TAKUNIQ

The Canadian Rangers and Canada's High Arctic in an Era of Strategic Competition

P. Whitney Lackenbauer

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North American and Arctic Defence and Security Network

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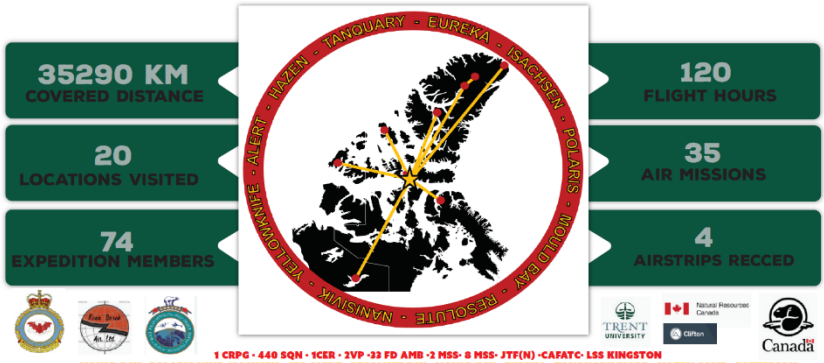

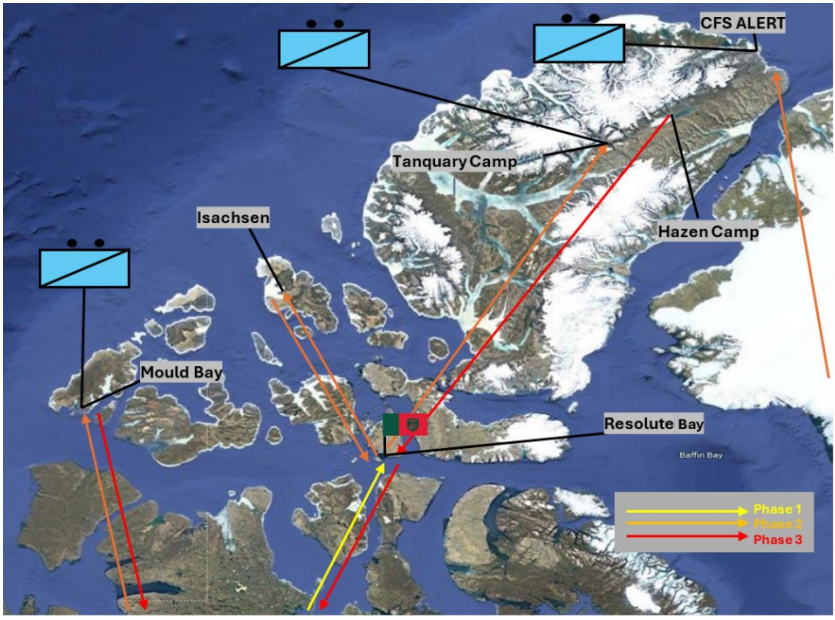

Contents

List of Acronyms

ACCE(N)	Air Component Coordination Element (North)
AES	Atmospheric and Environmental Services
AI	artificial intelligence
ANZAC	Australia and New Zealand (Army Corps)
AOA	Arctic Operations Advisor
AOR	area of responsibility
A-OTHR	Arctic Over-the-Horizon Radar
ARCG	Arctic Response Company Group
ASAR	Airfield Surface Assessment and Reconnaissance / air search and rescue
ASWG	Arctic Security Working Group
ATF	Air Task Force
ATV	all-terrain vehicle
AWOS	automated weather observation system
BCE	Before the Common Era
BGen	Brigadier-General
C	Celsius
CADIZ	Canadian Air Defence Identification Zone
CADPAT	Canadian Disruptive Pattern
CAF	Canadian Armed Forces
CAFATC	Canadian Armed Forces Arctic Training Centre
CAFP	*Canada's Arctic Foreign Policy*
CANSOFCOM	Canadian Special Operations Forces Command
Capt	Captain
casevac	casualty evacuation
CBR	California Bearing Ratio
CE	Common Era
CFB	Canadian Forces Base
CFIOG	Canadian Forces Information Operations Group
CFS	Canadian Forces Station
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CJOC	Canadian Joint Operations Command
CJTF	Combined Joint Task Force
CMTC	Canadian Manoeuvre Training Centre
CO	Commanding Officer
Col	Colonel
Corp.	Corporation

COVID	coronavirus
CP	Command Post
Cpl	Corporal
CR	Canadian Ranger
CRPG	Canadian Ranger Patrol Group
CV	Constant Velocity
DAOD	Defence Administrative Order
DCASS	Documents on Canadian Arctic Sovereignty and Security
DCDS	Deputy Chief of the Defence Staff
DEW	Distant Early Warning
DF	diesel fuel
DHH	Directorate of History and Heritage
DND	Department of National Defence
DRB	Defence Research Board
DRDC	Defence Research and Development Canada
DSR	daily situation report
ECCC	Environment and Climate Change Canada
ed(s).	edited/editor(s)
ESOVPAT	enhanced sovereignty patrol
ETS	Enhanced Training Session
EUR	equipment usage rate
FOL	forward operating location
GAC	Global Affairs Canada
GAW	Global Atmosphere Watch
GNWT	Government of the Northwest Territories
GPS	Global Positioning System
GSAR	ground search and rescue
HADCS	High Arctic Data Communications System
HAWS	High Arctic Weather Station
HBC	Hudson's Bay Company
HF	high frequency
HMS	Her / His Majesty's Ship
HQ	Headquarters
HURRICANE	Honeywell Uninterrupted Radio Relay in Canada's Arctic Northern Ellesmere
ICBM	intercontinental ballistic missile
IFAK	Immediate First Aid Kit
ILP	Intermediate Leadership Program
IMO	International Maritime Organization
IPY	International Polar Year
JAWS	Joint Arctic Weather Stations

JCR	Junior Canadian Rangers
JIMP	Joint, Interagency, Multinational, and Public
JOPG	joint operations planning group
JP-8	Jet Propellant 8
JRCC	Joint Rescue Coordination Centre
JTFN	Joint Task Force North
KBA	Kenn Borek Air
kg	kilogram(s)
km	kilometre(s)
L	litre(s)
LAC	Library and Archives Canada
lat.	latitude
lb	pound(s)
LCol	Lieutenant-Colonel
LogO	Logistical Officer
long.	longitude
Lt	Lieutenant
m	metre(s)
Maj	Major
MALA	mission acceptance or launch authority
MAMS	mobile air movement sections
MCpl	Master-Corporal
met rep	meteorological report
MGen	Major-General
min(s)	minute(s)
mm	millimetre(s)
MSS	Mission Support Squadron
MWO	Master Warrant Officer
N	North
NAADSN	North American and Arctic Defence and Security Network
NATO	North Atlantic Treaty Organization
NESP	Northern Employment and Support Plan
NORAD	North American Aerospace Defence Command
NOREX	Northern Exercise
NORPLOY	Northern deployment
NOSH	Northern Operational Support Hub
NW	northwest
NWS	North Warning System
OGD	other government department
OLS	Obstacle Limitation Surfaces
1 CER	1 Combat Engineer Regiment

1 CRPG	1st Canadian Ranger Patrol Group
ONSAF	*Our North, Strong and Free*
Op	Operation
OPLAN	Operation Plan
Op NA-NK	Op NANOOK-NUNAKPUT
Op NA-NU	Op NANOOK-NUNALIVUT
Op NA-TA	Op NANOOK-TATIGIIT
Op NA-TK	Op NANOOK-TAKUNIQ
Op NA-TU	Op NANOOK-TUUGAALIK
OpsO	Operations Officer
OpsWO	Operations Warrant Officer
OTH	over-the-horizon
OTHR	Over-the-Horizon Radar
PA	Practitioner's Assistant
PAIL	Pan-Arctic Inuit Logistics
PAME	Protection of the Arctic Marine Environment
PCB	polychlorinated bi-phenyl
PCI	Pavement Condition Index
PCMR	Pacific Coast Militia Rangers
PCSP	Polar Continental Shelf Program
PEARL	Polar Environment Atmospheric Research Laboratory
P-OTHR	Polar Over-the-Horizon Radar
PPCLI	Princess Patricia's Canadian Light Infantry
pt.	part
Pte	Private
RCAF	Royal Canadian Air Force
RCMP	Royal Canadian Mounted Police
RCN	Royal Canadian Navy
recce	reconnaissance
RFA	request for assistance
RG	Record Group
ROC	Rehearsal of Concept
RPAS	remotely piloted aircraft system
SAR	search and rescue
SAT	satellite
SAT PTT	satellite push-to-talk radio
SECD	Standing Senate Committee on National Security, Defence and Veterans Affairs
Sgt	Sergeant
SIGINT	signals intelligence
SOF	special operations forces
Sqn	Squadron

SSE	*Strong, Secure, Engaged*
SSEA	Secretary of State for External Affairs
SSM	Special Service Medal
STOL	short take-off and landing
3 R22eR	3rd Battalion, Royal 22e Régiment
2PPCLI	2nd Battalion, Princess Patricia's Canadian Light Infantry
2RCR	2nd Battalion, The Royal Canadian Regiment
2 R22eR	2nd Battalion, Royal 22e Régiment
UBC	University of British Columbia
UHF	ultra high frequency
UK	United Kingdom
ULSD	ultra-low-sulfur diesel
UNCLOS	United Nations Convention on the Law of the Sea
US	United States
USCGC	United States Coast Guard Cutter
USNORTHCOM	United States Northern Command
USS	United States Ship
USSEA	Under-Secretary of State for External Affairs
USWB	United States Weather Bureau
VFR	visual flight rules
VHF	very high frequency
vol.	volume
W	West
WO	Warrant Officer
WoG	whole of government

Foreword

BGen Daniel Rivière
Commander, Joint Task Force North

It is a pleasure and honour to provide a foreword to this book on Operation NANOOK-TAQUNIK (Op NA-TQ). It is a timely addition to the literature on Canadian Armed Forces (CAF) operations, and specifically the exploits of 1st Canadian Ranger Patrol Group (1 CRPG) and 440 (Transport) Squadron (440 Squadron) undertaken in the high latitudes of our country. It also marks a turning point in Canadians' general awareness of operations undertaken to secure the North Atlantic Treaty Organization's (NATO) western flank. For the first time in twenty years, a NANOOK operation garnered front page coverage in a major Canadian national newspaper. On the cover, a Canadian Ranger cresting a ridge, straining under a heavy rucksack, carrying a rifle above the eighty-fifth parallel north. The mountains of Tanquary Fiord on Ellesmere Island surrounding her as she reaches the crest. It remained the most viewed and read online *Globe and Mail* story for a month.

Canadians' interest in the Arctic is existential, emanating from a strong sense of national identity and concerns about our security in an era of global uncertainty and disruption. As the Commander of Joint Task Force North (JTFN), which has a permanent footprint in the three Territories, I have witnessed firsthand a rapid transformation as the scale, breath, and pace of Canadian operations in the North has reached a near persistent basis, accelerated by the release of the 2024 defence policy update *Our North Strong and Free: A Renewed Vision for Canada's Defence*, and Canada's *Arctic Foreign Policy Statement* released later that same year. The addition of Op NA-TQ to the Arctic operational landscape has broadened the growing suite of Arctic-capable force options available to the Commander Canadian Joint Operations Command (CJOC) and the Government of Canada.

JTFN's mission is to cohere pan-domain operations in the Canadian Arctic Theatre of Operations to detect threats, deter adversaries, defend Canadian sovereignty, ensure a persistent presence to support Northern People, and assure partners and Allies across the cooperation, competition, crisis, and conflict continuum. Along these lines, Op NA-TQ as a new line of effort looks to operationalize 1 CRPG through a whole-of-society approach. By leveraging joint, interagency, industry, academic, and national media partners at the operational level, JTFN was able to unify broad elements of national power, projecting 1 CRPG

further and longer across Canada's High Arctic. Equally important is the requirement to communicate larger Defence Team's actions and to integrate our strategic communications within Canada and NATO's overall deterrence strategy. Dr. Whitney Lackenbauer's work, written in close collaboration with other participants in Op NA-TQ, is an important part of that communication, situating intimate contributions from the team in historical and geopolitical context that illustrates how defence policy plays out under summer blizzards, melting permafrost, and isolation in Canada's Arctic Archipelago.

This book offers an eclectic and enjoyable narrative produced within six months of mission completion. Intended to reach a broad audience both within and beyond the Defence Team, its value lies in its timeliness and realism in recounting the first-hand experiences of Canadian Rangers and the pressures of designing and expanding High Arctic operations at speed. For military planners and professionals interested in the logistics, communications, and risk challenges of operating in the region, to the casual enthusiast seeking to understand the Rangers' esprit de corps and sense of humour, to policy buffs interested in practical mechanisms for cohering across the policy/implementation divide, this book will appeal to a diverse range of readers, eager to learn more about Canada's enduring commitment to defending and protecting its Arctic. Finally, it is a book on Canadian sovereignty and the Defence Team that brings it all together, expressed through the strength of relationships and the resilience of Northern Canadians leading the way.

1

Setting the Context

> *The most urgent and important task we face is asserting Canada's sovereignty in the Arctic and northern regions, where the changing physical and geopolitical landscapes have created new threats and vulnerabilities to Canada and Canadians.*
> *... Defending the Arctic is asserting Canadian sovereignty. To do so, we must take a new approach that improves and modernizes our defences in the region.*
> *This means establishing greater presence, reach, mobility, and responsiveness in the Arctic and North to deal with disasters, threats, and challenges to our sovereignty.*
>
> Department of National Defence,
> *Our North, Strong and Free* (April 2024)[1]

Global geopolitical drivers, technological advances, and climate change have propelled Arctic security to the forefront of Canadian and international discussions. According to popular narratives, the melting of Arctic sea ice is opening previously inaccessible areas, offering new opportunities for resource extraction, transpolar shipping routes, and military competition. While Canada and the other Arctic states continue to assert their sovereignty and control over the region's mineral and energy resources, some non-Arctic state and non-state actors articulate competing narratives about their desired future for the region. Once-prevalent ideas of "Arctic exceptionalism"[2] – the notion that the Circumpolar North has been, or can be, insulated from global pressures – have collapsed in the face of growing great power competition spilling over into regional affairs. Is Canada prepared to defend its sovereignty? What are the actual threats to Arctic security that Canadians should worry about? And what roles can and do the Canadian Rangers play in ensuring that we know what is going on in our North and that the region is defended?

These are questions with which I have been grappling for nearly three decades. I have dedicated countless hours to poring over dusty archival

files, microfilm, parliamentary transcripts, newspaper and magazine stories, and official reports to learn about Canadian perceptions of and approaches to Arctic sovereignty and security. I have also been blessed to have learned from the Canadian Rangers in countless conversations across the Canadian Arctic and North, as well as through my participation in many dozens of Ranger training and operational activities across the region since 1999. These experiences have profoundly shaped my understanding of and appreciation for the Rangers and what I typically refer to as their "living history." Through these interactions, I also have come to appreciate the alignments – and disconnects – between what is talked about in policy circles and what is experienced by experts on the ground.

As I have come to know the Canadian Rangers, I have also come to discover the diversity and resilience of Canada through the richness of its remote communities and the strength of the people who live in them. Collectively, the Rangers make up one of the most interesting and unorthodox military forces in the world. Individually, they are a microcosm of how and why mobilizing Canada's diverse population provides the broad and deep expertise needed to operate effectively in challenging environments that cannot be covered conveniently or economically by other military elements. Collectively, the Rangers contribute to a strong Defence Team, serving as force enablers or force multipliers for outside units operating in their northern homelands, as well as representing a strategic reconnaissance screen in their own right. As I have found myself drawn deeper into the Arctic security policy space over the years, advocating for proportionate military responses to evolving threat environments, I have always retained a strong sense of the central importance of the Rangers as a continuous military presence that balances economy of force with elite operational knowledge and capacity.

The geography of the Canadian Arctic continues to make it a unique environment where operating conditions vary significantly from those in southern Canada and other parts of the Circumpolar North.[3] Physical environmental challenges to projecting and sustaining forces in the region mean that climate change is not making it an easier region in which to operate – as much of the superficial news media coverage might lead us to believe – but rather more unpredictable and precarious.[4] Climate change is certainly reducing the thickness and extent of sea ice, with some scientists projecting an ice-free summer in the Central Arctic Ocean as soon as 2035.[5] While these changes are likely to bring increased international maritime traffic to the Canadian Arctic, the *unpredictability* associated with climate change makes it

difficult to anticipate *when* this will occur and in what form. Furthermore, the hazards and geographical challenges that vessels actually face when operating in Arctic waters – such as the remoteness, lack of hydrographic data, low temperatures, extended periods of darkness, shallow depths and shoals, complex ice characteristics and conditions, limited supporting infrastructure, and long distances from home ports in the South – remain serious constraints that will not abate and in some cases may become more acute, owing to climate change.[6] The Rangers offer similar examples of direct relevance to land forces operating in diverse Canadian Arctic and Northern landscapes.

"North does not mean winter - it means isolation," Arctic security expert Ken Eyre astutely summarized. "The most significant military characteristic of the Canadian North is not the climate; it is isolation!"[7] Land forces operating in the Canadian Arctic face vast distances, a lack of transportation infrastructure, and acute terrain and weather challenges that intrinsically affect mobility and military appreciations of time and space.[8] Equipment, sustainment systems, concepts, and doctrine that work in one part of the Canadian Arctic are not necessarily appropriate across the breadth of this diverse region. Geographical realities still dictate that the Canadian Army treats Arctic deployments akin to expeditionary operations, designed to deliver "high-readiness Arctic-enabled sub-units" that are self-contained, "self-sufficient for an extended period of time, [and] appropriate to the unique circumstances of the different regions of the Arctic."[9] The Army's Arctic concept notes that although "the first aspect of the environment that comes to mind may be the extreme winter temperatures, that is but one aspect of the many challenges Canadian troops encounter in the Arctic." Other factors include the wide range of temperatures; unpredictable ice conditions; difficulties of ground transportation over tundra, muskeg, ice and water obstacles, mountains, beaches, and the transitions to and from fresh- and salt-water bodies; the lack of flora and the presence of carnivorous fauna (and insects); and limited critical infrastructure or sustainment capacities.[10] Of course, the challenges that Canada faces in projecting and sustaining forces in its own Arctic, even in peacetime operations, would be amplified exponentially for a foreign adversary trying to mount an attack on or through the region.

Canada has a modest military footprint in the Territorial North. There are approximately 300 Canadian Armed Forces (CAF) personnel stationed in Yellowknife with Joint Task Force North (JTFN), 440 (Transport) Squadron, and other units; small JTFN detachments in Whitehorse and Iqaluit; approximately 1,500 Canadian Rangers serving

with 1st Canadian Ranger Patrol Group (1 CRPG) in sixty-five communities across the Yukon, the Northwest Territories, Nunavut, and northern British Columbia; and a small Primary Reserve unit (C Company, Loyal Edmonton Regiment) in Yellowknife. Neither the Canadian Armed Forces Arctic Training Centre in Resolute Bay, which is used to train soldiers in basic survival techniques and serve as a hub for High Arctic exercises, nor the long-promised Arctic docking and refuelling facility in Nanisivik has any year-round military personnel. The longstanding Canadian Forces Station (CFS) at Alert, on the northern tip of Ellesmere Island, and the North Warning System (NWS) radar stations along the Arctic Ocean and Labrador Sea coasts also represent parts of the Arctic footprint. Furthermore, there are North American Aerospace Defence Command (NORAD) forward operating locations (FOLs) in Yellowknife and Inuvik (as well as in Rankin Inlet and Iqaluit in Nunavut).

Critics point to the much larger Russian military presence in its Arctic, or the US one in Alaska, or the Norwegian footprint in its High North to paint the erroneous picture that Canada's Arctic is undefended. This is a complete distortion of reality, largely driven by a simplistic desire to shame political elites into investing more resources in the region. To date, it is hard to argue that Canada's defences have proven insufficient to keep Canadians safe in our Arctic. After all, no foreign military has invaded our North, and with our allies, we have successfully deterred adversaries from attacking the continent through the region. Our

sovereignty is well established, despite alarmists declaring the opposite based on speculations on what *could* happen – not what we actually have experienced and the strong position that Canada has established over the last century. The world is changing, however, and the Government of Canada's promise to make major investments in the defence of North America, with a heavy emphasis on the Arctic, has shifted significant attention to the region. This interest must be matched with more deliberate thinking about what it is that we need to detect, deter, and defend – and against what kinds of threats.

