Nunavut Search and Rescue Roundtable

Regional Roundtables 2022: Report



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Background: The Nunavut Search and Rescue Roundtable

The Nunavut SAR Roundtable – a partnership between community responders, government practitioners, and researchers – was created in response to repeated calls from Nunavummiut for review and discussion of the territory's SAR system. Further, community responders requested the opportunity to meet and 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.

In January 2020, Nunavut Emergency Management (NEM) and its academic partners held the first roundtable in Cambridge Bay. It was never envisioned as a one-and-done event, however. The roundtable is an ongoing initiative that provides a forum to discuss and improve the search and rescue system, facilitates other SAR-related activities, and strengthens the relationships that are essential for effective SAR operations. Such a roundtable approach 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.

In November 2022, the roundtable organized and conducted regional meetings for the Qikiqtani (Iqaluit, 11-13 November), Kivalliq (Rankin Inlet, 15-17 November), and Kitikmeot (Yellowknife, 20-22 November). Funding and logistical support for the meetings was provided by the Nunavut-Nunavik Search and Rescue Project – a team of Canadian and UK academics and Inuit research partners focused on strengthening Nunavut and Nunavik's whole-of-society SAR systems.[1] These regional 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 2022 Regional Roundtables: Setting the Scene

The organizers designed the regional roundtables to be as collaborative and informal as possible – they were about starting conversations and sharing ideas. They involved a mixture of all-participant discussions and small breakout groups to facilitate brainstorming and the sharing of perspectives. To

[1] The Nunavut-Nunavik SAR Project involves academics from St. Francis Xavier University, the University of Strathclyde, Dalhousie University, Trent University, and the Marine Institute at Memorial University. The project's Inuit research partners are Calvin Pedersen, Angulalik Pedersen, Jack Himiak, Kaviq Kaluraq, Daniel Kablutsiak, and Baba Pedersen. The project is funded by the National Research Council of Canada and the United Kingdom Research and Innovation through the Canada-Inuit Nunangat-United Kingdom Research Program. Additional funding was provided by the SAR-NIF project # EM-9101-22008 "Maximum Time to be Rescued in Canadian Arctic Waters" (principal investigator: Dr. Ron Pelot), the North American and Arctic Defence and Security Network (network lead: Dr. P. Whitney Lackenbauer), the Social Sciences and Humanities Research Council through SSHRC Insight Grant 435-2021-1131, and Kikkert's Irving Shipbuilding Chair funds. With support from community SAR groups across Nunavut and Nunavik, the Nunavut Research Institute (Research License No. 05 018 22N-M) and the St. Francis Xavier University (File 25969), Dalhousie University (File 2022-6234), and University of Strathclyde Research Ethics Boards approved the project in the fall of 2022.

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 discussions at the Kitikmeot SAR Roundtable

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 of the roundtables 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.



Small group discussions at the Qikiqtani SAR Roundtable

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.

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.

In short, the 2022 regional 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 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.



Calvin Pedersen and Roger Hitkolok from Kugluktuk share at the Kitikmeot SAR Roundtable



Tabletop exercise conducted at the Kivalliq SAR Roundtable



Community and government responders share stories at the Kitikmeot SAR Roundtable

This report first offers an analysis of the major lessons observed, best practices, core strengths, areas for improvement, and ideas for strengthening the system shared by roundtable participants (through formal roundtable discussions, informal conversations, and one-on-one interviews conducted during the meetings). It then provides a comparative chart summarizing the topics raised during each of the roundtable sessions described above.



Wesley Innukshuk presents at the Kivalliq SAR Roundtable



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 from the Qikiqtani, Kitikmeot, and Kivalliq SAR Roundtables.

SAR in Nunavut: The Context

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) during marine incidents.[2] 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, Cospas-Sarsat program, upholding Canada's commitments to the International Cospas-Sarsat Programme Agreement.

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 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. 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, maintaining 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.

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. 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).

[2] According to the Canadian Aeronautical and Maritime Search and Rescue Manual, for maritime SAR purposes, the Coast Guard is responsible for all oceanic, coastal (coastal waters include any tributary's estuary), and secondary waters (as defined in the Canada Shipping Act, 2001), but not inland waters (as defined in section 2 of the Customs Act), except for the Canadian inland waters of the Great Lakes, St. Lawrence River system, and Lake Melville.



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

Humanitarian SAR and ground SAR (GSAR) 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. Nunavut Emergency Management duty officers provide taskings and support to community responders on a 24-hour basis. These duty officers are supposed to 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.

Several other territorial and federal agencies are also occasionally called upon to provide support to 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 (PCSP), which coordinates over 50 fixed- and rotary-wing chartered aircraft in the North, is occasionally called upon to provide aerial support to SAR operations.

Nunavummiut engage in search and rescue activities on a voluntary basis through the Civil Air Search and Rescue Association (CASARA), the Canadian Coast Guard Auxiliary (CCGA), and community GSAR teams.

In support of its SAR mandate, the CAF provides funding for the training, insurance, administration, and operations of the volunteers who make up CASARA. 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. 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 planned for the Rankin Inlet CASARA group in early 2023.

