizations. In communities with high rates of SAR operations, however, funds raised through bingos and community dinners can be insufficient to cover the high costs involved in purchasing even basic equipment in Nunavut. While NEM offers $1000 in annual funding for community SAR groups that submit their application and budget plans, few groups have the administrative capacity to complete this task and the money is insufficient.

It is difficult for community SAR organizations to identify different funding opportunities, let alone apply for them. While the expansion of the Coast Guard Auxiliary in the region offers access to federal funding for marine SAR, there are few consistent federal funds for GSAR. Further, while the private sector, particularly the mining sector, has been generous to community SAR groups in the past, this is also an inconsistent source of funding that responders cannot rely upon.

The majority of the challenges identified by community responders require significant funding. The current levels of investment will be insufficient. Clear and consistent funding streams need to be established to better support SAR in Nunavut.



The Cambridge Northern Store mades a generous donation to Cambridge Bay Search and Rescue in 2020. (Back left to right) George Hakongak, Doug Blackburn, Bobby Greenley / (Front left to right) Beverly Maksagak, Rosabelle Klenglengberg.

4.2.9 THE NEED TO CLARIFY SEARCH SUSPENSION AND RECOVERY PROCEDURES

The processes and policies guiding who makes the decision to suspend a search, how that decision is made, how it is communicated, and which organization is responsible for recovery operations need to be clarified and strengthened.

In Nunavut, local SAR groups or community councils, in discussion with NEM, generally make the decisions around search suspension. Often, community Elders and the search subject's family will determine when it is time to call off a search. While this is generally how search suspension works, the actual process and lines of communication are not clear.

In most jurisdictions, the police are responsible for SAR operations. They play the role of search commander/incident commander during a search, and, when a search is suspended and a recovery operation commences, they can readily slide into that role. Nunavut is unique in that NEM is responsible for SAR in the territory, rather than the RCMP. However, the RCMP is responsible for recovery, along with the territorial coroner's office. The fact that the agency responsible for SAR operations is not responsible for recovery operations has generated confusion amongst community and government practitioners in the past. These issues arose during a recent search in Grise Fiord that transitioned into a recovery operation over a short time frame. A spokesperson for the RCMP explained that "[t]he RCMP in Grise Fiord and Resolute Bay are supporting the Nunavut Emergency Management office on this search [and recovery]" – an inaccurate statement that confuses responsibility for recovery in Nunavut.[80] Blurred lines of responsibility need to be clarified and communicated effectively.

Nunavut's current SAR policy does not lay out the protocols for search suspension or recovery operations. The most relevant reference is vague with respect to the procedures: "A search and rescue operation does not include the ongoing cost to recover the remains of a deceased person presumed or known to be deceased unless approved in writing by the Deputy Minister." For clarity's sake, the Government of Nunavut should consider inserting language into the revised policy (or into the procedures developed alongside the new policy) that clearly outlines what the process is for suspending searches, which organization is responsible for recovery operations, and how those operations will be conducted.

4.2.10 NEED TO STRENGTHEN NUNAVUT'S SAR POLICY

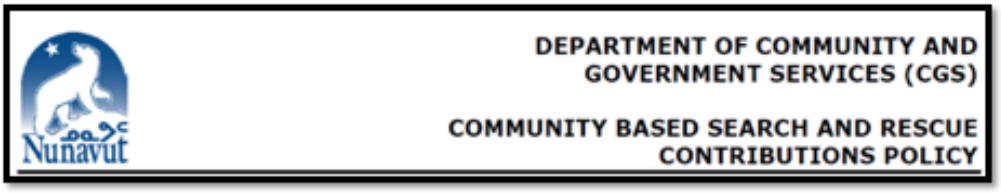
The Government of Nunavut's SAR policy expired in 2022. There is an opportunity to revise it to address some of the challenges identified in this report, including moving on from the non-profit-society approach, removing the private search category, and providing clarity on search suspension and recovery procedures.

Several other key issues should also be addressed. For instance, the policy's current definition used for a community-based search and rescue is confusing:

> A public search for a missing person(s) organized and conducted by the Canadian Coast Guard, Department of National Defense or Parks Canada and supported by a community council or a SARO under the authority of the Emergency Measures Act and may be prior to, or immediately following, a private search. Nunavut Emergency Management and the Royal Canadian Mounted Police shall be notified of the search and the details around the search before the search begins.

This is an unclear definition. Why is NEM, as the agency of jurisdiction for GSAR, not mentioned in the same line as the CCG, Department of National Defence, and Parks Canada? Is there a difference between a community-based search and a public search? The policy also makes it sound like community SAR councils and groups play supporting roles in air and marine searches, which is not necessarily true in communities with Coast Guard Auxiliary units.

Community responders would also like greater clarity on what constitutes a search and a rescue in Nunavut. The policy establishes that a "search is to look for a person(s) whose location is unknown and who is considered to be at risk. A decision whether or not to implement a search shall be based on the information supplied and the belief that to delay a search may result in loss of life or unnecessary suffering." Meanwhile, a "rescue operation is an operation organized to assist a person(s) whose location is known but due to equipment failure, injury or other circumstances is at risk and to delay the rescue may result in loss of life or unnecessary suffering." These definitions and the differentiation between a search and a rescue were not included in earlier Government of Nunavut SAR policies. They were inserted due to the rising number of incidents involving people running out of fuel or experiencing breakdowns on the land. Community responders understand what these regulations are trying to achieve (e.g. reducing the number of searches for people who are not in immediate danger), but they think that the actual parameters for a search remain blurry. Some of this confusion stems from the inclusion of a private search category in the policy. Other responders are confused about when someone running out of fuel or getting stuck on the land should be considered a rescue operation. What are the criteria? How should coordinators be assessing risk and the consequences of delay? While there is benefit to the policy having a flexible and broad definition of a SAR operation, greater clarity should be provided to the territory's SAR coordinators who have the difficult job of explaining the policy and their decision-making to their fellow community members.



"I read that policy closely, and I still don't really know what is and what isn't a search."
- Community responder, Kitikmeot Roundtable on SAR, 2022.

Many SAR policies will list out the eligible and ineligible activities for a jurisdiction's SAR volunteers (or the parameters through which activities can become eligible).[81] Most eligibility lists include wilderness SAR and recovery, urban searches (for missing persons in an urban environment, searching by boat, medical rescue, and evidence search. Ineligible GSAR activities often include underwater search and recovery, avalanche rescue, cave rescue, high angle rescue, glacier rescue, transporting patients to medical care, transporting police or law enforcement involved in a search for dangerous individuals, and searching for potentially dangerous people. The last three items are particularly pertinent to searchers in Nunavut: on multiple occasions, SAR teams have been asked to transport injured people to medical care or assist in guiding RCMP officers on searches for dangerous individuals, and they are frequently called to search for people who could harm them. In most cases, SAR groups are asked to do these things because no other organizations have the capability. Further discussions need to be conducted between NEM and community responders to determine eligible and ineligible activities in order to protect from liability issues, clarify roles and responsibilities, and improve volunteer safety.

This leads to another key recommendation: volunteers would like to see the policy more explicitly establish what coverage they have during a SAR operation and the conditions for that coverage. At the roundtables, NEM personnel explained that SAR volunteers are considered Government of Nunavut workers when tasked on a SAR operation, and they are thus covered under the Workers' Safety and Compensation Commission (WSCC). Responders are covered for the duration of the search operation, but only after the SAR coordinator registers them in the log. Many volunteers were unaware of this provision. The Sanirajak SAR volunteer who crashed their truck on the way to a search (recounted in the introduction) would not be covered under this policy. Some jurisdictions in Canada cover their SAR volunteers from the moment of their activation, rather than waiting for them to sign in at the command post, while others provide coverage for the travel portion of a response, as well as the operational task. The Government of Nunavut should consider matching this coverage. Regardless, the coverage provided should be clearly laid out in the territory's SAR policy or in a supplementary policy.

4.2.11 THE MARINE SAR GAP IN BAKER LAKE

Participants in the Kivalliq Roundtable on SAR lamented the critical gap in marine SAR services caused by Baker Lake's classification as an inland waterway – waters that are not the legislated responsibility of the Canadian Coast Guard. The community has been unable to participate in the Coast Guard Auxiliary expansion or the Indigenous Community Boat Volunteer Program. It struggles to secure suitable equipment for marine searches and to obtain assistance during SAR operations on Baker Lake, which is approximately 1,887 square kilometres in size. In short, "they have been left on their own."[82] In the community, marine SAR should be the responsibility of the RCMP or Nunavut Emergency Management, but neither agency has the capacity to take on this mission. Due to discussions conducted at the 2022 Kivalliq Roundtable on SAR, and at other engagements, the Coast Guard Arctic Region and the Coast Guard Auxiliary are working with community leadership in Baker Lake to address this critical gap, possibly by establishing an Auxiliary unit.

> **"I don't understand how they can have CCGA on Great Bear Lake and Great Slave Lake but not on Baker Lake."**
> ***- Community responder, Kivalliq Roundtable on SAR, 2022.***

4.3 RESPONSE ISSUES

Responding to SAR incidents in Nunavut is challenging, made more so by a changing environment. The following are the major issues and areas for improvement identified by responders that most impact SAR operations on the territory's land, water, and ice.

4.3.1 THE IMPACT OF AUSTERE AND CHANGING ENVIRONMENTAL CONDITIONS

Harsh and changing environmental conditions not only increase the SAR case load but also pose significant challenges to all responders. Poor weather and environmental conditions frequently hinder marine, air, and ground SAR operations in Nunavut, slowing responses and increasing risk.

On the marine side, changing ice conditions can complicate searches. The reduced ice coverage has expanded potential search areas, particularly for short-range community SAR boats looking for other community boaters. With the boating season starting earlier and ending later, responders are also exposed to the harsher spring and fall environmental conditions, increasing their level of risk. Further, the extended boating season means that community boaters are getting into the water before Coast Guard icebreakers have deployed north, limiting the response options if a situation arises. Ice can block or slow marine responses. When the Argentine sailors abandoned their vessel in Bellot Strait, for instance, a nearby cargo ship tried to render assistance, but was blocked by the ice conditions (see pg. 43). The reduced ice coverage has also expanded potential search areas, particularly for short-range community SAR boats looking for other Nunavummiut boaters. "The ice can get in the way of a rescue. Slow us down. It can block us. It can come in behind and block our return," explained a community responder from the Kitikmeot. Finally, changing ice conditions also make it more difficult to predict ice drift and characteristics when planning searches.

Worsening ice conditions are also creating challenges around the aerial rescue of search subjects on sea ice. In the past, helicopters and ski-equipped aircraft have frequently landed on the ice to evacuate located individuals. With thinner, less predictable ice coverage, however, this procedure has become more dangerous. In 2013, two hunters were stranded on an ice floe near Arviat, Nunavut, after their boat took on water. JRCC Trenton contracted a Bell 206 Jet Ranger helicopter from Custom Helicopters in Manitoba to pick them up. The helicopter landed on the ice and immediately started to sink. The hunters thus had to rescue the pilot, and SAR Techs had to jump on the scene. Community responders at the Kivalliq Roundtable on SAR worried that as ice conditions continue to deteriorate, the ability of helicopters to land safely on the ice to retrieve search subjects will decline, necessitating a hoist system capability or new approaches to retrieval.

Ice also adds to the dangers faced by RCAF SAR Technicians who may have to jump into Arctic waters during a rescue. With boaters operating earlier in the spring and later in the fall each year, situations may develop in which SAR Techs must jump into ice fields. In late October 2011, three SAR Techs jumped out of a Hercules airplane into ice-covered waters to rescue two Inuit hunters caught in their boat in the ice near Igloolik, Nunavut. One, Sergeant Janick Gilbert, died on the mission, his body recovered in an ice field of 45% slush with ice pieces up to five feet in diameter. While the investigation into Sergeant Gilbert's death could find no physical evidence that he was struck by ice, the final report emphasized the ice hazard risk facing SAR Techs: "Larger pieces of ice propelled by the actions of the wind and waves may damage a raft, capsize it or eject the occupants. Once ejected from the raft, successive pieces of ice may trap the occupant under water or result in crush injuries…."[83]

Changing ice and weather conditions have also made the conduct of GSAR operations more challenging for community responders in Nunavut, particularly with respect to search planning and determining search areas. "I think we used to have a better idea about where to start looking, because we knew the ice. You could guess where and how far a person went. Now, if a person doesn't have a SPOT [satellite communication device], it can be much harder to know where to start searching because the ice is so different," noted one responder at the Qikiqtani roundtable. On the marine side, reduced ice coverage has also expanded potential marine search areas, particularly for short-range community SAR boats, while at the Joint Rescue Coordination Centres, rapidly changing environmental conditions and the lack of accurate environmental information are making SAR modelling more challenging.

Many responders emphasized the growing need for accurate and timely information on ice and weather conditions as they plan their SAR operations and noted how difficult this can be to acquire. Some SAR coordinators have access to local ice information from SmartICE (see section 3.10).[84] Others rely on Facebook, SIKU (the Indigenous Knowledge Social Network), and publicly available satellite imagery to gather information on ice conditions. Although this information can be time consuming to obtain, many coordinators do not "want to send their teams out without it."

GSAR responders reported that worsening ice and weather conditions generally make their job harder: the ice is tougher on their machines, it slows down their movements, and it can be dangerous. The story of one responder from the Kitikmeot emphasized this: "On searches, we want to get out there fast. On one search, me and my partner thought the lake ice would be good, maybe a bit thin, but good enough. So, I went over it and the back end of my machine went right in. That could have ended worse." Many SAR groups are

also struggling to respond during the shoulder seasons (spring thaw and fall freeze-up), when ATVs often get stuck and require towing. Responders indicated that new training and equipment will be required as ice operations become increasingly complicated. "I think with the ice the way it is, we need new tools, new training, new tech. Dry suits. Rope rescues," concluded one responder at the 2020 Kitikmeot roundtable. This lack of training and equipment extends to recovery operations under the ice, in which local SAR groups are often involved.

While roundtable participants generally highlighted the challenges that ice conditions posed to SAR operations, some noted that they could create opportunities, as well. The ice could, for instance, provide temporary shelter to facilitate vessel evacuation (survivors may be able to shelter on ice, even if the incident is far from shore), while increased vessel traffic due to diminishing sea ice could result in more vessels of opportunity being available to provide aid.

"The ice can get in the way of a rescue. Slow us down. It can block us. It can come in behind and block our return. It can really make things harder."
- Community responder, Kitikmeot Roundtable on SAR, 2022.

"I think we used to have a better idea about where to start looking, because we knew the ice. You could guess where and how far a person went. Now, if a person doesn't have a SPOT [satellite communication device], it can be much harder to know where to start searching because everything is so different."
- Community responder, Qikiqtani Roundtable on SAR, 2022.

4.3.2 TRAINING ISSUES

An effective SAR response begins with effective training. Community responders have identified several core training issues that are limiting their overall effectiveness, particularly the lack of consistent training opportunities. At the same time, NEM personnel have expressed frustration at the poor turnout and participation when courses are offered in certain communities.

While acknowledging the efforts by NEM, CASARA, the Coast Guard Arctic Region, and the Coast Guard Auxiliary to provide SAR training in recent years, community responders suggest that more consistent training would help to improve skills and sustain interest. At times, multiple years pass between the in-community training sessions offered to community CASARA volunteers, GSAR teams, and Auxiliary units. As a result, communities have few trained responders and often rely on spontaneous volunteers with little to no formal SAR training, particularly for ground searches. CASARA volunteers require annual re-certification – many Nunavummiut have lost their active status because of the organization's inability to fulfill this requirement in the region. On the GSAR side, responders would like to see regular training on the SAR fundamentals, as well as the opportunity to take more specialized courses in wilderness first aid, traditional medical practices, radio operation, and critical incident stress management. Worsening ice conditions have also highlighted the need for ice rescue training and equipment across the territory.

Few of the serving SAR coordinators have taken the GSAR coordinator course offered through the Nunavut Municipal Training Organization. Most have simply learned through observation and practice. Coordinators that have received training suggest that it was heavily focused on basic administrative tasks involved, with little detail on leadership and management skills, search planning, risk assessments, and the specifics of managing a search. Responders suggested that community SAR coordinators should be flown to Iqaluit or the regional hubs to participate in this training.

GSAR coordinators felt strongly that they would benefit from more training in the area of search planning. As probability of a lost person's survival decreases over time, the application of effective planning methods and search theory can improve efficiency, critical in the extreme climate of the Arctic. Several experienced coordinators suggested that some of the



Thomas Angoshadluk, Rankin Inlet, and Calvin Pedersen, Kugluktuk, inside the Rankin Inlet SAR command post.

planning tools they had been taught to use had not been developed with information from the Arctic and did not reflect the region's unique social and environmental context. They suggested investigating Inuit approaches for assessing decision points, determining survivability, and conducting terrain and scenario analyses during searches, and build these practices into future coordinator training. Upon learning how lost person behaviour is used to guide searches in other jurisdictions, they suggested that an Arctic Lost Person Behaviour course could be developed based on historical case data from Inuit Nunangat and from stories of how missing Inuit have acted on the land.[85]

Training between the different community groups involved in SAR would also improve the overall operational effectiveness. Community GSAR teams, CASARA volunteers, Guardians, Coast Guard Auxiliary units, and Ranger patrols should have the opportunity to train and practice with one another.

There are many barriers limiting the participation of community volunteers in SAR training. At times, the marine and ground SAR training provided to community responders in the past has been inaccessible and too "southern focused." While longtime volunteers point out that the training materials offered for GSAR and the Auxiliary have adopted more of an Arctic focus, they would still like to see more training packages designed specifically for Nunavut (or the North). CASARA's RPAS program is an example of an innovative training initiative that could have a positive impact on SAR operations in the North. Currently, however, CASARA will only accept a drone operator with an advanced qualification certification from Transport Canada, which requires passing a technical exam. CASARA representatives at the roundtables agreed that the training could be challenging without an aviation background, and they responded positively to suggestions for a Northern-specific program that reflects the unique environment and requirements of community responders.

For volunteers with jobs and families, it can be difficult to get the time off required to complete training. Many people have to use their holidays to participate in SAR training. Community responders encourage governments and the private sector to provide workers with greater support and flexibility for participation in training activities. They also suggested that a stipend could help volunteers who must take time off work to participate in SAR training.



Currently, community stakeholders explained that there is little to no formal coordination between the different government agencies responsible for providing SAR training. These agencies should seek to synchronize training schedules and share information on local capabilities. For example, if the Rangers bring in an instructor to teach wilderness first aid, an invitation to participate should be extended to the community's GSAR team and Auxiliary unit. If Coast Guard trainers are running an exercise with a community's Auxiliary unit, they could invite the Ranger patrol and GSAR team to participate in a joint exercise. Sharing training schedules between government agencies is a straightforward solution to leveraging existing community-based capabilities, realizing cost savings, and improving efficiencies.

Participants emphasized that it would be highly beneficial to track who has what training in a community. Community groups often struggle to track the competencies of their own members. Furthermore, a GSAR team would benefit from knowing who in the Rangers has current training in competencies like wilderness first aid and airstrip construction, or who in the Coast Guard Auxiliary has radio operator training.

All territorial and federal agencies involved in the provision of SAR training in Nunavut should prioritize a "train-the-trainer" approach. This would allow community groups to sustain their training without external assistance and keep their volunteers engaged and interested.