Our North, Strong and Free, Canada's 2024 defence policy update, reinforced the idea that climate change is "making a vast and sensitive region more accessible to foreign actors who have growing capabilities and regional military ambitions." After speculating that "by 2050, the Arctic Ocean could become the most efficient shipping route between Europe and East Asia," it asserts that "Canada's Northwest Passage and the broader Arctic region are already more accessible, and competitors are not waiting to take advantage—seeking access, transportation routes, natural resources, critical minerals, and energy sources through more frequent and regular presence and activity."[11] It is a message of urgency, suggesting that Canada's Arctic is already under siege from foreign competition. How can Canadians make sense of these security threats? Does "access" to foreign actors heighten the risk of an Arctic invasion? How are risks and threats changing because of the climate, global competition, and technology? And what roles should the Canadian Armed Forces, including the Canadian Rangers, play in addressing them? I suggest in my recent work that characterizing the different threats *through*, *to*, and *in* the Arctic offers a starting point to make clearer sense of this complex security landscape.

Threats *Through* the Arctic

Threats that pass *through* the Arctic originate from outside of Canada and pass through or over Canada's North to strike targets outside of the region. In this sense, these are global threats to the North American homeland, which is no longer a "sanctuary" because of the growing speed and manoeuvrability of the means by which we can be attacked militarily. Because of the flight paths of the strategic delivery systems that adversaries might launch at North American targets, this makes Canada's Northern territories important to overall continental defence. For example, an advanced cruise missile with conventional warheads launched from Russia would likely pass over the Canadian Arctic before striking at a target in the northern continental United States. Sensor systems to detect the launch and track the missile might

be based in the Arctic, but they are not primarily intended to defend Canada's North – they are defending North America as a whole. Nevertheless, investments in these systems can secure "information dominance" for Canada and its allies, while simultaneously helping to address persistent communication and transportation gaps in the Arctic.

While the physical geographical space remains constant, advanced technologies allow would-be adversaries to compress the time that it takes for offensive weapon systems to cross vast distances. "Russia has posed a nuclear threat to North America for over half a century, but has only recently developed and deployed capabilities to threaten the homeland below the nuclear threshold," US General Terrence J. O'Shaughnessy, Commander of NORAD and US Northern Command, told a US Senate committee in April 2019. "Russia continues to hone and flex its offensive cyber capabilities, and its new generation of advanced air- and sea-launched cruise missiles feature significantly greater standoff ranges and accuracy than their predecessors, allowing them to strike North America from well outside NORAD radar coverage."[12] This has led the US and Canada to start work on a layered network of sensors and weapons to protect our shared continent from air or missile attacks.

While recent discussions have fixated on President Donald Trump's 2025 announcement of a "Golden Dome" to defend his country, the idea has its roots in joint US–Canada discussions between President Joe Biden and Prime Minister Justin Trudeau. On 20 June 2022, Canadian Minister of National Defence Anita Anand made a once-in-a-generation defence announcement committing to a six-year, $4.9-billion plan to upgrade Canada's continental defence systems, in addition to $38.6 billion to modernize NORAD command over the next two decades.[13] Situating the investments within the need for more robust defences to counter "new threats" from strategic competitors like Russia and China, Anand had assessed the previous month that "we do live in a world at the present time that appears to be growing darker." She elaborated that, "in this new world, Canada's geographic position no longer provides the same protection that it once did. And in this new world, the security environment facing Canada is less secure, less predictable and more chaotic."[14]

The foundation of the plan is Canada's ongoing commitment to NORAD – a binational command with the United States, which Anand characterized as "our most important ally, our strongest partner, and our closest friend." The lion's share of the promised investments will upgrade technology in support of the command's roles, including the

first major modernization since the 1980s and the upgrading of the 1950s-era Distant Early Warning (DEW) Line to the current NWS. NORAD was founded in 1957 "against the backdrop of the Cold War and the threat of a Soviet-era air attack," and Anand emphasized that it "has continually adapted and evolved in responses to new threats" that now include a "pressing need" to address hypersonic weapons, advanced cruise missiles, and other means wielded – or soon to be wielded – by strategic competitors who might wish to hold North America hostage. This required "turn[ing] another page and begin[ning] NORAD's next chapter."[15]

Subsequent announcements have clarified that Canadians will be provided with four overlapping layers of situational awareness to detect threats passing through the Arctic. Investments in a new Northern Approaches Surveillance System will focus on three core elements:

1) An Arctic over-the-horizon (OTH) radar system to provide early warning and threat tracking across Canada, from the southern border with the United States to the Arctic Circle;
2) A Polar OTH radar system to provide an early-warning function well past the Canadian Arctic Archipelago and far out into the northernmost approaches to North America, enabling the monitoring of the entirety of the Canadian Air Defence Identification Zone (CADIZ) and beyond; and
3) A new system dubbed "CROSSBOW," which will provide a network of other sensors and supporting communications infrastructure across Northern Canada (with the locations not disclosed), affording another layer of detection. Although little has been disclosed publicly about the prospective CROSSBOW sites, this will be "a complementary network of sensors with classified capabilities" that will be developed with the Americans.[16] One of the first steps entails finding suitable sites for these sensors.

The tremendous amount of data that these new layers of awareness will generate will be ingested by new "technology-enabled decision-making" capabilities,[17] the second major component of NORAD modernization. Initiatives include new positioning, navigation, and timing capabilities to assist with air navigation in remote areas, in addition to enhanced satellite communications across the Arctic. This is central to the CAF's search and rescue and emergency responses, as well as its deterrence and defence missions.

It is important to emphasize that these systems are designed to defend the entire continent, not just specific regions like the Canadian

High Arctic or individual pieces of critical infrastructure. As noted earlier, the great circle route over the North Pole makes the Arctic a likely conduit of attack on North America by foreign aerospace threats, rendering Canada vulnerable to rapid precision strikes or outright nuclear destruction from delivery systems passing through or over the region.[18] The need for would-be adversaries to actually enter into the territory or the Canadian Arctic more generally to launch these weapons, however, is unclear. Furthermore, the sheer expanse of the Arctic Ocean, vast size of the Canadian North, limited infrastructure, extreme climate, and challenging operating conditions all reduce the threats that foreign ground forces and maritime surface fleets pose.[19] Nevertheless, the strategic location of Canada's Arctic allows for the advanced detection of and responses to threats to North America as a whole. This also means that the Canadian Rangers, with their expertise in operating in isolated Arctic conditions, are well suited to help with on-the-ground reconnaissance and patrolling in support of locating sites for critical infrastructure.

Threats *to* the Arctic

Security threats *to* the Canadian Arctic emanate from outside the region but target or affect the region itself. It is this category of threat that is often misconstrued in social and news media that conjures images of a Russian or Chinese invasion seeking to usurp Canadian sovereignty or steal our Arctic resources.[20] While the Canadian Armed Forces must be prepared to defend all of our country in case of a direct "kinetic" attack, more sober analysis suggests that our Arctic is not at acute risk of this happening. Instead, the threats to our Arctic tend to take the form of "grey zone" or hybrid threats, below the threshold of armed conflict, which seek to disrupt systems, undermine democratic institutions, and sow or exacerbate divisions amongst Canadians.[21]

While the regional and global threat environments have changed since Russia's further invasion of Ukraine in February 2022, most official threat assessments do not suggest that Russia is more likely to attack the Canadian North using kinetic military forces – a fancy way of saying an attack using missiles, tanks, bombs, and bullets. Given that any Russian invasion of sovereign Canadian territory would constitute an act of war and thus lead to the mobilization of our North Atlantic Treaty Organization (NATO) allies (and the American nuclear deterrent), there is little to no likelihood that Russia would risk a general war with the West to try to acquire Canadian Arctic territory or resources. After all, Russia has the most Arctic territory and resources of any country. Although the two countries are neighbours across the Arctic Ocean,

they do not share a land border. Geography and geostrategic considerations mean there is no simple analogy to what has transpired in Ukraine when it comes to Russia's threat to Canada's Arctic.[22]

Over the last two decades, Russia has devoted considerable resources to modernizing its fleet of nuclear attack and ballistic missile submarines – despite the serious financial constraints that country faces. This spending affirms the priority that the Russian government places on this arm of its military, one that has a history of operating in the Arctic Ocean and perhaps even in the Canadian Arctic Archipelago.[23] In spite of these growing capabilities, the challenge lies in inferring Russian intent and deciding what gains Russia perceives that it could secure through military action in the region. For example, the scenario of a Russian "freedom of navigation" voyage through the Northwest Passage overlooks how, for nearly a century of straightforward self-interest, Russia has passively supported the idea that Canada enjoys control over a "sector" of the Arctic and/or that the Northwest Passage constitutes internal waters. Russia claims sovereignty over the Northern Sea Route, and to challenge Canadian sovereignty by treating the Northwest Passage as an international strait would undermine its own legal position in the Arctic Zone of the Russian Federation. Although transiting the Northwest Passage (by air or sea) in violation of Canada's internal waters position might afford closer launch sites for ballistic or cruise missiles in a wartime scenario, this would likely, in a peacetime context, invite an American reciprocal "freedom of navigation" voyage through Arctic waters that Russia claims as internal (and that the US considers an international strait). Presumably, this would offset any benefits that Russia might gain from challenging Canada's legal position.[24]

The European Centre of Excellence for Countering Hybrid Threats defines "grey zone" or hybrid threats as:

> An action conducted by state or non-state actors, whose goal is to undermine or harm a target by influencing its decision-making at the local, regional, state or institutional level. Such actions are coordinated and synchronized and deliberately target democratic states' and institutions' vulnerabilities. Activities can take place, for example, in the political, economic, military, civil or information domains. They are conducted using a wide range of means and designed to remain below the threshold of detection and attribution.[25]

By combining conventional and unconventional means (such as disinformation and interference in political debates or elections,

disrupting or attacking critical infrastructure, cyber operations, and asymmetric military means), hybrid actors use ambiguity and intermediaries (or proxy actors) to make it difficult to attribute responsibility and respond. As a recent report notes, "resilience and defence against hybrid threats in Canada require greater integration of military and non-military discussions on Arctic vulnerabilities to better understand how they interact and expose Canadians to harm caused by adversarial states that seek opportunities to advance their interests in the Arctic to Canada's detriment."[26]

Despite a growing US preoccupation with Chinese icebreakers or even submarines as real or potential capabilities designed to challenge Canada's Arctic sovereignty or launch attacks against the Arctic states,[27] it is important to remember that China's ability to project conventional military power into the Canadian Arctic remains minimal. It is likely to remain so, given the limited strategic gains that China would realize by doing so compared to the commensurate energies dedicated to other parts of the world, particularly in the Indo-Pacific region.[28] Apart from the speculation that China's naval expansion will support its ambition to become a "polar great power" (a concept that experts say is more nuanced than it might appear),[29] *Our North, Strong and Free* describes various Chinese threats that are not primarily military. It speaks of "dual-purpose research vessels and surveillance platforms collecting data about the Canadian North that is, by Chinese law, made available to China's military," as well as China's "expanding … investments, infrastructure and industrial scientific influence throughout the Arctic region" (although this statement seems to overinflate the success of China's *attempts* to make these kinds of inroads in Arctic states other than Russia).[30] Accordingly, domain awareness is essential to ensure that foreign actors are not engaged in illegal behaviour in Canada's Arctic. This requires a whole-of-society effort to identify suspicious activities and pass along information to the appropriate people at the speed of relevance.

Recent incursions into the Canadian North have illustrated the need for improved domain awareness to detect and enable responses to potential "hybrid threats" that blur the lines between civilian and military capabilities. In fall 2022, the CAF found and retrieved Chinese monitoring buoys in an undisclosed location in the Arctic, feeding political and media concerns about Beijing's interventions in Canadian affairs (including its interference in federal elections). The buoys were spotted as part of Operation LIMPID, the CAF mission to detect threats to Canada's security as early as possible through a routine watch over Canada's air, maritime, land, and aerospace domains.[31] Less than a

year later, NORAD aircraft shot down a high-altitude Chinese surveillance balloon that crossed North America before it was destroyed off the coast of South Carolina. Reports indicate that three other objects shot down over the weekend of 10–12 February 2023 (including one in the Yukon) were benign and connected to research, commercial, or meteorological pursuits. Nonetheless, the incident showed how unconventional delivery systems could evade the radar and other detection systems currently in place. The episode amplified the importance of looking across all domains to discern and anticipate how foreign competitors may collect intelligence about our country.[32]

The threats to the Canadian Arctic invite a new approach to closing the gaps and seams in our systems that adversaries are exploiting. The *Pan-Domain Force Employment Concept* articulates the Canadian military's approach to competing with, contesting, confronting, and – when necessary – combatting Canada's adversaries who "are challenging us in the cyber and space domains as well as in the land, maritime, and air domains. They use information to sow confusion, mask their intentions, oppose our actions, and gain advantage over us. We must meet these challenges [by integrating effects] across domains and in the information environment." This approach also recognizes that military power alone is insufficient to deter and defeat the aggressive actions of Canada's adversaries, meaning that "the military instrument must coordinate more closely with other instruments of national power."[33]

A "whole-of-society" effort in the Canadian Arctic resonates with the Canadian Rangers' established role, presence, and relationships in communities and across the region. They are ideally suited to identify when something is not right in their homeland – whether a strange vessel or aircraft, suspicious persons or behaviour, or a change in the tenor of conversation that could indicate interference. They are also uniquely placed to mobilize a local response to an emergency with available resources and to advise, guide, and mentor outside military or security elements that arrive to assist in and around their community. As respected members of the CAF, they are also important ambassadors for the military in their communities, as well as for their communities and peoples within the military. These substantive contributions cannot be overstated in the hybrid threat environment in which Canadians and their allies find themselves today.

Threats *in* the Arctic

Security and safety threats *in* the Arctic originate within and have primary implications for the region. Many of these relate to human and

environmental security and are connected to climate and environmental change. For example, community first responders across the Canadian North often raise broader emergency management and community safety concerns, including the risks posed by fires, prolonged power outages, and other critical infrastructure failures. In particular, first responders flag the broad spectrum of natural and human-made hazards created or exacerbated by climate change: forest fires; unpredictable ice conditions; permafrost thaw risks; severe weather events; erosion, water level, and ice flow risks; flooding; and the myriad issues raised by increased outside human activity, including environmental pollution and the prospect of a major maritime or air disaster.[34]

The Arctic is warming much faster than the global rate, creating changes to the natural environment that affect the health and well-being of residents (both human and animal), as well as infrastructure and the economy. [35] Canada's 2019 Arctic and Northern Policy Framework observes that "the qualities that make the Canadian Arctic and North such a special place, its size, climate, and small but vibrant and resilient populations, also pose unique security challenges, making it difficult to maintain situational awareness and respond to emergencies or military threats when and where they occur." Climate change compounds these challenges. "The effects of climate change are perhaps most pronounced in the Arctic," the Canadian Army's modernization strategy notes. "Rising activity levels in Canada's Arctic by state and commercial actors raise the potential for safety and security-related challenges," including "search and rescue operations, response to natural or man-made disasters, and response to actions by states with interests in the Arctic." The military is cast in a supporting role to other Canadian partners in a comprehensive whole-of-government approach, wherein the Canadian Armed Forces assist other government departments and agencies in fulfilling their mandates within the safety and security domains.[36]

While most strategic analyses of the Arctic stress the role that climate and environmental change will play in "opening" the region to the broader world, this must be counterbalanced by considerations of the heightened *constraints* that changing and increasingly unpredictable environmental conditions will have on operations in the Canadian Arctic. "Geography and seasonal changes in climate will affect the degree of risk to the integrity of sparse Northern infrastructure such as roads, airfields, port facilities, communications networks, or power plants," the 2013 Canadian Joint Operations Command Plan for the North noted. "The impacts of climate change are not only being

observed from an economic vantage point[,] but the environmental impacts will put enormous strains on how the CAF conducts operations in the north and will require a change in how operations are planned and conducted."[37] For example, permafrost degradation not only inhibits mobility but also affects physical infrastructure, thus exacerbating sustainment problems. The increased frequency and intensity of extreme weather also impact operational activities, while changing sea ice conditions, ocean currents, and temperatures complicate acoustic modelling and other operational and strategic planning factors.[38] Consequently, the regional impacts of climate change over the short- to medium-term horizons are likely to exacerbate rather than alleviate operational challenges by increasing the level of uncertainty in the Canadian North.[39]

Canadian Rangers in the Arctic are living the realities of climate and environmental change. They note how long-established trails or routes have become unreliable, how weather patterns are increasingly unpredictable, and how legacy infrastructure is being affected. They are acutely aware of the new risks that these changing conditions pose, as well as the need to adapt to shifting realities. The training that they receive as Rangers is tailored to distinctive terrain and environmental conditions and generally involves several elements directly related to emergency and disaster management capabilities, including first aid and wilderness first aid, ground search and rescue (GSAR), constructing emergency airstrips on land and ice, and communications. Ranger patrols are taught how to work together as cohesive units (a necessity during an emergency), and training exercises sometimes involve patrols from multiple communities and other military or emergency response personnel with whom they might have to respond to a disaster. Rangers strengthen the disaster resiliency of their communities through their organization, leadership, and training; their ongoing involvement in community preparedness and hazard risk analysis; their social relationships and networks; and the trust that they have earned from fellow community members.[40] Given their experience and expertise, Rangers are well equipped to anticipate, observe, and adapt to changing conditions on the ground in a self-sustaining way – key attributes in High Arctic operations where outside support is minimal.

Operation NANOOK: Exercising Canadian Defence and Security in the Arctic

Although overzealous journalists sometimes conjure scenarios involving hostile land forces threatening Canada's sovereignty in its sparsely populated and lightly defended Arctic, Canadians should not

expect a military invasion of its Arctic territory or conventional ground-force incursions across its land borders. The challenges that the Canadian Armed Forces face in projecting and sustaining forces in our own Arctic, even during non-combat training exercises, would be magnified exponentially for a foreign adversary trying to mount a ground attack.[41] The simple realities of climate, terrain, limited infrastructure, and (most importantly) limited military objectives render the Canadian Arctic an unattractive operational theatre for adversarial ground forces. As strategists noted in the early days of the Cold War, the vast distances in and the nature of the region offer (in the words of General Andrew McNaughton) "something of a defence in itself," and future prime minister Lester Pearson once dubbed the Government of Canada's position a "scorched ice policy" in which a potential adversary would have nothing to conquer – and nowhere to go.[42] This reality has not essentially changed. While the Canadian Arctic does contain military infrastructure such as CFS Alert, NORAD forward operating locations, and the NWS sites that would be obvious targets in the case of a full-scale attack on North America, these are unrealistic as jumping-off points for a ground force invasion.[43]

Most Canadian military operations in the High Arctic are based on the sober appraisal that the region is not likely to be invaded or attacked using "kinetic" military force, but that the Canadian Armed Forces still must prepare for any eventuality and have a role to play in deterring aggression, providing domain awareness, and contributing to whole-of-government security efforts. The military describes Operation NANOOK as its "signature northern operation comprised of a series of comprehensive activities designed to exercise the defence of Canada and to secure our northern regions."[44] Since its first iteration in 2007, this operation has allowed the military to strengthen its northern capabilities while addressing the security and safety challenges that accompany climate change and increased human activity in the region. Bolstering cooperation between the Canadian military, other federal agencies and departments, Inuit associations and regional corporations, territorial, municipal, and Indigenous governments, and Northern communities more generally has solidified relationships and mutual understanding, enhanced interoperability and readiness, and reaffirmed why a Canadian Armed Forces presence brings positive benefits in and for the region's inhabitants.

Rebranded in 2018 as a year-round initiative, NANOOK now encompasses various annual deployments:

- Op NANOOK-NUNALIVUT (Op NA-NU) demonstrates the CAF's capability to project and sustain forces in the High Arctic under

the harshest winter conditions and tests new capabilities and interoperability with allies and partners.

- Op NANOOK-TUUGAALIK (Op NA-TU) showcases the Royal Canadian Navy's ability to demonstrate presence and conduct surveillance in the North in cooperation with maritime allied and partner nations. It is typically executed concurrently with Op NANOOK-NUNAKPUT to enable naval participation in both lines of effort.
- Op NANOOK-NUNAKPUT (Op NA-NK) focuses on increasing CAF joint capabilities in Arctic surveillance and mobility along Canada's Northwest Passage.
- Op NANOOK-TATIGIIT (Op NA-TA) is a whole-of-government disaster response rehearsal that reinforces domestic and international Arctic partnerships to respond to security challenges and emergencies in the North.[45]

The newest line of effort is Op NANOOK-TAKUNIQ (Op NA-TK), which was introduced as a concept development operation in 2025. Designed as a pan-domain training and capability development operation, it is focused on enhancing the capacity of the Canadian Rangers to act as Canada's *eyes and ears* in the North, and to integrate with other organizations, sensors and surveillance capabilities.