Coast Guard Auxiliary units are made up of trained local volunteers who use their own vessels or community vessels to respond to SAR incidents. 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. 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.[3]

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 Inuit 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.[4]

Many Auxiliary 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.

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

[3] Cambridge Bay, Kugluktuk, Gjoa Haven, Clyde River, Pond Inlet, Arviat, Naujaat, Igloolik, Sanirajak, and Pangnirtung.
[4] Kikkert and Lackenbauer, "Search and Rescue, Climate Change, and the Expansion of the Coast Guard Auxiliary in Inuit Nunangat / the Canadian Arctic."

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).

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.

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). NEM then works to track down and contract private sector resources or requests assistance from JRCC Halifax or Trenton.



Daniel Kablutsiak, coordinator for Arviat SAR, briefs the Kivalliq SAR Roundtable on how he organizes his SAR team.

On occasion, Nunavummiut also engage in SAR operations through several different community-based organizations. During some longer searches, members of 1 Canadian Ranger Patrol Group (1CRPG) will be officially activated to respond to ground SAR cases. During these taskings, 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.[5] In the Kitikmeot Region, a team of Inuit Guardians (working under the hamlet's Nattilik Heritage Society) 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.[6] 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).[7] In addition, the Coast Guard has provided marine search and rescue training to the Taloyoak Land 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.[8]

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 the PCSP, and those working for mining/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.

SAR in Nunavut: Core Strengths

Community responders at the roundtables identified several core strengths that support effective SAR operations in Nunavut.

Community Responders: Community responders form the cornerstone 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

[5] See Peter Kikkert and P. Whitney Lackenbauer, "The Canadian Rangers: Strengthening Community Disaster Resilience in Canada's Remote and Isolated Communities," *The Northern Review* 51 (2021): 1-33, https://thenorthernreview.ca/index.php/nr/article/view/901.

[6] See Peter Kikkert and P. Whitney Lackenbauer, "'A Great Investment in Our Communities': Strengthening Nunavut's Whole of Society Search and Rescue Capabilities," *Arctic* 74, no. 3 (September 2021): 258-275. https://doi.org/10.14430/arctic73099.

[7] Eilis Quinn, "Inuit Association Gets $900,000 to Monitor Marine Protected Area in Arctic Canada," *Eye on the Arctic*, 19 July 2018, https://www.rcinet.ca/eye-on-the-arctic/2018/07/19/inuit-association-gets-900000-to-monitor-marine-protected-area-in-arctic-canada/.

[8] Erin Abou-Abssi, "A New Way to Track Arctic Vessels, Oceans North," Oceans North, 11 January 2018, https://www.oceansnorth.org/en/blog/2018/01/nti-monitoring-program/; Fisheries and Oceans Canada, *Departmental Plan 2019–20* (Government of Canada, 2019), http://www.dfo-mpo.gc.ca/rpp/2019-20/dp-eng.html.

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. 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.

- *"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, Kitikmeot SAR Roundtable 2022.*

SAR Coordinators and Unit Leaders: 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.

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, Nunavummiut roundtable participants 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 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, Kitikmeot SAR Roundtable 2022.*

- *"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 SAR Roundtable 2022.*

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 SAR Roundtable, 2022.*

Nunavut Emergency Management SAR 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. Roundtable participants highlighted:

- The compensation provided to community SAR volunteers who may damage or lose equipment during a search (although process can be too slow and complicated).
- The SPOT program, which has provided each community with 15 to 20 devices which can be loaned to individuals for free (although can be a struggle to get people to use them and return them).
- The new "Nunavutized" GSAR Basic Searcher training that was rolled out in 2019-2020.
- Community visits, during which NEM personnel built relationships, explained complicated parts of the SAR policy, recruited additional searchers, and offered best practices for SAR operations.
- The provision of Garmin inReach devices to community SAR teams, which provide reponders with GPS, emergency beacon, and two-way communications (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).
- The "Go Bags" provided to community SAR teams was viewed as step in the right direction although responders noted a desire to discuss the contents of the bags (includes inside are 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 support that *some* of NEM's duty officers have provided during searches, which has included support with investigations, search planning, determining search tactics, locating additional regional resources, and liaising with other SAR partners. At other times, however, NEM personnel have been unable or unwilling to offer a high degree of assistance during searches, leaving community responders feeling unsupported and alone.

    - *"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 SAR Roundtable 2022.*

    - *"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 SAR Roundtable 2022.*

Coast Guard Arctic Region 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. Roundtable participants highlighted that these

efforts have facilitated the successful implementation of several key marine SAR initiatives, including the inshore rescue boat at Rankin Inlet, the Training and Exercising Industry Program, the expansion of the Coast Guard Auxiliary and the Indigenous Community Boat Volunteer Program, and the marine SAR training provided to various Inuit organizations, such as the Taloyoak Guardians and the Qikiqtani Inuit Association's Nauttiqsuqtiit

- *"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.*

- *"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.*

SAR in Nunavut: Best Practices and Key Lessons

Community responders at the roundtables shared several best practices geared towards improving SAR operations in the territory.