4.3.3 EQUIPMENT AND SUPPLY GAPS

SAR equipment gaps represent a longstanding source of concern in communities across Nunavut. On the GSAR side, while some communities use community SAR snowmachines and ATVs, many responders must use their personal machines and equipment during searches. Multiple community responders explained that snowmachines are how they provide for their families and get out on the land for their health and well-being. Such machines mean everything to them. A fully equipped responder could go on a search with between $15,000 and $40,000 of their own gear. Although responders can obtain reimbursement if they prove that their machine was damaged during a search, there is no compensation for regular wear and tear on vehicles and equipment (despite the rough terrain and seascapes in which SAR personnel operate). Further, the NEM SAR policy providing compensation for damaged vehicles is still relatively new (2017) and is not well known or understood by community responders. The current administrative process for getting machine part replacements and general repairs is slow and complicated.

Given that these machines are an integral part of everyday life in Nunavut, any delay in repairs can have a serious impact on volunteers and their families.

GSAR equipment requirements go beyond snowmachines and ATVs, however, and include smaller pieces of gear as well. Although each community has different equipment requirements, community practitioners point to the need for throw bags, lifejackets for shoreline or floe edge searches, medical sleds, Ice



Kugluktuk responders and their snowmachines. (Photo courtesy of Baba Pedersen)

Commander Rescue Suits, Mustang Flotation Suits, etc. Given that they are providing an essential public safety service on a volunteer basis, community volunteers argue that they should be given greater access to the equipment they require.

These requirements extend to critical supplies, such as fuel. In some communities, fuel depots close early in the evening, and community responders cannot access the fuel required to conduct their searches. SAR teams need fuel caches or after-hours access to gas stations to fill up their tanks before heading out on searches.

Prior to investing in any equipment, regardless of size, NEM should consult with community responders. One of the largest equipment investments NEM ever made involved the purchase of Argos for multiple communities. Little consultation was completed for this, however, and the vehicles failed in each community.

Before the expansion of the Coast Guard Auxiliary in the territory, communities found it incredibly challenging to find safe boats for marine SAR operations. The Indigenous Community Boat Volunteer Program (see section 3.7) has helped to mitigate this challenge.

"The federal government just gave the Coast Guard Auxiliary units in the Kitikmeot brand new SAR boats and equipment, at a cost well over $200,000 a piece. That's a great program. I'm a member of the Auxiliary and it has had a huge impact. But, what about GSAR? If the reason for the new boats is that communities don't always have safe equipment, that more outside boats are coming in, that more marine SARs will happen, couldn't the same be said about GSAR? What about those Norwegian tourists between Cam Bay and Gjoa? Volunteer GSAR rescued them. What if they had died out there on the ice – that would not be a good result for Canada. We have to stop treating the ice differently than the water. What I'm saying is that if the Coast Guard can buy new boats for the Auxiliary, can't the feds provide funding for GSAR equipment, so we don't use our own?"
- Community responder, Kitikmeot Roundtable on SAR, 2020.

"You would never send a firefighter out to fight a fire with bad equipment or without any protective gear, yet we are asked to do this when doing searches on the land? Is this not also dangerous work?"
– Community responder, Kitikmeot Roundtable on SAR, 2020.

"Hearing everyone's stories, we all have the same problems finding people to volunteer for SAR. With a $20,000 snowmobile, who's going to take the risk of using it for searches?" *– Community responder, Kivalliq Roundtable on SAR, 2022.*

4.3.4 CAPABILITY GAPS

Due to training limitations, equipment gaps, and the small volunteer pool, the capacity for certain highly technical SAR tasks does not exist in Nunavut. Ice rescue, mountain rescue, crevasse rescue, high angle rescue, and avalanche rescue are examples of core gaps. While commentators often focus on the possibility of major marine accidents involving cruise ships, a researcher who has fallen into a glacial crevasse, or a lone paddler in an isolated area can also severely test local and regional SAR resources.

In April 2011, a French hiker fell into a 25-metre crevasse in Auyuittuq National Park. His partner managed to get an alert out. Unable to respond in a timely manner, Parks Canada requested assistance from JRCC Halifax, which dispatched a Hercules from Greenwood, Nova Scotia (2,435 Cormorant from Gander. Approximately 20 hours after the alert notification, the Cormorant arrived on scene and landed five SAR Techs. They assessed the situation and decided to use a rope rescue system to extract the patient, lowering Master Corporal Stephen Bates into the crevasse to retrieve the hypothermic hiker. While this case had a positive outcome, it raises key questions. What if the JRCC had no aircraft or personnel available to task on this rescue? How long would it have taken Parks Canada's Mountain Safety Specialists to respond?

With more eco-tourists, adventurers, and researchers venturing into unstable and dangerous environments in Nunavut, more planning needs to be conducted to address these capacity gaps. Groups and individuals could, for instance, be required to provide a self-rescue

capability. NEM might also develop memorandums of understanding, plans, and procedures with the JRCCs to address highly technical search requirements, such as crevasse rescue.

4.3.5 THE NEED TO BETTER INTEGRATE INUIT KNOWLEDGE INTO SAR RESPONSE

A major theme emphasized at the Nunavut SAR roundtables was the desire to better integrate Inuit Knowledge into SAR response operations at every level, from the local to the JRCC. Community responders emphasized the need to consistently raise awareness amongst key SAR partners about the value of Inuit Knowledge, skills, and practices, especially in the Coast Guard and the Canadian Armed Forces. Community responders often feel like their knowledge is ignored. While the expansion of the Coast Guard Auxiliary has provided critical entry points for Inuit Knowledge into the broader SAR system, much work remains to be done.

Community responders repeatedly brought up the importance of using local and Inuit Knowledge when planning SAR responses. The government practitioners and responders present also acknowledged and emphasized its importance. This discussion focused on the Canadian Search and Rescue Planning (CANSARP) program, which is an automated search-planning tool for calculating drift plots and guiding effort allocation. In all maritime searches, the JRCCs use it as the primary tool for search planning. Coast Guard personnel at the roundtables emphasized the importance of local and Inuit Knowledge on such topics as how the currents work, the wind, the unique drifts, and on-scene weather. Given the limited environmental information that exists for huge swaths of the Arctic, this knowledge is crucial. This information can be plugged directly into the computer model. Federal practitioners understand that local and Inuit Knowledge can greatly improve SAR operations. Thus, appropriate mechanisms need to be put into place and sustained to facilitate the sharing of this knowledge.

4.3.6 THE SLOW AND CHALLENGING RESPONSES FROM FEDERAL ASSETS

The tyranny of time and distance has a major impact on SAR operations in Nunavut. Community responders frequently highlight slow response times from Coast Guard icebreakers and southern-based SAR air assets as a source of major concern. Given the distances involved, it can be hours before aircraft arrive on scene during an incident in the region. Incidents in Nunavut often require Cormorants to be flown all the way from Gander, Newfoundland and Labrador, or Greenwood, Nova Scotia, given the limited speed and endurance of the Griffon helicopters based at Trenton.

The timelines for two major marine incidents are indicative. In August 2010, the passenger vessel *Clipper Adventurer* ran aground near Kugluktuk. At 1915 Mountain Daylight Time (MDT) on 27 August,



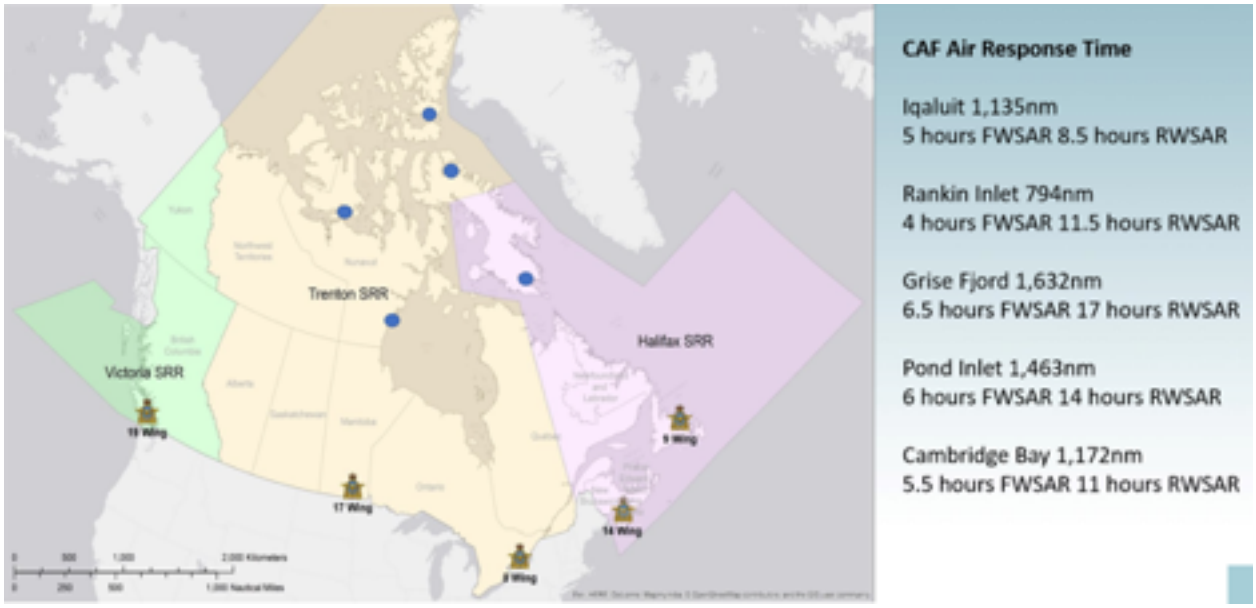
Master Corporal Steve Bates, a Search and Rescue Technician from 413 Squadron, Greenwood Nova Scotia hiking with his equipment away from Cormorant during 2011 crevasse rescue. (*The Aurora Newspaper*)

Marine Communications and Traffic Services (MCTS) Inuvik advised JRCC Trenton of the grounding, and the JRCC immediately issued an Enhanced Group Calling (EGC) SafetyNet broadcast with distress priority at a 200-mile radius around the stricken vessel to alert possible vessels of opportunity. At 1932 MDT, JRCC Trenton tasked the Canadian Coast Guard icebreaker *Amundsen* to respond to the incident. The icebreaker arrived on scene at 1000 MDT on 29 August after transiting 270 nautical miles and conducting hydrographic surveys en route to ensure its own safety.[86]

The response times for the aerial and marine assets deployed to the *Akademik Ioffe* incident are even more illustrative. On 24 August 2018, the passenger vessel ran aground 78 nautical miles north-northwest of Kugaaruk, Nunavut. In this incident, the vessel ran aground at 1113 MDT and issued a distress call an hour later, which reached JRCC Trenton at 1219 MDT, allowing it to initiate a response four minutes later. It tasked CCG icebreakers *Pierre Radisson* and *Amundsen* to deploy to the scene, with estimated times of arrival (ETAs) of 36 and 24 hours respectively, as well as *Ioffe*'s sister ship, *Akademik Sergey Vavilov*, with an ETA of 14 hours. At 1255, it also tasked two CC-130H Hercules aircraft from Trenton, Ontario, and Winnipeg, Manitoba, to respond, followed by another from Greenwood, Nova Scotia, and two CH-149 Cormorant helicopters from Greenwood and Gander, Newfoundland and Labrador.[87] The first Hercules was tasked at 1255 and took off from Trenton at 1359. With a maximum range of 7,222 kilometres, it was able to fly directly to the scene, arriving at 2021 MDT, 6 hours and 22 minutes after having departed its airbase and 9 hours after *Ioffe*'s initial distress call. The first Cormorant was tasked at 1345 and departed Gander at 1520. With its maximum range of 1,018 kilometres, it required multiple fuel stops at Goose Bay, Newfoundland and Labrador, and Kuujjuaq, Quebec, before landing in Iqaluit at 0143 on 25 August, where it stopped, its services no longer required.[88]

Participants in the Nunavut Roundtables on SAR highlighted the need to discuss the basing, pre-positioning, and/or contracting of primary aerial SAR units in Nunavut or in nearby places in the North. The recent announcement that three new Cormorants will be built for the RCAF as part of the airframe's Mid-Life Upgrade Project (to be delivered by 2028) will strengthen the CAF's overall SAR capabilities. The additional Cormorants should also inspire serious consideration of basing rotary assets in the North, even on a seasonal basis.

"Our icebreakers are where the ice is. Every morning we evaluate the tasking of the ships. If they're doing icebreaking, then they do that. But if not assigned to that, we place them in high-risk SAR areas."
- Canadian Coast Guard Arctic Region representative, Qikiqtani Roundtable on SAR, 2022.



"Given an Arctic SAR scenario, one can clearly see that the CF [Canadian Forces] RW [rotary wing] SAR assets already work at their maximum capability and offer very little flexibility or depth to account for unforeseen circumstances." - ***Major D. Poitras, Royal Canadian Air Force, 2013.***[89]

4.3.7 COORDINATION, COOPERATION, AND COMMUNICATION DIFFICULTIES

SAR operations in Nunavut can be extremely complex, involving multiple organizations and search platforms. One past search, for example, involved GSAR volunteers on the land and in boats on the water, multiple civilian and military aircraft, and, eventually, a Coast Guard icebreaker and Canadian Rangers. That is a lot of moving parts to effectively organize and coordinate. To use them effectively requires familiarity and practice. Greater effort is required to improve vertical and horizontal coordination, cooperation, and communication across the SAR system in Nunavut. Roundtable and interview participants highlighted the need for stronger coordination and cooperation between those responsible for SAR at the community level, groups from different communities, local responders and the territorial and federal agencies with which they work.

At the community level, Coast Guard Auxiliary units, GSAR teams, Ranger patrols, CASARA, and other local SAR responders need to be able to work together as effectively as possible. Without the opportunity for joint training and exercises, however, this is difficult, even though responders often wear many "hats" and are members of two or more of these groups. Coordination can be even more challenging when these groups have to work with one another and with federal responders. Relatively new SAR partners, such as the various Guardians groups at work in the territory, also need to connect with the broader SAR system – currently, they are not sharing information with NEM when they are conducting searches.

At the regional level, past inter-community searches have exposed significant challenges, including issues sharing information between the SAR coordinators and responders from different communities, integrating search plans, sustaining communications, and with decision-making around resource allocation. Past inter-community searches have been weakened by a lack of clear, overarching coordination of all assets involved. There are no protocols in place to guide how communities should work together during a search.

At the territorial level, NEM also occasionally struggles to communicate effectively with community SAR coordinators and responders. Only a couple of SAR coordinators attend the monthly call-ins that NEM hosts to hear about community concerns and needs. When they receive an emergency alert, NEM duty officers often struggle to get a hold of SAR coordinators or other responders. Communities must be sure to forward any changes in their SAR coordinators' contact information to NEM.

Opportunities for community responders to practice more with outside SAR organizations, particularly the JRCCs, would be helpful. Many community participants at the roundtables expressed that working with federal partners on SAR initially made them nervous and uncomfortable, but it became easier with greater familiarity and experience. It can also be a challenge for some community responders to speak effectively to the JRCCs, and to understand SAR partners more generally, given the specialized jargon (particularly with the military). Community responders also emphasized that the JRCCs should be better at communicating when they are sending aircraft or vessels of opportunity to respond to a search. Communities want to know the assets that are being sent and their status. Finally, roundtable participants also highlighted concerns around the JRCCs lack of knowledge of traditional placenames, which can act as a barrier to effective communication during searches.

Changes in the staffing at NEM, Canadian Coast Guard, the JRCCs, and other federal agencies means that when community and government responders are able to develop a good relationship with an individual contact, it might not last for long. Constantly dealing with new people – whether trainers, administrators, or those involved in SAR missions – disrupts continuity and can impede SAR operations.

"We often don't know who to talk to in the community. Sometimes we have to call the RCMP to get help finding the right person."
- JRCC representative, Qikiqtani Roundtable on SAR, 2022.

"Because people in these groups often know one another and there is usually a lot of crossover between them, with all the hats people wear, there might be an idea that they can work together no problem. But in an emergency, when groups have different ways of communicating, different ways of doing things, different mandates from the South, we can quickly run into trouble. We need to practice cooperating. We need to practice working together. And it's not just SAR – think about how helpful this would be during other emergencies that we might face in the community."
- Community responder, Kitikmeot Roundtable on SAR, 2020.

4.3.8 THE NEED FOR STRONGER GSAR PLANS, PROCEDURES, AND GUIDELINES

While GSAR responders in Nunavut receive standardized basic training and coordinators are given a list of the steps they must take to initiate a search, community teams take widely different approaches to SAR operations. There are no comprehensive standard operating procedures or guidelines for SAR in the region, at the territorial or community level. While this allows communities the freedom to shape their SAR responses as they see fit, it can slow down response times and generate confusion. SOPs can create efficiencies, distill complex processes into step-by-step instructions, ensure everyone knows their roles and responsibilities, facilitate cooperation and coordination between different agencies and communities, and make searches safer.

Nunavut Emergency Management and community SAR organizations need to have clear plans, procedures, and/or guidelines that lay out the steps taken before, during, and after a search, complete with the contact information of all individuals and agencies involved. When visiting communities, NEM personnel could work with the SAR teams to ensure that this information is in place and up to date. In a search, fast action is essential. Plans that clearly lay out roles and responsibilities are essential. Everyone should know what they have to do to prepare for a search and to complete their tasks immediately. The SAR coordinators should not do all the preparation work by themselves. Jobs should be split up amongst the team, optimally in line with the Incident Command System.

Stronger procedures around notetaking and log-keeping would also benefit NEM personnel and community responders. Currently, community groups take widely different approaches to the quantity and quality of their notes. Position, weather observations, times, key actions, and observations should all be regularly recorded in the logbook. The command post should also maintain a log of all incoming and outgoing communications. Completing these logs during a search can improve its effectiveness, strengthens command and control, and assists in the debriefing process. Many of these protocols are in place to improve search effectiveness and responder safety.

4.3.9 LIMITED LOCAL AIR SUPPORT

There is a limited supply of both fixed-wing and rotary-wing commercial aircraft operating in Nunavut. Rotary-wing aircraft, in particular, are relatively rare, particularly given how many are seasonally operated by the mining companies. It can also be difficult for NEM to keep track of all the private sector aircraft operating in the territory at a given time.

Community responders expressed concern about how long it can take to secure air support for GSAR operations. They often feel like they have to defend their requests for air support with NEM personnel. In considering air support requests, however, NEM must work through a variety of criteria: aircraft availability, weather conditions, the age of and resources available to the missing person or group, underlying medical conditions, and the length of time the search has been ongoing. When there are two or more searches in a region and only one aircraft available to charter, NEM personnel must also make tough decisions around which case is the most urgent.

The cost is also a consideration. Generally, the typical cost for a rotary-wing aircraft is up to $10,000 for a four-hour call out. The daily cost of a Twin Otter is usually $20,000. These numbers stand in sharp relief next to the budgetary stipulations in NEM's air support charter request policy, which state that, "assistance will be allowed for reimbursement of actual expenses up to a maximum of $25,000.00 per search and rescue



Incident. Where unusual circumstances warrant special consideration, the Deputy Minister or delegate may deem excluded items or limits to this policy to be eligible expenditures…. Payment is subject to having the available funds in the Search and Rescue Organization budget."

"As I mentioned earlier, due to the existing infrastructure required to house aircraft, Sanirajak would not require the level of investment compared to others. There are always helicopters operating locally every year, and our community already houses the North Warning system that could easily accommodate the emergency services, the company I believe is called ATCO, and they are located in Sanirajak and with these many factors, I believe it would make the most sense to move it there. Can the minister commit also to make Sanirajak a choice for search and rescue operations in line with increasing our smaller communities' development and to include all options when reviewing the factors of this?"
- Joelie Kaernerk, Member of the Legislative Assembly, 13 March 2023.