"Takuniq," the Inuktitut word for "seeing," points to the core mission of projecting a Ranger presence to conduct surveillance and increase domain awareness. Op NA-TK 01, held from 10–14 March 2025 in Whitehorse, involved CAF members and CH-146 Griffon helicopters from 430 Tactical Helicopter Squadron, as well as Rangers from 1st Canadian Ranger Patrol Group, who worked together to establish a presence in the region and developed mountain flying skills in an Arctic environment. Op NA-TK 02, the next iteration, was a reconnaissance and presence operation in the High Arctic that took place from 25 June to 1 August across various islands of Canada's Arctic Archipelago. Conducted within an expedited ninety-day planning cycle, Canadian Rangers and staff from 1 CRPG, supported by other CAF elements and civilian partners, conducted assessment patrols to identify and verify airstrips, as well as reconnaissance patrols to locations in the High Arctic that might accommodate new infrastructure to expand the military presence in the Canadian Arctic. "TAKUNIQ is the first operation that places [the Canadian Rangers] in the primary role," photojournalist Gavin John observes. "They are the tip of the spear, projecting further and deeper into the Arctic than ever before with their capabilities

elevated to match the high-tech surveillance projects now reshaping Canada's Arctic posture."[46]

Although the Canadian Rangers had conducted enhanced sovereignty patrols in some of the remotest parts of Canada's Arctic Archipelago in the 2000s, the tactical and operational knowledge associated with mounting these activities had not been tested for nearly a decade. Instead, deliberate operations with long planning horizons had taken precedence over more hastily conceived, planned, and executed activities that test agility, resourcefulness, and adaptability. TAKUNIQ represented an opportunity to exercise Ranger patrolling skills, test the constraints associated with supporting airlift (both military and civilian contractors) and resupply, and assess terrain and legacy infrastructure that are of strategic significance to expanding the Canadian Armed Forces' footprint in the High Arctic. Projecting from an operational base in Resolute, 1 CRPG launched three simultaneous patrols: a dismounted patrol from Mould Bay on Prince Patrick Island involving soldiers from 2nd Battalion, Princess Patricia's Canadian Light Infantry (2PPCLI); a mounted patrol using all-terrain vehicles (ATVs) covering the ground around CFS Alert on northern Ellesmere Island; and a third dismounted patrol on Ellesmere from Tanquary Fiord toward Hazen Camp. The operation stressed small-team structure. TAKUNIQ's teams were kept compact and deliberately agile because the Royal Canadian Air Force (RCAF) Twin Otters of 440 (Transport) Squadron have limited hauling capacity over vast distances. This demanded improvisation, adaptability, and humility.

This Book

This book provides an in-depth look at what was involved in planning and executing the various components of Operation NA-TK 02. Like the operation itself, the goal of this publication project was to take a concept, leverage the diversity of subject matter expertise amongst participants to devise a plan, marshal resources at the speed of relevance, and produce a deliverable with a short turnaround time. As lead author, I have written the introduction, the background on the Canadian Rangers, and the chapter laying out the geographical and historical context. Lieutenant-Colonel Travis Hanes, Commanding Officer of 1st Canadian Ranger Patrol Group, wrote the fourth chapter on the concept and initial planning of the operation, with Cath Welsh and Maya Poirier providing insights on work-up training in the Yukon, and Captain Alexander Boom contributing the section on the reconnaissance mission to Isachsen. I was lead author on chapter five, with contributions from Warrant Officer Mike Albright, Welsh, Poirier,

and Boom. I wrote the chapters on the Alert Team, with contributions from Ranger Leandra Brient. Albright provided detailed notes and reports that laid the groundwork for chapter seven narrating the experiences of the Mould Bay Team. Welsh, Poirier, and James Cleary drafted chapter eight on the Alpine Team, documenting the trek from Tanquary Fiord to Lake Hazen. Hanes and I were the lead authors of the final reflections, with contributions from other participants.

This book, like the operation that inspired it, came together quickly. The intent was not to publish a conventional academic monograph with an overarching argument or a consistent narrative across chapters. As a reader, you will discern in various chapters that I am a scholar who loves to immerse himself in libraries and archives. In others, you will see that I am very interested in advising on security policy and sharing lessons that have been observed in hopes that they will be learned and applied to future operations. When narrating the operation, you will see that I also love a good "adventure" story, which I believe is a compelling way to share insights into how teams overcome challenges and adversity – and the range of emotions associated with interactions with the land, animals, and other people. First and foremost, however, you will see why I often refer to myself as the Canadian Rangers' "biggest fan," who wants to share their stories. As an academic and as the Honorary Lieutenant-Colonel of 1st Canadian Ranger Patrol Group for nine years, I have benefitted immensely from listening, learning, and seeing the living legacy of the Rangers and their stories across generations. Operation NANOOK-TAKUNIQ in the summer of 2025 is another part of this "living history."

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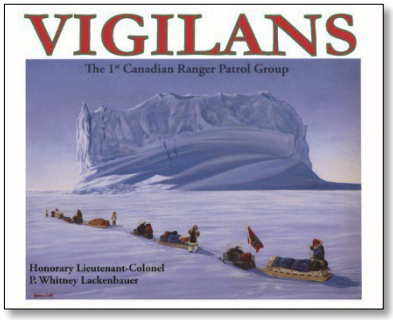
2

The Canadian Rangers: The Eyes, Ears, and Voice of the Military in the Canadian North

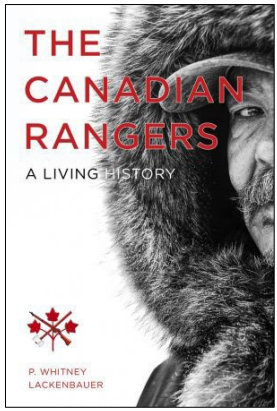
The Canadian Rangers serve as the "eyes, ears, and voice" of the CAF in isolated regions of Canada, providing a military presence in the remote parts of the country "which cannot conveniently or economically be covered by other elements of the CAF."[1] They are not intended to act as combat forces and receive no tactical military training. Instead, their regular tasks include surveillance and presence patrols, collecting local data for the CAF, reporting unusual sightings, participating in community events, and assisting with domestic military operations. To facilitate these operations, Rangers share their knowledge and skills with other members of the CAF, teaching them how to survive and function effectively in Arctic, Subarctic, and rugged coastal environments.[2]

The Rangers' role in support of CAF elements that deploy into the Canadian North is long established. First, Rangers serve as guides, planning and leading teams into inaccessible areas for reconnaissance and communications. Second, Rangers facilitate intermediate staging base operations, including by securing facilities, providing transportation, repairing/recovering vehicles, and renting out their own specialist equipment suited to their environments. Third, Rangers provide access to and influence in their communities and regions, securing CAF access to land use, as well as providing essential political liaison within communities and with local organizations (such as with hunting and trapping organizations). This contribution is often underappreciated, but it is instrumental to enabling efficient, effective, low-visibility, and sustainable activities in the Canadian Arctic. Fourth, Rangers provide domain awareness through their diverse networks, which penetrate deep within Arctic society. They are inherently well suited to discerning changes or anomalies in their local areas of responsibility. Fifth, the Rangers provide training to other CAF personnel in self-sustaining operations on the land. In an environment

where carrying capacity is thin and communities are isolated, the Rangers represent a permanent military presence in their home communities and a persistent presence that can be deployed more broadly across the Canadian North.



This chapter provides a basic history of the Canadian Rangers in 1 CRPG, which spans Canada's Territorial North, and an overview of what they contribute and how they operate in a contemporary context. While the Rangers' primary mission is focused on their home environments close to their communities, they also possess elite skills that allow them to project in mixed groups into some of the remotest parts of the country. Their involvement in "enhanced sovereignty patrols" exercises the defence and security of Canada, employs and builds unique skill sets to operate in austere locations, and improves coordination with other Northern partners. In the early twenty-first century, the Rangers went from the primary focus of KIGILIQAQVIK RANGER operations to a more supporting role to other CAF members on NUNALIVUT, operations that were planned and organized outside of 1 CRPG. These High Arctic exercises were generally conducted in the winter, apart from the summertime NANOOK operations immediately around Resolute Bay. Operation NANOOK-TAQUNIK was conceived for the Canadian Rangers to once again exercise and showcase their distinctive role as the military's "eyes and ears," capable of operating in some of the remotest and most unforgiving places in our country.



Background on the Canadian Rangers

The Canadian Rangers were conceived during the Second World War and the Cold War. The force was originally modelled after the Pacific Coast Militia Rangers (PCMR), a home guard established along the West Coast in 1942 to meet potential Japanese incursions. The Ranger concept was rooted in the idea that unpaid volunteers, often too old or too young to serve overseas, could perform useful military functions while carrying out their everyday civilian lives on the land and at sea. Given their intimate knowledge of local areas, these men (as women

were excluded from Ranger service until the early 1990s) could provide intelligence, act as guides, and delay an enemy advance using guerrilla tactics. All told, more than 15,000 British Colum-bians served in the PCMR before it was stood down in late 1945.[3]

By 1947, chilly superpower relations and a new focus on northern security, coupled with renewed sovereignty concerns related to a US military presence in the North, led the government to establish the Canadian Rangers as a corps of the Reserve Militia. The force was unpaid, and members were simply provided with an armband, a .303 rifle, and 200 rounds of ammunition a year. In war, they would serve as coast watchers and guides for regular troops, assist authorities in reporting and apprehending enemy agents and saboteurs, provide local defence against small enemy detachments, and undertake ground search and rescue (GSAR) operations. Their peacetime roles were similar, focusing on guiding troops on exercises, collecting detailed information about their local areas, reporting any unusual activities, and providing GSAR parties when tasked. They were recruited from local areas, commanded by civilian leaders from their communities, and expected to serve as the military's "eyes and ears" while carrying out their daily lives.[4]

The Rangers survived the oscillating cycles of military concern about the North through the second half of the twentieth century.[5] Military and political interest in the Rangers diminished by the late 1950s, when technological solutions like the Distant Early Warning (DEW) Line were conceived to secure the continent. Although the Rangers were left to "wither on the vine," they survived because there was no political benefit to formally disbanding something that cost virtually nothing. During the 1970s, the "Northern" Rangers enjoyed modest growth as a sovereignty- bolstering measure, but it was only in the mid-1980s, when the voyage of the US Coast Guard vessel *Polar Sea* renewed sovereignty concerns related to the Northwest Passage, that the Rangers underwent dramatic growth. By 1992, the national strength of the force rose to 3,200 (and

doubled in the Territorial North), and a ceremony celebrating the enlistment of the 5,000th Ranger was held on the Arctic tundra in Nunavut in August 2013.[6]

The Rangers grew "North of 60" after 1970 because the basic structure already existed and was very inexpensive, but also because a "new security discourse" had emerged. Military activities in the region could no longer be divorced from domestic socio-economic, cultural, and environmental health issues. Indigenous leaders repeatedly called for the demilitarization of the Arctic on social and environmental grounds, often construing a military presence as a threat to their peoples' security. Conversely, military officers noted that the public and Indigenous leaders took great interest in the Rangers. Beginning in the late 1980s, explicit government statements increasingly stressed the socio- political benefits of having Ranger patrols in Indigenous communities. Consequently, the Rangers enjoyed sustained growth in the 1990s while the Canadian Forces more generally faced austerity measures and personnel cuts, representing a "postmodern militia" that enjoyed strong political and popular support in the North.[7]

This support has continued through the first quarter of the twenty-first century. There are currently approximately 5,100 Rangers in more than 220 communities across Canada.[8] The Rangers are neither a military nor an Indigenous "program" (as they are sometimes misidentified), but rather a distinct subcomponent of the Reserves that leverages the skill sets of Canadians from diverse ethnic and social backgrounds to support home defence, security, and public safety missions. While official figures suggest that Indigenous Canadians represented 2.2% of the total Canadian Armed Forces in 2013, they make up more than two-thirds of the Canadian Rangers in Northern Canada.[9] Approximately 25% of Rangers are female, and the Rangers in 1 CRPG are a representative cross-section of adults from eighteen into their eighties (given that there is no mandatory retirement age for Rangers).[10]

There are five Canadian Ranger Patrol Groups (CRPGs) across Canada, each encompassing a distinct geographical area. 1 CRPG is the largest military unit in Canada, with an effective strength of about 1,400 Rangers in sixty-four patrols across the Yukon, the Northwest Territories, Nunavut, and northern British Columbia. The majority of Canadian Rangers in 1 CRPG are Inuit, First Nations, or Métis, and their

command structure – wherein community-based patrols vote in their own leadership – reflects the grassroots nature of the Ranger organization. They are also heavily involved in leading and mentoring youth in their communities through the Junior Canadian Ranger (JCR) program, a military-funded initiative that promotes traditional cultures and lifestyles and other developmental activities. Furthermore, Rangers are often called upon to respond to local emergencies and disasters, support humanitarian and search and rescue operations, and perform other public safety missions.[11]

Table 1: Canadian Ranger Tasks (DAOD 2020-2)

The tasks in the following table may be undertaken by a Canadian Rangers (CR) member on duty when authorized by their CRPG headquarters (HQ):

Tasks	Examples
Conduct and provide support to sovereignty operations	Conduct and provide support to surveillance a sovereignty patrols, including training in Canada Conduct North Warning System site patrols. Report suspicious and unusual activities. Collect local information of military significance
Conduct and provide assistance to CAF domestic operations	Conduct surveillance of Canadian territory. Provide local knowledge and CR expertise (e.g., advice and guides). Participate in search and rescue operations. Provide support in response to natural or humar made disasters and support in humanitarian operations. Provide assistance to federal, provincial, territorial, or municipal government authorities.
Maintain a CAF presence in the local community	Instruct, mentor, and supervise Junior Canadian Rangers. Participate in and support events in the local community (e.g., Yukon Quest, Canada Day, Remembrance Day, etc.).

The following tasks may not be assigned to a CR member, except when placed on active service under section 31 of the *National Defence Act*:

- undertaking tactical military training;
- performing immediate local defence tasks, such as containing or observing small enemy detachments pending the arrival of other forces;
- providing vital point security (e.g., dams, mines, oil pipelines, etc.);
- assisting federal, provincial, territorial, or local police in the discovery, reporting, and apprehension of enemy agents, saboteurs, criminals, or terrorists; and
- serving in aid of the civil power.

A Unique Capability

While operating around their home communities, Rangers are expected to be self-sufficient when on the land – and to use their own personal gear, snowmobiles, ATVs, or boats to conduct their duties (for which they are reimbursed according to nationally established equipment usage rates, as discussed below). The Canadian Army also provides them with modest equipment and training. Each Canadian Ranger is issued a red hoodie sweatshirt, CADPAT (Canadian Disruptive Pattern) pants, red fleece, a water-resistant shell jacket, combat boots, a baseball cap, a safety vest, navigation aids, and a C-19 .308 bolt-action rifle (for protection against predatory animals, not for military combat). In addition, patrols are generally given a supply of camp stores, including tents and lanterns, satellite phones, and hand-held Global Positioning System (GPS) units. A ten-day Basic Ranger Qualification Course is held for new Rangers, which includes rifle handling, general military knowledge, navigation (map and compass, GPS), first aid, search and rescue (SAR), and communications. Nevertheless, Rangers are considered "trained upon enrolment,"[12] which means that individual Rangers cannot be assumed to have standardized skills, and their capabilities are best gauged based upon their roles in their patrol and, when available, the recommendations of the Regular Force or Primary Reserve Ranger Instructor responsible for mentoring their patrol.[13]

Rangers are paid for annual community-based patrol training and a field exercise, providing patrols with the opportunity to practice essential skills and work together as a team. In addition to these training activities, Rangers are paid when activated for official CAF tasks, which include emergency response activities and SAR operations. Importantly, beyond their paid service, Rangers perform their "eyes and ears" function as part of their everyday lives and are always present in their communities, ready to respond as required.

Although some southern Canadian media commentators and politicians criticize the lack of pay, equipment, and clothing provided to Rangers compared to their Regular and Reserve Force counterparts, these

criticisms are generally ill-informed or misplaced. Although Rangers are not paid for their year- round service as "eyes and ears" on the land, they are paid for force generation activities such as annual training patrols, monthly meetings, and leadership workshops. Furthermore, they are paid when they participate in force employment activities such as Operation NANOOK, when they provide support to southern units (including special operations forces or SOF elements) on Northern training exercises, or when they are officially tasked to conduct a search and rescue operation.[14]

The diverse landscapes in which Rangers live and operate also require different equipment and clothing. The philosophy of treating the Rangers as self-sufficient, lightly equipped members of the Defence Team recognizes this reality, as well as the military's limited capabilities for providing logistical support and sustainment to community-based patrols distributed across the Territorial North. The Rangers are known for their much-publicized "red hoodies," and they are also provided with t-shirts, pants, jackets, ball caps, and other parts of their distinctive uniform. In using their own personal, environmentally appropriate clothing when going out on the land, rather than being assigned standard military gear, Rangers retain the power to wear whatever they deem best suited to local conditions.

The Rangers' lack of uniformity in clothing reflects an ethos that respects how Northerners should make their own decisions about what they should wear to operate comfortably and effectively in their home environments. This same logic extends to transportation and hunting equipment. During training and official taskings, Rangers are paid for the use of their own equipment and vehicles (such as snowmachines, ATVs, and boats) according to an established equipment usage rate (EUR). This arrangement provides Rangers with tax-free reimbursements that they can invest in their own equipment and tools, appropriate to their local environments, which they can then use in their everyday lives without having to ask the government for permission to do so. By allowing individuals to invest in their own, privately owned equipment, this approach represents a material contribution to local capacity

building and resilience, while simultaneously reducing the logistical burden on the CAF.[15]

As leaders in their local communities, Rangers represent an important source of personal and in many cases formal political power within their communities.[16] While the Rangers fall within 1 CRPG at the unit headquarters in Yellowknife, their local leadership is reflective of community culture and norms.[17] Amongst the Rangers' ranks are prominent politicians, Elders, and business people, alongside social workers, teachers, linesmen, hunters, artists, civil servants, and countless other occupations. In the Rangers, Northerners from myriad walks of life have an outlet to serve in the defence of their country without having to leave their home communities.

Ranger activities have military applications while allowing community members to practice and share traditional skills, such as living off the land, not only with people from outside their cultures but also across generations within. By celebrating traditional and local knowledge and skills, encouraging and enabling community members to go out on the land, and facilitating relationships that allow Northerners to share their knowledge and expertise, the Rangers play an important role in supporting the retention and expansion of core cultural competencies. In turn, the Ranger concept is inherently rooted in the idea that the unique knowledge of Northern peoples can make an important contribution to effective military operations. By providing culturally attuned information and relevant support to CAF teams, the Rangers can serve as a force multiplier that better enables work with regional civilian authorities, organizations, and populations in Northern Canada.[18]

Enhanced Sovereignty Patrols: Projecting Presence

A century ago, the Canadian Arctic sovereignty "brand" in the southern Canadian imagination belonged to intrepid ship captains and to the Royal Canadian Mounted Police (RCMP). Canada's first active steps to affirm its sovereignty claims to the High Arctic took the form of

expeditions to the region in the first two decades of the twentieth century by Alfred Peter Low and Joseph-Elzéar Bernier in the east and Vilhjalmur Stefansson in the west. The Eastern Arctic Patrols initiated and sustained a police presence on Ellesmere Island in 1922, followed by Devon Island in 1924. These outposts served as pivotal hubs for ambitious land patrols in the interwar period, such as the "muskox patrols" undertaken by Staff Sergeant Alfred Joy, Corporal Edward Anstead, Corporal Harry Stallworthy, and their Inuit guides, such as the famous Nukapianguaq.[19] Since the Second World War, military patrols have supplemented – and eventually supplanted – those of the RCMP as a means of "showing the flag" and exercising Canada's sovereignty.