The Importance of Relationship-Building: At each roundtable, community, territorial, and federal participants consistently emphasized and accepted the critical importance of relationships and trust to the conduct of effective SAR operations in Nunavut. Relationships constitute the foundation of the system. Relationships foster horizontal and vertical coordination and cooperation. 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. The community visits conducted by NEM SAR personnel (discussed above) are a good example. Likewise, 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. These are best practices that should be continued.

Securing 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 and Arviat are good examples. In Cambridge Bay, 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. In Arviat, 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.



Elders Roger Hitkolok (Kugluktuk Search and Rescue), Paul Ikuallaq (Gjoa Haven Search and Rescue), and Jimmy Haniliak (Cambridge Bay Search and Rescue) share some of the best practices they have gathered over decades of SAR service.

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. Roundtable participants 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.

Securing Private Sector Support: 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 Agnico Eagle and Baffinland is a great asset during searches. 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 and 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."[9] Agnico Eagle's Emergency Rescue Team has also supported several searches conducted by Baker Lake Search and Rescue. Given these benefits, roundtable participants advised community SAR teams to build relationships with local and regional potential private sector partners, particularly those involved in resource development and adventure tourism (and which have a vested interest in a strong SAR system).

Benefits of Working With JRCC: The expansion of the Coast Guard Auxiliary in Nunavut has led to greater engagement between community responders and the JRCCs. Several roundtable participants highlighted the benefits of working with the coordinators at the JRCCs. 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 roundtables 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

Roundtable participants suggested that there was some concern that working with the JRCCs might lead to a loss of local control over certain searches. Those community responders that had worked with the JRCCs on past cases reported that this had not been their experience.

SAR Prevention Initiatives: Roundtable participants highlighted the benefits of 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. 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

[9] Agnico Eagle, "Agnico Eagle Commemorates Opening of Amaruq Whale Tail with $1 Million Donation to Baker Lake Legacy Projects," *The Eagle Blog*, 28 August 2019, https://www.agnicoeagle.com/English/the-eagle-blog/blog-news-details/2019/Agnico-Eagle-Commemorates-Opening-of-Amaruq-Whale-Tail-with-1-Million-Donation-to-Baker-Lake-Legacy-Projects/default.aspx.

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.

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.

Roundtable participants 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. 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."

Search Management, Planning, and Tactics: The discussions at the roundtable tended to focus more on broader policy, programming, organizational, and response issues, rarely getting into the nuts and bolts of SAR management, planning, and tactics. Still, roundtable participants did share several critical best practices and identified several key areas for improvement during searches (see next section).

- **Importance of Investigative Work:** Community responders who perform the role of investigator during ground and marine searches are critical. Given the close-knit nature of Nunavut's communities, the amount of quality information that can be gathered quickly is significant – making the investigation component a strength of many searches. Investigators are able to leverage their personal networks to quickly gather information about the search subject, their travel plans, their on-the-land activities, capabilities, condition of their equipment, mental health status, environmental conditions, etc. This information flows in throughout the search – it can be overwhelming, and the investigator must always assess for accuracy, but it generally helps to reduce the search area and can point searchers in the right direction.

  On the marine side, this service is essential 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. 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, condition of their

vessel, 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.

- **Benefits of Involving Elders in Search Planning:** SAR operations in Nunavut often involve massive search areas. Given their expertise, Elders can play a critical role in determining the most probable areas where a search subject might be found. They are particularly adept at assessing and understanding possible decision points, are critical for terrain analysis, can help work through various scenarios, and provide estimates on probability of area and probability of detection. Elders can also offer expert advice on survivability and on if/when searches should be transitioned to recoveries. Roundtable participants suggested embedding them in command posts and engaging them in planning throughout searches.

    - *"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." Community responder, Kivalliq SAR Roundtable 2022.*

- **The Value of Hasty Teams:** Hasty teams are a valuable tool at the beginning of most searches. In Nunavut, many SAR coordinators have a small group of experienced searchers that they will activate first, deploying them out in pairs or in parties of four to search trails, cabins, and other high probability areas where the subject is most likely to be found. This tactic allows for rapid responses and helps to identify and preserve tracks and clues. Given how quickly untrained spontaneous volunteers (often people returning to the community or going out on the land) can descend on the search area, these fast reaction hasty teams can be critical.

- **Making Use of the Garmin inReach Devices:** Garmin inReach devices are the main tools used by many of Nunavut's GSAR teams. Upon completing basic GSAR training, a 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+, and attachments and equipment for both Garmin devices. Some teams have supplemented the devices provided by NEM by purchasing additional units. At the roundtables, teams that employ their inReach devices extensively encouraged their peers to make sure they were using them to the fullest. They are tough, durable, and impact-resistant units, ideal for the rough conditions encountered on many searches. These units function as GPS, emergency beacon, and two-way communicator, allowing users to send and receive text message and email updates and share location information – pivotal functions during a search. They provide responders with real time weather information and extensive tracking capabilities. Many

responders pair their inReach units with their phones using the Earthmate app, which allows for easier typing and communications.