"We can find you aircraft, but remember that you can't rely on them too much. It is still true that most people are being found by people on the ground. Aircraft have completely missed people that searchers ended up finding."
– NEM personnel, Kivalliq Roundtable on SAR, 2022.

"Almost every single search, NEM gets requests for air support, but we can't always just say yes."
- NEM personnel, Qikiqtani Roundtable on SAR, 2022.

4.3.10 THE INFRASTRUCTURE DEFICIT

Community responders highlighted that Nunavut's severe critical infrastructure deficit – ranging from transportation facilities, to communications, to energy and health services – both contributes to the number of searches in the territory and makes responses more challenging. Limited runway length, for instance, means that Hercules aircraft cannot land in every community when assisting with searches. The small amount of aviation fuel available to most communities can also be exhausted during a long search in which aircraft must refuel locally or travel out of the search area.

Many responders insist that more VHF equipment and infrastructure, as well as cellular repeating antennas would reduce the number of searches and provide a welcome support to response operations. The community of Whale Cove, for instance, set up a cellular repeater at the airport. Now, people have cellular coverage almost the entire way to Rankin Inlet, a common destination. Whale Cove's SAR coordinator explained that the repeater led to an immediate decline in the number of searches to which his team had to respond.

Other community responders highlighted the need for dedicated SAR facilities at the community-level, whether it be offices, buildings, or sea-cans. A 2020 Kitikmeot Roundtable participant from Kugaaruk explained that, "during a search, we often have to run back and forth between different places gathering food and supplies, getting fuel, coordinating volunteers, and getting ready. This can take a lot of time, which we do not have during a search. It can also mean we forget important things. Having a building with storage and an office for a command centre or even just a seacan in which to store our supplies would be very helpful. That way we could all just meet at the building, get our supplies, and take-off. Maybe we could even store military rations in the building, which we can take right away during a search. All of this would save time." Many participants highlighted the need for a common SAR building that both GSAR and Auxiliary groups could use for equipment, supplies, training, and meetings.

"Our VHF radio tower needs solar energy, so communication is dead for two and a half months (the dark period). So, we rely on InReach, but not everyone can use it. It's more complex than VHF radios, which have "press to talk" ability."
- Community responder, Qikiqtani Roundtable on SAR, 2022.

"A lot [of] groups and associations are building their own radio towers. But these don't operate at the same frequencies. These towers are just a patchwork. We have to get better at using what we already have and patching it into a larger framework. But the reality is that people are using different technologies."
- Community responder, Qikiqtani Roundtable on SAR, 2022.

4.3.11 RESPONDER SAFETY

The austere environmental conditions in which Nunavummiut responders must operate, whether it be on water, ice, or land, increase the risks to which they are exposed. Further, responders are often searching for family, friends, and neighbours – for loved ones. This can make them feel like they need to go out in unsafe conditions, which increases the risks to which they are exposed. Sometimes the family members of the search subject will ask the responders to go out. It is difficult for them to refuse these requests, even when they know they should.

The RCMP also sometimes ask community responders to participate in searches for people who have committed crimes or for those struggling with mental health issues. RCMP officers do not have the skills to operate on the land, so volunteers have to guide them to these missing persons. This can put responders into dangerous situations.

Risk also arises from the lack of safety equipment available to many responders, particularly for GSAR operations.

4.3.12 SPONTANEOUS VOLUNTEERS

During large searches, community members will sometimes go out to search without consulting with the community GSAR team or Auxiliary unit and will not relay where or how they are searching. While roundtable participants appreciated the assistance that these spontaneous volunteers provide, they pointed out that constant communication and coordination between everyone involved is essential. People going out on their own, without communicating their plans, wastes time and effort. When SAR teams conduct their searches, they also have to worry about untrained people who might themselves require assistance while engaging in their own searches on the land. If community SAR organizations put out the call for additional volunteers, all responders must be prepared to work as a group and follow direction.

"We need to educate community members on the dangers of this and how they can help from inside the community. We don't want to have to rescue the rescuers."
-Community responder, Kitikmeot Roundtable on SAR 2020.

4.3.13 PUBLIC CRITICISM AND SOCIAL MEDIA

While community support is generally a critical asset for SAR operations in Nunavut, in some situations, responders have felt unsupported and even under attack. Sometimes community members will pressure responders to go out in terrible weather and publicly criticize them if they do not. Community responders have also been blamed when a search is unsuccessful or when something goes wrong. Social media can be a source of criticism for community SAR responders. This criticism can have a devastating impact on morale.

Facebook and other forms of social media can be helpful, providing information about missing persons and offering a platform on which to share tips about where to look for them. At the same time, social media often leads to the spread of false information, both about missing persons and about the efforts of community searchers. Social media is often used to publicly criticize community SAR responders, which can have a devastating impact on morale.

4.4 POST-SEARCH CHALLENGES

Responders identified the following challenges and areas for improvement that appear between and in the aftermath of SAR operations in Nunavut.

4.4.1 RECOVERY OPERATIONS

Community responders frequently participate in recovery operations in Nunavut, often at the request of the RCMP. They emphasize their limited access to the specialized equipment and capabilities needed for these operations (particularly on the marine side), the lack of assistance and financial support provided by other government agencies, and the mental health impacts of these activities.

Communities struggle to secure the funding and resources – qualified divers, sonar equipment, and remotely operated underwater vehicles – required for prolonged recovery operations. A 2019 case in Baker Lake is a good example of the intense effort and financial investment that communities put into recovery operations. In 2019, the community fundraised to bring HEART (the Hutterian Emergency Aquatic Response Team, based at the Oak Bluff Hutterite Colony, just south of Winnipeg) and its specialized underwater equipment to recover the body of a missing boater, Solomon Tulurialik, in Baker Lake. When that proved unsuccessful, they recruited and paid the travel expenses of a marine sonar team from Minnesota, Crossmon Consulting LLC, to take over the recovery operations (the Americans conducted the search for free). Using marine sonar technology that can scan a 200-foot swath of lakebed at a time, the team found Tulurialik's body under about 99 feet of water, after more than five hours of searching.[90]

While communities can request financial assistance from NEM to continue recovery operations after a search is suspended, they are often frustrated by the lack of support these agencies provide. Community participants at the SAR roundtables suggested that these organizations do not understand the importance of recovering the bodies of missing persons. It can bring closure and healing to families and communities.

> **"I found a friend dead. It took me more than 20 years to get back into SAR."**
> *- Community responder, Qikiqtani Roundtable on SAR, 2022.*

> **"Sometimes I don't think they [government personnel] understand what it's like for a small community not to recover the body. We aren't talking about closure for just the family – it's for the whole community. You don't find the person, you are always thinking about what happened to them. Where are they? How bad did they suffer? The closure is important. It really hits us. If you don't find the body as a SAR member, you are always thinking, did I make the right decision? Could I have done things differently? Finding the body doesn't take all that away, but I think it helps."**
> *- SAR coordinator, Kivalliq Region, November 2023.*



Marine sonar team, Crossmon Consulting LLC.

4.4.2 VOLUNTEER RECRUITMENT, RETENTION, AND BURNOUT ISSUES

The level of local involvement differs between Nunavut's communities, with some responders reporting a high degree of involvement and others suggesting that it is hard to recruit volunteers.

Community responders frequently cited the problems posed by the inadequate numbers of volunteers willing to serve in community organizations and the concomitant issue of volunteer burnout.[91] Many community responders wear multiple hats and are involved in several groups that are responsible for SAR and emergency services. Some are GSAR members, Coast Guard Auxiliary members, Rangers, and first responders with the fire department and ambulance. The simple fact that many of these volunteers wear "multiple hats" can lead decision makers outside of the community to overestimate the amount of local capacity upon which they can draw. Even in communities with a substantial volunteer pool, team leaders emphasized difficulties in attracting people to attend meetings, training, practice, and fundraising efforts.

In communities where finding enough volunteers can be a challenge, it is the same small group of volunteers who respond to every incident. In some Coast Guard Auxiliary units, the same people are on call for most of the summer, which hinders their ability to get out on the land and hunt and fish for their families. This is unsustainable and can lead to burnout and ineffectiveness.

Across the communities, it is a particular challenge to get young adults engaged in SAR. Even those who are interested might not have adequate on-the-land experience/skills or suitable equipment.

Some participants also suggested that a lack of perceived enticements or incentives make it difficult to recruit new members. While SAR volunteers across Canada who serve more than 200 eligible hours in a calendar year are able to claim a $3,000 non-refundable tax credit on their personal tax return (resulting in an average of $450 in tax savings), many volunteers in Nunavut are unfamiliar with this benefit or are not sure how to access it.

The heavy workload, combined with the lack of trained volunteers and the fact that missing persons are often friends and family, can lead to emotional, mental, and physical exhaustion. Maintaining a Coast Guard Auxiliary unit or SAR team on a regular basis is not easy. Organizing and carrying out searches is not easy. Many SAR coordinators report that they do not rest during intense searches, sometimes going days without sleep because no one else in the community is capable or willing to relieve them. The responsibilities and requirements that come with involvement in these organizations, and the trauma that searches can cause, contribute to high rates of volunteer burnout in many communities.

"This is the real challenge, getting people involved. If we had more volunteers, we would have more people willing to respond. It would take the burden off. It might even encourage people to train more together if the burden was spread around a bit more. We need people who are willing to put the time in and learn how to do SAR. But we have no incentives, no perks, except that you are saving people's lives."
- Community responder, Kitikmeot Roundtable on SAR, 2020.

"All of it is very stressful, very tiring. When you have two dozen searches a year, it takes so much out of you. It's easy to get exhausted. Sometimes you want to quit. Sometimes you are searching for people you love. Sometimes you don't find them or find them too late. It's all hard."
- Community responder, Kitikmeot Roundtable on SAR, 2020.

"In our community, we did a search in December. We only had four people, now six. It's very hard to get people to become a SAR volunteer. I don't know what stops them. The last search was very, very hard. Myself, I had to go down to the flow edge and do some reports. It's very hard to get people – nobody signs up. All my searchers are younger than me. Now I have one guy who's older than me, which is good. When there's a search, they come and complain, and I say, well, why not become a SAR [volunteer] instead of complaining? They say no, it's too difficult. Our Honda broke down 2 years ago when [we] did [a] search for [a] young man. Now we only have one skidoo. Some are keen to go, but [we] have to stop them if there's only one person willing to go. I have to tell them we need to get another person, but it's hard to find someone. I was at the radio station 12 hours or more, [and] there was no one willing to go.… That was a two-week search. On that day, I said I'm going to quit, but the wife said, no, don't quit, keep doing it, you guys tried your best. But it was hard. I still take it hard. I knew this man: he was my cousin. When I visited him, we would always argue, but like we were sisters and brothers. So it's very hard to be involved in SAR in my community."

- Community responder, Qikiqtani Roundtable on SAR, 2022.

4.4.3 THE ADMINISTRATIVE BURDEN

The administrative side of community SAR organizations can be a challenge. This can include SAR preparedness activities, such as setting up training schedules or keeping community SAR organizations and Auxiliary units registered as non-profit societies.

The administrative burden is also heavy during and after a search: summarizing expenditures with supporting receipts, completing invoices, and reporting on the status of any equipment, along with completing all the actual search paperwork. The amount of administrative work can be overwhelming. Many of the coordinators and unit leaders at the roundtables highlighted that the accounting and administration side of coordinating a search and rescue organization is a real struggle.

4.4.4 THE NEED FOR DEBRIEFING AND A NUNAVUT-WIDE SAR LESSONS MANAGEMENT SYSTEM

Many SAR teams in Nunavut do not regularly complete a team debriefing after an incident. Team debriefs and hotwashes are helpful to generate lessons learned and as an immediate check-in following a search. Debriefs are useful after any SAR operation, and they are especially valuable after incidents in which lives have been lost or injuries sustained, that were complex and involved multiple responding units, or in which coordination, communication, or response challenges emerged. A debrief is not about laying blame or pointing fingers. Instead, it is to identify what worked well, what could be improved, and where additional resources and effort could be required. The ultimate goal is to record what happened, discuss outcomes, and improve SAR response through the sharing of lessons learned, challenges, solutions, and best practices.

NEM should work with community SAR coordinators to facilitate team debriefs following every search and establish a territory-wide lessons management system. Lessons management refers to a process that supports a continuous learning cycle of the collection, analysis, dissemination, and application of learning experiences from events and exercises to facilitate ongoing improvement and measurable behavioural modification in the responsible networks, organizations, and individuals (in short, it is the process of moving from identifying lessons to learning lessons). An effective lessons management framework

or system requires an open, respectful, and collaborative environment, interoperable learning processes that use common language and methods and facilitate the horizontal and vertical exchange of information, the resources to carry the learning through to the implementation and testing of new policies and procedures, and the observation of results. In short, a lessons management framework both depends on and develops a learning culture amongst its users.

> **"Is there a common database that stores the information from every previous search, including where they occurred, who they involved, and how the searches went?… Who goes through these reports to identify past problems and possible solutions? Would it be possible to share this information with community SAR group[s]? This information could be very helpful, but it is not provided to the communities."**
> ***- Community responder, Kitikmeot Roundtable on SAR, 2020.***

> **"When we have taken the time to talk about searches, and how they have gone, we've learned a lot."**
> ***- Community responder, Kitikmeot Roundtable on SAR, 2020.***

4.4.5 MENTAL HEALTH CHALLENGES

Searchers in Nunavut are usually family, friends, or acquaintances of the people for whom they are looking. This makes searching incredibly stressful. Searchers have found missing people who have died from accidents and the elements, and whose bodies are in poor condition. They have found people who have committed suicide. These situations are very traumatic. In these cases, love is a double-edged sword: it is often what drives community responders to keep going on searches, but that same love makes the bad searches and the negative outcomes that much harder to endure. Community SAR coordinators and unit leaders shared many stories of responders who have had to step away from search and rescue activities because of the traumatic events they have experienced, and they highlighted their concern about the PTSD from which many members of their teams suffer.

Some community SAR groups have taken the initiative to organize after-action activities, including sharing circles led by Elders, which allow for responders to share their feelings and provide an outlet for their emotions. Many other GSAR teams and Auxiliary units do not, however, engage in any critical incident stress debriefing, even after traumatic incidents. These debriefs help people deal with their mental trauma by allowing them to discuss and cope with their thoughts and experiences without judgment or criticism. They allow responders to talk about and validate their experiences and vent with one another. These sessions can help teams to discuss coping mechanisms together and also identify who may need additional mental health services.

Currently, the majority of community responders say that they do not have access to the required mental health supports – a critical gap identified by almost every participant at the roundtables and by every responder interviewed for this report. NEM provides responders with the phone number for a professional they can call to assist with critical incident stress management, but responders rarely do this. They would prefer in-person support. Several responders suggested that this was the biggest issue facing the SAR system in Nunavut. There is concern that without sustained intervention many of the territory's most experienced and skilled searchers will have to stop participating in SAR operations.

The stories and testimonies offered at the Nunavut Roundtables on SAR about PTSD and the mental health burden that community and government responders carry provide a window into this crisis.

4.5. MASS RESCUE OPERATIONS[92]

The International Maritime Organization (IMO) defines a mass rescue operation (MRO) as "an immediate response to a large number of persons in distress so that the capabilities normally available for search and rescue authorities are inadequate."[93] MROs are low-probability, high-consequence scenarios that are complex and challenging wherever they occur, requiring well-planned and coordinated responses from multiple organizations and governance levels, shared situational awareness, comprehensive evacuation protocols, the sustained accountability of passengers, the transportation of large numbers of survivors, and, potentially, a large-scale medical response.[94] While a mass rescue in Nunavut could involve a tanker or resupply vessel, generally with 30 crew members or less on board, an incident involving a large passenger airplane or a cruise ship would be especially worrisome, requiring the evacuation of a substantial volume of passengers.

"A search happened years ago. A couple of people got lost. When we found them, the ravens had eaten their eyes. That stuck with me."
- Community responder, Qikiqtani Roundtable on SAR, 2022.

"Not finding them makes it so much worse. It's not just the families that need closure. We need it, the search team."
- Community responder, Kivalliq Roundtable on SAR, 2022.

"I am exhausted after some searches. I don't want to see anyone or talk to anyone. I am exhausted."
- Community responder, Qikiqtani Region, November 2023

"Another thing I've learned over the years since 1967 is that in part of your life as a volunteer, there will be trauma. And that is something to think about. It's very hard on a person. Really hard on people who go out and find something they don't want to see."
- Jimmy Haniliak, Kitikmeot Roundtable on SAR, 2022.

"We've all searched for loved ones. Most have lost loved ones. We always know who we are searching for. We have to face the community, the families, the wives if we can't bring them home. We see them at the Co-op. We see them around town."
- Community responder, Kivalliq Region, November 2023.

"The guilt is hard. It's very hard."
- Community responder, Qikiqtani Roundtable on SAR, 2022.

"Sure, you shouldn't feel bad if you've done everything you can. But sometimes you do."
- Community responder, Kivalliq Roundtable on SAR, 2022.

"I've had searches where I've felt like I've made the wrong call. Maybe I sent the searchers to [the] wrong place at the wrong time. You replay those ones."
- Community responder, Kivalliq Roundtable on SAR, 2022.