The Rangers' primary responsibility throughout the second half of the twentieth century was to know their local areas. In the early twenty-first century, however, the newly created 1 CRPG conceived a new task for its Rangers: enhanced sovereignty patrols (ESOVPATs). These long-distance patrols would extend to the remotest reaches of Canada's Arctic, showcasing the Rangers' elite travel and survival skills, forging a patrol group identity that spanned diverse communities, and attracting significant media and political attention. These activities also inextricably linked the Rangers to demonstrating Canadian sovereignty, leading journalist Tim Querengesser to quip in 2010 that "if Canada's Arctic sovereignty has a brand, it's the red Rangers hoodie."[20]

Operation KIGILIQAQVIK RANGER (2002–2005)

By the turn of the new millennium, Rangers had always gone on patrols but never far from their home communities. With the renewed emphasis on Arctic sovereignty, Canadian Forces Northern Area recommended that Rangers conduct regular ESOVPATs over vast, uninhabited stretches of the High Arctic. "What they will do is cover some area, and they will show the flag and report any unusual activity," Major Yves Laroche told reporters. Major Bob Knight, the former commanding officer of 1 CRPG, used the maxim "possession is nine-tenths of the law" to rationalize these activities. "In purely legal terms,

they're proving Canada's sovereignty over the territory they're travelling through simply through their presence," he asserted. "If you claim that you have sovereignty over a certain area, yet you have never been there, then someone else could turn around and say, 'Is that really your sovereign territory?'"[21] Other media, political, and academic commentators framed similar arguments for Ranger patrols based on the idea that Canada's legal sovereignty depended upon effective occupation. Although many of their interpretations did not correctly reflect international law, they fired up the imaginations of politicians, academics, and journalists alike.[22] These highly publicized patrols also served to increase awareness of the Rangers' existence and solidified their role as sovereignty soldiers.[23]

The connection between sovereignty issues, security threats, and land-based surveillance took tangible form at the dawn of the new millennium. Rumours of polar bear hunters crossing from Greenland to Ellesmere Island led 1 CRPG to participate in Operation ULU, a fifteen-man operation with the RCMP, in April 2000. In an unprecedented move, the military airlifted Rangers from their communities to the uninhabited Alexandra Fiord region of Ellesmere Island, 300 kilometres above Canada's northernmost settlement of Grise Fiord, to show the flag and deter illegal hunters from violating Canadian laws.[24] Whether the primary goal was to enhance Ranger skills or deterrence, the operation took the Rangers beyond their typical area of responsibility. Although a more covert operation might have caught "Greenlandic hunters red-handed," a Northern newspaper editorial noted that "the whole point of sovereignty patrols is to fly the flag and let the world know the borders of Canadian soil and tundra."[25]

The scale of the enhanced sovereignty patrols quickly grew as Northern Area conceived plans to both demonstrate sovereignty and bolster the Rangers' national profile. To mark the Rangers' sixtieth anniversary celebrations in 2002, thirty-three Rangers from patrols in 1 CRPG met in Resolute Bay to launch Operation KIGILIQAQVIK RANGER – a 1,700-kilometre expedition to the Magnetic North Pole. The extensive media coverage of the patrol reflected a growing interest in

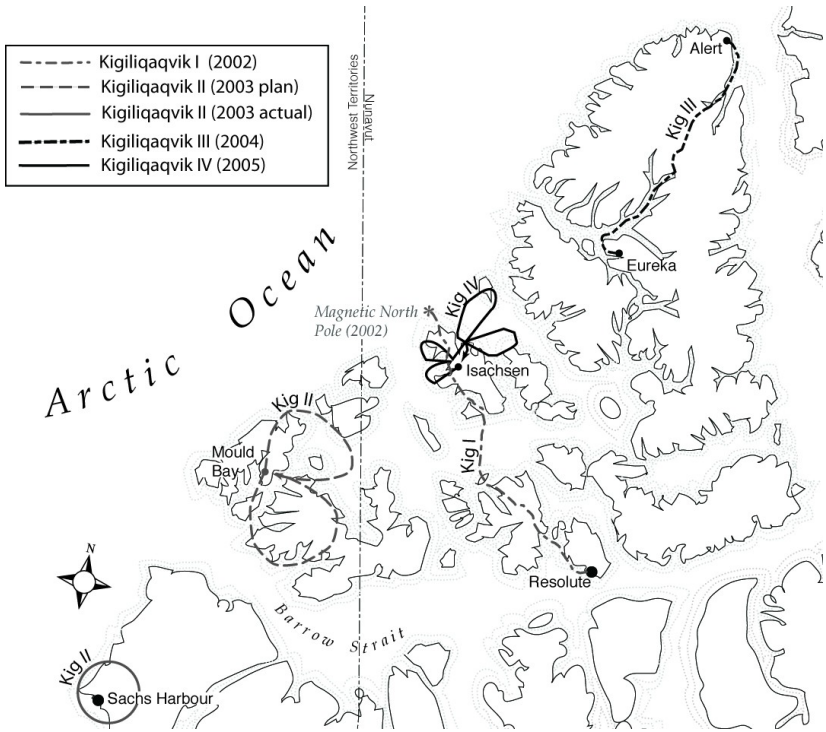
Arctic sovereignty and the Rangers' activities in support of it. Applauding this "heroic and historic accomplishment," Lieutenant-General George Macdonald wrote that "[t]his courageous expedition in support of our country's sovereignty was not only a clear demonstration of the importance of the mandate and roles of the Canadian Rangers, but is also a testament to the special breed of person it takes to fulfill this most important duty. The sheer magnitude of the journey leaves one breathless and the daily media releases ... could only provide us with a small glimpse of this grand adventure. This initiative can only serve to reflect positively on the Canadian Rangers organization and the Canadian Forces."[26] For the Rangers, political accolades matched the sense of personal accomplishment. Governor General Adrienne Clarkson awarded the Queen's Golden Jubilee Medal to each of the participants the following year and thanked each one in a letter "for the support you have given me as Commander-in-Chief and for the loyal and dedicated service you provide Canada."[27] She also applauded the Rangers for the operation in her Canada Day message on Parliament Hill.[28]

Media coverage of the conclusion of Operation KIGILIQAQVIK RANGER was overshadowed by the tragic news that an American F-

16fighter had accidentally dropped a bomb on Canadian troops in Afghanistan, killing four and injuring eight others. Canadian Rangers mourned the loss, which placed their sovereignty operation in sober perspective. One could not forget that the war in Afghanistan was the Canadian Forces' foremost priority. Nevertheless, as climate change and Arctic sovereignty questions commanded attention, the Rangers' perceived importance grew apace. "These enhanced sovereignty patrols made Canadians more conscious of the need for a Canadian military presence in the North, and particularly that of the Rangers," observed Ranger Sergeant Peter Moon, a retired *Globe and Mail* reporter who worked diligently to raise the Rangers' profile during these operations. By creating events to give reporters something to write about, he explained, these patrols served as a catalyst for growing media interest in Northern security issues.

The KIGILIQAQVIK series of patrols occurred annually from 2002 to 2005 and included increasingly ambitious plans to trace lines over Canada's remotest islands:

- **Operation KIGILIQAQVIK RANGER II** was conducted in the western Arctic Archipelago from 23 March to 12 April 2003, with participants from the Sachs Harbour and Holman patrols. The CAF planned to conduct the patrol on Prince Patrick Island but



had to go to Banks Island instead. A bulldozer, left in cold storage at Mould Bay when the weather station closed in 1997, failed to work, preventing the clearing of the runway and the landing of the Hercules aircraft carrying Rangers, equipment, and supplies. Instead, the Rangers established a base camp near Sachs Harbour and patrolled remote parts of Banks Island.[29]

- **Operation KIGILIQAQVIK RANGER III**, conducted in the central Arctic Archipelago from 31 March to 16 April 2004, involved fifteen Rangers and five Regular Force soldiers from 1 CRPG. Facing punishing conditions, the group crossed more than 1,300 kilometres of ice, snow, and boulder-strewn valleys from Resolute Bay to CFS Alert, on the northern tip of Ellesmere Island. The harsh climate and terrain took its toll, requiring the airlifting of two injured members of the patrol to safety and damaging most of the snowmachines. Despite the brutal conditions, however, the Range rs accomplished their mission.
- **Operation KIGILIQAQVIK RANGER IV**, conducted from 30 March to 18 April 2005, centred around the abandoned weather station at Isachsen on Ellef Ringnes Island. Despite abominable weather conditions, thirty Rangers from across the North completed sovereignty patrols to nearby Amund Ringnes and Meighen Islands to plant emergency cairns and report on the land and sea ice conditions. Reducing the operation from twelve to seven days meant that a planned aircraft crash simulation, designed to enhance the Rangers' first-response capability, was cancelled. Nonetheless, the Rangers emerged with pride that they had played a role in patrolling one of Canada's most isolated frontiers.

"We're putting footprints in the snow where they are not normally put," Colonel Norris Pettis, the commander of Canadian Forces Northern Area, told a journalist in 2004.[30] Even when operations did not go as planned, the media emphasized the durability of the Rangers and their essential contributions to sovereignty.[31]

This mix of political emphasis on an expanded military "presence" and the development of practical CAF

capabilities to "lead from behind" in probable soft security and safety missions animated the annual Operation NANOOK, an integrated whole-of-government (WoG) exercise held in August from 2007 onward to refine interdepartmental coordination (before being rebranded and restructured in 2018 as an umbrella operation housing sub-operations or exercises that take place throughout the year).[32] This joint "sovereignty operation" involving land, air, and sea components highlighted military interoperability, command and control, and cooperation with interdepartmental and intergovernmental partners in the North. Federal, territorial, and municipal partners rehearsed integrated responses to likely scenarios requiring CAF assistance, including counter-drug operations, oil spill responses, hostage takings, shipboard fire responses, criminal activity, disease outbreaks, crashed satellite recoveries, and grounded vessels.[33]

On several occasions, NANOOK operations took Canadian Rangers to the High Arctic. For example, the August 2010 iteration took place in Resolute Bay, Grise Fiord, Pond Inlet (Mittimatalik), Bylot Island, and Iqaluit, with more than 900 CAF personnel participating. Soldiers from 32 Canadian Brigade Group in Ontario deployed north as an Arctic Response Company Group, where they were joined by Canadian Rangers, three naval ships, a dive team, helicopters, and transport and patrol aircraft. The following year, the operation consisted of patrolling ashore on Cornwallis Island and on nearby waters, followed by an air disaster scenario – planned as an exercise but cancelled so that the engaged forces could respond to a real crisis when First Air Flight 6560 crashed near Resolute Bay. Canadian Rangers were amongst the first on the scene and remained to assist throughout the rescue and recovery operations.

Operations NUNALIVUT, conducted in March and April each year in the High Arctic,[34] and NUNAKPUT, an annual surveillance and presence operation in the Western Arctic conducted in cooperation with the Canadian Coast Guard, RCMP, and Department of Fisheries and Oceans, have also contributed to improving interoperability and

enhancing situational awareness. More generally, these "N-series" operations have represented a regular, highly visible example of government efforts to exercise sovereignty, integrate new capabilities, and prepare the CAF for a broad range of potential missions.[35]

These activities have reaffirmed astute lessons learned from earlier eras that conducting and sustaining Arctic operations requires careful planning and preparedness to manage the persistent challenges associated with harsh and unpredictable weather, difficult terrain, and isolation. "The North is a unique environment and operating conditions vary significantly from those in the South to which the [military] is more accustomed," the Canadian Armed Forces' 2011 Northern Employment Support Plan highlighted. "The variety of potential tasks, the remoteness of the region, the vast distances between operating bases, the lack of infrastructure, and difficulties in communications mean the North can be regarded as an expeditionary-type theatre requiring forces to be uniquely equipped and trained, deployable, scalable, and as self-sufficient as possible."[36] In short, reaching and sustaining operations in isolated parts of Canada's Arctic required approaching mobility and resupply akin to operations overseas. It took a combined, joint effort.

To mark the creation of Joint Task Force North (JTFN) to replace Canadian Forces Northern Area in Yellowknife in 2006, the Canadian Armed Forces launched their largest sovereignty patrol to that point: a 5,000-kilometre trek through some of the most difficult terrain and weather in the world that was christened Operation NUNALIVUT – Inuktitut for "land that is ours." The forty-two-member patrol consisted of eleven Regular Force soldiers and thirty-one Rangers divided into five teams. They left Isachsen, Grise Fiord, and Resolute Bay in Nunavut and Mould Bay in the Northwest Territories before linking up to finish the patrol as a single group at Resolute Bay. Participants broke snowmobiles, bashed up their komatiks, and coped with frigid temperatures, searing winds, white-outs, and blizzards. In overcoming these obstacles, they gathered useful information on abandoned buildings, equipment,

and airfields in some of the remotest parts of Canada, which could prove useful in an emergency.

Subsequent iterations of Operation NUNALIVUT followed similar patterns, with Canadian Ranger involvement being pushed from the forefront into a supporting role for other military elements as the activity grew in size and scope. The following summary of these wintertime operations provides a sense of the places in the High Arctic where Rangers interacted with other Canadian and allied forces:

- On Op NUNALIVUT 2007, conducted in the northernmost islands of the Arctic Archipelago, three teams of Canadian Rangers patrolled Ellesmere Island on snowmobiles, covering almost 6,000 kilometres. One team travelled up the island's west coast to CFS Alert, the world's most northern permanent settlement, stopping on the way to install a flag on Ward Hunt Island, a traditional starting point for North Pole expeditions. The second team patrolled up the centre of Ellesmere Island, while the third crossed the island from Eureka on the west coast to Alexandra Fiord on the east coast. 440 Squadron from Yellowknife, flying ski-equipped CC-138 Twin Otter utility transport aircraft, provided air support to deliver fuel and supplies along the patrol routes.
- During Op NUNALIVUT 2008, conducted during the International Polar Year, scientists accompanied Canadian Rangers to the northwest shore of Ellesmere Island to investigate changes in the Ward Hunt Ice Shelf. Three patrol teams were deployed. Patrols one and two guided the scientists to the ice shelf from Eureka and assisted them as they

carried out their work, while patrol three departed from CFS Alert to Eureka and served as a "backup" to ensure the success of the mission.

- On Op NUNALIVUT 2009, about 100 CAF personnel conducted four aerial surveillance and ground patrols on Ellesmere Island and Axel Heiberg Island. For the first time, a northern operation exploited RADARSAT 2 and Polar Epsilon imagery and benefited from weather forecasting by the CAF's Joint Meteorological Centre.
- Op NUNALIVUT 2010 demonstrated the CAF's ability to respond to emergencies on Ellesmere Island, near CFS Alert, on Ward Hunt Island, and on the sea ice of the Arctic Ocean. It featured a combined exercise with *Slædepatruljen Sirius*, a Greenland-based Royal Danish Navy reconnaissance unit that uses dogsled teams. Using Alert as the initial staging area, four patrol teams of Canadian Rangers deployed. Tasks included establishing a semi-permanent Tactical Command Post located at Ward Hunt, as well as supporting the CAF's port inspection diving team and the Sirius Patrol. This exercise served as a test bed for ground resupply, communication devices, and interoperability between international units.

- Op NUNALIVUT 2011 involved about 200 CAF members, including sixty Canadian Rangers and 1 CRPG staff, who conducted cross-country patrols between Resolute and Isachsen in Nunavut. The purpose of the operation was to test critical communication links under adverse conditions and to demonstrate JTFN's ability to respond to potential security and safety issues by deploying the Rapid Reaction Force (North).
- Op NUNALIVUT 2012 was conducted on Cornwallis Island and Devon Island by a task force of about 150 CAF members, including approximately fifty Canadian Rangers. The Rangers conducted

sovereignty patrols and provided ground support to the Fleet Diving Unit (Atlantic) as it surveyed the world's most northern known shipwreck, HMS *Breadalbane*, lost in 1853 while searching for traces of the Franklin expedition. 1 CRPG patrols also conducted a search and rescue operation to locate missing Rangers from Grise Fiord who had become disoriented while out on the land. The Rangers' success in deploying to an isolated environment and sustaining themselves throughout the operation demonstrated the unit's ability to support other government agencies in emergency situations.

- Op NUNALIVUT 2013 involved 120 CAF participants who conducted over 600 kilometres of reconnaissance and surveillance patrols on the land, in the air, and on the ice. Approximately thirty-five Canadian Rangers conducted four different presence patrols between Resolute Bay and Isachsen, as well as on Devon Island, more specifically in Griffon Inlet and in Gascoyne Inlet. They effectively operated on the land for two weeks, patrolling thousands of square kilometres of the northwestern portion of Canada's Arctic Archipelago.
- Op NUNALIVUT 2014 was conducted on Bathurst, Cornwallis, and Devon Islands. Canadian Rangers participated in force generation activities and sovereignty patrols, establishing a forward operating base on Sherard Osborn Island. An eight-Ranger patrol team, along with the Combined Dive Team, travelled to Gascoyne Inlet to conduct Arctic Diver operations under the sea ice. Rangers also circumnavigated Bathurst Island, travelled to Isachsen, constructed mock defensive

positions, and conducted small arms training.

- Op NUNALIVUT 2015 focused on the area around Cambridge Bay, Nunavut, far south of previous iterations.
- Op NUNALIVUT 2016 was conducted near Alert and Resolute Bay. Canadian soldiers from the 2nd Battalion of the Royal Canadian Regiment (2RCR) and the 4th Canadian Division Arctic Response Company Group (ARCG), supported by Canadian Rangers from 1 CRPG, established an austere base camp on Little Cornwallis Island and conducted long-range patrols in the High Arctic.
- Op NUNALIVUT 2017 took place in Resolute Bay and Hall Beach, Nunavut, with Rangers supporting members from the 12e Régiment blindé du Canada, as the Immediate Reaction Unit, and a group of soldiers from 34 and 35 Canadian Brigade Groups, as the ARCG, on patrols and survival training around Hall Beach.
- Op NUNALIVUT 2018 consisted of Arctic survival training and patrolling around Resolute Bay and Cambridge Bay, Nunavut, with 1 CRPG supporting troops from 2nd Battalion, Princess Patricia's Canadian Light Infantry (2PPCLI), and an ARCG from 38 Canadian Brigade Group.

As discussed in the previous chapter, Operation NUNALIVUT became integrated into a combined operation NANOOK later in 2018. This was done to showcase the year-round nature of military operations in the Canadian Arctic, featuring four deployments throughout the year to exercise the defence of Canada and to secure its Northern regions. Operation NANOOK-NUNALIVUT demonstrates the military's ability to project and sustain forces in the High Arctic under harsh winter

conditions and to test new capabilities and interoperability with allies. Operation NANOOK-TATIGIIT is a whole-of-government disaster response rehearsal that reinforces domestic and international Arctic partnerships to respond to security challenges and emergencies in the North. Operation NANOOK-TUUGAALIK, conducted in the open water season during late summer, showcases the Royal Canadian Navy's ability to demonstrate presence and conduct surveillance in the Arctic in concert with partners and allies. Operation NANOOK-NUNAKPUT, also hosted in late summer, focuses on Canada's presence and surveillance along the Northwest Passage.

Operation NANOOK-TAKUNIQ is the newest serial, intended to refocus attention on enhancing the capacity of the Canadian Rangers to act as Canada's "eyes and ears in the North." Through this initiative, 1 CRPG can exercise its ability to integrate with other organizations, sensors, and surveillance capabilities. Improving domain awareness in the High Arctic is not just about technology – it is also about leveraging people who have the ways of knowing and seeing to discern changes, detect anomalies, conduct effective reconnaissance, and help to determine the suitability and feasibility of accessing and using specific locations as part of an expanded military footprint in the High Arctic.