Crucially, the devices allow SAR coordinators and NEM duty officers to monitor each unit from their computers and track the search area covered using the web-based MapShare portal. The inReach device sends waypoints at preselected time intervals, which greatly facilitates search management and planning. All of this geographic information can then be shared with partners, such as the JRCCs.

Roundtable participants suggested that the number of inReach units provided to each GSAR team be increased to better facilitate SAR operations.

Employing New Technology: Roundtable participants 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. They can also be used to improve communications for responders deployed on the land.

Many participants emphasized the benefits of accessing 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, which can be used to improve responder safety and help determine search areas.[10] 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."

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

[10] T. Bell, R. Briggs, R. Bachmayer, S. Li. "Augmenting Inuit knowledge for safe sea-ice travel: The SmartICE information system." In *2014 Oceans - St. John's*, N.B, 14-19 September 2014, DOI: 10.1109/OCEANS19395.2014; SmartICE, "Enabling Resiliency in the Face of Climate Change," SmartICE n.d., https://smartice.org/.

on the mobile app, SIKU, and shared via social and broadcast media."[11] Several SAR coordinators highlighted how SmartICE has reduced the number of searches in their communities.

Participants 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.

[11] Government of Canada, "SmartIce," Government of Canada, https://www.canada.ca/en/atlantic-canada-opportunities/services/indigenous-business-atlantic-canada/smartice.html

SAR in Nunavut: Challenges and Areas for Improvement

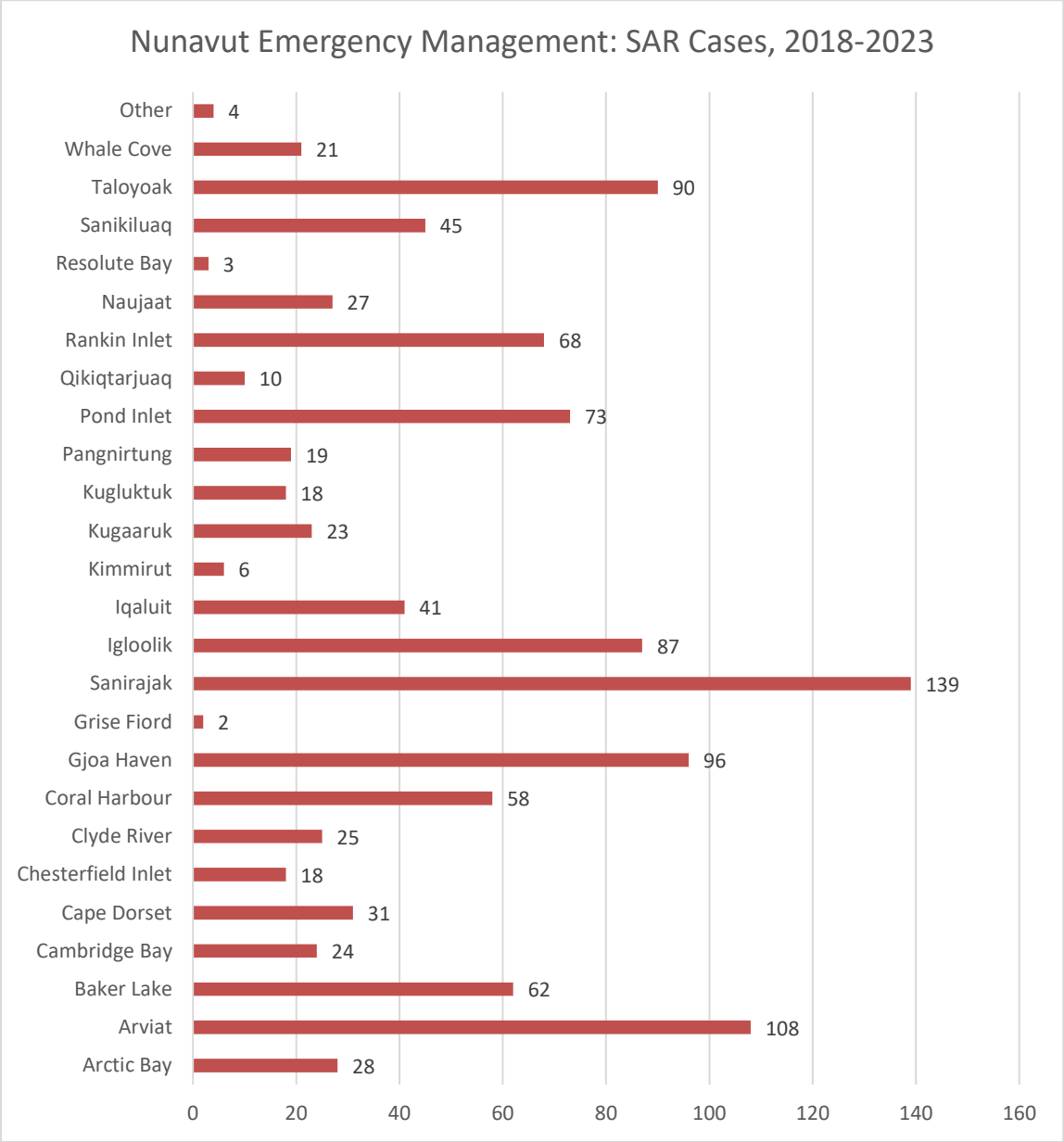
Search and rescue operations on the water, land, and ice of Nunavut are often difficult. The tyranny of time, distance, and space are major issues. Nunavut covers more than 2,093,000 square kilometres of total area, encompassing 157,077 square kilometres of water, 45,000 kilometres of coastline, and 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. The search and rescue responders who participated in the roundtables, however, have identified a wide array of other difficulties that hamper effective SAR operations.