Images from the Clipper Adventurer incident (*Nunatsiaq News*)

On 27 August 2010, at 1832 MDT, the expedition cruise ship *Clipper Adventurer*, with 128 passengers and 69 crew on board, ran aground on a known shoal in Coronation Gulf, approximately 55 nautical miles east of the community of Kugluktuk, Nunavut. With the vessel listing 5° to portside, the crew carried out emergency procedures, sounded the tanks, and lowered the lifeboats. The accident caused "extensive damage" to the hull and holed 13 double-bottom tanks and compartments, including four full diesel oil tanks.[95] Over the next few hours, the passengers carried on with their regular routines, while the crew made two unsuccessful attempts to back off the shoal and refloat the ship. The situation could have escalated quickly and dramatically during this critical period. After its investigation into the incident, Canada's Transportation Safety Board found that the vessel's master did not have "sufficient damage stability information to assess whether or not the vessel would be stable once off the shoal." The board concluded that without a complete seaworthiness assessment and on-scene search and rescue resources, the refloat attempts could have placed the passengers and crew at great risk.[96]

At 1915 MDT on 27 August, MCTS Inuvik advised JRCC Trenton of the grounding, and the JRCC immediately issued an Enhanced Group Calling (EGC) SafetyNet broadcast with distress priority at a 200-mile radius around the stricken vessel to alert possible vessels of opportunity. At 1932 MDT, JRCC Trenton tasked the Canadian Coast Guard icebreaker *Amundsen* to respond to the incident, while preparing a Hercules aircraft with air-droppable search and rescue kits on board to proceed to the scene with an ETA of three hours. The SAR coordinator stood the aircraft down, however, when *Clipper Adventurer*'s captain advised that the vessel was not taking on water and was in no immediate danger. *Amundsen* arrived on scene at 1000 MDT on 29 August after transiting 270 nautical miles and conducting hydrographic surveys en route to ensure its own safety. While all 69 crew members remained on board the cruise ship, the passengers boarded *Amundsen* and safely disembarked in Kugluktuk shortly after midnight on 30 August.[97]

Throughout the two-day incident, the Coast Guard and JRCC provided community leaders and responders in Kugluktuk with minimal information. The community's well-organized and effective marine and ground search and rescue responders were not mobilized, nor were its Canadian Rangers or other first responders, such as the volunteer fire department. Only a couple of hours before the passengers were

offloaded did the Coast Guard inform Kugluktuk's hamlet office that they were inbound. Unfortunately, no one in the office knew where to locate the community's emergency plan, let alone how to put it into operation.[98] Hamlet officials quickly called NEM asking for instruction, particularly on how to handle the sudden influx of passengers given the limited resources available in the community.[99] When the Coast Guard started to barge in the passengers, hastily organized community volunteers used their truck lights to illuminate the landing site, while groups of passengers were loaded onto Kugluktuk's commercial bus and taken to the recreational complex. Meanwhile, hamlet officials scrambled to gather blankets and pillows for the passengers and asked the owner of the local Northern Store to open to provide food. Fortunately for Kugluktuk's supplies and essential services, the evacuees did not remain in the community for long – that morning, a Canadian North charter arrived to take them south.[100]



Crash site of First Air Flight 6560

Looking back on the incident, Kugluktuk's SAR volunteers, Rangers, and other first responders wonder what would have happened if *Clipper Adventurer* had required immediate assistance. What if the weather or sea state had been less than pristine? What if the passengers had been evacuated into zodiacs or lifeboats? What if they had had to establish a temporary camp on the land? What if Kugluktuk had been required to house, feed, and provide medical aid to the passengers and crew for an extended period? What would their impact have been on the community's limited fuel, food, and sanitation resources?[101] The *Clipper Adventurer* incident "was kind of a wake-up call, you know," explained one community responder. "I mean, if things had worked out differently, those people may have needed a lot of help from us. They weren't that far from the community. We started talking about it more: what we could do, what the community could do, what it would be like."[102]

Subsequent years have brought additional large-scale accidents in Nunavut, ranging from the crash of First Air Flight 6560 on landing at Resolute Bay in August 2011 to the several tanker, resupply, and fishing vessels that have run aground, hit ice, or experienced mechanical problems. In 2018, the research vessel *Akademik Ioffe* grounded on a rocky shoal in the Gulf of Boothia about 78 nautical miles north-northwest of

Kugaaruk. While its passengers were evacuated and transferred to *Ioffe*'s sister passenger vessel, *Akademik Sergey Vavilov*, it had been a close call.[103] In its aftermath, residents of Kugaaruk asked the same questions as their counterparts in Kugluktuk, while expressing dissatisfaction and concern over the quality of information and communication provided to the community over the course of the incident.[104]

As aerial and vessel traffic in Nunavut increases, the risk grows.[105] In 2023, twenty-three cruise ships, from 16 tour operators and with an average passenger count of 377, were scheduled to enter Canada's Arctic waters. While more marine traffic means more vessels of opportunity that could respond during a mass rescue operation, any such operation in the region would still be incredibly challenging. "I'm not too worried about supply ships that come up every year, even though they could run into trouble," noted one community responder. "The cruise ships though … Obviously, we haven't had them up here the last couple of years because of COVID. But they'll come back and they might not know what they are doing, or have some bad luck, or go somewhere they shouldn't. We have to keep on getting ready."[106]

The planners and operators in the Canadian Coast Guard, the Canadian Armed Forces, and Nunavut Emergency Management understand the risk. On the marine side, uncharted sections of seabed, the presence of ice hazards, and the tendency of expedition cruise vessels to leave well-known shipping corridors could all lead to accidents. They also understand the challenge. Mass rescue operations are extremely difficult anywhere in the world and even moreso in Canada's Arctic, with its austere environmental conditions, cold temperatures, limited local resources and infrastructure, communications difficulties, and fewer vessels, as well as the substantial distances involved in responding with Coast Guard icebreakers or RCAF aircraft based in the South.[107] A mass rescue in the region would seriously test Canada's search and rescue system, while the sudden influx of hundreds of evacuees would challenge the infrastructure and essential services of most communities in Nunavut.

In response, Canada has developed detailed air and marine disaster plans and has the expertise in the JRCCs, Canadian Armed Forces, and Coast Guard to carry them out. They repeatedly practice these plans with domestic and international partners in the Canadian Arctic, including through a large-scale multinational exercise conducted this summer on Herschel Island. The Coast Guard Arctic Region's innovative Exercising Program (launched in 2019) provides expert guidance to the cruise industry on risks, how the SAR system functions, and how a mass rescue would work in the region. This program helps smooth out some of the complexity involved in MROs and ensures that participating cruise ships are ready to assist as vessels of opportunity. Canada's MAJAID kits – a novel innovation for the country's remote and expansive geography – can also be deployed for marine disasters and are Arctic capable. The kits, containing tents, sleeping bags, clothing, medical supplies, heaters, generators, water, and rations, can be air-dropped to support 400 people for up to 24 hours.

The challenges remain daunting, however. Continuing to strengthen Canada's everyday search and rescue capabilities – its primary search and rescue assets and Joint Rescue Coordination Centres – will help, as will constructing new icebreakers and strengthening the Auxiliary. The number of MAJAID kits could be expanded to match the growing number of passengers on board Arctic-bound cruise ships. Most importantly, the planning, training and exercises must continue as our search and rescue professionals work through the complex problem of moving passengers and crew from ship to shore to south.

Community responders are also willing to provide assistance. One member of the Cambridge Bay Ranger Patrol explained that "[i]f a major emergency happened[,]… people would come from the community to help. That's just the way it is up here."[108] In discussing a potential marine disaster off the shores of their community, another tabletop exercise (TTX) participant noted that "[w]e may not be happy that you've brought this trouble, but we will try our best to help you out of it."[109] A community responder offered an explanation for this willingness to help, the sentiment of which was shared by many: "We have a responsibility for what happens on the Northwest Passage. These are our waters. We will protect them. We will help the people using them. It's simple."[110] More work is required, however, to determine the roles that community-based SAR groups could perform during a mass rescue operation in Nunavut.

5. SUGGESTIONS FOR IMPROVEMENT

At the Nunavut Roundtables on SAR, community responders and government practitioners and policymakers came up with a wide array of suggestions for how to address the myriad challenges impeding SAR operations in Nunavut. An important idea expressed repeatedly at the roundtables was the need for solutions made in Nunavut by Nunavummiut.

The following suggestions (in no particular order) are divided into three categories: SAR prevention, SAR preparedness, and SAR response.

5.1 SAR PREVENTION

Responders forwarded multiple ideas for how to improve land and marine safety and prevent SAR cases:

- Funding should be secured to erect permanent markers on popular land trails, at regular intervals, which can serve as way-finders.
- Communities should be given more funding and materials for preventative SAR, for instance to make posters, to go into the schools and give presentations, and to talk with people one-on-one.
- NEM should consider distributing decks of playing cards to communities with tips on how to survive on the land (for example, how to wait out dangerous situations like storms, or what to do if your machine breaks down).
- NEM should consider expanding its SPOT program to provide more devices to community members. Furthermore, NEM and HTOs need to publicize this service to make sure people are using the devices.
- Cabins should be built on the most commonly used hunting grounds and on the routes connecting the communities to provide people with shelter, basic supplies, and a radio to call for help. Maps and coordinates need to be provided showing where these cabins are, so that people can find them when in trouble.
- Local, territorial, and federal governments should continue to invest in innovative technological solutions to reduce travel risks, such as SmartICE, VHF infrastructure, inReach devices, etc.
- There should be consistent marine safety programs in every community that give people access to information but also to life-saving devices, such as lifejackets.

- On-the-land survival skills should be part of the school curriculum and offered through more community-based programs. Youths need more opportunities to learn from Elders. A land-based course should be developed specifically to impart Inuit Knowledge and survival skills, teach navigation, and develop SAR capabilities.
- All community members must be consistently reminded of what to take with them in their emergency kits, how to remain calm on the land, and what to do if they run into trouble. Community responders and Elders should deliver these messages using radio, social media, and at community events. If these activities become too onerous for volunteers to lead, an alternative delivery model could have Ranger patrols engaging in preventative activities as part of their official paid duties.
- There is a need to investigate the impact and potential limitations of emerging technologies like the emergency SOS service provided for certain iPhone models.
- "Everyone has a cell phone in the communities. Everyone. We need to push the cell service out on the land, push it out 50-100 miles from the community. Repeater towers on the hills can push the coverage way out. We could put repeaters on the most common routes or hunting areas. We could put repeaters at all the DEW Line sites, every 100 miles. Making sure they are up and running could be part of the Ranger NWS site checks. This seems to be a cheaper option than giving everyone an inReach."[111]
- Prevention efforts should be tailored to specific communities, starting with those experiencing the most searches every year. NEM should research the causes of these higher rates of SAR cases and develop community-specific strategies to address these causes. Participatory mapping should be conducted to identify the locations of past searches, which should then guide prevention activities and be used to inform responses.
- Safety videos should be created featuring Elders explaining how they prepare to go on the land, how they stay safe, and what they do if they run into problems.
- Nunavut's Emergency Measures Act includes the following clause: "The Minister may require a person to reimburse the costs incurred in the course of a search and rescue operation that resulted from conduct or omission on the part of the person that was imprudent, unreasonable or negligent." Several responders suggested that it might be time to use this clause, particularly for visitors to Nunavut engaging in risky behavior.[112]

5.2 SAR PREPAREDNESS

Roundtable participants suggested many ways in which to better prepare for SAR operations:

- Organizational and governance reforms are required to improve Nunavut's SAR system, starting at the community-level. Responders discussed a range of potential options: a territorial SAR association, regional SAR associations, establishing SAR groups as formalized entities under the hamlet office, or combining them with volunteer fire departments.
- The creation of a regional SAR association could help to organize roundtables and working groups, provide direction on SAR policy and planning, fundraise, and ensure the development of a community of practice across Nunavut. Some people want to be involved in SAR but not as searchers – an association may allow people with other skills to help out with SAR.
- To work through the SAR challenges facing Nunavut, community responders have suggested that an annual or bi-annual Nunavut Roundtable on SAR be established. This roundtable would focus on bringing Nunavummiut together to discuss issues and share best practices, with territorial and federal agencies invited when required.
- An alternate suggestion was for the establishment of working groups focused on specific areas, such as SAR prevention activities, operational challenges, policies and programs, lessons learned and best practices, and critical incident stress management.
- Create new SAR policies that are clear and concise – everyone should be able to understand them.

- Provide more education about how the SAR system works to everyone – not just communities, but all territorial government agencies that might be involved as well.
- The JRCCs should liaise with NEM about how to get and maintain more accurate details of community assets and capabilities.
- Every community should have a database that lists the skills and competencies of everyone involved in their SAR and emergency management organizations.
- Every community should have a list of basic procedures for what to do during a search, including all contact information for territorial and federal partners. They can work through this like a checklist before, during, and after a search.
- The CCG should work on policies that would allow CCGA units and boats to be used for a wider range of purposes.
- Memorandums of understanding should be created between community SAR groups and federal and territorial government agencies, such as the RCMP, for use of snowmachines and other equipment.
- SAR responders would benefit from more training opportunities, more frequent training visits, and different types of training (e.g., ice rescue). GSAR training should continue to be "Nunavutized" and take a "train-the-trainer" approach. Greater SAR planning training should be provided to coordinators and it should emphasize best practices used by Inuit. Historical case data from Inuit Nunangat and stories from past searches should be used to further develop SAR planning tools, and these should be included in the training.
- Increase the coordination and cooperation between community groups. The different community-based groups involved in SAR should meet regularly and create a common training schedule. If one group is going to receive first aid training, they should open the training to members of all the different groups whenever possible. Equipment could be shared between groups. Furthermore, community groups should have opportunities to train and exercise with each other.
- Municipal, territorial, and federal governments should provide time off, with pay, to allow their employees to pursue training opportunities. This recommendation reflects the high number of community responders who are employed by the municipal, territorial, and federal governments.
- Incentives should be devised to encourage people to volunteer for SAR and participate in training. Ideas for incentives included: a small annual cash bonus, equipment and gear, and Nunavut SAR clothing and gear.
- Remote training opportunities should be provided to responders. The basic searcher course could be provided digitally, allowing more recruits to be trained without waiting for community visits.
- Community groups should have access to lessons observed from previous searches. This should include maps of where previous searches have occurred over the last decade. These learning materials would help community organizations to train and better prepare for SAR missions.
- Reference cards should be made and maintained for every community, containing the contact information of the local SAR committee or GSAR team members, contact details of all the territorial and federal organizations involved, and information on all of the SAR resources in a community. Southern organizations should receive copies of these SAR cards so that they know with whom they are working in each community.
- Each community should have a dedicated SAR building where they can hold meetings and store supplies, equipment, and fuel, and which can serve as a command post during SAR missions.
- A territorial-wide recognition program is needed to acknowledge the work and sacrifices of community responders. This could involve awards, SAR gear, identifying sweaters, or even uniforms.

- Telling the stories of Nunavut's SAR responders would help strengthen the SAR culture in Nunavut.
- Community and territorial responders should do exchanges with Coast Guard, JRCC, and RCAF personnel so that everyone can be better prepared to respond together.
- There needs to be a database for all air assets in Nunavut. That could be a policy at the government level, requiring that any air asset must tell the territorial government where they are, when they will be in that location, and their contact information.
- Communities need information on who to call and what the protocols are for different situations and different levels of searches. Community responders need clarity on what to do in the wide array of situations with which they may be faced. Decision trees might help (e.g., if this happens, do a, b, and c, in that order). Posters, brochures, fridge magnets, and social media campaigns could help distribute this kind of information.
- Community SAR groups should be issued monthly inspection checklists to document the status of equipment and supplies.
- There is a need to investigate ways to get more young adults involved in search and rescue.
- A new Auxiliary region should be created that matches the jurisdictional boundaries of the Coast Guard's Arctic Region.
- Coordinators need specific training on how to engage with family members and the broader community. Part of this is teaching them how to deal with community pressure.
- NEM personnel should have high levels of SAR training. They should be able to support community SAR coordinators with accurate and prompt information and advice.
- NEM should conduct more frequent community visits to train, help with recruitment, and provide information and education on SAR to community members.
- Responders in Nunavut need to work more closely with the JRCCs. Cases need to be reported. To help with this, communities need to be educated on the benefits of working with the JRCCs (e.g., reimbursement and/or insurance is only possible with a tasking number; if the JRCC is alerted they can take on the data reporting and archiving piece, which alleviates administrative pressure on the community, etc.).
- A Coast Guard Auxiliary unit should be established in Baker Lake as soon as possible.
- The Canadian Coast Guard should continue to hire more full-time Inuit SAR officers. They have managed to hire several already to provide training on the marine side. NEM should learn from this program and do the same thing.
- As one community responder explained: "SAR cases are increasing. SAR is an essential service at the community-level; we need it for health and community safety. There are multiple community groups involved in SAR – it is tough to coordinate between all of them. We should have a paid coordinator in each community who is the full-time point of contact for all things SAR. This person could organize the searchers, train community members, ensure there is cooperation and coordination between the different groups, check equipment, and ensure that a community is always ready for SAR. This person could keep track of who has what training in the community. They could arrange the fundraising. This could be a full- or part-time job, but it should be paid work. I think it would be a great investment in our communities."

5.3 SAR RESPONSE

Roundtable participants developed various ideas for how to improve SAR response in Nunavut:

- Inuit Knowledge must be fully integrated into SAR response operations. All parties involved must be willing to use this Knowledge in the organization, coordination, and execution of searches.
- The federal government should fund the study of traditional Inuit medical practices to treat on-the-land injuries.

- Large SAR maps should be given to community groups to help plan and execute searches. These maps should be of different scales, some focused on the 100 kilometres around each community, and others covering the areas between communities. All maps should be sufficiently detailed to meet the needs of search teams.
- NEM should provide laptops to community SAR coordinators to facilitate SAR response.
- The CCG should explore options for providing insurance and fuel payments to community boats used for marine SAR.
- Each GSAR team should have access to two snowmobiles and two ATVs to be used only during searches, training, and exercises.
- A fund should be established to provide compensation to searchers who prefer to take their own machines and equipment on searches.
- Community responders should be provided with something like the Canadian Ranger Equipment Usage Rate (EUR). During training and official taskings, the military compensates Rangers when they use their own small-engine equipment (such as ice augers, chain saws, generators, and welding machines) and vehicles (including snowmachines, ATVs, dog teams, and boats), according to a fixed EUR.
- NEM should streamline the process by which community responders can submit claims for machine parts and repairs.
- Community marine and ground SAR teams should be provided with SAR Go-Bags. When they need to respond, these Go-Bags would contain key equipment and supplies.
- There is a need to develop standard operating procedures for the region. Every community should have a list of basic procedures for what to do during a search, including all contact information for territorial federal partners. They can work through this like a checklist before, during, and after a search. There can be flexibility built into these SOPs to ensure that there is space for the unique capabilities and approaches of Nunavut's communities.
- NEM should look into whether it can set up accounts at community gas stations for GSAR use.
- Every community needs a trained search coordinator, to guide searches and to do inspections.
- The local coordinator should have a designated communication device and known number that does not change. This device would be separate from their personal phone so that they can give their duties to a replacement to combat turnover and allow for vacation or sick days.
- Coordinators and unit leaders should be given access to more information about environmental and ice conditions.
- Need to link up SAR responders with the organizations capable of providing good information on environmental conditions, such as SmartICE, is a key response priority moving forward – and these relationships and capabilities will play an important role in SAR prevention as well.
- The Canadian Rangers should be even more heavily involved in GSAR response in Nunavut.
- Communities need greater access to air support. The territory should create its own aerial SAR capability.
- Financial compensation should be provided to community SAR responders. They should be paid on-call.
- Responders need to be provided with greater access to mental health supports following traumatic searches. They should be able to access the best services available to responders in other parts of the country.
- There is a need to have Elders involved in every aspect of SAR. There must be Elders at command posts, helping coordinators plan searches, sharing their knowledge, and reminding searchers of what they need to look out for while searching.

- Coordinators should have access to more tools and information to help them with search planning – and the training for how to use them. We need to get better at determining the potential search area.
- Territorial and federal governments must work to identify core capability gaps, and determine how to address them, whether it be through the provision of new training and equipment, or through memorandums of understanding between SAR partners – ensuring that they are ready for all incidents, including lower probability, high risk events. While developing response capabilities is essential, another tack would be to promote or mandate that adventurers, eco-tourists, outfitters, researchers have proper emergency plans or even a self-rescue capability
- There is a need to improve early on-scene command and control. Everyone must know the different levels of escalation during a search.
- Community SAR groups need to be taught how to conduct debriefings after searches to record what happened, discuss outcomes, and improve SAR response through the sharing of lessons observed, challenges, solutions, and best practices. Key lessons should be shared with NEM, the Coast Guard, and the JRCCs.



6. RECOMMENDATIONS

The challenges affecting SAR operations in Nunavut are multi-faceted, deeply rooted, and dynamic. There are few easy answers, and every issue will take time to address. There are, however, core strengths upon which to build, none greater than the skill and determination of the region's community responders. They have ideas for improvement, new approaches, best practices, and lessons learned that can have an immediate positive impact if they are acted upon. These responders are clear that the SAR system's challenges require "made-in-Nunavut" solutions and approaches.

The following recommendations represent solutions that have been co-developed with Nunavummiut responders. While several are broad solutions that address some of the ongoing challenges undermining the SAR system in Nunavut, they are not exhaustive. As a result, we also offer recommendations on the structures that might be put into place to begin working through the array of challenges and areas for improvement identified in this report.