Notes

[1] Defence Administrative Order (DAOD) 2020-2, Canadian Rangers, 21 May 2015, https://www.canada.ca/en/department-national-

defence/corporate/policies-standards/defence-administrative-orders-directives/2000-series/2020/2020-2-canadian-rangers.html.
[2] See P. Whitney Lackenbauer, *The Canadian Rangers: A Living History* (Vancouver: UBC Press, 2013); P. Whitney Lackenbauer, *Vigilans: The 1st Canadian Ranger Patrol Group* (Yellowknife: 1st Canadian Ranger Patrol Group, 2015); P. Whitney Lackenbauer, Magali Vullierme, and Stéphane Roussel, *L'histoire des Rangers canadiens du Québec: 2e Groupe de patrouilles des Rangers canadiens* (Richelain and Peterborough: 2nd Canadian Ranger Patrol Group and North American and Arctic Defence and Security Network (NAADSN), 2022); and P. Whitney Lackenbauer, ed., *The Canadian Armed Forces' Eyes, Ears, and Voice in Remote Regions: Selected Writings on the Canadian Rangers* (Peterborough: NAADSN, 2022), https://www.naadsn.ca/wp-content/uploads/2022/01/Lackenbauer-Cdn-Rgrs-selected-writings-NAADSN-jan22.pdf.
[3] P. Whitney Lackenbauer, "Guerillas in Our Midst: The Pacific Coast Militia Rangers, 1942-45," *BC Studies* 155 (August 2007): 31–66, https://doi.org/10.14288/bcs.v0i155.628.
[4] On the history of the Rangers, see Lackenbauer, *The Canadian Rangers: A Living History*.
[5] See Kenneth C. Eyre, "Forty Years of Military Activity in the Canadian North, 1947-87," *Arctic* 40, no. 4 (December 1987): 292–299, https://doi.org/10.14430/arctic1786, and Kenneth C. Eyre, *Custos Borealis: The Military in the Canadian North, 1898-1975*, ed. P. Whitney Lackenbauer (Peterborough: NAADSN, 2020), https://www.naadsn.ca/wp-content/uploads/2020/02/custos-borealis-eyre-lackenbauer-NAADSNweb-jan20.pdf.
[6] Lackenbauer, *The Canadian Rangers: A Living History*.
[7] P. Whitney Lackenbauer, "The Canadian Rangers: A 'Postmodern' Militia that Works," *Canadian Military Journal* 6, no.4 (Winter 2005–2006): 49–60.
[8] The established strength of the Rangers is set at 6,821 positions, with an approximate effective strength of 5,100, according to the Department of National Defence's (DND) *2024-25 Departmental Plan* (27 February 2024), https://www.canada.ca/en/department-national-defence/corporate/reports-publications/departmental-plans/departmental-plan-2024-25/planned-results/defence-team.html.
[9] This official figure of Indigenous peoples' participation in the CAF does not include the Canadian Rangers because they are neither Regular Force nor Primary Reserves. Self-identification surveys related to the Rangers are highly unreliable. See P. Whitney Lackenbauer, "Diversity Statistics, Self-Identification Data, and the Canadian Rangers: Underestimating Indigenous Peoples' Participation Rates in the Canadian Army," NAADSN *Policy Brief*, 19 April 2021, https://www.naadsn.ca/wp- content/uploads/2021/04/ Lackenbauer_Rgr-Diversity-Statistics-final.pdf. See also P. Whitney Lackenbauer, "Canada's Northern Defenders: Aboriginal Peoples in the Canadian Rangers, 1947-2005," in *Aboriginal Peoples and the Canadian Military: Historical Perspectives*, ed. P. Whitney Lackenbauer and Craig Leslie Mantle (Kingston: Canadian Defence Academy Press, 2007), 171–208, and P. Whitney Lackenbauer, "Canada's Eyes and Ears in Northern Communities: Aboriginal Peoples in the Canadian Rangers," in *Hidden in Plain Sight:*

Contributions of Aboriginal Peoples to Canadian Identity and Culture, Vol. 2, ed. Cora J. Voyageur, David R. Newhouse, and Dan Beavon (Toronto: University of Toronto Press, 2011), 306–328.
[10] P. Whitney Lackenbauer, "The North's Canadian Rangers," in *Strengthening the Canadian Armed Forces Through Diversity and Inclusion*, ed. Alistair Edgar, Rupinder Mangat, and Bessma Momani (Toronto: University of Toronto Press, 2020), 67–86.
[11] P. Whitney Lackenbauer and Peter Kikkert, *Measuring the Success of the Canadian Rangers* (Peterborough: NAADSN, 2020), https://www.naadsn.ca/wp-content/uploads/2020/10/Rangers-Success-Metrics-Lackenbauer-Kikkert-high-res.pdf; 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): 35–67, https://thenorthernreview.ca/nr/index.php/nr/article/download/901/937; and P. Whitney Lackenbauer and Peter Kikkert, "Broadening Human Security: The Canadian Rangers and Community Disaster Resilience," in *Evolving Human Security: Frameworks and Considerations for Canada's Military*, ed. Shannon Lewis-Simpson and Sarah Jane Meharg (Kingston: Canadian Defence Academy Press, 2023), 211–217.
[12] DND Main Estimates 2024-25, "Key Issue Notes: Domestic and Continental Defence," Government of Canada, last modified 24 September 2024, https://www.canada.ca/en/department-national-defence/corporate/reports-publications/proactive-disclosure/nddn-main-estimates-2024-2025/key-issues-notes/domestic-continental-defence.html.
[13] On Ranger Instructors, see P. Whitney Lackenbauer, "Teaching Canada's Indigenous Sovereignty Soldiers … and Vice Versa: 'Lessons Learned' from Ranger Instructors," *Canadian Army Journal* 10, no. 2 (Summer 2007): 66–81; Magali Vullierme, "Cultural Understanding and Dialogue Within the Canadian Armed Forces: Insights from Canadian Ranger Patrols," *Northern Review* 52 (2021): 127–144, https://doi.org/10.22584/nr52.2021.005; Magali Vullierme, "The Social Contribution of the Canadian Rangers: A Tool of Assimilation or Means of Agency?," *Journal of Military and Strategic Studies* 19, no. 2 (2018): 193–211, https://jmss.org/article/view/62820; and Bianca Romagnoli, "Patrolling North of 60: Military Infrastructure in Canada's Arctic Communities" (unpublished PhD dissertation, University of California, Los Angeles, 2023).
[14] Although the influx of several thousand dollars into a community at the end of a Ranger patrol or military exercise might appear paltry, this Ranger pay can constitute a substantive part of an Indigenous economy that balances short-term paid labour with traditional harvesting activities, thus supporting distinctive Northern social economies. Lackenbauer and Kikkert, *Measuring the Success*.
[15] DND Main Estimates 2024-25, "Key Issue Notes: Domestic and Continental Defence"; Lackenbauer and Kikkert, *Measuring the Success*.
[16] Chief of Land Staff, "Army Support Plan Immediate Reaction Unit – Northern Contingency Plan," 14 December 2011, DND file 3350-1 (Army G35).
[17] See Peter Kikkert with Doug Stern, "Finding Ihuma: Inuit Leadership Norms and Canadian Ranger Operations," in *Canadian Arctic Operations, 1941-2015: Lessons Learned, Lost, and Relearned*, ed. Adam Lajeunesse and P. Whitney

Lackenbauer (Fredericton: Gregg Centre for the Study of War & Society, 2017), 370–386, http://lackenbauer.ca/wp-content/uploads/2023/05/2017-AL-PWL-CAF-Arctic-Ops.pdf.

[18] See Bernd Horn and Hans Ilis-Alm, "Introduction," in *Force Multiplier: Utilization of SOF from a Small State Perspective*, ed. Bernd Horn and Hans Ilis-Alm (Ottawa: Canadian Special Operations Forces Command, 2024), iii.

[19] See, for example, William R. Morrison, *Showing the Flag: The Mounted Police and Canadian Sovereignty in the North, 1894-1925* (Vancouver: UBC Press, 1985), and Eric Jamieson, *Arctic Patrol: Canada's Fight for Arctic Sovereignty* (Qualicum Beach: Caitlin Press, 2024).

[20] Tim Querengesser, "Embedded with the Canadian Rangers," *Up Here* 26, no. 7 (October–November 2010): 24.

[21] Aaron Spitzer, "Canadian Forces Want Bigger Role for Nunavut's Rangers," *Nunatsiaq News,* 26 January 2001. Laroche expected the sovereignty patrols to involve four to eight Rangers who would spend about a week on the land. The scale quickly escalated beyond this projection.

[22] Although human activity in the Arctic Archipelago has been limited, other states have long recognized Canada's territorial sovereignty, which makes our legal position strong. Canada would only risk losing sovereignty if it abandoned the territory completely or tolerated the effective presence of another state in the Archipelago as a competing sovereign. For a tight summary, see François Côté and Robert Dufresne, *The Arctic: Canada's Legal Claims* (Ottawa: Library of Parliament, 2008), https://publications.gc.ca/collections/collection_2017/bdp-lop/ym32-9/YM32-9-08-05-eng.pdf.

[3] See, for example, John Mitchell, quoted in Adrian Humphreys, "Intrepid Rangers to Leave for Pole," *National Post,* 9 April 2002, A9.

[24] See Jerry Kobalenko, *The Horizontal Everest: Extreme Journeys on Ellesmere Island* (Toronto: Penguin, 2002), 239–252.

[25] Editorial, "Operation Ulu Sends the Right Messages," *Northern News Services*, 24 April 2000. See also James Cudmore, "Military Fails to Spot Polar Poachers in Double Operation: Charges Unconfirmed," *National Post*, 18 April 2000. Alexandra Fiord fell within the theoretical radius of the Grise Fiord patrol but could be accessed only by air. "We wanted to extend our area of influence … [and] go a little further than the Rangers' traditional hunting grounds," public affairs officer Lieutenant Mark Gough explained. "The whole purpose was so the Rangers would become familiar in a different area." Quoted in Kerry McCluskey, "Poacher Patrol," *Northern News Services*, 24 April 2000. Although Canada had tolerated traditional hunting by Greenland Inuit in the past, rumours of Inuit guiding and shuttling paying tourists across the international border (a practice that contravened Canadian immigration, hunting, customs, and firearms laws) made the perceived threat more serious. Colonel J.G.P. Leblanc to Deputy Chief of the Defence Staff (DCDS), December 1999, DND, f. NA 2100-4(Comd).

[26] Lieutenant-General G.E.C. Macdonald to Major Yves Laroche, 1 May 2002, DND, Directorate of History and Heritage (DHH) 3685. Marking the sixtieth anniversary of the Rangers required tracing their lineage back to the Pacific Coast Militia Rangers, even though there was no official linkage between the two corps.

[27] "Rangers Will Receive Medals," *Whitehorse Star,* 21 January 2003.
[28] Canada NewsWire, "Governor General's Canada Day Message," 29 June 2002.
[29] "Patrol Redirected to Banks Island," *Whitehorse Star*, 2 April 2003.
[30] Adrian Humphreys, "Canada's Troops to Reclaim Arctic," *National Post,* 25 7March 2004.
[31] See P. Whitney Lackenbauer, ed., *Canada's Rangers: Selected Stories, 1942-2012* (Kingston: Canadian Defence Academy Press, 2013), and P. Whitney Lackenbauer and Bianca Romagnoli, eds., *Sovereignty, Security, and Resilience: Selected Stories about 1st Canadian Ranger Patrol Group, 1998-2022* (Yellowknife: 1 CRPG/NAADSN, 2022).
[32] Dawnieca Palma, CJOC Public Affairs, "Operation NANOOK: Towards a New North," 29 June 2018, https://ml-fd.caf-fac.ca/en/2018/07/15249.
[33] See P. Whitney Lackenbauer and Adam Lajeunesse, "The Emerging Arctic Security Environment: Putting the Military in Its (Whole of Government) Place," in *Whole of Government Through an Arctic Lens*, ed. P. Whitney Lackenbauer and Heather Nicol (Antigonish: Mulroney Institute of Government, 2017), 10–11.
[34] Originally designed to take advantage of the unique capabilities of the Canadian Rangers and 440 (Transport) Squadron to undertake and support snowmobile patrols in the most remote stretches of the High Arctic, the NUNALIVUT operation changed to focus on opportunities for specialized groups (such as Royal Canadian Air Force SAR units, the Royal Canadian Navy Combined Dive Team, and Arctic Response Company Groups) to gain experience in the region. See, for example, Captain Bonnie Wilkin, "Operation Nunalivut: Shine on the Arctic Sun," *Northern Frontline* [JTFN] (2014): 16–19.
[35] CJOC, *CJOC Plan for the North*, January 2014, CJOC file 3350-1 (J5), 29. JTFN also conducts Operation QIMMIQ as a continuous surveillance and presence operation involving Ranger patrols, CP-140 Aurora patrols, and Royal Canadian Navy vessels in the summer.
[36] DND, Northern Employment Support Plan, 3. Peter Kikkert and I have argued that "the Army's Arctic deployments are treated akin to expeditionary operations, designed to deliver 'high-readiness Arctic-enabled sub-units' that are self-contained, 'self-sufficient for an extended period of time, [and] appropriate to the unique circumstances of the different regions of the Arctic.' This concept reflects an ongoing appreciation of the remoteness, isolation, and 'hostile' climatic and topographical conditions in Canada's Northern regions that strongly influence how the Army can generate and employ forces." P. Whitney Lackenbauer and Peter Kikkert, *Lessons in Northern Operations: Canadian Army Documents, 1945-56*, Documents on Canadian Arctic Sovereignty and Security No. 7 (Calgary and Waterloo: Centre for Military, Security and Strategic Studies; Arctic Institute of North America; Centre on Foreign Policy and Federalism, 2016), vii. Quotes are from Canadian Army Land Warfare Centre, *Northern Approaches: The Army Arctic Concept 2021* (Ottawa: DND, 2013), 24, 40.

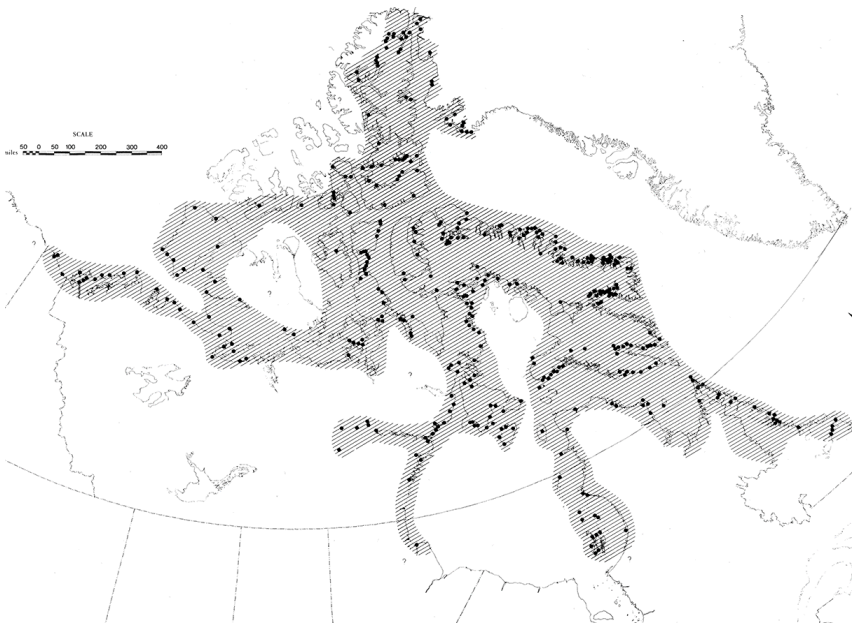

ARCTIC OCEAN
Queen Elizabeth Islands
Sverdrup Islands
Quttinirpaaq National Park
Alert
Ellesmere Island
Rareson Channel
Hall Basin
Kennedy Channel
Nansen Sound
Greely Fjord
Eureka
Eureka Sound
Axel Heiberg Island
Meighen Island
Sverdrup Channel
Peary Channel
Massey Sound
Kane Basin
Strait
Smith Sound
KALAALLIT NUNAA
GREENLAND (DK)
Qaanaaq (Thule)
Nares
Prince Gustaf Adolf Sea
Ellef Ringnes Island
Hassel Sound
Amund Ringnes Island
Borden I.
Wilkins Strait
Brock I.
Mackenzie King Island
Lougheed Island
Danish Strait
Maclean Strait
King Christian I.
Cornwall I.
Norwegian Bay
Graham I.
Belcher Channel
Byam Martin Channel
Findlay Group
Qausuittuq National Park
Prince Patrick Island
Emerald I.
Cameron I.
Mould Bay
Hecla and Griper Bay
Vanier I.
Bathurst Island
Queens Channel
Grise Fiord
Jones Sound
Coburg I.
Eglinton I.
Melville Island
Byam Channel
Byam Martin I.
Cornwallis Island
Wellington Channel
Devon Island
Resolute
McClure Strait
Parry
Baffin
Beaufort Sea
Viscount-Melville-Sound
Barrow Strait
Lancaster Sound
Channel
Russel I.
Bay
Stefansson Island
McClintock Ch.
Prince of Wales Island
Peel Sound
Somerset Island
Prince Regent Inlet
Bylot Island
Sirmilik National Park
Banks Island
Victoria Island
Baffin Island
0
150
300
600km

3

Geographical and Historical Context

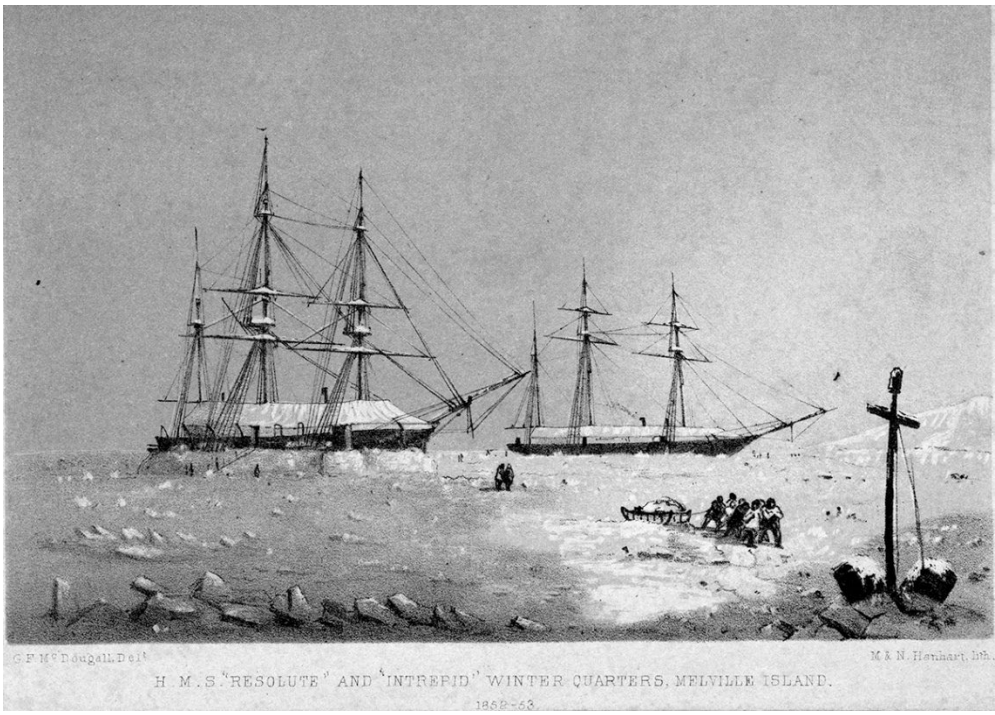
> *TAKUNIQ's stage is the Arctic Archipelago: more than 36,000 islands, only six of which are inhabited, stitched together by a labyrinth of straits and channels. Farther north, the Arctic Cordillera rises along Baffin and Ellesmere islands to the edge of the polar ice cap. It is into this unyielding and largely unvisited terrain that the Rangers were deployed.*
>
> - Gavin John (2025)[1]

Today, Inuit Nunangat – the Inuit homeland in Arctic Canada – encompasses the entirety of Canada's Queen Elizabeth Islands. The historical record (both oral and archaeological) of human habitation, however, reveals that the human presence in the High Arctic region has reflected a process of expansion and contraction in response to changing climatic conditions. Anthropologist George Wenzel has consolidated data from palaeoclimatology, physical oceanography, biology, and archaeology to characterize how two major past climatic shifts – the Neo-Atlantic Period (also known as the Medieval Warm Period), ca. 1000–1300 CE, and the Neo-Boreal Period (or Little Ice Age), which lasted from ca. 1550 to 1850 CE – influenced Inuit material subsistence and cultural adaptation. During the Neo-Atlantic Period, warming temperatures across the North American Arctic reduced annual sea ice coverage and produced prolonged periods of open water during the summer. Thule people (ancestors of modern Inuit), with centuries of whale-hunting expertise, spread eastward more than 8,000 kilometres from what is now Alaska to the Canadian High Arctic and Greenland to pursue bowhead whales and other migratory marine mammals that had entered the newly accessible High Arctic waters. The Thule rapidly displaced the people who Inuit remember as Tuniit and who archaeologists refer to as the late Palaeo-Eskimo or Dorset culture, who had occupied most of the Canadian Arctic and Greenland for nearly 2,000 years. This dramatic human migration brought technological adaptations such as the bow and arrow, dog sled, *umiaq* (whaling boat), *qayaq*, and semi-subterranean whalebone and boulder dwellings to the High Arctic Islands.[2]



Thule Site locations and presumptive land use. Inuit Tapirisat of Canada, *Inuit Land Use and Occupancy Project*, vol. 1, p. 239.