The Case Load: Generally, Nunavut's communities have a heavy SAR case load. 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. While the official record shows that certain communities experience far more SAR incidents than others, the underreporting of cases is widespread. Some communities have dozens of searches a year. The chart below is illustrative, although it should be emphasized that these are only the cases reported through NEM – they do not include all marine or air cases reported through the Coast Guard and JRCCs. Further, some communities may not be reporting every incident to which they respond.



Calvin Pedersen and Peter Kikkert summarize the areas for improvement identified at the roundtables

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.



Unreported 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.

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 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.

- *"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 SAR Roundtable 2022.*

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. 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.[12] Nunavummiut now have to travel new, longer, and more dangerous routes on sea ice,

[12] T. Pearce, B. Smit, F. Duerden, J. Ford, A. Goose, and F. Kataoyak, "Inuit vulnerability and adaptive capacity to climate change in Ulukhaktok, Northwest Territories, Canada," *Polar Record*, 46 (2) (2010): 157-177, DOI: http://dx.doi.org/10.1017/S0032247409008602; T. Pearce, H. Wright, R. Notaina, A. Kudlak, B. Smit, J.D. Ford, and C. Furgal, "Transmission of environmental knowledge and land skills among Inuit men in Ulukhaktok, Northwest Territories, Canada," *Human Ecology*, 39 (3) (2011): 271-288, DOI: http://dx.doi.org/10.1007/s10745-011-9403-1; T. Pearce, J. Ford, A. Cunsolo Willox, B. Smit, "Inuit Traditional Ecological Knowledge (TEK): Subsistence Hunting and Adaptation to Climate Change in the Canadian Arctic," *Arctic* 68 (2) (2015): 233-245, DOI: https://doi.org/10.14430/arctic4475; A. Durkalec, C. Furgal, M. Skinner, and T. Sheldon, "Climate change influences on environment as a determinant of Indigenous health: relationships to place, sea ice, and health in an Inuit community," *Soc. Sci. Med.* 136 (2015): 17–26; A. Durkalec, C. Furgal, M. Skinner, and T. Sheldon, "Investigating environmental determinants of injury and trauma in the Canadian North," *Int. J. Environ. Res. Public Health* (2014), DOI: http://dx.doi.org/10.3390/ijerph110201536; D. Clark, J.D. Ford, T. Pearce, and L. Berrang-Ford, "Vulnerability to unintentional injuries associated with land-use activities and search and rescue in Nunavut, Canada," *Social Science & Medicine* 169 (2016): 18-26, DOI: 10.1016/j.socscimed.2016.09.026; D. Clark and J.D. Ford, J., "Emergency response in a rapidly changing Arctic," *Canadian Medical Association Journal* 189 (4) (2017): 135-136, https://doi.org/10.1503/cmaj.161085; S. Gearheard, C. Aporta, G. Aipellee, and K. O'Keefe, "The Igliniit project: Inuit hunters document life on the trail to map and monitor arctic change," *The Canadian Geographer*, 55 (1) (2017): 42-55, DOI: https://doi.org/10.1111/j.1541-0064.2010.00344.x; J.D. Ford and D. Clark, "Preparing for the impacts of climate change along Canada's Arctic coast: The importance of search and rescue," Marine Policy 108 (2019): 1-4, https://doi.org/10.1016/j.marpol.2019.103662; Kikkert et al, *Kitikmeot Roundtable on SAR: General Report and Findings*; N. Simonee, J. Alooloo, N.A. Carter, G. Ljubicic, and J. Dawson, "Sila Qanuippa? (How's the weather?): Integrating inuit qaujimajatuqangit and environmental forecasting products to support travel safety around Pond Inlet, Nunavut, in a changing

increasing the chances of damaging equipment or getting lost. 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. 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.

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.[13] 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.

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, pointed 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.

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

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climate," *Weather Clim. Soc.* 13 (2021): 933–962, DOI: 10.1175/WCAS-D-20-0174.1; and J.D. Ford, D. Clark, L. Copland, T. Pearce, IHACC Research Team, and S. Harper, "Projected Decrease in Trail Access in the Arctic," *Communications Earth and Environment*, 4 (23) (2023), DOI: https://doi.org/10.1038/s43247-023-00685-w.