Develop a Whole-of-Society Preventative SAR Program

To reduce the strain on community-based SAR organizations, greater investment in preventative measures needs to focus on whole-of-society SAR education and technological solutions. All community members must learn and be reminded about how to operate safely on the land, the dangers of going out unprepared, and how to respond appropriately when they get into trouble. Across the region, a wide array of actors, community-based organizations, non-governmental organizations (NGOs), and levels of government are providing programming that falls under SAR prevention. While there are many positive initiatives, there is little cohesion or overarching direction to these activities. A cohesive territorial wide prevention program, that fosters local practices and knowledge, could reduce the number of SAR cases in the region. This should include more on-the-land safety and preparedness signage in each community, the continuation of the territory's SPOT program (or, perhaps, a switch to Personal Locator Beacons), and more youth programming.

Community responders highlighted the benefits of providing youth and young adults with survival training and involving young people more directly in SAR operations. They suggested doing so directly through the school curriculum. Several responders noted that they had completed survival skills courses in high school during the 1980s, but that this was no longer an option in the curriculum. Community members with land skills represent a core community strength, and participants suggested that a course should be developed specifically to impart traditional knowledge and survival skills, teach navigation, promote marine safety, and develop SAR capabilities. This resonates with recent calls by Inuit leaders for a decolonized educational system emphasizing Inuit Qaujimajatuqangit and land-based education.[113]

Part of this program should include sustained territorial and federal investments in innovative technological solutions that can reduce travel risks, particularly SmartICE and improved weather forecasting.

This prevention strategy should also determine if, when, and how to use the stipulation in Nunavut's Emergency Measures Act allowing the territorial government to "require a person to reimburse the costs incurred in the course of a search and rescue operation that resulted from conduct or omission on the part of the person that was imprudent, unreasonable or negligent."[114]

Re-Organize Nunavut's SAR Teams

The territorial SAR policy is based on the formation of non-profit community SAR organizations. This is how most volunteer GSAR groups are organized in the South: as non-profit organizations incorporated under the provincial Societies Acts. Generally, however, these Southern groups have larger volunteer pools, support from broader provincial associations, and more fundraising possibilities. Communities in Nunavut do not have these resources. This approach to the organization of volunteer GSAR groups was not designed for or with Nunavummiut and is not working effectively in the territory. Community responders have consistently highlighted that the administrative burden to maintain society status and secure funds, which includes submitting detailed budgets and activity reports, is too onerous. The annual funding that the Government of Nunavut provides these groups is also insufficient and has gone down since the first societies were established in 2003 (from $2,500 to $1,000).

There are other models. In the past, Nunavummiut have suggested that SAR groups should be formalized and fall under the jurisdiction of the hamlet offices, along the same lines as volunteer fire departments. Another possibility is to pair SAR groups with fire departments, similar to the structures used in certain Indigenous communities in Nunavik, Eeyou Istchee, and Northern Ontario (some of these groups also include marine SAR units under the umbrella of one organization). Working with NEM, hamlet offices could decide how to best support their SAR teams. In Rankin Inlet, for instance, volunteer firefighters receive a stipend for being on call, as well as fees for each call to which they respond. Regardless, placing SAR teams within the governance structure provided by the municipalities would yield greater support, administrative capability, and streamlined funding opportunities.

Revise Nunavut's SAR Policy

The Government of Nunavut's community-based SAR contributions policy expired in 2022. There is an opportunity to revise it to address some of the challenges identified in this report, including clarifying the policy's definition of SAR operations, moving on from the non-profit society approach, removing the private search category, providing clarity on search suspension and recovery procedures/guidelines, establishing a list of eligible and ineligible activities for Nunavut's SAR volunteers, and explicitly laying out the insurance coverage provided to SAR volunteers.

Establish a Nunavut Search and Rescue Advisory Council

Several provinces have established SAR advisory councils made up of the key actors involved in SAR operations. The Nova Scotia Search and Rescue Committee, for instance, involves representatives from the provincial emergency management office, the Nova Scotia Ground SAR Association, the RCMP and other municipal police services, CASARA, and Parks Canada. This body meets to discuss issues pertaining to the GSAR program in the province, develop and monitor new standards, and make recommendations aimed at improving the program. The Search and Rescue Manitoba Advisory Council is chaired by the Office of the Fire Commissioner and meets to ensure that the province's SAR program is fulfilling the needs of the member organizations and the general public. A Nunavut SAR advisory council, made up of personnel from the key agencies involved in SAR in the territory and a small number of community representatives (e.g., the president of the Nunavut SAR association, if it is established, or one coordinator chosen from each region), could be responsible for high-level discussions pertaining to reviewing and revising policies, establishing standards, working through key jurisdictional issues (e.g., the role of the RCMP in GSAR operations, or the confusion over the activation of the Canadian Rangers), identifying key resources (e.g., aircraft availability), and developing solutions to core challenges.

Support the Establishment of a Nunavut Search and Rescue Association

In both 2003 and 2007, efforts were made to establish a territory-wide Nunavut SAR society to provide a regional framework for SAR, which would take the pressure off community groups and potentially open up new funding opportunities. Moving forward, a territory-wide association could be created with distinct

branches for the Kitikmeot, Kivalliq, and Qikiqtani regions and a board of directors that spans the whole territory. A made-in-Nunavut SAR association could even combine marine, ground, and aerial SAR. This association would represent the interests of and be the voice for all SAR teams in the territory and work to meet various needs, including the following:

- soliciting, administering, and distributing funding and donations
- providing and supporting SAR prevention, education, and awareness programs
- monitoring and improving the working relationships between community responders and their government and private sector partners
- providing responder health and safety support
- developing and supporting local and territorial training programs
- developing standard operating procedures/guidelines
- working to ensure interoperability and collaboration between community SAR teams so that they deploy between communities to provide support during prolonged searches.

With appropriate funding, such an association could choose to hire full-time administrative support positions or even SAR training officers. Community responders at the roundtables suggested that this model could generate more support from Nunavut Tunngavik Incorporated, the regional Inuit associations, and the federal government. It would furthermore help to build a "SAR culture" across the territory.

Such an association, however, would require committed volunteers, willing to engage at the territorial and federal levels on SAR issues. These volunteers would have to invest considerable time in the association and be willing to shoulder a great deal of responsibility. Community responders at the roundtables were enthusiastic about the possible benefits that a territorial SAR association could bring but were worried about the workload. They also expressed concern about how such an association would ensure that all communities benefitted from its activities. Moving forward, NEM should develop an implementation plan to determine the scaffolding, supports, and resources required to establish an effective and sustainable association.

Create a Bi-Annual Nunavut Roundtable on Search and Rescue

While one of the primary purposes of a newly created Nunavut SAR association could be organizing an annual or bi-annual Nunavut roundtable on SAR, such an endeavour should be undertaken regardless. In concluding the Kivalliq Roundtable on SAR, one community responder remarked that "[w]e need more of these. We need to meet each other and talk through everything. It makes things simpler." The other local and government responders around the table shared this sentiment. A regular roundtable could be scaled as Nunavummiut see fit and focused on community responders – GSAR coordinators, Coast Guard Auxiliary unit leaders, Rangers, Guardians, and other community-based groups, with funding for their participation provided by their respective organizations. Local and territorial government representatives, Inuit organizations, and private sector partners could be invited as required.

A bi-annual roundtable would provide Nunavummiut with the opportunity to work through challenges, examine the SAR risks facing communities, develop standard operating procedures, strengthen relationships, ensure that Inuit Knowledge is fully integrated into Nunavut's SAR system, and share best practices and lessons learned on SAR prevention, preparedness, and response. The different SAR groups involved could also practice how to best work together during SAR operations.

The roundtable could be used to identify priorities and create working groups focused on specific topics, such as policies and programs, operational challenges, lessons learned and best practices, funding, technology, and the development of culturally appropriate mechanisms for debriefing and critical incident stress management. These working groups should be made up of community and government responders and other SAR experts who have a deep understanding of how the SAR system works in Nunavut. These groups could make recommendations to the broader roundtable and to the government bodies responsible for SAR and public safety.

Importantly, roundtable meetings could also be used to consistently deliver key training packages, particularly SAR coordinator/manager training.

Enhance Nunavut Emergency Management's SAR Capacity

More personnel should be hired to support NEM's SAR mandate. Personnel should be provided substantive training and experiential learning opportunities to bolster their ability to provide guidance and support to community SAR operations. It is essential that all NEM members have an in-depth understanding of the SAR system and that they are provided with high levels of search and rescue commander/mission coordinator training, preferably adapted to Nunavut's unique context (see section 4.2.3). They should also have the opportunity to exercise regularly with SAR partners at the local, territorial, and federal levels, particularly with the JRCCs.

NEM's SAR training officer position was first created in 2000, with the goal of providing specialized training packages to each community and developing a Nunavut-specific training manual with GSAR techniques. This objective has not been realized. Most of the SAR training provided in Nunavut is contracted out. To generate cost efficiencies and to build relationships between NEM staff and community responders, this training should be brought in-house and prioritize a "train-the-trainer" approach. NEM personnel should:

- construct accessible and relevant GSAR training materials rooted in Nunavut's unique context
- develop remote training opportunities, particularly for a basic searcher course that could allow more recruits to be trained on a regular basis
- ensure that training and learning materials are based on Inuit Knowledge and Inuit approaches to SAR planning and management
- work with community responders to develop the tools required to improve GSAR operations in the territory, including coordinator guidebooks, enhanced planning capabilities, and Arctic lost person behaviour modelling

While in a community, NEM training officers could also perform the outreach that community responders have highlighted as being an effective way of educating Nunavummiut about the SAR system, recruiting new volunteers, and building relationships and lines of communication that function well during SAR operations.

Continue to Strengthen the Coast Guard Auxiliary and Provide Alternative Marine SAR Training Opportunities

The expansion of the Coast Guard Auxiliary in Nunavut has been a much-needed improvement to the SAR system. Auxiliary units tap into in-depth local knowledge of the marine environment, serve as "SAR detectives," share information, and improve response times and effectiveness. Community responders are clear that these units require sustained in-community engagement, maintenance support, and training opportunities, preferably on an annual basis. The Coast Guard Auxiliary expansion has been one of the most noticeable and effective efforts made by the federal government to fulfill the commitments it made in the *Arctic and Northern Policy Framework* to increase "Search and Rescue reaction and responsiveness to emergencies for Arctic residents and visitors."

Previous efforts to build the Coast Guard Auxiliary in Nunavut have failed due to the lack of sustained engagement, relationship building, and funding. This cannot be allowed to happen again. Since 2015, the Coast Guard and Coast Guard Auxiliary have built an impressive foundation for the Arctic units, and the consistent in-person relationship building and community support have served as its cornerstone. If this cornerstone is weakened or withdrawn, there is a strong possibility that many Coast Guard Auxiliary units will fail, particularly those that have been recently established. Coast Guard and Coast Guard Auxiliary personnel should continue to provide consistent in-community engagement and training opportunities to existing units. Although these outreach and training trips are expensive to conduct, they will safeguard the considerable investment of time and resources already made into these units and ensure that the region is well-served by community-based SAR units. Ongoing support should also be provided to Nunavut's communities without marine SAR resources that desire to establish new Auxiliary units.

Moving forward, serious consideration should be given to moving these units from the Coast Guard Auxiliary's Central and Arctic Region into a new Arctic district with the same jurisdictional boundaries as the Coast Guard's Arctic Region. Such a governance reform could provide Auxiliary members with greater autonomy, supporting regional decision making and offering more programming flexibility.

For communities that already possess a suitable marine SAR capability (e.g. the Guardians), the Coast

Guard should continue to provide training opportunities to these groups, as it did to the Taloyoak Guardians in 2023.

Incentivize Volunteers: Pilot a SAR Equipment Usage Rate (EUR)

Community responders rank concerns about equipment usage and the lack of volunteers as amongst the highest challenges that they face. Incentives could be offered to mitigate some of these issues and could include, for instance, high-quality SAR jackets, free equipment, and, perhaps, stipends. Still, this may not be enough. While significant Coast Guard investments in new boats for Auxiliary units bolster local capacity, GSAR teams have received no comparable investments in equipment. Some participants suggested that snowmobiles and ATVs should be issued to each GSAR team for searches, while other participants insisted that they would never trust an untested, random snowmachine, or an ATV selected and maintained by the government, to mount a search. They trust their own personally maintained equipment.

The Canadian Rangers model might be used to address both equipment challenges and the incentivization of volunteers. During training and official taskings, the military compensates Rangers when they use their own small-engine equipment (such as ice augers, chain saws, generators, and welding machines) and vehicles (including snowmachines, ATVs, dog teams, and boats) according to a fixed Equipment Usage Rate (EUR). This arrangement encourages Rangers to invest in their own equipment and tools appropriate to their local environment, which they can then use in their everyday lives without having to ask the government for permission to do so. In so doing, the EUR model represents a fair way of reimbursing Rangers for using their tools in military activities and makes a material contribution to local capacity building. Furthermore, it means that the military does not have to assume an unnecessarily high sustainment burden when it comes to maintaining equipment dispersed across 64 communities in the Territorial North.

Community responders using their personal equipment during authorized SAR training, exercises, and operations could receive compensation according to a SAR Equipment Usage Rate. Such a program would recognize the wear and tear on the personal equipment that SAR volunteers use to serve the public good, and community responders could use these funds to ensure that their equipment is ready to use at a moment's notice – a better solution than having NEM-owned machinery sitting in a sea container, waiting for the next search.

Although a SAR EUR for volunteers represents a significant departure from how SAR operations are conducted in Southern Canada, it represents a distinct solution that is suited to the unique context of Nunavut communities. Individuals involved in SAR rely on their equipment for their occupations, food security, and culture. Consequently, the strain that repeated SAR operations has on their gear and machines directly affects their broader lives. Nunavummiut involved in SAR are the experts on their environment and the equipment they need to operate in it safely. They are well situated to decide how they should invest EUR reimbursements in order to heighten their effectiveness. Accordingly, a SAR EUR model represents an equitable and innovative approach to supporting and bolstering community resilience.

Pilot a Community Public Safety Officer Program

While a SAR EUR model may bring dependable equipment and more volunteers, it will not address coordination and cooperation issues, administrative burdens, or the leadership burnout facing community SAR groups. To address these problems, participants in each roundtable raised the idea that communities should have a paid SAR coordinator position. This is a difficult case to make, however, particularly when some communities conduct only a few searches each year. Through the development of a Community Public Safety Officer (CPSO) program in Nunavut, communities could be provided with personnel to act as SAR coordinators while carrying out other public safety and emergency management duties as well. Such a program would build off the officers' Inuit Qaujimajatuqangit, existing skills, and community relationships, while providing space for the development of new capabilities. A tailor-made training program would ensure that the officers have shared competencies and skillsets.

Nunavut SAR Project participants suggested that the duties of Community Public Safety Officers in Nunavut – which must be determined in consultation with Nunavummiut – could focus on SAR (prevention, preparedness, response, and after-action activities), marine safety, emergency preparedness, and fire prevention.

On the SAR side, the CPSO could organize and lead community education and training events, support

the schools in their efforts to offer land-based programming to foster survival skills, and work directly with people going out on the land to ensure their preparedness. To prepare for SAR operations, the CPSO could ensure that each community organization has clear plans and protocols for what to do before, during, and after a search. They could also create and update SAR resource sheets that contain the contact information of SAR committees, GSAR teams, Auxiliary members, and all relevant territorial and federal organizations, along with information on the available SAR resources in a community and private industry assets. This resource sheet would list all of the skills, training, equipment, and competencies possessed by community responders, and it would be distributed to territorial and federal agencies. With support from NEM and interested federal agencies, the CPSO could organize regular training for SAR volunteers, meetings, and exercises between community groups and other governmental agencies to facilitate cooperation and coordination. Through all SAR activities, the CPSO would be a central point of contact between the community and outside agencies, facilitating essential relationship building.

During SAR operations, the CPSO would work to secure tasking numbers, ensure the distribution of fuel and essential supplies, and act as a liaison between the community, NEM, and the Joint Rescue Coordination Centres. With advanced SAR manager training, a CPSO would be able to organize and coordinate the search and manage the community command post. Working with the hamlet office, the CPSO could keep track of responder reimbursements and compensation for damaged vehicles, in addition to, if implemented, gathering the required information for the distribution of the SAR EUR.

The CPSO should also be responsible for the collection of best practices and lessons learned related to SAR both in the community and, in collaboration with regional colleagues, across Nunavut. They should be provided with a small budget for after-action activities, including sharing circles, led by Elders, to allow for debriefing, the sharing of observations by team members, and critical incident stress management. The CPSO could also convene community meetings after each search to explain what happened, disseminate lessons learned, and undertake preventative SAR measures.

Officers could moreover be engaged in every part of the emergency-management continuum – prevention and mitigation, preparedness, response, and recovery. They could facilitate a whole-of-community approach to emergency planning, ensuring that plans are living documents that reflect local realities, are updated regularly, and are tested through exercises, rather than being generic forms collecting dust in a filing cabinet.

Officers could also perform hazard, risk, and vulnerability assessments, map out local resources and assets that could be mobilized during a crisis, prepare evacuation procedures, and organize localized training to increase community capacity. They could direct the responses to emergencies or disasters, their efforts aided by their knowledge of who is most vulnerable, where support and assistance might be required, and how to work with outside organizations. If one of the increasing number of vessels plying the Northwest Passage ran into trouble and its passengers required evacuation to a community, the CPSOs could mobilize and coordinate shoreside operations, which are always complex and demanding.

Marine safety and fire prevention would be important day-to-day roles. The CPSOs could work with fire marshal offices, other government agencies, and volunteer fire departments to promote fire safety, while providing instruction on safe and responsible boating practices.

Through all these activities, CPSOs would be central points of contact between their communities and outside agencies, facilitating the relationship building that is absolutely vital during emergencies and disasters. Given its broad safety focus, a CPSO program would break down the silos of responsibility that currently exist across the agencies responsible for community safety and security in the North, fostering a more holistic and cooperative approach.

Possible models exist, such as the public safety officers in place in many Cree communities of the Eeyou Istchee territory, the public safety and fire prevention technician positions that currently exist under the Kativik Civil Security Department in Nunavik (which is currently piloting a position very similar to the CPSO proposed here), and the village public safety officer program in Alaska that has inspired similar approaches in Yukon and the Northwest Territories (although the community responders involved in this project did not believe that CPSOs in Nunavut should take on the law-enforcement/crime-prevention components built into these programs because they would be busy enough with their

safety, SAR, and emergency-management roles). A Nunavut CPSO program could take best practices and lessons learned from these models to create a strong foundation from the start – and, in time, perhaps offer a framework for other regions in the North.

The benefits of a CPSO program would extend from the local to the federal level. These officers would make invaluable contributions to the safety of their communities. They would also facilitate the kind of whole-of-society emergency management envisioned by the *Arctic and Northern Policy Framework* – capabilities that are key to the exercise and expression of Canada's sovereignty.

Critics will no doubt highlight the cost of such a government-funded program. However, considerable savings could result if these officers could prevent even a few SAR cases requiring an aerial response from the South or reduce the number of building fires in the region. This, too, says nothing of the lives they might save.

A pilot program could establish CPSO positions in two communities of varying sizes and assess the results. Such a pilot program would provide invaluable feedback on the kind of activities to be undertaken by the officers and the training required.