The significant cooling of the High Arctic during the Little Ice Age ultimately forced Inuit to withdraw from the northernmost islands of the North American Arctic Archipelago. As the length of ice-free waters in summer shrank and bowhead whales ceased travelling to the High Arctic, Inuit lost access to large supplies of food, fuel, housing, and sled materials. Smaller, extended families living in tents and snowhouses ("igloos") replaced larger Thule villages as Inuit became less sedentary. By 1600 CE, Inuit had abandoned the High Arctic islands, pursuing seasonally available smaller game (primarily caribou in summer, ringed seals at their breathing holes in winter, and Arctic char in the spring and autumn), as well as walrus, beluga whales, and narwhal in more southern regions with less severe climatic conditions. Thus, when European explorers seeking the Northwest Passage ventured into the northern North American Arctic from the seventeenth century onwards, they met Inuit in Greenland but not in the Archipelago north of Lancaster Sound, Parry Channel, and M'Clure Strait. Indigenous Peoples' climate-related adjustments had led them to migrate southward, leaving the High Arctic islands uninhabited apart from periodic hunting trips by Inughuit across Davis Strait and Inuit from the southern Arctic islands.[3]



European polar explorers were drawn to the "New World" Arctic in the sixteenth century not to exploit its riches but to pass through it as a commercial route to elsewhere. Their search for a Northwest Passage to the Orient treated the Arctic not as a *place* of inherent value but as a transient *space* – an obstacle to be circumvented. Nevertheless, their voyages opened up a new frontier in the mental maps of Europe. In 1576, Sir Martin Frobisher sailed across the southern end of Davis Strait and discovered the bay on western Baffin Island that bears his name. John Davis pushed further north eleven years later, reaching about 73°N before returning south and mapping his namesake strait that would lead his successors into the islands of the archipelago. Over the next century, most British efforts to find a Northwest Passage concentrated further south in Hudson Bay. Nonetheless, the 1616 expedition led by Robert Bylot and William Baffin sailed as far north as 78°N, discovering and naming Smith, Jones, and Lancaster Sounds.[4]

Sir John Franklin's ill-fated attempt to conquer the Northwest Passage in 1845, and the subsequent searches to determine what happened to an expedition that seemed to vanish from the face of the Earth, unveiled much more of the North American Arctic map. In his brilliant study of British exploration during the mid-nineteenth century, Hugh Wallace observed:

> as exploration had advanced towards the centre of the North American Arctic it had been thrown out of focus. Normally, discovery vessels were not only a means of finding new lands but were also surveyors' platforms and scientific laboratories. Now, however, ice and the archipelago in the central Arctic had forced a separation of these two elements, placing marine discovery and marine surveying in conflict. The navy had ignored the possibility that the prompt and realistic, way to find a passage might be to send to the Arctic a scouting party by land or small vessels to test and sail it. Instead, the Franklin expedition had gone into the Arctic in the manner of hydrographers, land surveyors, military map readers, or even settlers, not of discoverers—and the results had matched the method. The party had surveyed a Northwest Passage, not discovered it; they had seen it, but not reported it—so news had not been conveyed to London. Indeed, now it was necessary both to find the discoverers and also, so far as possible, what it was that they had found.[5]

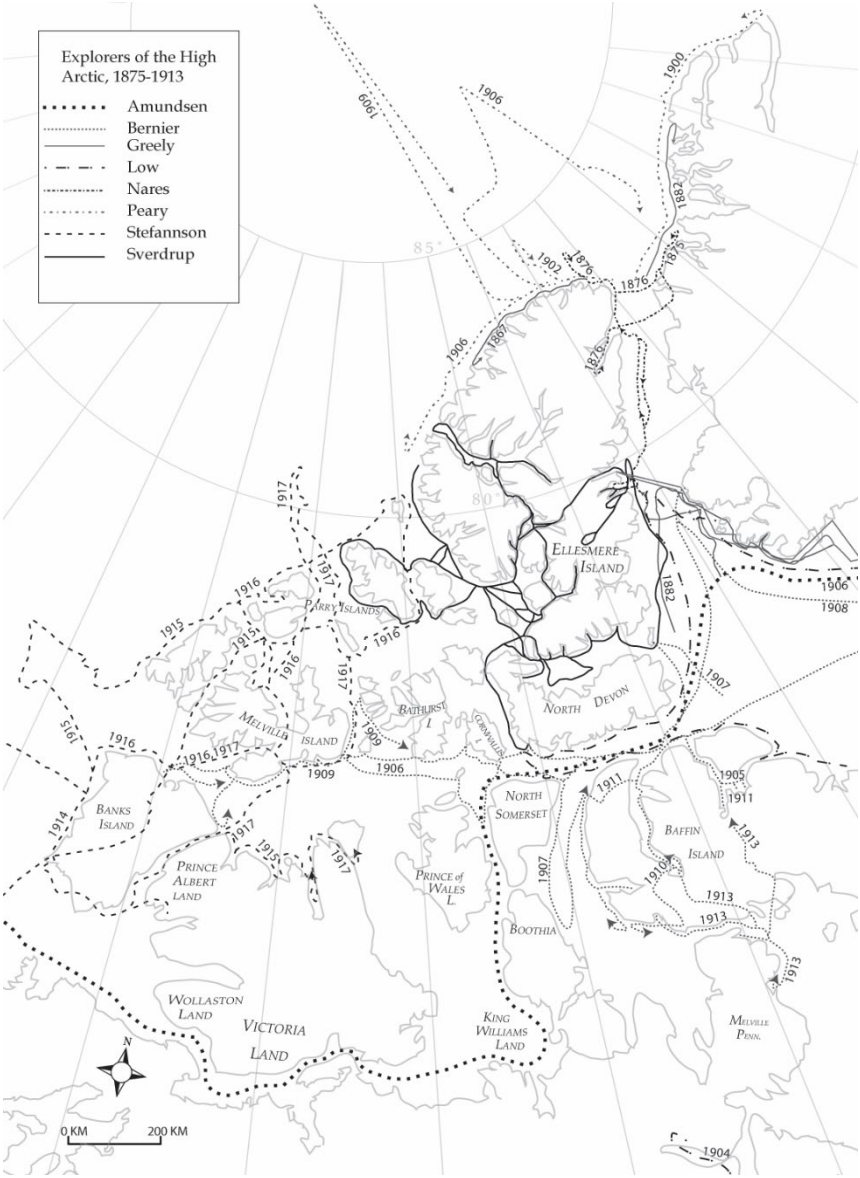
The search expeditions criss-crossed the waters at the heart of the archipelago by ship and sledge, filling in much of the Arctic map. For example, when Captain Henry Kellett's ships settled in for winter quarters at Dealy Island, at the entrance to Bridport Inlet (after ice blocked their access to Winter Harbour in August 1852), they used the island as a base for spring journeys by sledge. Captain Sir F. Leopold M'Clintock's epic 105-day, 1,408-mile trip in April 1853 traversed Melville Island, led him to Prince Patrick Island where his party gorged on muskox, and covered 768 miles of previously undiscovered coastline.[6] This accumulation of scientific knowledge left a lasting legacy, and the expeditions searching for Franklin ultimately uncovered half of the Canadian Arctic and three Northwest Passages.[7] The northernmost islands, however, remained largely unexplored.

The "Push for the Pole" and Canada's High Arctic

The Franklin search also internationalized activities in the North American Arctic. Americans turned their primary focus to the path to the North Pole. Dr. Elisha Kent Kane's 1853–1855 expedition, sponsored by the US Navy, sought the answer to Franklin's fate by pushing northward to the "open sea" along the west coast of Greenland, pressing deep into Kennedy Channel before ice and scurvy forced their retreat. Dr. Isaac Hayes sought "to complete the survey of the north coasts of Greenland and Grinnell Land" in 1860–1861, crossing the Greenland ice cap before

working his way up the Ellesmere Island coast to Lady Franklin Bay (81°35'N, by his calculation), the "most northern land that has ever been reached."[8] After the British, exhausted by the Franklin search, ceased their Arctic exploration efforts, American Captain Charles Francis Hall sailed north from Washington on the reconditioned steam tug *Polaris*, reaching 82°11'N at the northern entrance to Robeson Channel in 1871.[9] The quest for the North Pole would continue to entice Americans to the northernmost reaches of North America through the turn of the century, seeking prestige and, by extension, clarifying cartographic and scientific understandings of the continent.

CFS Alert is named after Her Majesty's Ship (HMS) *Alert*, a British Royal Navy vessel commanded by Sir George Nares, a veteran of the search for the ill-fated Franklin expedition, which wintered in a small bay near Cape Sheridan (ten kilometres east of CFS Alert) between 1875 and 1876. The British Arctic Expedition was the first to sail ships north through the channel between Greenland and Ellesmere Island – now named Nares Strait – to the Lincoln Sea. While they did not reach their goal of the geographic North Pole, the crews of HMS *Alert* and *Discovery* were the first explorers to reach northern Ellesmere Island and dispelled the popular theory that this route would lead to an imagined "open polar sea," an ice-free region surrounding the Pole. After settling in at Floeberg Beach, on the northeastern coast of Ellesmere, owing to impassable ice, a sledging party under Albert Hastings Markham set a new record for "furthest north" by reaching 83°20'26"N. Overall, however, the expedition was a near disaster. Scurvy decimated the crews, leading to several deaths, and their clothing and equipment proved inappropriate for the High Arctic environment. When Nares realized that his expedition would not survive another winter, he hastily retreated southward with both of his ships in the summer of 1876.[10]



The series of expeditions attempting to discover "the American route to the North Pole" between the west coast of Greenland and Ellesmere Island encountered serious obstacles, given that the conditions for passage through the ice are highly variable in this part of the Arctic. Several explorers reached very advanced points to the north, with the

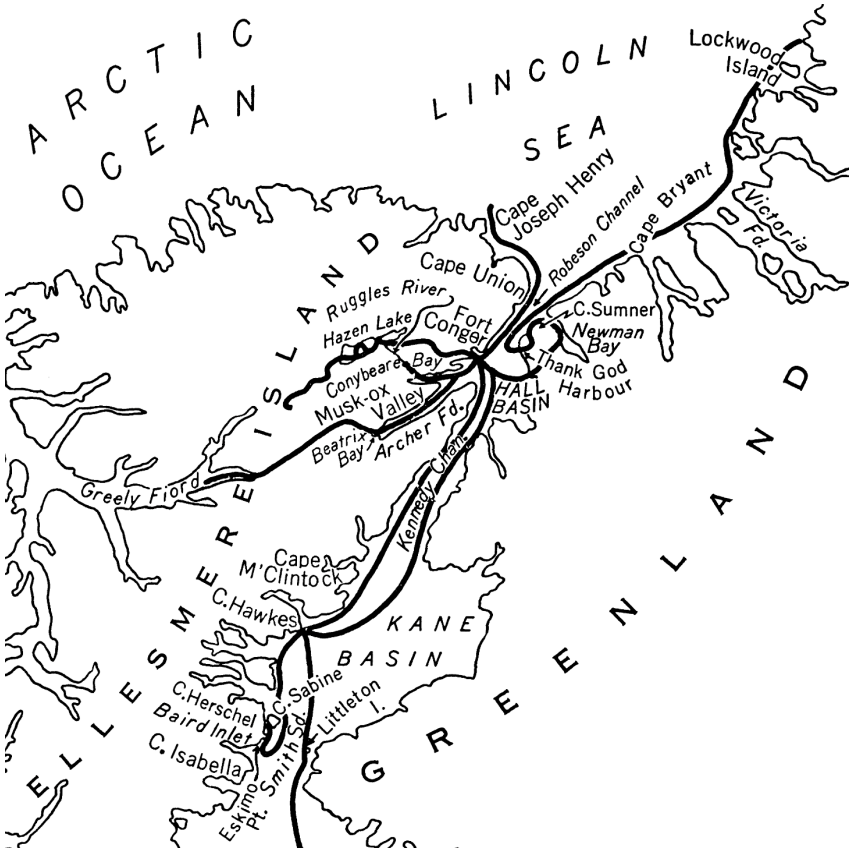
first major exploration of the interior of the northern part of Ellesmere Island being undertaken by members of the ill-fated Lady Franklin Bay Expedition. The north coast of Ellesmere Island served as a base of operations for American explorer Robert Peary, who claimed to reach the geographic North Pole in April 1909 (although most historians now consider it unlikely that he actually reached the Pole). Subsequently, the territory was visited infrequently, with explorations largely confined to quick trips inland.[11]

The Canadian footprint in the region remained largely non-existent during this period, with the North American Arctic remaining beyond the practical reach of nineteenth-century nation-building programs. The confederation of British North America in 1867 created the Dominion of Canada, whose aspirational motto proclaimed that the country would extend "from sea to sea." Visionaries of a transcontinental empire connected the Atlantic to the Pacific, but they did not internalize the value of a third ocean – the Arctic Ocean – to the north. The Hudson's Bay Company (HBC) surrendered its vast territories (Rupert's Land and the Northwest Territory) to Great Britain in 1869, and Canada accepted them from Great Britain the following year.

The full extent of Canada's dominion, however, was unclear – particularly the northernmost limits of the territory it had inherited from the HBC (see the Outline Map of the Dominion of Canada from 1881 below). The status of the islands north of the Canadian mainland

became a source of considerable concern because of two innocent requests for concessions of Arctic territory in 1874: one by a British subject to establish temporary fishing buildings and another by an American for a mining operation. After extensive deliberations, Britain approved an order-in-council on 31 July 1880 stating that "all British territories and possessions in North America, and the islands adjacent to such territories and possessions which are not already included in the Dominion of Canada, should (with the exception of the Colony of Newfoundland and its dependencies) be annexed to and form part of the said Dominion." By this act, Britain gifted to Canada whatever territories or territorial rights it had in the Arctic Archipelago. The completeness of Britain's own title at that time, and the extent of its territories, remained questionable. "The Imperial Government did not know what they were transferring," Canadian associate archivist Hensley R. Holmden quipped in 1921, "and on the other hand the Canadian Government had no idea what they were receiving." [12] Fortunately for Canada, no foreign state raised questions about the transfers – or made firm claims to the unoccupied islands. For its part, Canada, hesitant to take steps "for the good government of the country until some influx of the population or other circumstance shall occur," did little to consolidate its administrative or practical control over the region for the next fifteen years.[13]

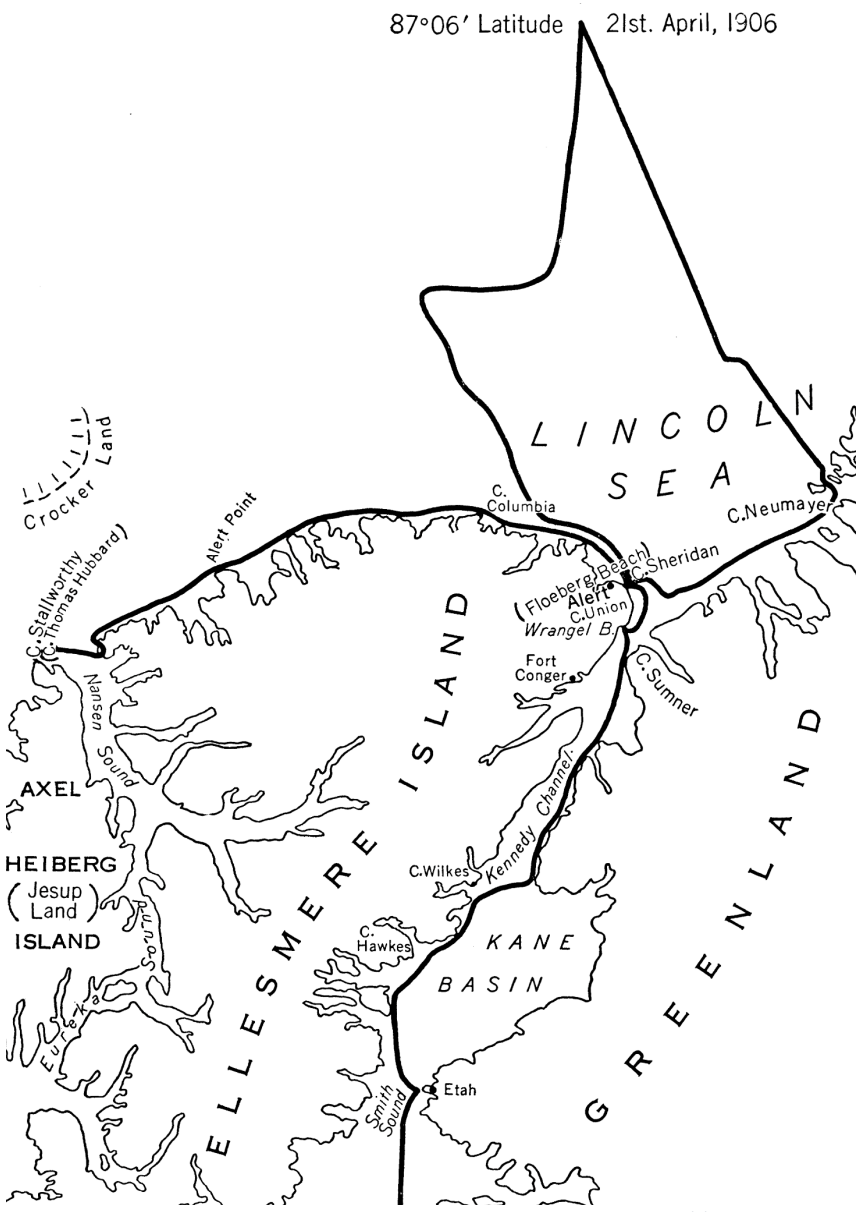
While foreign explorers continued to explore the Arctic Archipelago after the Franklin searches (with all the competitive aspects to exploration and scientific work that such voyages carried), a new current of transnational interest in geomagnetism and other scientific questions requiring systematic and standardized investigation encouraged nascent international cooperation. [14] Eight nations cooperated in the First International Polar Year (IPY) in 1882–1883, the first organized effort to make synoptic meteorological observations based on a clear sampling protocol and high-quality, well-calibrated instruments. Arctic scientists set up fifteen data collection points around the Arctic rim to record systematic simultaneous geophysical observations over an extended period, thus building a data base upon which to study the Arctic environment.[15] Three of these Arctic stations were organized in the Canadian North. US Army Lieutenant Adolphus W. Greely commanded a twenty-five-man scientific expedition that established a meteorological base at Fort Conger (Lady Franklin Bay) on the northern coast of Ellesmere Island and achieved a new northern record of 83°24'N. When his party was forced to retreat after its second winter, Greely took copies of his condensed meteorological



Map of the Greely expeditions, 1881–1884

observations of barometric pressure, air temperature, wind, clouds, and weather conditions in three tin boxes (weighing fifty pounds each) in lieu of extra rations – thus ensuring the expedition's scientific legacy, although only seven men survived the ordeal. Greely went on to preside over the Signal Corps when it transferred the US weather service to the civilian Department of Agriculture, where it became an independent scientific organization free from military regulations, in 1891.[16]

The United States established its footprint in the region during the so-called "American era" of Arctic exploration, concentrating its efforts on "the royal road to the North Pole" along the western coast of Greenland in the late nineteenth century.[17] "The transformation of the Arctic from an arena for heroic adventures to a northern Mediterranean Sea had begun with American expeditions at the turn of the century," historian Nancy Fogelson suggested. American interest grew when Robert E. Peary extended his 1898 Greenland expedition onto Ellesmere



Map of the Peary expedition, 1905–1906

Island and repatriated papers belonging to the abandoned American IPY base at Fort Conger. Two years later, Peary extensively surveyed West Grinnell Land (Ellesmere) before mapping northern Greenland. Although the US War Department boasted that Peary should acquire Greenland "by right of conquest," it made no such statement about