[13] This echoes the previous findings of Durkalec et al, "Investigating environmental determinants of injury and trauma in the Canadian North,"; Clark et al, "Vulnerability to unintentional injuries associated with land-use activities and search and rescue in Nunavut,"; J. Ford, D. Clark, and T. Pearce, "Changing access to ice, land and water in Arctic communities," *Nature Climate Change* 9 (2019): 335-339, DOI: https://doi.org/10.1038/s41558-019-0435-7; and Kikkert and Lackenbauer, "'A Great Investment in Our Community.'"

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 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.

Roundtable participants 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 and boats, which allow travellers to go vast distances and, in the case of snowmachines, 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 officially reported by community responders. Finally, 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.

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. 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.

- *"[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."* - *Community responder, Kivalliq SAR Roundtable 2022.*

- *"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, Kivalliq SAR Roundtable 2022.*

- *"They [back-pack hunters] take too many risks."* - *Community responder, Kivalliq SAR Roundtable 2022.*

- *"[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 SAR Roundtable 2022.

- *"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 SAR Roundtable 2022.*

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

- *"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 SAR Roundtable 2022.*

Policy, Governance, Organizational, and Planning Issues: Policy, governance, planning, 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.

- **The Non-Profit Status Requirement for 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 … to act as the sole agent for collecting funds for and carrying out a community-based search."[14] Community SAR coordinators and responders 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. They wondered 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.

- **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."[15] 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

[14] Department of Community and Government Services, *Community Based Search and Rescue Contributions Policy*, Government of Nunavut, 31 January 2017, https://www.gov.nu.ca/sites/default/files/documents/2024-02/1.5.%20CGS%20-%20Community%20Based%20Search%20and%20Rescue%20Contributions%20Policy%2003%2C17.pdf.
[15] Department of Community and Government Services, *Community Based Search and Rescue Contributions Policy*.

danger (provided that the family members are capable of doing so), they argue that this provision simply wastes time in most SAR operations.

  - *"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 SAR Roundtable 2022.*

- **The Lack of Consistent Funding:** Roundtable participants 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. Further, it is difficult for community SAR organizations to identify different funding opportunities, let alone apply for them. 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 Need for Stronger GSAR Plans, Procedures, and Guidelines:** A key take-away from the roundtables was that, 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. SOP/SOGs 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.

- **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.

  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.

- **The Need to Improve Nunavut's SAR Policy:** The Government of Nunavut's SAR policy expires in 2022. There is an opportunity to revise it to address some of the challenges identified by roundtable participants, including moving on from the non-profit-society approach, removing the private search category, and providing clarity on search suspension and recovery procedures.

Community responders would also like greater clarity on what constitutes a search and a rescue in Nunavut. 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. Along these lines, participants emphasized the need for the policy to explicitly establish what coverage they have during a SAR operation and the conditions for that coverage.

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

- **Jurisdictional Issues in the SAR System:** 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. 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.

  A part of the issues is general confusion amongst community responders and Nunavummiut more generally about how the SAR system works. Roundtable participants noted that 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.

- *"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 SAR Roundtable 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 SAR Roundtable 2022.*

- *"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 SAR Roundtable 2022.*

- **Lack of Clarity on the Role of the RCMP**: Roundtable participants expressed 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 piecemeal and largely based on the decisions and community relations of individual officers. 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.

  - *"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 SAR Roundtable 2022.*

- **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.

  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 SAR Roundtable 2022.*

- **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." 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.

- *"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 SAR Roundtable 2022.*

Capacity and Capability Issues: The following are the major capacity and capability gaps that most impact SAR operations on the territory's land, water, and ice.

- **The Need to Enhance NEM's SAR Capabilities:** 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.

  NEM personnel play a significant role as search commanders assisting in the coordination of searches, but that support can be uneven. Roundtable participants 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. 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.

  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.

- *"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 SAR Roundtable 2022.*

- **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 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.

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 long-time 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, 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.

- **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 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 has helped to mitigate this challenge.

  - *"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 SAR Roundtable 2022.*

- **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, roundtable participants noted that 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. 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.

- **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.

- **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.

  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.[16] 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.[17]

  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. Many participants highlighted the need for a common SAR building that both GSAR and Auxiliary groups could use for equipment, supplies, training, and meetings.

[16] There is seasonal coverage to those waters within a 40-nautical-mile radius of Churchill, Iqaluit, Resolute Bay (Quasuittuk), Cambridge Bay, and Parson's Lake, including those bays, coves, and inlets that have unobstructed signal paths from VHF radio facilities.

[17] HF coverage is provided within an 800-nautical-mile radius of Iqaluit, Killinek, Coral Harbour, Resolute Bay (Quasuittuk), Churchill, Cambridge Bay, and Inuvik, and to the Mackenzie River from Hay River and Inuv. Canadian Coast Guard, "Levels of Service Marine Communications and Traffic Services," https://www.ccg-gcc.gc.ca/publications/corporation-information-organisation/levels-of-service-niveaux-de-service/page08-eng.html.

- *"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 SAR Roundtable 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 SAR Roundtable 2022.*

- **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."