Re-Establish the Northern SAR Roundtable

Relationships constitute the foundation of an effective search and rescue system. Relationships allow for the multi-level horizontal and vertical coordination and cooperation required for the execution of SAR operations. They encourage mutual understandings of resources and capabilities, SAR risk, and community-specific needs. Relationships rooted in trust and respect also promote honest dialogue about the challenges and obstacles that weaken the SAR system. When territorial and federal practitioners and policymakers have made greater efforts at relationship building in the past, they have improved search and rescue in Nunavut. These efforts have, however, been too ad hoc, intermittent, and short-lived. While current governmental efforts to improve working relationships, including through more face-to-face visits and better information sharing, are promising, they, too, could fade with changing personnel and priorities. A structure is required to sustain, integrate, and improve these efforts.

Funded and supported by the National SAR Secretariat, the re-establishment of the Northern SAR Roundtable (2010-2016), which Nunavut Emergency



Northerners question why Arctic search and rescue roundtable meeting stopped

Last roundtable meeting between volunteers, military, coast guard happened nearly 2 years ago

Katie Toth · CBC News · Posted: Feb 11, 2019 7:00 AM AST | Last Updated: February 11, 2019

The Royal Canadian Air Force Cormorant helicopter is often used in search and rescue missions in Canada's North. (Andrew Vaughan/The Canadian Press)

Management was instrumental in creating, would allow for the ongoing strengthening of the relationships between interested regional, territorial, provincial, Indigenous, and federal partners. This platform would allow the federal government to fulfill its ambitions to improve the SAR system in the region laid out in the *Arctic and Northern Policy Framework*. The roundtable would involve regular meetings between policymakers and practitioners engaged in SAR in the Arctic to work through the coordination and cooperation challenges that can impede SAR operations. At the same time, the roundtable would allow practitioners to share common operating challenges and discuss various solutions. Together, they could work to better integrate their efforts, creating efficiencies and synergies that would improve the system in a cohesive manner. They would have the ability to learn from one another, about everything from what works best for SAR prevention to what devices best facilitate on-the-land communication during searches. Crucially, such a roundtable could be also used to identify and address key SAR capability gaps in the North, such as crevasse and high angle rescue.

A Northern SAR Roundtable would also allow members to engage in joint planning for complex SAR scenarios, such as mass rescue operations, that would cross jurisdictional boundaries and require an "all-hands-on-deck" approach. Together, participants could share their insights to shape and develop the actions, approaches, and priorities of every level of government during MROs. They could identify mass rescue capability gaps, the means of filling those gaps, and how to best mobilize and coordinate these

resources. The planning undertaken by the roundtable should be a "cyclical and continuing process" – the plan must be a living document rooted in constant improvement.[115]

Membership in the roundtable could include all government agencies directly involved in air, marine, and ground SAR in the North, representation from Indigenous governments and associations, and a select number of community responder representatives. Both Nunavut Emergency Management and Kativik Civil Security served as chairs of the previous roundtable and should do so again.

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Taken together, these recommendations have the potential to transform the SAR system in Nunavut. These measures would, however, require sustained government funding and support across the local, territorial, and federal levels, but the investment would be worth every dollar. As community responders reiterated repeatedly during the roundtables, this is about saving lives. It is about providing Inuit with the support and tools they need to respond to life-and-death situations on the land to save their neighbours, friends, and family members. At the same time, the SAR safety net also facilitates on-the-land activities, fostering the connection with land, water, and ice that is a requirement for Inuit physical, mental, social, and cultural health and well-being. SAR also supports travel between communities, the harvesting activities required to feed families, and economic activities, including local subsistence economies, commercial fisheries, and tourism. Search and rescue should not only be viewed as a life-saving measure but also as a critical component of broader community safety, security, and resilience objectives.

This report opened with the tragic sinking of the *Avataq* in August 2000. On that day, Louis Pilakapsi died in the water, waiting for a rescue that came too late. His case highlighted many of the deficiencies in the SAR system that continue to undermine search and rescue operations in Nunavut.

Before he died, Pilakapsi shared his dream for a united Nunavut many times: a simple plea for "No Boundaries."[116] Pilakapsi's vision is equally applicable to search and rescue. Only by bridging the gaps that continue to hinder coordination, cooperation, and integration between all of the actors involved in SAR in Nunavut will progress be made on the wide array of challenges identified in this report.



Photo courtesy of Baba Pedersen

ABOUT THE AUTHORS

Peter Kikkert is an Associate Professor of Public Policy and Governance at St. Francis Xavier University. He is the academic lead for the Kitikmeot SAR Project and the Nunavut SAR Project, and the Nunavik SAR Roundtable. He is a volunteer searcher and team leader with the Strait Area Ground Search and Rescue (SAGSAR) Association in Nova Scotia and serves on its Board of Directors.

Calvin Aivgak Pedersen is a search and rescue volunteer, a former member of the Nunavut legislative assembly and has served as a Canadian Ranger for 22 years. Pedersen has travelled approximately a quarter of a million miles on snowmobile, ATV, boat and on foot in his lifetime.

P. (Paul) Whitney Lackenbauer is Canada Research Chair (Tier 1) in the Study of the Canadian North and a Professor in the School for the Study of Canada at Trent University. He also serves as Honorary Lieutenant Colonel of 1 Canadian Ranger Patrol Group and is the network lead of the North American and Arctic Defence and Security Network (NAADSN), funded by the Department of National Defence MINDS program.

Ian Belton is a postdoctoral researcher at the University of Strathclyde. His research expertise centres on the theory and practice of human judgment and decision making at both the individual and group level. He has conducted decision-making research in a range of applied contexts including strategic management, risk and reliability evaluations, the criminal justice system and the defence and security sectors.

Ronald Pelot is a Professor of Industrial Engineering at Dalhousie University. He has over 25 years' experience developing models for maritime Search and Rescue, shipping traffic analyses, and environmental impacts of shipping. His projects also extend to emergency management logistics, and risk analysis for coastal zone community adaptation to climate change.qualitative methods, as well as mixed methods designs.

John Quigley is a professor in the department of Management Science at the University of Strathclyde, and an Industrial Statistician with expertise in developing and applying statistical and stochastic methods to build decision support models.

Appendix I. SAR Roundtable Participants

Qikiqtani Roundtable on Search and Rescue, Iqaluit, Nunavut, 11-13 November 2022

Qikiqtani Community Responders

Alex Puasi Ippak	Sanikiluaq Search and Rescue
Elijassie Kavik	Sanikiluaq Search and Rescue
Rosie Akavak	Kimmirut Search and Rescue
Adamie Nuna	Kinngait Search and Rescue
Juanisie Etidloi	Kinngait Search and Rescue
George Innuksuk	Sanirajak Search and Rescue / Coast Guard Auxiliary (could not attend due to flight cancellation, provided comments over the phone)
Isaiah Pikuyak	Sanirajak Search and Rescue (could not attend due to flight cancellation)
	Clyde River Search and Rescue
Mark Kilabuk	Pangnirtung Coast Guard Auxiliary
Nathaniel Julai Alikatuktuk	Pangnirtung Search and Rescue
Jacob Malliki	Igloolik Coast Guard Auxiliary / Search and Rescue (could not attend due to flight cancellation, provided comments over the phone)
Leena Sangoya	Igloolik Search and Rescue (could not attend due to flight cancellation, provided comments over the phone)
Valerie Qaunaq	Arctic Bay Search and Rescue
April Taqtu	Arctic Bay Search and Rescue
Nancy Amaraulik	Resolute Bay Search and Rescue
Marty Kuluguqtuq	Grise Fiord Search and Rescue
Amon Akeeagok	Grise Fiord Search and Rescue
Titus Allooloo	Pond Inlet Canadian Ranger Patrol / Search and Rescue
David Suqslak	Pond Inlet Coast Guard Auxiliary / Search and Rescue
Jacopie Audlakiak	Qikiqtarjuaq Search and Rescue
Jaloo Kooneeliusie	Qikiqtarjuaq Search and Rescue
Jimmy Akavak	Iqaluit Search and Rescue
John Vander Velde	CASARA Nunavut / Iqaluit

Federal, Territorial, Inuit, and Non-Profit Agencies

Jakob Anilniliak	Nunavut Emergency Management
Nicholas Dunphy	Nunavut Emergency Management
June Shappa	Nunavut Tunngavik Incorporated
Daniel Tauki	Inuit Marine Monitoring Program
Steve Waller	Joint Rescue Coordination Centre Halifax
Major Christopher Simm	Joint Rescue Coordination Centre Halifax
Steve Thompson	Canadian Coast Guard Arctic Region
Mark Gagnon	Canadian Coast Guard Arctic Region
John Landry	Canadian Coast Guard Arctic Region
Chris Bianco	Canadian Coast Guard Arctic Region

Brian McShane	Canadian Coast Guard Auxiliary
Captain Martin Zimmer	CASARA Liaison Officer, 424 Squadron, RCAF
Brandon Anderson	Visitor Safety Coordinator, Parks Canada
Captain Thomas Jancarik	1 Canadian Ranger Patrol Group
MWO Murphy	1 Canadian Ranger Patrol Group
Major Sean Brinkema	Joint Task Force (North)

NSAR Project Team

Calvin Pedersen	Kitikmeot Search and Rescue
Peter Kikkert	St. Francis Xavier University
P. Whitney Lackenbauer	Trent University
Ian Belton	University of Strathclyde
Cailey Dyer	Dalhousie University
Jack Gallagher	Maximum Expected Time to Rescue Project
Kathleen Dolan	St. Francis Xavier University
Rory Jakubec	St. Francis Xavier University

Kivalliq Roundtable on Search and Rescue, Ranking Inlet, Nunavut, 15-17 November 2022

Kivalliq Community Responders

Janice Aggark	Chesterfield Inlet Search and Rescue (could not attend due to flight cancellation, provided comments over the phone)
Kevin Issaluk	Chesterfield Inlet Search and Rescue (could not attend due to flight cancellation)
Joseph Alogut	Chesterfield Inlet Search and Rescue (could not attend due to flight cancellation)
Daniel Kablutisiak	Arviat Coast Guard Auxiliary / GSAR
Rosalina Kringayark	Naujaat Search and Rescue
Jimmy Immingark	Naujaat Coast Guard Auxiliary
Richard Aksawnee	Baker Lake Search and Rescue
Kaviq Kaluraq	Baker Lake Search and Rescue
Hannah Angootealuk	Coral Harbour Search and Rescue
Kidlapik Nakoolak	Coral Harbour Search and Rescue
Stanley Adjuk	Whale Cove Search and Rescue
Tony Dias	Rankin Inlet Coast Guard Auxiliary
Wesley Wiebe	Rankin Inlet Coast Guard Auxiliary
Thomas Angoshadluk	Rankin Inlet Ground Search and Rescue
Peter Kadlak	Rankin Inlet Ground Search and Rescue
Darcy Kanayok	Rankin Inlet Ground Search and Rescue
Lorna Tatty	Rankin Inlet Ground Search and Rescue
Violet Innukshuk	Rankin Inlet Ground Search and Rescue
Wesley Innukshuk	Canadian Coast Guard / Rankin Inlet

Federal, Territorial, Inuit, and Non-Profit Agencies

Jakob Anilniliak	Nunavut Emergency Management
Nicholas Dunphy	Nunavut Emergency Management
Lucy Maynard	Nunavut Tunngavik Incorporated
Captain Chris Newman	1 Canadian Ranger Patrol Group
Major Tim McHugh	1 Canadian Ranger Patrol Group
Captain Brian Bovine	Joint Rescue Coordination Centre Trenton
Sergeant Rob Featherstone	Joint Rescue Coordination Centre Trenton
Sergeant Patrick Frenette	Royal Canadian Mounted Police
Steve (Brian) Travis	Parks Canada

NSAR Project Team

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Peter Kikkert	St. Francis Xavier University
P. Whitney Lackenbauer	Trent University
Ian Belton	University of Strathclyde
Cailey Dyer	Dalhousie University
Jack Gallagher	Maximum Expected Time to Rescue Project

Kitikmeot Roundtable on Search and Rescue, Yellowknife, NWT, 20-22 November 2022

Kitikmeot Community Responders

Angulalik Pedersen	Cambridge Bay Coast Guard Auxiliary / GSAR
Jimmy Haniliak	Cambridge Bay Coast Guard Auxiliary
Beverly Maksagak	Cambridge Bay Search and Rescue
Ivor Maksagak	Cambridge Bay Search and Rescue
Brian Kavanna	Cambridge Bay Search and Rescue
Bobby Klengenberg	Cambridge Bay Search and Rescue
Randy Klengenberg	Cambridge Bay Search and Rescue
Jack Himiak	Kugluktuk Search and Rescue
Baba Pedersen	
Kugluktuk Search and Rescue	
Roger Hitkolok	Kugluktuk Search and Rescue
Ryan Nivingalok	Kugluktuk Search and Rescue
Calvin Pedersen	Kugluktuk Search and Rescue
Amber Eleehetook	Gjoa Haven Search and Rescue
Jack Skillings	Gjoa Haven Search and Rescue
Sarah Kamimmalik	Gjoa Haven Coast Guard Auxiliary
Paul Ikuallaq	Gjoa Haven Coast Guard Auxiliary
Steven Ukuqtunnuaq	Taloyoak Search and Rescue / Guardians
Johnny Ukuqtunnuaq	Taloyoak Search and Rescue

Sam Inaksajak	Kugaaruk Search and Rescue
John Vander Velde	CASARA Nunavut

Federal, Territorial, Inuit, and Non-Profit Agencies

Jakob Anilniliak	Nunavut Emergency Management
Nicholas Dunphy	Nunavut Emergency Management
Major Marc Crivicich	Joint Rescue Coordination Centre Trenton
Sgt. Rob Featherstone	Joint Rescue Coordination Centre Trenton
Jay Collins	Canadian Coast Guard Arctic Region
Chris Bianco	Canadian Coast Guard Arctic Region
Claire Wallace	Canadian Coast Guard Arctic Region
Brian McShane	Canadian Coast Guard Auxiliary
Rob Wilkins	Canadian Coast Guard Auxiliary
Captain Mackenzie Cook	CASARA Liaison Officer, 435 Squadron, RCAF
Major Stephane Belanger	1 Canadian Air Division Detachment Yellowknife
Guy Girard	RCMP Emergency Management
Sgt. Ben M. Comley	RCMP V Division
LCol Kristian Udesen	1 Canadian Ranger Patrol Group
Major Tim McHugh	1 Canadian Ranger Patrol Group
Captain Chris Newman	1 Canadian Ranger Patrol Group
GSM Adam Taylor	1 Canadian Ranger Patrol Group
Cdr Derek Merlo	Royal Canadian Navy
LCol Ray P. Chiasson	Directorate of Land Force Development / Canadian Army
Sly Bernier	Director Future Operations Continental / Royal Canadian Navy
Stephen Sherburne	Manager Office of Boating Safety / Transport Canada
Jason Rosadiuk	Boating Safety Officer / Transport Canada
Sharon Chung	Boating Safety Officer / Transport Canada
Madyson Craig	Boating Safety Officer / Transport Canada
Alex Samuel	Boating Safety Officer / Transport Canada
Calli Citron	Public Health Agency of Canada
Kyle Van Deft	Parks Canada
Ron Kroeker	National Search and Rescue Secretariat (Retired)

NSAR / METR Project Team

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Joshua Kroker	St. Francis Xavier University
P. Whitney Lackenbauer	Trent University
Samuel Pallaq Huyer	Trent University
Ian Belton	University of Strathclyde
Ron Pelot	Dalhousie University
Floris Goerlandt	Dalhousie University

Cailey Dyer	Dalhousie University
Desai Shan	Memorial University
Bianca Romagnoli	University of California, Los Angeles
Jack Gallagher	Maximum Expected Time to Rescue Project

Kitikmeot Roundtable on Search and Rescue, Cambridge Bay, Nunavut, 31 January-1 February 2020

Kitikmeot Community Responders

Murphy Angnayoak	Cambridge Bay Search and Rescue
George Angohiatok	Cambridge Bay Search and Rescue
Bobby Klengenberg	Cambridge Bay Search and Rescue
Randy Klengenberg	Cambridge Bay Search and Rescue
Rosabelle Klengenberg	Cambridge Bay Search and Rescue
Ivor Maksagak	
Cambridge Bay Search and Rescue	
Beverly Maksagak	Cambridge Bay Search and Rescue
Jim MacEachern	Cambridge Bay Assistant Senior Administrative Officer and Search and Rescue Coordinator
Calvin Pedersen	Cambridge Bay Search and Rescue and Canadian Ranger
Jimmy Haniliak	Cambridge Bay Search and Rescue and Coast Guard Auxiliary
Angulalik Pedersen	Cambridge Bay Search and Rescue and Coast Guard Auxiliary
Candice Pedersen	Civil Air Search and Rescue Association Volunteer
Abel Aqqaq	Taloyoak Canadian Ranger Patrol
John Ikilik	Taloyoak Canadian Ranger Patrol
David Nanook	Taloyoak Canadian Ranger Patrol
Mary Ugyuk Sutherland	Taloyoak Canadian Ranger Patrol
Bruce Takolik	Taloyoak Canadian Ranger Patrol and Ground Search and Rescue
Sgt. Sam Tuluirialik	Taloyoak Canadian Ranger Patrol
David Totalik	Taloyoak Canadian Ranger Patrol
Steven Ukuqtunnuaq	Taloyoak Ground Search and Rescue
Lena Ukuqtunnuaq	Taloyoak Ground Search and Rescue
Johnny Ukuqtunnuaq	Taloyoak Canadian Ranger Patrol and Ground Search and Rescue
Breanne Inaksajak	Kugaaruk Ground Search and Rescue
Sam Inaksajak	Kugaaruk Ground Search and Rescue
Ronald Inutuinaq	Kugaaruk Ground Search and Rescue
Bernadette Iqqugaqtuq	Kugaaruk Ground Search and Rescue
Nick Sikkuark	Kugaaruk Ground Search and Rescue
Chris Tungilik	Kugaaruk Ground Search and Rescue
Aidan Case	Kugluktuk Junior Canadian Rangers
Jack Himiak	Kugluktuk Coast Guard Auxiliary and Ground Search and Rescue

Sergeant Roger Hitkolok	Kugluktuk Coast Guard Auxiliary, Ground Search and Rescue, and Canadian Ranger Patrol
Glen Leyte	Kugluktuk Canadian Ranger Patrol and Ground Search and Rescue
Baba Pedersen	Kugluktuk Coast Guard Auxiliary, Ground Search and Rescue, and Canadian Ranger Patrol
Winnie Hatkaittuq	Gjoa Haven Coast Guard Auxiliary
Paul Ikuallaq	Gjoa Haven Coast Guard Auxiliary, Ground Search and Rescue, and Canadian Ranger Patrol
Sarah Kamimmalik	Gjoa Haven Coast Guard Auxiliary
Kenneth Puqiqnak	Gjoa Haven Coast Guard Auxiliary
Leonard Teelktak	Gjoa Haven Coast Guard Auxiliary

Federal, Territorial, Inuit, and Non-Profit Agencies

Sergeant Jas Dilbar	Royal Canadian Mounted Police, Cambridge Bay
Mike Kendall	Nunavut Emergency Management
Captain Daniel Wilkinson	Joint Task Force (North)
Ehren J. Edwards	Department of National Defence
Major Wesley Cromwell	1 Canadian Air Division Headquarters
Chris Bianco	Canadian Coast Guard Arctic Region
Jay Collins	Canadian Coast Guard Arctic Region
Alana Swales	Canadian Coast Guard Arctic Region
Darlene Langdon	Canadian Coast Guard Auxiliary
Miguel Parent	Transport Canada