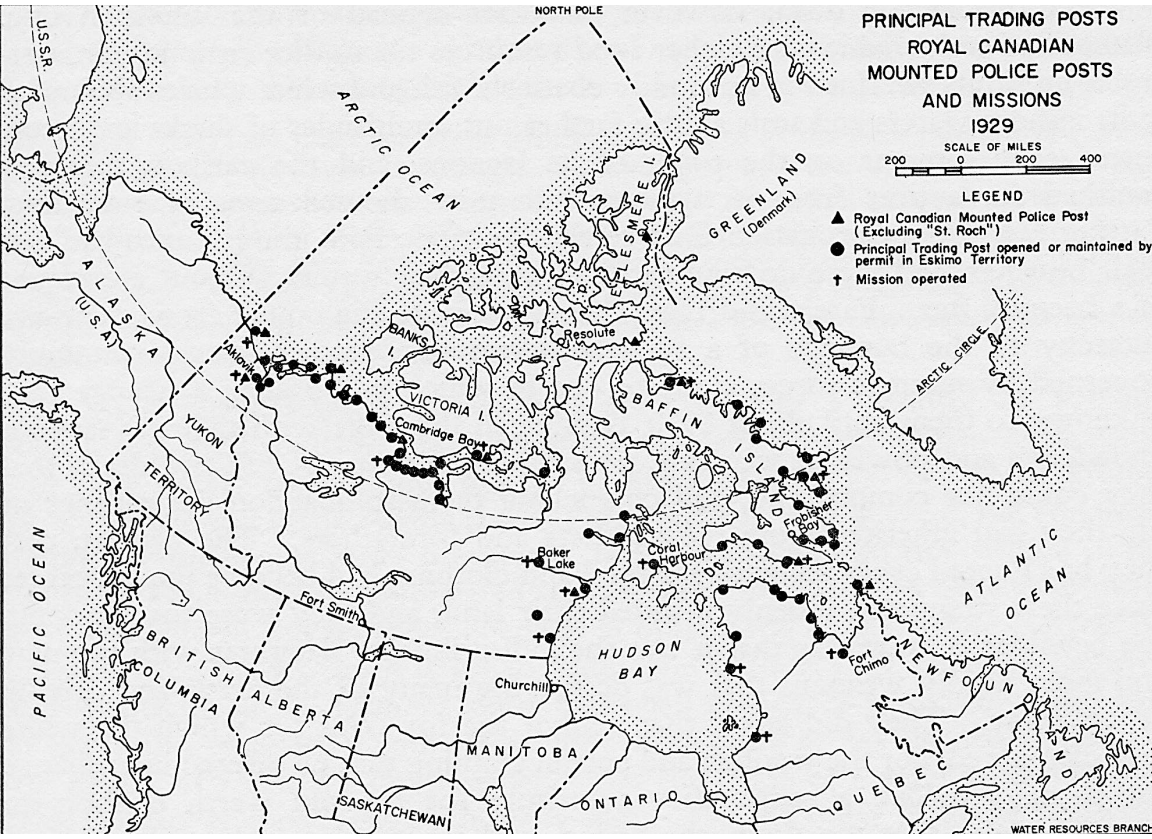
Ellesmere. For his part, Peary had his eyes on being the first man to the North Pole – an accomplishment that would realize America's "manifest duty and privilege." He fell short in 1903, but he managed to map Ellesmere's northern coast and sighted new islands that, "if confirmed, would add to the list of American prizes."[18]

Fortunately for Canada, the United States never claimed these "prizes." Ambiguity remained about how far Canada's sovereignty actually extended to the north, prompting state efforts to clarify its High Arctic claims. The chief astronomer of Canada admitted in 1905 that "Canada's title to some at least of the northern islands is imperfect."[19] Simply drawing lines along Canada's east and west coasts and extending them up to the North Pole, thus delineating a "sector claim" to the Arctic, seemed an attractive and inexpensive option – even if it did not have a firm basis in international law. The origins of this idea are well documented.[20] On 20 February 1907, Senator Pascal Poirier presented a motion to the Senate asserting that "the time has come for Canada to make a formal declaration of possession of the *lands and islands* [emphasis added] situated in the north of the Dominion, and extending to the North Pole." As successor to the rights of the HBC, Poirier asserted that Canada could claim as its territory all of the islands lying between 141°W and 60°W longitude up to the Pole.[21] Although the speech has assumed great significance, Senator Poirier's motion was neither seconded nor debated, and Canada did not incorporate the sector principle in statute – but it proceeded, "by a series of semi-official and official actions and pronouncements, to stake out a sector claim."[22] Captain Joseph-Elzéar Bernier zealously planted the Union Jack at every landing he made on the Arctic islands until 1 July 1909, when he revived the idea of a Canadian sector by installing a plaque on Melville Island taking sweeping possession of the "whole Arctic Archipelago lying to the north of America from long. [longitude] 60°W to 141°W up to latitude 90°N."[23] Although this dubious act may have done little to perfect Canada's claim to the archipelago in international law, it served as an important symbol in national sovereignty narratives.[24]

Lingering Sovereignty Concerns and the Changing Nature of Arctic Exploration

The First World War and its immediate aftermath were marked by a general lapse in Northern activity, but a clear exception was Vilhjalmur Stefansson's two-pronged Canadian Arctic Expedition, which operated in the Western Arctic from 1913 to 1918. The last of the "old-fashioned expeditions," the main purpose of Stefansson's northern party was to "discover new land along the 141st Meridian" and to map the edge of the continental shelf in the Beaufort basin. In the end, the intrepid explorer discovered and took possession of several islands for Canada, adding several thousand square kilometres to the country's territory, while clarifying cartographically ambiguous ones such as Prince Patrick Island.[25] Despite the southern party's vast scientific achievements, Stefansson's tireless self-promotion and geographical discoveries attracted the most popular attention. Stefansson sought to recast the image of a *Friendly Arctic* – a resource-rich region that Canada could not retain simply by colouring it "red in Atlases published in Canada." He preached the gospel of effective occupation, with science playing a vital part in demonstrating national interest and control.[26]

The character of Arctic exploration changed rapidly and dramatically after the First World War, transitioning from an emphasis on new geographical discovery to scientific exploration. Aviation also reshaped the expectations and practices of modern Arctic exploration, holding out the possibility that the airplane offered a mechanical solution to the longstanding problem of polar transportation.[27] Arctic aviators took to the skies at a time of lingering Canadian concern about sovereignty and increased Canadian government activity in the North. The immediate post-war catalyst for action was Danish explorer Knud Rasmussen's alleged denial of Canada's sovereignty over Ellesmere Island and the Danish government's apparent endorsement of his stance. Stefansson, in an early articulation of a "use it or lose it" doctrine, urged that if Canada did not occupy the northern islands of the archipelago, it might lose them. Stefansson sought to organize an expedition for this purpose, but it did not materialize. "Fear about what Denmark might do



in the archipelago was gradually replaced by concern over what Canada herself ought to do," historian Gordon W. Smith observed, leading the government to institute ship patrols of the Eastern Arctic on an annual basis and to expand the Mounted Police's permanent presence along the Arctic coast and on the Arctic Islands, beginning with new posts at Pond Inlet on Baffin Island and Craig Harbour on Ellesmere Island in 1922.[28] As the Canadian government took action to solidify its Arctic claims, however, other countries lost interest in pursuing their own. Denmark let the issue of Ellesmere Island drop and, at least tacitly, accepted Canadian sovereignty. Lingering questions about Norwegian claims to the Sverdrup Islands surfaced in 1924, but Norway formally recognized Canadian sovereignty over the Sverdrup Islands in 1930.[29]

The tempo of American Arctic exploration activity declined in the 1930s, pushing to the backburner any lingering suspicions about whether the United States accepted all of Canada's Arctic claims for the time being. In March 1933, V. Kenneth Johnston argued optimistically in the *Canadian Historical Review* that foreign claims in Canada's Arctic

Archipelago had disappeared and that Canada's own claim had been established.[30] The Permanent Court of International Justice's decision in the *Eastern Greenland* case between Norway and Denmark the following month indicated lessened requirements for sovereignty over remote, inaccessible, thinly settled or even uninhabited territories.[31] Nevertheless, the judicial nature of polar sovereignty remained ambiguous, and the United States' Hughes Doctrine insisted that proclamations, transient visits, temporary outposts, and symbolic acts of control were insufficient bases for a state to claim sovereignty over polar territory. The contrast between this approach and Canada's "sector principle" could not have been starker.[32]

The Second World War brought the Canadian Northwest and parts of its lower Arctic into a new strategic focus, imprinting the novel idea that the region also constituted a military frontier and thereby initiating a process of military modernization that culminated during the 1950s.[33] The potential value of the Canadian North to both friend and foe became apparent, and the United States' security interests drove attention northward. Although the Americans withdrew from the Canadian North at war's end and the ownership of permanent facilities passed into Canadian hands, senior officials in Ottawa acknowledged a tension between continental defence imperatives and Arctic sovereignty.

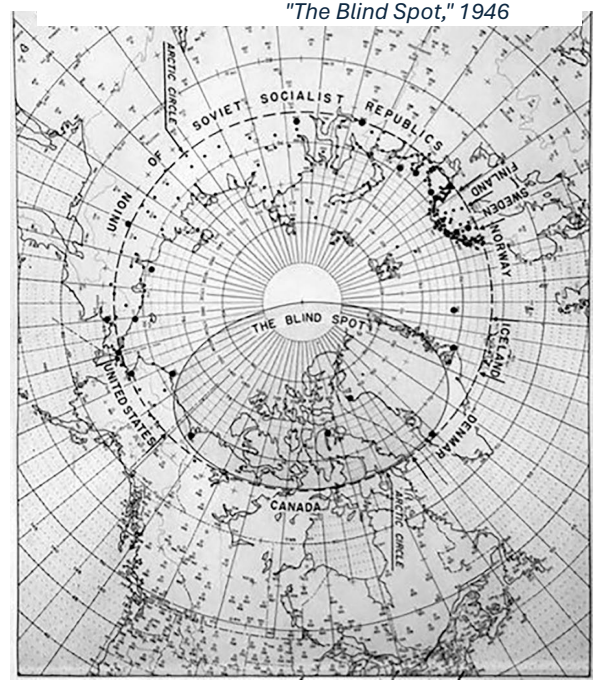
The Cold War in the Canadian Arctic

The onset of the Cold War renewed pressures on Canada to balance sovereignty concerns with continental security imperatives. Polar projection maps revealed how Canada's strategic situation had changed when the US and the Soviet Union became rivals. "As the superpowers and their allies drifted into cold war, the importance of the northern approach to North America came to the fore with a vengeance," historian Kenneth Eyre observed. "The ghastly one aircraft, one bomb, one city arithmetic of the nuclear age made it inevitable. No longer was the North a strategic barrier. It is significant that neither the United States nor Canada looked on the North as a place to be protected because of some intrinsic value. Rather it was seen as a direction, as an exposed flank."[34]

The dictates of geography placed the Arctic at the centre of Cold War superpower geopolitics now that the intercontinental bomber and atomic weapons changed the continental air defence equation. When the US pushed for access to Canada's Far North to build airfields and weather stations beginning in 1946, Canadian officials proved apprehensive in authorizing new installations, and journalists began to

talk about a looming sovereignty crisis. Some scholars argue that Canadian apathy in the face of American security interests threatened our sovereignty in the late 1940s, [35] while others paint a more benign portrait of bilateral cooperation, with Canadian policy-makers preserving Canadian sovereignty through quiet diplomacy and careful negotiations that extended into the 1950s and beyond. [36] Whatever the verdict, the notion that there were "no boundaries upstairs" when it came to North American air defence had entered the military imagination and could no longer be simply ignored. [37]

"The Blind Spot," 1946



The first step was improved domain awareness, including of weather conditions in the region that affected global systems. The US Weather Bureau (a civilian agency) spearheaded the Joint Arctic Weather Stations (JAWS) program as a component of a postwar effort to gather weather data to produce accurate long-term forecasts with civilian economic and industrial benefits. The same forecasts were, naturally, of interest to the American military, which provided logistical support. [38] The Government of Canada approved the binational program in 1947, providing half the personnel at each station – and with all permanent installations at the stations and adjacent airstrips remaining Canadian property. [39] Over the next four years, five JAWS stations were established, at Eureka (1947), Resolute (1947), Isachsen (1948), Mould Bay (1948), and Alert (1950). By 1972, when the US withdrew from the program because of budget cuts and Canada assumed full control of the renamed High Arctic Weather Stations, these outposts had played a key role in opening access to Canada's High Arctic. [40] "Though the physical environment remains essentially the same," geographer William Wonders observed in 1978, "knowledge of the area in many fields has been immensely expanded and [the human] presence has been felt everywhere" owing to these "anchor points" in the Arctic Archipelago. [41]

The Canadian Arctic also became a key scientific "frontier" for military research projects, particularly after the creation of the Defence Research Board (DRB) in 1947 as the civilian science branch of the Canadian military. The DRB and its successors, including today's Defence Research and Development Canada (DRDC), have undertaken a wide range of novel and innovative activities in the Canadian High Arctic.[42] For example, Geoffrey Hattersley-Smith, the High Arctic's first glaciologist, led scientific expeditions to the region every year from 1953 to 1972. He was the first to study the ice shelves of Ellesmere Island and to revisit many historic cairns and camps, and he enjoyed sampling decades-old explorers' rum. In April 1953, Hattersley-Smith and Robert Blackader of the Geological Survey of Canada flew to Alert to study the ice islands that originate from Ellesmere's ice shelves and to reconnoitre the geology of the north coast. With two Greenlandic Inughuit and their dogs, the scientists dogsledded west from Alert, visiting explorers' cairns and caches en route. After returning to Alert, they completed dogsled reconnaissance up Clements Markham Inlet and to Floeberg Beach, then hiked up the Wood River to its headwaters to measure the snow depths of the glaciers and made the first ascent of Mount Grant. Their remarkable season concluded with a trek to Black Cape, south of

Alert, where they inspected a well-stocked cairn left in 1876 by British officers Sir George Giffard and Crawford Conybeare. He later noted that "perhaps the most important result of nearly 20 years of activity in northern Ellesmere Island has been to maintain within a nucleus of Arctic specialists in the fields of geophysics and military geography and logistics, whose knowledge can be tapped on problems of military commitment in the Arctic." He also concluded that "whatever the future may hold for the Arctic islands, it would be well to invest strongly in scientific exploration as the cheapest and most effective means of demonstrating Canadian sovereignty there."[43]

Sovereignty concerns were never far from the surface as the Cold War heated up in the 1950s, and the importance of the Arctic to the defence of North America grew apace. The Americans sought extensive air defence systems, extending to the northernmost reaches of the continental mainland and lower parts of Canada's Arctic Archipelago, built around radar that would provide as much early warning as possible before enemy bombers reached the main population belt. The Distant Early Warning (DEW) Line, built across the seventieth parallel in a "crash program" from 1955–1957, was the boldest mega-project in Arctic history, dramatically altering the military, logistic, and demographic characteristics of the Canadian Arctic. The US designed and paid for it, triggering sovereignty concerns in southern Canada. Although Canadian officials negotiated a very favourable agreement that protected Canada's sovereignty and secured economic benefits for Canadian companies, journalists and opposition politicians suggested throughout the construction and operational phases that Canada lacked practical control over its northland. In the words of *Maclean's* editor Ralph Allen, the DEW Line represented "the charter under which a tenth of Canada may very well become the world's most northerly banana republic."[44]


Nunavut Archives: NU-1979-051-1968

Such an eventuality did not come to pass. Canada's insecurities and minor American indiscretions were managed effectively, and the US again proved an accommodating and respectful ally. After visiting the

DEW Line in 1969, Eric Wang of the Department of National Defence's legal department noted that journalists who had taken "masochistic pleasure" in decrying American control and dwelling on potential sovereignty encroachments were both misleading and unfounded in the evidence. Ultimately, the radar network was a major coup for Canadian sovereignty, reaffirming that the Arctic Islands explicitly belonged to Canada and that the US, as an ally, accommodated Canadian interests and sought harmony rather than relying on coercion to get its way. "Indeed we might be tempted to congratulate ourselves … for enjoying a 'free ride' at least in this area of our defense activities on our own soil, without any unpleasant side effects," Wang noted in his report.[45] While there were no side effects in terms of sovereignty, there certainly were lasting cultural and environmental impacts.

The legal status of the Northwest Passage posed a more intractable dilemma than questions of terrestrial sovereignty. American and Soviet submarine activity in the Arctic raised concerns about what was going on under the sea ice in the waters of Canada's Arctic Archipelago, but Canadian politicians sent mixed messages in the late 1950s about whether it formally claimed these waters as part of its sovereign jurisdiction. Canadian officials discussed issuing a more decisive claim in the 1960s. In 1965, the government introduced legislation to institute an exclusive fishing zone using straight baselines along the east and west coasts, but it did not make a similar move in the Arctic, fearing a US objection. Canadians hoped that the Americans might support an extension of Canada's claim to Arctic waters for reasons of defence and national security, but the US disagreed. "We can't concede [Canada] the principle of territoriality [in the Northwest Passage] or we'd be setting a precedent for trouble elsewhere in the world," a Department of State official explained in 1969.[46] Ottawa retreated from its plans.[47]

The issue came to a head at the end of the decade. In 1969, American-owned Humble Oil sent the *Manhattan* icebreaker through the Northwest Passage to determine if it was a viable commercial shipping route for oil and gas from the Beaufort Sea. The Canadian media described the voyage as a direct challenge to Canada's Arctic sovereignty. A

crisis mentality developed; according to Maxwell Cohen in 1970, the *Manhattan* voyages "made Canadians feel that they were on the edge of another American [... theft] of Canadian resources and rights which had to be dealt with at once by firm governmental action."[48] In response, the Liberal government under Pierre Trudeau announced a "functional" approach to Canadian sovereignty in 1970. It cast the Arctic as an ecologically delicate region: Canada needed to extend its jurisdiction northward to ensure that foreign vessels did not pollute Canadian waters. Trudeau considered his actions to be a show of "legal moderation," but the Americans were furious, announcing that Canada's unilateral actions were unjustified in international law.[49]

Canada increased its tempo of military activities in the North during the 1970s, emphasizing the importance of a CAF "presence" to "show the flag." On 3 April 1969, Prime Minister Trudeau identified "the surveillance of our own territory and coastlines – i.e., the protection of our sovereignty" – as the first priority in his government's defence policy. However, the specific nature of the CAF's role in asserting sovereignty remained ambiguous.[50] What exactly could the military accomplish as sovereignty soldiers? On 30 April 1969, Eric Wang (then with the Department of External Affairs) emphasized that the sovereignty question related to Arctic waters was "a legal, political and economic problem. It is not a military problem. It cannot be solved by any amount of surveillance or patrol activities in these channels by Canadian Forces." Increasing Canada's military or non-military surveillance activities would not strengthen its legal claim to the Northwest Passage.

The following year, Michael Shenstone of the Department of External Affairs observed that the government had not clarified its rationale in any classified or published document. "We are not aware of any current intelligence estimates forecasting a need for a greater level of military surveillance and capability in the North," he explained, but recent announcements showed that "the Canadian Armed Forces are moving in the direction of a significant reallocation of resources towards the North and away from other areas such as NATO Europe."[51] Why? The government insisted that there was no challenge to Canada's Northern

lands, territorial waters, and seabed, and that the only likely challenge was a commercial, non-military one to the Northwest Passage. "At the same time, Canada's Armed Forces had been given the primary mission of protecting sovereignty, with particular emphasis on the North," Eyre explained. "Yet, by the government's own admission, the only possible challenge to Canadian claims - and that in a very specific and restricted area - was mounted not by an international rival or threat, but by the United States, Canada's closest ally and major trading partner." Given this confusion, he was unsurprised that both the Canadian Forces and the broader public had difficulty discerning what the military's role should actually be in this "new North."[52]

Strategic planners at National Defence Headquarters in Ottawa insisted that, "apart from the threat of aerospace attack on North America, which can be discounted as an act of rational policy, Canada's geographic isolation effectively defends her against attack with conventional land or maritime forces."[53] Who, after all, was challenging our sovereignty, and what role could the Armed Forces play? The military eventually identified three classes of Northern "anomaly" that could undermine Canadian control. The first, "tactical anomalies," were acts by foreign militaries such as overflights of Canadian territory, submarine or warship transits of Canadian internal waters, or the unlikely prospect of a military incursion in the North. The second, "commonweal anomalies," included disasters that threatened the ecological or social stability of the region and its people, such as floods, pollution, or air crashes. The third and most likely class, "sovereign anomalies," included foreign companies or individuals who, acting without direct government approval, contravened Canadian law but probably would not be detected given the vastness of the Arctic. Senior officials determined that the CAF should be able to respond to each of these anomalies from detection and reconnaissance to enforcement. In short, the military had to rethink its surveillance and reconnaissance role to incorporate non-evasive, non-hostile, and often cooperative "targets" that might undermine Canadian sovereignty.[54] These were not primarily combat roles, of

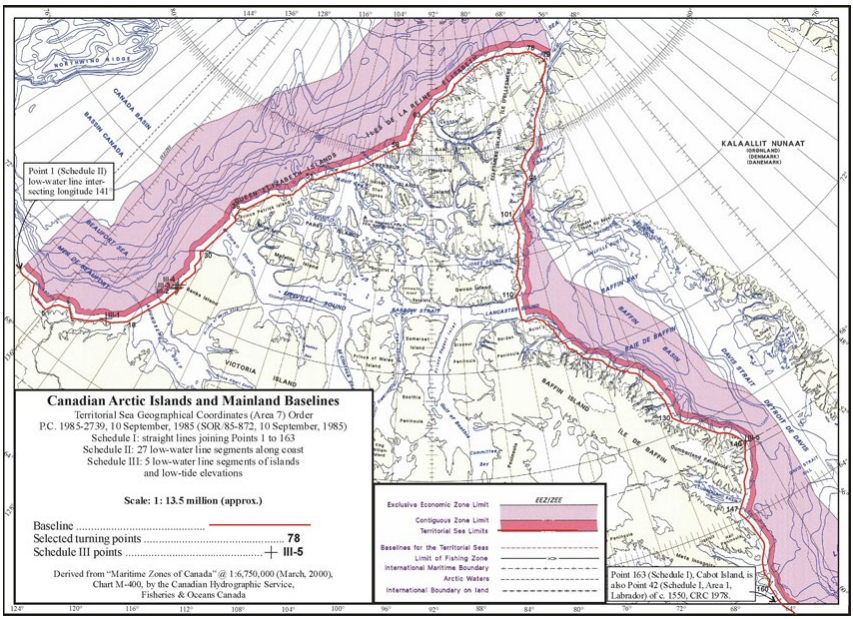
course, but reflected the complexities that the government faced in asserting sovereignty in the North.