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

  - *"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 SAR Roundtable 2022.

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.

- **The Impact of Austere and Changing Environmental Conditions on SAR Operations:** A critical lesson discussed at each of the regional roundtables was that harsh and changing environmental conditions not only increase the SAR case load but also pose significant challenges to responders. Participants reported that 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. Changing ice conditions also make it more difficult to predict ice drift and characteristics when planning searches. Finally, ice can also delay or stop responders altogether during SAR missions. "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.

  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. 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.

  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.

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. This lack of training and equipment extends to recovery operations under the ice, in which local SAR groups are often involved.

  - *"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 SAR Roundtable 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 SAR Roundtable 2022.*

- **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.

- **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.

  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 SAR Roundtable 2022.*

- **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 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. These 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 SAR Roundtable 2022.*

- **The Challenge of Managing 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.

- **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.

- **Mass Rescue Operations[18]:** Roundtable participants, both community responders and government practitioners, thought the risk of a major transportation accident requiring a mass rescue was increasing in Nunavut. 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."[19] 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

[18] See Peter Kikkert, Calvin Pedersen, and P. Whitney Lackenbauer, "Mitigating the Tyranny of Time and Distance: Community-Based Organizations and Marine Mass Rescue Operations in Inuit Nunangat," in *Arctic Shipping at a Time of Change: Governance Challenges and Approaches in the Canadian North*, eds. Kristin Bartenstein and Aldo Chircop (Leiden: Brill, 2023. 182-210), https://doi.org/10.1163/9789004508576_010; Peter Kikkert and P. Whitney Lackenbauer, "'That Others May Live': Search and Rescue," in *Evolving Human Security Frameworks and Considerations for Canada's Military*, eds. Shannon Lewis-Simpson and Sarah Jane Meharg (Kingston: Canadian Defence Academy Press, 2023), 143-147.

[19] International Maritime Organization (IMO), *Guidance for Mass Rescue Operations* (London: IMO, 2003), http://imo.udhb.gov.tr/dosyam/EKLER/201381214504COMSAR1Circ31GuidanceForMassRescueOperations.Pdf; IMO, *International Aeronautical and Maritime Search and Rescue IAMSAR Manual* (London: IMO, 2016).

protocols, the sustained accountability of passengers, the transportation of large numbers of survivors, and, potentially, a large-scale medical response.[20] A mass rescue in Nunavut 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. While discussions of mass rescues in the Canadian Arctic often point to the risks posed by large passenger airplanes or cruise ships, the tabletop exercises conducted as part of the roundtables highlighted that relatively small numbers of people requiring rescue could quickly overwhelm the "capabilities normally available for search and rescue authorities" for operations in Nunavut.

Post-Search Issues: Responders identified the following challenges and areas for improvement that appear between and in the aftermath of SAR operations in Nunavut.

- **Recovery Operations:** Community responders frequently participate in recovery operations in Nunavut, often at the request of the RCMP. They emphasized 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. Community participants 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 SAR Roundtable 2022.*

- **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. Many community responders wear multiple hats and are involved in several groups that are responsible for SAR and emergency services. 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

[20] See, for instance, Richard Button and Thomas Gorgol, "Understanding the Challenge: Mass Rescue Operations at Sea," in *Cooperation and Engagement in the Asia-Pacific Region*, eds., Myron H. Nordquist, John Norton Moore, and Ronán Long (Leiden: Brill Nijhoff, 2020), 356–390; United States Coast Guard Research and Development Center, *Mass Rescue Operations Scoping Study, Final Report* (April 2007); International Maritime Rescue Federation (IMRF), *The International Maritime Rescue Federation Mass Rescue Operations Project: The Challenge: Acknowledging the Problem, and Mass Rescue Incident Types* (IMRF, 2019), https://www.international-maritime-rescue.org/Handlers/Download.ashx?IDMF=d592a796-9d30-4bec-ab67-3052940dab4d.

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.

Some roundtable 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.

- *"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 SAR Roundtable 2022.*

- **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.

- **Debriefing:** Many SAR teams in Nunavut do not regularly complete a team debriefing after an incident. Team debriefs and hotwashes are helpful to generate lessons observed 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.

- **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.

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

- *"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 SAR Roundtable 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 SAR Roundtable 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 SAR Roundtable 2022.*

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

- *"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 SAR Roundtable 2022.*

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.

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 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 (providing more to each SAR team), 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.

- 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.

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.

- The Government of Nunavut should consider investing in paid SAR coordinator positions. This individual would be responsible for SAR prevention, preparedness, and response at the community level.

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 – at the very least, it should be easier to use them if they are required.
- 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 response 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.

Taken together, these suggestions 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.

"These roundtables remind us that – Nunavut Emergency Management, Coast Guard, the military, all us volunteers – are working together for the same reason: 'so that others may live.' That's a powerful thing and that should be celebrated." - Community responder, Kitikmeot SAR Roundtable 2022.