Kitikmeot SAR Project Team/Academics

Peter Kikkert	St. Francis Xavier University
Bailey Chisholm	St. Francis Xavier University
Chloe Walker	St. Francis Xavier University
P. Whitney Lackenbauer	Trent University
Natalie Carter	University of Ottawa
Ryan Dean	University of Calgary
Bianca Romiagnoli	University of California, Los Angelos

Appendix II: 2022 SAR Roundtables Analysis

Issues raised across the three roundtables. The aim of this table is to (a) record the key issues raised in each regional roundtable and (b) identify major overarching themes that were common to all three roundtables. The issues are listed in the order in which they came up.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
	A. Issues mentioned in all roundtables			
1	Placing of JRCC assets	• Distance to JRCC assets means very long response times, e.g., 5-6 hours for Hercules, 8-17 hours for Cormorant • CCG icebreakers' priority is ice breaking for community supply; will often be many hours away if called to an SAR case • Debate re value of placing one or more JRCC assets in Nunavut. • Deployment of federal assets depends on analysis of SAR cases; decisions are made based on the data and JRCC and CCG have, which is currently incomplete. • Also, the CCG RAMSAR program is going into communities to try and find out more about the reality of SAR activities.	• Having a JRCC asset nearer the region (e.g., in Churchill) would be very useful. • To Rankin Inlet: 5 hours for Hercules from Trenton or Halifax; 13 hours for Cormorant from Halifax. • CCG locate SAR assets on a risk basis, depends on data they have on SAR cases. • The more SAR data CCG have, the better they can get assets and funding to the right areas. • CCG RAMSAR program is about community outreach, hoping to fill in data gaps. • If call EMO every time, even for minor cases, then govt will get better picture of scale of SAR in NU.	• Data JRCC currently has informs the placing of its SAR assets. JRCC need to get as much case data from communities as possible. • May not be correct just to rely on SAR case numbers, as context is different in the north – people are on the land for different reasons (e.g., subsistence hunting) and searches may be harder, longer, etc. • One reason JRCC get so few calls may be because their SAR assets are known to be so far away. No point in calling if e.g., Hercules takes 6 hours to come. • CCG's RAMSAR program will determine location of future CCG stations in the north. • Transport Canada has funding available and can provide training but struggles to get accurate accident statistics.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
2	Need for better communication and coordination between SAR partners	• JRCC need to let communities know what assets are coming and their ETA. Very difficult wait otherwise. More updates from NEM would also be good. • JRCC don't have up-to-date enough picture of SAR assets and capabilities available in each community • Better coordination needed between different SAR assets involved in a search. • CCG can task any local government-owned boats to support an SAR exercise but they tend not to know where those boats are. Need community help with this. • Community response time varies a lot – can be caused by lack of consistency of SAR coordinators. NEM sometimes have to contact several people to get the right one. CCG often have to resort to contacting RCMP to help find the right person. • Debate around the best way to share SAR information with the community during a search – open radio? Social media? Have to be careful what you post and SAR teams often get very negative feedback from family, friends of missing people. • NEM want to have regular meetings with SAR coordinators. Have arranged monthly online meetings but no-one attends. • Need more engagement between NEM and JRCC. • Best way to locate and access private assets (e.g., helicopters owned by mining companies) for SAR purposes? NEM has contacts but not a set list of assets and their locations (tend to move around). • Need to find a way to communicate to federal and territorial authorities that the SAR system is not working well in the north. Perception is that things are ok. • Policies written for the south are hindering SAR in the north (general Ranger observation – no specifics given – likely relates to red tape around Ranger activation).	• CRs would like to be able to speak to ground, marine, air SAR support on one unified system (i.e., rather than NEM for GSAR and JRCC otherwise). • Would also be good if SAR coordinators could communicate on the same central system as well – may then be able to assist in one another's' searches. • Need for better communication between JRCC and community SAR coordinators: let them know what assets are coming and when. • Lack of clarity about when CRs can call JRCC and not – if a GSAR case, request has to come from NEM, can't come directly from the community. • Important for CRs to keep JRCC/NEM updated with any information they have on the search. • RCMP and federal/territorial agencies see communication with communities as the biggest challenge. When things go wrong, it usually starts with the communication. • NEM arrange monthly meetings with SAR coordinators but no-one attends – means NEM don't find out when communities are missing equipment. • IMMP/NEM communication is not good – IMMP perceived as being secretive, do searches without informing NEM. Need to work together better.	• CRs would like to have a contact list of each SAR coordinator within the region? Sometimes people from neighbouring communities can come to help. • Example given where JRCC didn't update community about status of search, coordinator was angry because could've got some rest. • Need to have a much clearer picture of who is responsible for what in different cases, where do the responsibilities lie? • Need better communication at ground level and more of that information needs to move up to the operational/tactical levels and above. • CASARA and GSAR need to talk regularly, as CASARA is interested to explore how they can work together more on GSAR cases. • NEM need to find a way to communicate effectively with SAR coordinators – no-one attends zoom meetings. • Key factor is that everyone involved in SAR works together, coordinates especially during long searches. • Need everyone involved in a search to be working from the same plan [i.e., need for unified SAR processes – see action re decision trees]. • There has been miscommunication in searches around location coordinates. NEM can help with this in future.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
3	Issues around location/ communication devices	• Need to be more devices in communities, make a huge difference to SAR operations • NEM has issued a lot more SPOT and InReach devices to communities recently – keen to get as many out there as possible as many cases still involve people who don't have/ can't afford a location device. Every community should currently have 1-2 InReach. • NEM want to find out how much SPOT devices are being used – do people generally take one with them? • InReach and SPOT don't send signals direct to JRCC, so JRCC has to locate the person who can access the missing person's InReach account • NEM get SPOT and InReach communications from the devices they have issued automatically by email • Some community areas have InReach blackspots, notably Cambridge Bay • People borrow devices and don't return them. Communities have real trouble getting them back. One community (Resolute Bay? Nancy) has had some success sending letters to request return. • Is SPOT the right solution? What other options are there?	• Challenge getting people to return borrowed SPOT devices. • Some communities are now using Zoleo devices – like SPOT but cheaper. No signal direct to JRCC. • Lack of effective communication between communities and NEM means NEM don't know where more devices are needed. • Some people don't trust SPOT devices because no two-way communication. SAR team show people how to use them but they still don't. • Issues around the "help" (less urgent) button on SPOT devices. People use it and expect help quickly if not far out from town, then think no-one is coming. But can be several hours between signal going to NEM and SAR team getting notification. [NEM not clear why this happened; it shouldn't.]	• InReach has stopped working in Kugluktuk, similar issues in Cambridge Bay. • JRCC clarified difference between 406 MHz beacons (PLBs) that notify JRCC directly, and SPOT, InReach etc., which go through the device's company. [Although SPOT alerts go to NEM's email account.] • Apple I-phone 14 is now basically a SPOT beacon. Might have an impact once people start to get new phones with this technology. • Starting to use Zoleo devices in Cambridge Bay: cheaper and fewer black spots. • Discussion about getting emergency beacons for all CCGA boats – currently being rolled out along with PLBs for all boat crews. • People borrow SPOT devices and don't bring them back. How can we get them back?
4	Problems created by mixed marine and ground SAR cases	• Mixed cases, e.g., where the quickest access to a land rescue is by boat are always problematic for NEM. • Who is the lead agency? • Issues around who refunds fuel, equipment repair, etc. For communities without CCGA units: if local boats go out, how can they claim for their fuel costs? • CCG is aware of the issue. One solution is via establishing CCGA units. Trying to make sure there is a process that works in each community. • If primarily ground rescue, NEM will be in charge – need to contact JRCC and get approval for use of CCGA, other marine assets. • Either way, should be a seamless process for the SAR coordinator – one POC then dealt with behind the scenes by NEM and JRCC.	• CCG mentioned upgrading of coastguard station in Rankin Inlet. • Roll out of CCGA units continues, important part of CCG strategy for the north, to have assets in the right locations. • One community went to rescue people on the flow edge, couldn't get a tasking number from NEM because technically a marine rescue. CCG agreed that if people used a boat to get to the ice, it's a marine rescue, call JRCC. • If someone goes through the ice, depends on how they got to the ice. If on a vehicle, then GSAR so contact NEM. • If ice breaks off from flow edge, technically GSAR so likely starts with call to NEM but NEM will then need to contact JRCC where boat needed to access the ice floe. Same as when people are stranded on an island. • Other unusual example case: NEM tasked a local private helicopter to rescue people from the ice; helicopter then went through the ice. JRCC had to be contacted, sent a boat to rescue the helicopter pilot. • Sounds as if NEM can task local boats to go out on an MSAR case but can't reimburse costs. • CCG can definitely help with shoreline cases, just need to go through NEM first.	• Kugluktuk: before got CCGA boat, difficult to decide which team goes out – same people but which hat to wear? In practice, they would just go out whatever. • Question re who pays for fuel for a community vessel that goes out on a marine SAR case. NEM can't. Particular issue for communities with no CCGA.

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5	Expansion of VHF and/or cell phone coverage	• VHF repeaters would be very useful • CCG has towers and is looking at connecting independent community to their network; difficult because all have different tech and physical state varies. • Specific issue in Grise Fjord: VHF system is solar powered so doesn't work during the dark months. • In some communities, cell phone towers extending further out might reduce the need for searches.	• Nunavut government is planning to instal new VHF repeater systems in 7 Nunavut communities during 2023, probably 2 in Kivalliq. Funding from Federal government indigenous community support fund. • Questions around specifics of tower design and installation, e.g., need to protect from polar bears. • If had more cell repeaters in the region, that would help a lot, reduces need for searching.	
6	Issues around when to contact NEM/JRCC	• Concept of "private searches" done by family and friends. • Tendency is not to report for 24 hours, until private search has been unsuccessful. Unclear why this is done – reflects different way SAR operates in the north – CRs know the person concerned, their habits/abilities, have expert knowledge of the local environment. Don't need govt to do the searching for them (more about supporting local capabilities, rather than taking over as would be the case in the south). Also: sense of self-reliance; fear of 'crying wolf', consequences if report too many cases? JRCC seen as 'big, scary, remote' organisation. Also CRs perceive that contacting an EMO will slow the search down, get tied up in red tape/paperwork. Just want to get out there asap). • NEM and JRCC both want communities to report searches as soon as they start (a) for insurance coverage of searchers; (b) because JRCC assets have such long travel times, better to send and then cancel; (c) for record-keeping. No issue if community search is successful without further support. More information means can plan better.	• General agreement amongst CRs that they wait 24-48 hours before calling NEM. [Why?] • JRCC want communities to contact the EMO (JRCC or NEM) as soon as possible. Call whenever they decide they need help. • If CRs called JRCC sooner, there would probably be more responses from JRCC. • Cost of sending a Hercules isn't an issue for JRCC – we want to help find people. • Sooner JRCC are contacted, narrower search area for vessels/people likely to be drifting. CCG have a computer system for plotting drift. If called early, chances of finding the person are increased a lot. • NEM generally come to JRCC for help if have already tried using local assets. [Point being: why wait?] • Question re when is the right time for NEM to contact JRCC for help with a GSAR case? • CCG also highlighted importance of contacting JRCC early for marine SAR cases. • NEM mentioned general rule that family should respond first, then get SAR team involved. [Issue here: distinction between contacting NEM to get assets tasked and just contacting them to let them know there's a search happening. Can do latter without former.]	• CR perception that calling EMO slows down the search process, need to go out quickly because time is critical. • Role of "private searches" – just family, friends. Not public until initial search has been unsuccessful. Currently, it sounds as if SAR coordinators don't call the EMO until the private search has failed, e.g., after the first day. • Insurance coverage doesn't start until NEM has issued a tasking number, so CRs need to register with their coordinator, who then needs to contact NEM, before starting a search. • NEM want coordinators to call straight away (i.e., during private search), even if just to say, "we might not need your help but…" • People just head out and don't tell the SAR coordinators what they're doing. One coordinator resigned because she was blamed for stopping people searching [presumably because she was trying to get them to inform her first, contact EMO, etc.?]

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7	Introduction of drone technology to Nunavut	• Currently in testing, not in Nunavut yet • Drone training planned for Nunavut in 2023 • New drones can be operated remotely, has IR tech, weather resistant to -20, hoping to get approval for beyond-line-of-sight search. • Loc8 search software can find specific colours in drone footage. • Lots of community interest in having drones and drone training. • Training is relatively onerous (3-4 weeks online course, then some in-person training) and need two qualified people per community (one pilot, one support). May be an issue for some communities. • Drones will be distributed to CASARA units only.	• Drone technology would be very helpful because could use for searching while waiting for air assets to come from Trenton. • Underwater drone would also be useful. Lots of rivers in the area and often have to search for people there. • CASARA drone training coming to Rankin Inlet in the new year (2023). • Baker Lake SAR team used a personal drone in a search this year, person was deceased, made the recovery easier to after seeing them first (less of a shock). • Rankin Inlet and Baker Lake will be test locations for new drone systems. Training in Rankin Inlet is due to happen in the new year. • Operation currently limited to line-of-sight only but there are plans to extend that. • Likely battery issues with drones, may only run for a short time in sub-zero temperatures.	• Discussion around CASARA drone program coming to Nunavut – will be issued to CASARA units. • CRs interested in how to apply for a CASARA unit – apparently up to military to decide.
8	Changes in frequency and type of SAR cases	• NEM and communities describe a sense that there are more SAR cases happening – and yet the statistics don't show that. Why might that be? • Changing weather alters seasonal timings (fall freeze up and spring thaw) – means more stranded travellers, more fatalities • Populations are increasing, therefore perception is that SAR caseload will likely increase as well. • More use of modern snowmobiles and boats -> people go out further -> larger search areas needed • More cruise ships coming to the arctic now that the sea is ice-free for longer. • Community members are less prepared than they used to be – they have faster machines and so can go further away without feeling they've been out for long.	• Rapid increase in commercial aircraft flying over the north, e.g., new Delhi-Vancouver route flies directly over Rankin Inlet. • More and more adventure tour companies operating in Nunavut. Have already had SAR cases as a result. • People are using more powerful machines: they go out for a quick day, can go far on one tank of gas but aren't prepared, don't take the right kit. • Increasing number of people who just run out of gas or have a trivial issue. • CRs perceive that there are a lot of "backpack hunters" now, who aren't properly prepared if something goes wrong.	• Rapid increase in commercial aircraft flying over the north, e.g., new Delhi-Vancouver route flies directly over Rankin Inlet. • More and more adventure tour companies operating in Nunavut. Have already had SAR cases as a result. • People are using more powerful machines: they go out for a quick day, can go far on one tank of gas but aren't prepared, don't take the right kit. • Increasing number of people who just run out of gas or have a trivial issue. • CRs perceive that there are a lot of "backpack hunters" now, who aren't properly prepared if something goes wrong.

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9	Training needs for CRs	• Need more, culturally relevant, SAR-related training delivered in communities • NEM are working on providing more training; training their own staff to deliver the training; cost of travel and translation of training materials are limiting factors. Currently getting to every community every 2 years; aiming for annual visits. • Many different organisations separately involved in training: NEM, CCG, IMMP, CASARA, etc. Scope for coordinating more – unified training e.g., first aid (CCG could reimburse NEM for running a course or vice versa). • Real variation in how well hunters etc. can use SPOT devices. Training would help. • Could there be community training on mental health support? • Also need opportunities (e.g., exercises) to practice putting training into practice and learn from others. • Need to make the case to the Nunavut government to fund additional NEM community visits: (a) can deliver more training and education (b); builds trust between NEM and community members – meeting same staff repeatedly; and (c) shows that communities, and SAR volunteers, matter to the territorial and federal governments.	• CR was speaking to CCG last year about doing land to water training – how to move people across faster. • NEM hasn't delivered any of the new, more north-relevant training in the Kivalliq region yet. COVID part of the issue. • Would be good for CRs to have time to communicate, teach and learn from each other. • Can the military train CASARA members/other CRs first aid, how to be prepared for difficult medical situations? • Communities interested in training from NEM. • CRs really want training for dealing with trauma, e.g., finding a dead body. Can be very hard to cope with. Also managing grief and loss. • CCG can/does provide maritime SAR training (just for CCGA units or more widely?). • Discussion around mapping of safe routes by CCGA units. Useful to do for self, don't necessarily rely on other crew's tracks. Can get fuel refunded for mapping exercises. • CASARA ran spotter training in Rankin Inlet in 2022. Will be more training coming to the region in future. • CR suggestion – need to find ways for experienced SAR responders to pass their knowledge on to the next generation because many are now too old to go out regularly.	• Boat safety training needed in Kugluktuk. • How can CRs get leave from work (a) to do their SAR work and (b) to get the training they need? Very time-consuming. • Suggestion to deliver training by zoom but NEM noted that no-one currently attends zoom meetings. • CASARA noted that if people join, they can get access to GSAR training. • CCG marine search training delivered in Gjoa Haven was very successful, ended up being "two-way training", request for more to come. • Needs to be formal SAR coordinator training.

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10	Training needs – public education	• Important to get into schools – youth education is key. • CRs suggested hunter safety training, spring camps (kids out on the land with elders).	• Need to go into schools to teach outdoor survival skills to the future hunters. Children used to get this kind of training, not clear why it stopped. • CCG interested in partnering with NEM to do sessions in schools, build a culture of safety. NEM may have to get approval from NU government first. • In some communities (e.g., Arctic Bay), NEM have opened SAR training to the public: how to use SPOT, InReach devices etc.	• Request for CASARA to come into community schools and talk about their work. • Would be good to have exercises for young people to learn SAR skills, e.g., lay of the land and how to use GPS devices. • Proposal for land/ice safety training in schools twice a year to coincide with 2 main harvests: fall freeze-up and spring thaw. To be delivered by community members. NEM visits likely too expensive. • Could involve other organisations in safety training, e.g., Public Safety Canada, SmartICE. • Transport Canada wants to be more involved in training in the north, e.g., in-school education – knowing what training is needed is a real challenge, though. • Some people are children of parents who lived off the land, would like to see similar training in schools [not sure what this is getting at]. • Public education is key to cutting down SAR cases – NEM could do call-in on local radio or something via social media. Should be much bigger focus on this – need to cut down unnecessary calls. • Ideas for promoting SAR prevention: posters, school outreach.

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11	Equipment issues	• There is a need for more and better community-based SAR vehicles to improve response capabilities • NEM has now issues go-bags to all communities with tarp, Coleman stove, sleeping bag, heated blankets, etc. • Debate around NEM or communities providing dedicated SAR machines vs paying people to use their own. If dedicated vehicles, then someone has to maintain it, also people may not trust the communal vehicles as much as their own. • Community members don't want to use their machines for searches because perception is that can't get money back for fuel, repairs. • In fact, NEM can reimburse people for fuel and any damage to their machines (although not complete replacement). • Possibility of having a 'day rate' for using own equipment, like the Rangers get? • Need to have a common place to store equipment and run SAR operations from in every community. • Some communities have issues getting enough fuel. NEM can pay for having a few (e.g., 4) jerry cans of fuel on standby for SAR purposes.	• How to service dedicated SAR snowmobiles, ATVs? • One community mentioned having a SAR office but it's very small and has no bathroom. • NEM can reimburse costs of fuel and repairs to personal vehicles used in searches. Need to get this message out to the communities. • Current admin process for getting machine parts, repairs from NEM is slow and complicated – involves going through the Hamlet, raising a PO, NEM order parts, etc. Too slow, people need to get their machines repaired straight away and then claim back. Need to use them for hunting, can't wait around. • Questions raised about why NEM can't buy communities ATVs or snowmobiles to avoid them having to fundraise. NEM response: (a) don't have that much funding; (b) better for searchers to use their own machines and get refunded. Can maybe explore funding machines if get a SAR association. • Coral Harbour were expecting a CCGA boat but haven't got one yet – would really help. • Can NEM arrange a training session on how to do the paperwork for equipment compensation? Right now, people don't know how to do it. And/or could NEM collect CRs' receipts and take them to the Hamlet? • Another option: could have a dedicated SAR machine, just use as a back-up if personal machines are damaged (while parts being ordered, etc.). • CRs have sometimes needed to get underwater search equipment in. Sonar device had to be flown in from the USA – none suitable in Canada. • JRCC cannot help with anything underwater. • CASARA drones that can detect heat may be useful here, when available.	• Gjoa Haven: would be useful to have a smaller boat for searching in shallow areas; also a diagnostic imaging device. • Cambridge Bay: don't have any SAR machines or a building. SAR building, with equipment in one place, could save 2-3 hours of preparation. • Might be useful in some communities to have dedicated SAR cell phones for use by CRs. • Forms needed to claim for equipment damage are difficult to fill out. • Some communities have difficulty getting fuel – can sometimes be issues with fuel deliveries. If a pleasure craft got into difficulties, they may use up a community's fuel. • Can be challenges getting access to facilities during a search, e.g., opening times of gas station, airport, convenience stores. • SAR teams need to have central place to store gas safely for use in a search; should be provided by hamlet office. • Some CRs would like to have dedicated SAR machines and equipment.

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12	Relationship difficulties between SAR teams, RCMP and nurses	• RCMP officers and nurses may have little local knowledge because there's a 2-year turnover. • Community expectations often exceed RCMP mandate/policing guidelines. • Need to build trust because these relationships are important.	• Example given where GSAR became medical case. Nurse and RCMP were both new, had no SAR experience. SAR coordinator had to wait for them to make the call b/c their responsibility. • CRs would like to see a written framework about which calls RCMP and nurses can and should make in different situations. New staff can then use that when they come in. • If cases come to RCMP first – e.g., involve firearms – NEM will keep back, up to RCMP to decide if SAR team can help. • Example case: SAR went out, requested RCMP to ping missing family's cell phone. Called back after an hour, RCMP had no record of previous call. • Example case: medical request, health centre asked SAR team to take meds out. Initially refused because stormy, wanted to keep crew safe, but went in the end. Didn't call NEM because not really a SAR case. NEM confirmed can't help with health cases.	• A lot of SAR cases are either RCMP cases or a medical issue. But RCMP and nurses typically have no local knowledge, e.g., will say they can't go out somewhere; they are ignorant of their powers and responsibilities. • Could RCMP look at funding GSAR teams to respond to e.g., recoveries, where they are best placed or have the best knowledge to respond?
13	NEM proposal to set up regional SAR associations	• Would give access to many more funding sources. • Association could employ someone to do SAR paperwork and free up SAR coordinators.	• Separate session held for NEM and SAR coordinators to discuss founding of a regional SAR association. • Noted that won't enable CRs to be paid – will still be a volunteer system. • SAR association could employ a full-time person to deal with SAR paperwork. • Setting up and running an association will also involve a lot of its own paperwork, legal requirements to follow, etc. Full-time admin person would have to deal with all of that as well.	• CRs keen to discuss forming of a Kitikmeot SAR association. • If form a society, would definitely need lots of administrative support. • Separate session held for NEM and CRs to discuss founding a regional SAR association.

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14	Burden of SAR paperwork	• Paperwork for SAR coordinators is really challenging. • Currently all the pre- and post-search paperwork has to be done by them without any support. • See point about getting SAR associations to deal with the paperwork. • Would be useful to have a checklist to work through on each search. • Stipend/honorarium for coordinators for submitting their paperwork? • Could make a paid coordinator role but difficult because whole SAR setup is voluntary, would be awkward if one person in the team was getting paid. • Could maybe have a wider paid role, e.g., Public Safety Officer – would deal with SAR and other issues. Could maybe run a pilot program?	• CRs agreed that paperwork is an issue – how can we make it easier? • Proposal to have a paid point of contact in each community that can coordinate GSAR cases.	• Paperwork for a search can take a couple of hours – can make all the difference. CRs need a regional coordinator who can deal with the paperwork. • Big challenge having no full-time SAR employee to do paperwork properly. Significant burden on coordinators. • Would be useful to have an admin person who is removed emotionally from the search process
15	Role of Rangers in SAR activities	• Communities find it very difficult to activate Rangers on SAR cases • In principle, have to exhaust other local assets first but exception for "life and limb" situations – interpretation up to officers involved in the case. • Rangers prepared to look into cutting red tape when local Ranger group assesses that it should be involved. • Easier if RCMP are already involved and they're supportive.	• Question re involvement of Rangers in an air SAR case. Rangers can't get involved unless situation involving "immediate life and limb" – up to the Ranger CO. Would need to be tasked by NEM. • Rangers cannot get involved in body recovery. • CR perception is that Rangers don't want to get involved in searches if not getting paid – need for authority from Iqaluit "feels like an excuse". Frustrating for CRs if struggling to find volunteers and know that Rangers have snowmobiles and training. • Rangers can take part in rescues as private community members if they want to, no problem with that but can't mandate that they volunteer. • CRs keen to get message across to Rangers that they can volunteer if they want, don't have to wait to be tasked. Good way to connect with the community. • If Rangers go out as volunteers, although not insured by the Rangers, they would be covered by NEM. • May need to look further at how NEM go about tasking Rangers to get involved in SAR cases. One case discussed where NEM may have waited too long to contact Rangers because unclear whether there were enough CRs or not. • Specific issues around if and when Rangers can help with airstrip work (e.g., if lighting needed). • Issues with Rangers volunteering as then have to use own equipment and repair if breaks. (Although NEM can cover fuel and repairs in that situation).	• Difficult to get Rangers involved in a SAR case because of delays in tasking them.

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17	Mental health issues	• SAR volunteers have to deal with very emotionally challenging situations (searching for family members and friends, finding dead bodies, pressure from distressed relatives), are living with a lot of trauma. • In longer searches, often the same team has to try to keep going pretty much non-stop for e.g., a week. Very physically and mentally exhausting. • No time for proper debriefs after searches. Also potentially debriefs with JRCC and/or NEM. Can just be chats over coffee. • Lack of consistent, long-term mental health support (staff change regularly) – needs to be in communities • NEM can provide mental health support but seems that communities don't often pick up on this. • Important to schedule debriefs if possible after every search. At community and EMO level. Should deal with (a) lessons learned and (b) check everyone is doing ok in terms of their mental health. • Interest from CRs for a lessons-learned platform to discuss experiences, best practices. NEM have proposed monthly meetings but no-one attends, so gathering information is difficult. • NEM used to do debriefs but it was time-consuming and so they stopped.	• Difficult to deal with trauma of finding a dead body. One CR took 20+ years to get back to SAR work afterwards. • NEM has a 24-hour mental health support line available. Can also organise mental health support in the community. Need to ask – NEM don't want to assume that people aren't coping/offend anyone. • Being a SAR coordinator gets very stressful and challenging – have to deal with angry family members. • CCG have a mental health support team that is automatically activated where there's a recovery or searchers are related to the missing person. • Question over how NEM and CCG can coordinate better to provide support. • SAR coordinators can get blamed for the outcome of a search, when sometimes they just can't find anyone to go out (or can't find two – can't send one person alone). Might have spent 12 hours trying to find volunteers. • CR suggestion to involve elders in community mental health support, as they understand the issues. • SAR coordinators to work together to provide mental health support? Have experience of how to cope – switch on, switch off from the job.	• One CR has brought home 3 bodies – pretty hard to deal with. • During debriefings everyone says they're ok. But one CR's father was involved in a recovery, has never been the same since. Difficult to get him the help he needs. • Important to have debriefs after difficult searches.

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18	Difficulty recruiting SAR volunteers	• Can be hard to find volunteers: puts a lot of pressure and responsibility on the coordinators. • How can we encourage more community members to get involved in SAR – especially young people?	• Big challenge getting volunteers in some communities. Especially as searches can go on for days, difficult when there aren't many searchers. • One community had 3 people going out to search last time, out of 3,000 people. It's not enough. • If people knew NEM could refund fuel and repair costs, might get more volunteers. (But see issues with inefficiency of current process). • People complain about progress of searches but won't volunteer, say "no, it's too difficult". • Volunteer numbers can depend on who the missing person is: if well-known, will get 4-6 people within 30 minutes. Otherwise, can be very hard, especially at night.	• Difficult to generate interest in SAR within the community. • CASARA needs to generate more interest, membership is dwindling and not recruiting enough younger members. • NEM put on GSAR fundamentals course [where?] last year – turn-out in communities was very poor. Frustrating for NEM, need to improve engagement.
19	Importance of local knowledge/ expertise	• Local knowledge and experience and willingness of communities to help one another are key strengths of SAR in the north, need to make sure they are managed/harnessed properly.	• Local CASARA members can be very useful to JRCC, e.g., can help with spotting. They have the local knowledge of land, conditions, etc. • Important to involve elders in community SAR set-ups as they have the IQ, know if the land is safe or not (see also re training – transfer of knowledge between generations is vital). • Can't replace traditional knowledge with technology.	• Local knowledge of the land/ ice/water is a major strength of the SAR system in the north.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
20	SAR best practice	• CCG planning to organise a series of small-scale SAR exercises across communities, like the tabletop exercises used in the roundtables. • Offer unified training where possible, e.g., first aid. • Share innovations and best practice across communities, e.g., SAR checklist, codes for communicating on open channels. • Regular SAR coordinator meetings. • Have a common site for SAR equipment and operations. • Simple, usable procedures that everyone can understand – who does what. • After action debriefs whenever possible. • Establish a community Public Safety Officer program. • Communities should fundraise together and pool resources.	• Arviat: all searchers tracked by SAR coordinator; call in every hour; each time they come in, routes taken are printed and reviewed, gaps identified; monthly planning meeting to decide who's on call and dispatcher rotated monthly; different winter team (older, experienced guys) and summer team (younger guys, mostly about rescue rather than search); have own ATVs, snowmobiles, boats – 2 team members just do maintenance. • JRCC: make a plan and tell it to other community members. Makes searching much easier. • Key to go out with a location device of some kind, not so important which kind. • Arviat: SAR coordinator fields issues with angry/upset family members • Always have people in training to take over the coordinator role (succession planning). • Where possible, involve elders and people from the hamlet council in local SAR set-up. Can also use Rangers for mapping [how does that work?] • Baker Lake: Pair up more and less experienced searchers; collect data from searchers' devices and use to make sure not revisiting the same areas; have people come in and cook food for searchers. • Tell hunters: can still use google maps even when there's no service. • In one community [not sure where], have young people come to the SAR office, help with filling gas, packing sleds, whatever. • Ask about health issues before start a search, nurse may be able to provide medication in some cases. • CCG best practice: adding local names to mapping system; engaging with local community life; running training exercises in the community; hiring more Inuit SAR officers.	• Could have aids to navigation on islands in the region – on the high points. • Idea of setting up base-camps during long searches [not sure exactly what this involves]. • Have sensitive SAR-related information available only on a need-to-know basis. • Develop maps with local place names and trails, with information on when they are accessible, etc. • Think about how to leverage retired volunteers to enhance response capacity.
21	Specific issues around mass rescues	• Tabletop exercise identified various challenges that would arise if a large vessel were to get into difficulties in arctic waters.	• Tabletop exercises identified various challenges that would arise if a large vessel were to get into difficulties in arctic waters.	• Tabletop exercise identified various challenges that would arise if a large vessel were to get into difficulties in arctic waters. • Challenge with mass rescues is not just how to deal with one but also the impact on the local communities affected. • General agreement that communities will go out and help, do what they can. • Concern is: don't yet know what it would look like in practice at a community level.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
	B. Issues mentioned in two roundtables			
22	Fundraising		•Good amount of money raised across the region from Bingo nights. What other funding sources might be available, what other ones can be found? •Relevance of regional SAR association, can open up other funding sources.	•Can work well, some communities have been able to buy SAR machines with the proceeds of e.g., Bingo nights.
23	Boundaries of SAR responsibility		•NEM is not a gas delivery service, nor is the CCG. Decision for coordinators whether to go out or not in those circumstances. •Re CCG towing boats – can do but may have to prioritise other activities.	•Question about what constitutes a search – decision is left to person answering the phone, they need guidelines to follow. E.g., when to involve SAR team, should family start search first, what to do in a medical case. •Need clarity that medical issues aren't for SAR teams to deal with: "search and rescue is not medivac". •People often expect SAR team to recover their machine/equipment as well. But that's not their responsibility. •SAR is not a taxi service or a fuel service.
24	SAR cases involving mental illness		•Discussion around who deals with the situation where someone is e.g., suicidal and walks out of the community. •RCMP will likely take charge in this situation. Person might have a weapon, be dangerous. Have to consider safety of searchers.	•SAR gets called on cases relating to suicidal individuals; have to involve the RCMP. •CR in Gjoa Haven working with youth on suicide prevention; big issue in the community.
	C. Issues mentioned at one roundtable			
25	Communities would like to use their CCGA boats for other things	•Not currently possible – only permitted uses are SAR and environmental response – but CCG is working on the issue.		
26	SAR in Parks Canada sites	•Parks Canada have two boats and can assist. •Can call on helicopters as well, which may sometimes be nearby for other reasons. •Staff have training including wilderness first aid and firearms use. •Would also like to be more involved in SAR cases in regions near parks (e.g., Pond Inlet).		
27	Whom to contact if need divers?		•Generally, divers needed for recovery so RCMP would deal with that. •JRCC will only dive where assess that someone may still be alive, e.g., lost diver.	

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
28	Funding issues re: lengthy searches		• CRs asked for more help from NEM to keep searches going longer. • NEM response – in recent case, elders decided that the search should end. Decision has to be made when all resources exhausted, everywhere searched.	
29	Predator control during SAR			• CR question about how to get conservation agency involved, SAR teams have encountered grizzly bears and wolves.
30	Administrative issues around having a CCGA unit			• There is too much regulation – everyone on the boat has to be trained. Just have one trained person on the boat at any time?
31	Need to push MLAs about SAR issues			• Timing is good as Canada is currently very focused on arctic sovereignty and key to Canadian sovereignty is the Canadian people living in the arctic.
32	(Lack of) role of NSS for SAR in the north			• NSS should have oversight of SAR in the north but perception is that it has done very little for some time. Missed opportunity – unified, strategic approach needed.

Notes

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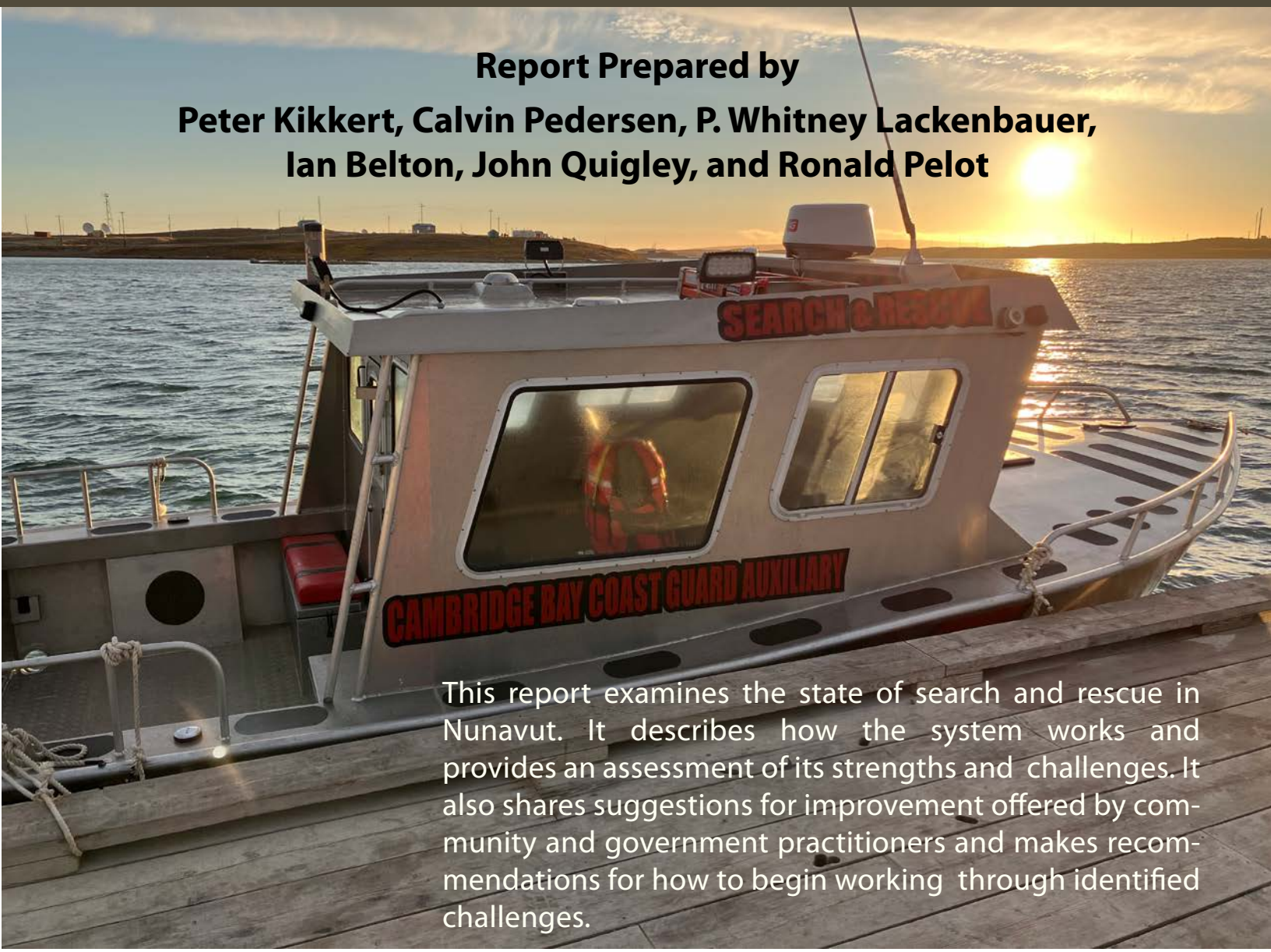
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THE STATE OF SEARCH AND RESCUE IN NUNAVUT

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Report Prepared by

Peter Kikkert, Calvin Pedersen, P. Whitney Lackenbauer, Ian Belton, John Quigley, and Ronald Pelot



This report examines the state of search and rescue in Nunavut. It describes how the system works and provides an assessment of its strengths and challenges. It also shares suggestions for improvement offered by community and government practitioners and makes recommendations for how to begin working through identified challenges.

METR Maximum Expected Time of Rescue Research Project

Social Sciences and Humanities Research Council of Canada

Conseil de recherches en sciences humaines du Canada

Canada

IRVING

Irving Shipbuilding, Inc.

Public Safety Canada

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NAADSN North American and Arctic Defence and Security Network

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