2022 SAR Roundtables Comparison

The aim of this table is to (a) record the key issues raised during the formal discussions conducted during 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.	- 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	- 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

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		- Also, the CCG RAMSAR program is going into communities to try and find out more about the reality of SAR activities.	minor cases, then govt will get better picture of scale of SAR in NU.	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.
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	- 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	- 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

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		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	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	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

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		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	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.	miscommunication in searches around location coordinates. NEM can help with this in future.

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		the north (general Ranger observation – no specifics given – likely relates to red tape around Ranger activation).		
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	- 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 doesn'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.	- 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.

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		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?	- 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.]	- 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?

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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	- 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	- 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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		assets. - Either way, should be a seamless process for the SAR coordinator – one POC then dealt with behind the scenes by NEM and JRCC.	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.	
5.	**Expansion of VHF and/or cell phone coverage**	- VHF repeaters would be very useful - CCG has towers and is looking at	- Nunavut government is planning to instal new VHF repeater systems	

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		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.	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	- 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.	- 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

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		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	- 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	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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		(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.	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.]	
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-	- 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	- 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.

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		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.	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.	
8.	**Changes in frequency and**	- NEM and communities	- Rapid increase in commercial	- Discussion of SAR cases involving

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	type of SAR cases	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	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.	adventure tourism/exploration – very frustrating for community SAR teams. - Question over SAR system's ability to deal with increasing cruise ship traffic in the arctic. CCG recognise the issue but still working to assess the size of the problem. - Pleasure craft can just show up in communities without any advance notice – they shouldn't do this but no-one is there to stop them. - Better machines mean people go further for hunting, which means larger search distances. - Communities are concerned about the risk presented by cruise ships - Perception that there is a rise in SAR cases. - CR mentioned that some young people don't take enough

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		prepared than they used to be – they have faster machines and so can go further away without feeling they've been out for long.		gas with them.
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	- 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	- 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

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		– 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	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	training.

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		staff repeatedly; and (c) shows that communities, and SAR volunteers, matter to the territorial and federal governments.	SAR responders to pass their knowledge on to the next generation because many are now too old to go out regularly.	
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.

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				- 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.
11.	**Equipment issues**	- There is a need for more and better community-based SAR vehicles to improve response	- How to service dedicated SAR snowmobiles, ATVs? - One community mentioned having	- Gjoa Haven: would be useful to have a smaller boat for searching in shallow areas; also a diagnostic

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		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	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	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

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		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.	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	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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			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.	
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	- 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	- 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

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		important.	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	teams to respond to e.g., recoveries, where they are best placed or have the best knowledge to respond?

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			a SAR case. NEM confirmed can't help with health cases.	
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.
14.	**Burden of SAR paperwork**	- Paperwork for SAR coordinators is really challenging. - Currently all the	- CRs agreed that paperwork is an issue – how can we make it easier?	- Paperwork for a search can take a couple of hours – can make all the difference. CRs

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
		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	- Proposal to have a paid point of contact in each community that can coordinate GSAR cases.	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.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
		program?		
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	- Difficult to get Rangers involved in a SAR case because of delays in tasking them.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
			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	

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
			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).	
16.	**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	- 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	- 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.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
		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-	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	

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
		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.	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.	
17.	**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	- 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.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
			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.	
18.	**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	- 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)
			is safe or not (see also re training – transfer of knowledge between generations is vital). - Can't replace traditional knowledge with technology.	
19.	**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	- 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	- Could have aids to navigation on islands in the region – on the high points. - Idea of setting up basecamps 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.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
		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.	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	

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
			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.	
20.	**Specific issues**	- Tabletop exercise	Tabletop exercises	- Tabletop exercise

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
	around mass rescues	identified various challenges that would arise if a large vessel were to get into difficulties in arctic waters.	identified various challenges that would arise if a large vessel were to get into difficulties in arctic waters.	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.
	B. Issues mentioned in two roundtables			
21.	**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	- Can work well, some communities have been able to buy SAR machines with the proceeds of e.g., Bingo nights.

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
			funding sources.	
22.	**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.
23.	**SAR cases involving mental illness**		- Discussion around who deals with the situation where someone is e.g., suicidal and walks out of the community.	- SAR gets called on cases relating to suicidal individuals; have to involve the RCMP. - CR in Gjoa Haven working with youth

No.	Issue	Qikiqtani (Iqaluit)	Kivalliq (Rankin Inlet)	Kitikmeot (Yellowknife)
			- RCMP will likely take charge in this situation. Person might have a weapon, be dangerous. Have to consider safety of searchers.	on suicide prevention; big issue in the community.
	C. Issues mentioned at one roundtable			
24.	**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.		
25.	**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).		
26.	**Whom to contact if need**		- Generally, divers needed for	

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	divers?		recovery so RCMP would deal with that. - JRCC will only dive where assess that someone may still be alive, e.g., lost diver.	
27.	**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.	
28.	**Predator control during SAR**			- CR question about how to get conservation agency involved, SAR teams have encountered grizzly bears and wolves.
29.	**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

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				time?
30.	**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.
31.	**(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.

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)
Gina Paniloo	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

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

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)

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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

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.

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.

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.

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.

Funding

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.