The new look for Canada's Arctic patrols was "to see and be seen."[55] In 1970, naval vessels sailed into Arctic waters for the first time in eight years, initiating annual Northern deployments or "NORPLOYs" that continued through the decade. Maritime Command began Arctic surveillance patrols using medium- and long-range patrol aircraft, performing such tasks as surveying Northern airfields, examining ice conditions, monitoring wildlife and pollution, and documenting resource extraction and fishery activities. The Army began regular, small-unit "Viking" indoctrination patrols, as well as elaborate paratroop assault exercises in the archipelago involving the Canadian Airborne Regiment. These activities were transient and limited. So, too, were the long-range air surveillance patrols (which were limited by weather and the lack of Northern airfields), and naval ships were confined to select waters only in ice-free months. To provide a permanent presence, the Canadian Forces set up a new Northern Region headquarters in Yellowknife in May 1970, which boasted that it was responsible for "the largest single military region in the world." To cover 40% of Canada's land mass, the only resources at Northern Region's direct disposal were the headquarters staff, two Twin Otter aircraft, 600–700 Canadian Rangers in units that were resurrected after being left to "wither on the vine" during the 1960s, and a few hundred personnel at communications research and radar stations (including CFS Alert).[56]

Not only did the Government of Canada avoid stationing Regular Forces in the Arctic, but it also did not obtain any new equipment for the Canadian Armed Forces, such as special reconnaissance aircraft or surveillance equipment, ice-capable ships or submarines for the Navy, or all-terrain vehicles for the Army. "To protect sovereignty in the North, the government adopted a policy strikingly analogous to the situation that existed in Canada at the time of the 1922 Eastern Arctic Expedition," Eyre noted. "In the 1920s, Canada established sovereignty in the Arctic with a symbolic presence of the Royal Canadian Mounted Police. In the 1970s, Canada prepared to protect that same sovereignty with a

symbolic presence of the Canadian Armed Forces." An important difference, however, was that the southern military units that operated in the North were transient, and their roles in national defence included much more than Northern training. They did not enjoy the focused tasks that the Mounties had earlier. Nevertheless, by 1975, "the Canadian Forces had re-established themselves in the North to an unprecedented degree." Perhaps more importantly, Eyre observed, "for the first time, the Department of National Defence was prepared to admit that the North had an intrinsic value to the country as a whole and that a military presence was required in the area."[57] By the end of the decade, however, political and public concerns about Northern sovereignty and security had dissipated. In March 1979, the minister of national defence noted that "neither the military threat nor the non-military threat to Canada's sovereignty in the North is considered to be significant" and that "Canada's presence in the North seems now to be well established."[58] Ongoing proposals to redefine, restructure, and better equip the Canadian Rangers in the North fell on deaf ears. Freezes, squeezes, and cutbacks left National Defence with little room to manoeuvre. The North again was out of sight – and out of mind.

The August 1985 voyage of the US Coast Guard icebreaker *Polar Sea*, for reasonable operational objectives relating to the resupply of the American base at Thule (now Pituffik), Greenland, launched another Canadian "crisis" over the Northwest Passage. The Americans refused to seek official permission from Canada for the icebreaker transit, recognizing that this would prejudice their own legal position that the waters through Canada's Arctic Archipelago represented a strait used for international navigation. In response, the Conservative government under Brian Mulroney announced that Canada was officially implementing baselines around the Arctic Archipelago effective 1 January 1986, thus claiming full sovereignty over the Northwest Passage as "historic, internal waters." Concurrently, it outlined an aggressive plan to exercise control over its waters and assert its Arctic sovereignty, including a "Polar 8" icebreaker, new maritime patrol aircraft, a new CAF Northern training centre, improved Northern airfields, a dozen nuclear-powered attack submarines, and a fixed sonar detection system at the entrances to the Passage. It also promised to negotiate with the United States – a prudent move that, owing to Mulroney's close relationship with President Ronald Reagan, yielded the 1988 Arctic Cooperation Agreement requiring Canadian consent for US icebreaker transits. By "agreeing to disagree" on the legal status of the Passage, the two countries reached "a pragmatic solution based on our special bilateral relationship, our common interest in cooperating on Arctic matters, and



the nature of the area" that did not prejudice either country's legal position nor set a precedent for other areas of the world.[59]

As a former infantry officer, Eyre also noted that the 1987 defence white paper acknowledged "the requirement for land forces to be able to operate in the North." Based upon his observations of the preceding decade, however, he remained skeptical. "What remains to be seen is if the government has the resolution to acquire the technology and techniques to support tactical movement within the North as opposed to strategic movement into the North." Eyre explained that policy pledges to strengthen the Canadian Rangers and build a Northern training centre simply reiterated previous commitments that were made back in 1971 and never fulfilled. "Old northern hands must be permitted to be skeptical and adopt an 'I'll believe it when I see it' attitude," he offered.[60] The former did receive sustained resources, although never along the ambitious lines proposed in the 1970s.[61] The Northern training centre plans did not survive the end of the Cold War, but, as was the case with several other Mulroney-era Arctic defence initiatives, they would be resurrected by Stephen Harper's Conservative government in the twenty-first century.

It is important to note that neither the *Manhattan* nor the *Polar Sea* voyages challenged Canada's ownership of its Arctic waters. They related to Canada's right to restrict transit passage [62] by foreign commercial or naval vessels. When the federal government perceived Canadian sovereignty to be threatened, however, it exhibited its

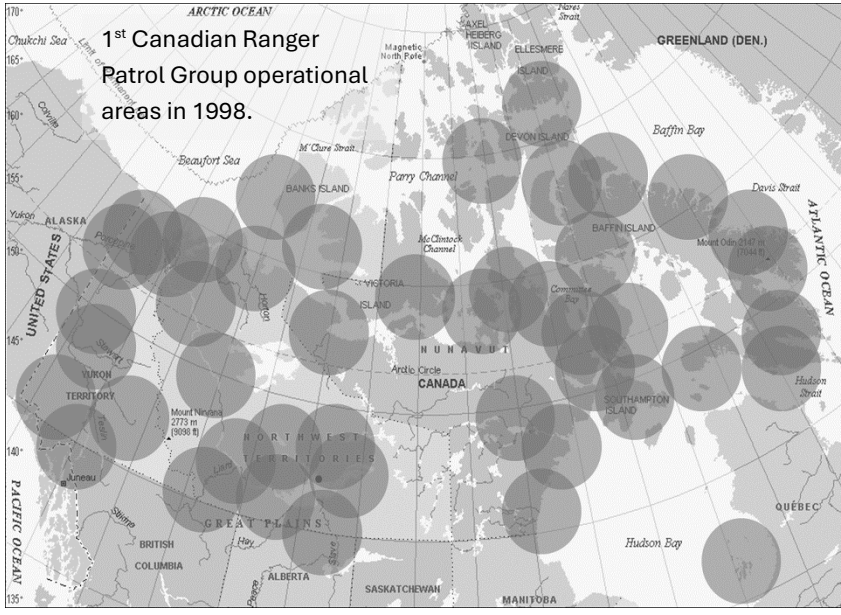
commitment to defending Canadian sovereignty by ordering the CAF to "show the flag" and demonstrate Canada's presence in the North. Given that Canada's closest military and economic ally was also its main challenger, this was a symbolic show of control. Canada could devote resources to a presence precisely because it knew that, in the end, the US could be relied upon for overall continental defence.[63] When the short-term sovereignty crises faded, the government's willingness to deliver on its promised investments in Arctic security also melted away.

The End of the Cold War

With the end of the Cold War, budget pressures, promises of a "peace dividend," and few military threats on the Northern horizon, CAF capabilities in the North were allowed to atrophy. The opening and "fall" of the Berlin Wall beginning in late 1989, and the dissolution of the Eastern Bloc over the next two years, prompted Ottawa and Washington to re-evaluate their Cold War assumptions, thrusting Arctic security out of the political spotlight. Voices within the United States, bolstered by the confidence of "winning" the Cold War, began to preach about an expected "peace dividend" in a new era of liberal peace. The Mulroney government had already announced on 27 April 1989 that it would not proceed with acquiring nuclear-powered submarines, and, one by one, it cut its other planned military acquisitions to serve the cause of Arctic sovereignty. Only the North American Air Defence Modernization program and the expansion of the Canadian Rangers avoided the government's knife. More pressing national priorities – particularly a growing national debt – trumped Arctic issues, precipitating a now-typical period of military inactivity in the North in the 1990s. The sovereignty crisis had passed, and so, too, had the imperative to deliver on Arctic security promises. New issues – Indigenous land claims, self-government, and environmental concerns that transcended national boundaries in the Circumpolar Arctic – called for a different

conversation, and human and environmental security considerations also came to dominate the circumpolar agenda. In the Canadian Arctic, abandoned Cold War military sites required remediation, with hundreds of millions of dollars being poured into cleaning up decommissioned DEW Line sites.[64] This investment in environmental safety, alongside a dramatic reduction in CAF surveillance patrols and training exercises, reflected the change in official priorities during the 1990s.

These assumptions during an era of fiscal austerity in which Canada faced no apparent Arctic military threats dictated a sharp decline in CAF activity and presence in the Canadian North. The Navy had halted its semi-annual NORPLOYs in 1990, Army training in the Arctic ceased on all but the smallest scale, and Air Force patrols scaled back. The 1994 defence white paper scarcely mentioned the Arctic.[65] The Army did not conduct any sovereignty operations by 1999/2000, and RCAF Aurora maritime patrol aircraft conducted only four sovereignty patrols in 2000, down from twenty in the mid-1990s. The largely uncrewed North Warning System (NWS) radar sites, maintained by civilian contractors, and the skeleton staff at CFS Alert/Eureka on Ellesmere Island continued their quiet vigil. The Canadian Rangers in fifty-eight patrols across the Territorial North provided the most extensive and visible military presence in the region, but they did not have the capacity to operate outside of their local areas, nor the authorization to do more than report problems. [66] Much of the institutional knowledge surrounding Arctic operations had dissipated during the 1990s, and the



Forces' ability to move, operate, and survive in the Arctic was very limited as a result.[67]

The dawn of the new millennium brought new concerns that portended a "renaissance in Canadian Arctic security."[68] The *Arctic Capabilities Study*,[69] released in June 2000, acknowledged that the nature of security issues had evolved to include environmental, social, and economic aspects, particularly in the North. Rather than diminishing the military's role, however, it argued that the coming decades would make the North even more vulnerable to "asymmetric" security and sovereignty threats. "There is presently no immediate direct military threat to Canada," the study conceded, but "there remain many significant security/sovereignty challenges of a different nature emerging in the North" which could, over the long term, "erode Canadian sovereignty." Improved capabilities to monitor and respond to emergencies were needed.[70] Given the resource constraints, National Defence Headquarters decided that the equipment and programs proposed to address more than surveillance issues would be extremely expensive and continued with more pressing priorities.[71]

In the years that followed, a growing chorus of academic commentators and journalists warned that the potential security drivers anticipated in the *Arctic Capabilities Study* were coming true and that Canada's sovereignty might be on "thinning ice."[72] Heightened public and political awareness about the impacts of global warming on the Arctic environment, scientifically grounded in the disconcerting findings of the Arctic Climate Impact Assessment in 2004, served as the

main driver for concern about a rapidly changing region. Canadian commentators soon connected these dynamics to Arctic security (broadly defined) and highlighted how new environmental and human challenges could converge into acute sovereignty concerns for Canada. University of Calgary political scientist Rob Huebert, the most vocal "purveyor of polar peril,"[73] emphasized how increased air and maritime activity, coupled with outstanding boundary and jurisdictional disputes, placed Canadian sovereignty "on thinning ice." [74] This narrative resonated with journalists, who commonly adopted the theme of impending Arctic conflict and sovereignty challenges in their stories.[75]

These concerns ignited a vigorous debate about what Canada needed to do to "defend" the Arctic and "assert" Canadian sovereignty. They also prompted the CAF to "return" to the North. Operation NARWHAL in 2002 and 2004, Operation HUDSON SENTINEL in 2005, and Operation LANCASTER in 2006 indicated that the Liberal government under Paul Martin had elevated the Arctic back onto the military radar, but Martin's government fell before it could implement its Northern Strategy. The Conservative government of Stephen Harper, which came to power in January 2006, amplified political attention on Arctic sovereignty and security to an unprecedented level.

"The single most important duty of the federal government is to defend and protect our national sovereignty," Harper asserted. "It's time to act to defend Canadian sovereignty. A Conservative government will make the military investments needed to secure our borders. You don't defend national sovereignty with flags, cheap election rhetoric, and advertising campaigns. You need forces on the ground, ships in the sea, and proper surveillance. And that will be the Conservative approach."[76] Emphasizing that his new government would "stand up for Canada" in the Arctic, Harper placed a primary emphasis on developing new military capabilities to meet potential sovereignty challenges. Harper's main military announcements, all put forth as sovereignty initiatives, included expanding and enhancing the Canadian Rangers, ordering new Arctic and Offshore Patrol vessels (with the contract signed with Irving

Shipbuilding in 2013), building a deep-water Arctic docking and refuelling facility in Nanisivik (which would reach full operational capability in 2020), deploying RADARSAT-2 to provide enhanced surveillance and data-gathering capabilities (successfully launched in December 2007), conducting major military exercises, building a Canadian Forces Arctic Training Centre in Resolute (opened in 2013), establishing a new Army Reserve unit in Yellowknife (2009), and creating Arctic Response Company Groups that would entail training southern Army units for Northern operations.

In the eyes of many academic and media pundits at the time, international developments appeared to justify the Conservatives' military-centric approach. In August 2007, an expedition led by Russian explorer-politician Artur Chilingarov planted a Russian flag on the Arctic seabed below the North Pole – a demonstration of capabilities that was depicted in the Western media as an aggressive move to assert Moscow's claim to the polar seabed. Later that month, Russian president Vladimir Putin announced that, for the first time since 1992, his country had resumed "on a permanent basis" long-range flights by strategic bombers capable of striking targets inside the United States – a change quickly linked in the media to Russia's claims to "a large chunk of the Arctic."[77] That fall, scientists confirmed that the Arctic sea ice during the 2007 melt season had plummeted to its lowest levels on record. This recession in the cryosphere was so great that the Northwest Passage "completely opened for the first time in human memory," with the US National Snow and Ice Data Center reporting that "a standard ocean-going vessel could have sailed smoothly through … the normally ice-choked route."[78] Prime Minister Harper's annual visits to the Arctic during Operation NANOOK, coupled with the other Arctic operations discussed in the previous chapter, demonstrated a burgeoning commitment to regional security.

The militaristic rhetoric[79] of the early Harper years, however, was soon jettisoned in favour of more nuanced statements that attempted to balance messaging that promised to "defend" Canada's Arctic sovereignty with a growing awareness that the most likely challenges

facing Canada were softer security- and safety-related issues that required "whole of government" responses.[80] *Canada's Northern Strategy*, released in 2009, downplayed the possibility of military confrontation in the region and gestured to a stable and well-governed circumpolar community. The strategy cast the United States as an "exceptionally valuable partner in the Arctic," emphasized opportunities for cooperation with Russia, and stressed "common interests" with European Arctic states, as well as a shared commitment to international law.[81] The *Statement on Canada's Arctic Foreign Policy*, issued the following year, outlined a vision for the Arctic as "a stable, rules-based region with clearly defined boundaries, dynamic economic growth and trade, vibrant Northern communities, and healthy and productive ecosystems."[82] The first and foremost pillar of Canada's foreign policy remained "the exercise of our sovereignty over the Far North," but the hard security message was supplanted by a new tone of cooperation.

The military's operational plans also downplayed conventional military threats. Defence documents consistently operated on the explicit assumption that Canada faced no direct, conventional military threat to its security in the near to medium term.[83] While noting enduring responsibilities to defend Canada and North America and deter would-be aggressors, as well as the importance of monitoring military activities across the Arctic region (particularly by Russia, and primarily through surveillance missions),[84] strategic assessments emphasized that the security risks and "threats" facing Canada's Arctic were unconventional, with the lead management responsibilities falling primarily to other government departments and agencies.[85] The most pressing threats and challenges to Northern security and safety required whole-of-government responses: law enforcement challenges (such as upholding Canadian fishing regulations vis-à-vis foreign fishing fleets), environmental threats (such as earthquakes and floods), terrorism, organized crime, foreign (state or non-state) intelligence gathering and counterintelligence operations, attacks on critical infrastructure, and

pandemics.[86] Accordingly, rather than focusing on training for Arctic combat, the military embraced what the *Land Force Operating Concept* (2011) described as a "comprehensive approach," with the CAF providing assets and personnel to support other government departments and agencies dealing with issues such as disaster relief, pollution response, poaching, fisheries protection, and law enforcement.[87] From a military perspective, this meant *supporting* the many stakeholders responsible for implementing federal, regional, and local government policies in the North.[88] The unilateralist "use it or lose it" logic that seemed to dominate speeches during the early years of the Harper government was conspicuously absent.

By the 2010s, Army, Air Force, and Navy personnel conducted routine and contingency operations in the North, undertook regular surveillance and security patrols, and continued to monitor and control the Northern airspace under the auspices of NORAD.[89] Military responsibility for the Canadian North (defined as the area north of 55°N) fell under Canadian Joint Operations Command (CJOC) and, on a Northern territorial level, to Joint Task Force North (JTFN) based in Yellowknife with small detachments in Whitehorse and Iqaluit. JTFN's role was to exercise Canadian sovereignty and security by conducting routine and contingency operations in the North; contribute to the growth and development of the people in the North through the youth-oriented Junior Canadian Ranger and cadet programs; build the collective capability to respond rapidly and effectively to emergencies, along with creating the positive and lasting partnerships required to meet Canada's safety, security, and defence objectives for the region; and actively contribute to the environmental stewardship of the North. Approximately 250 Regular Force, Reserve Force, and civilian personnel work at JTFN to coordinate and support the wide array of military activities in the North, as well as perform a liaison function with the territorial governments and peoples of the three territories.[90]

"Strong at Home": Increasing Canada's Military Presence in the Arctic

Despite a strong change in broad political atmospherics, the transition to a Liberal government under Prime Minister Justin Trudeau in 2015 brought little change in how the Government of Canada conceived of security in the North and of the CAF's role therein. Rather than repudiating Harper's promised investments in enhanced Arctic defence capabilities, the Trudeau government extended them. Canada's June 2017 defence policy, *Strong, Secure, Engaged* (*SSE*), reinforced that the Arctic remained an area of particular interest and focus for strategists and defence planners. "To succeed in an unpredictable and complex security environment," it committed to "increase [the military's] presence in the Arctic over the long-term and work cooperatively with Arctic partners." [91] Reiterating longstanding images of the Arctic as a region undergoing massive change, the policy described it as "an important international crossroads where issues of climate change, international trade, and global security meet."[92] This last sentence suggested that Russia (described elsewhere in the policy document as a state "willing to test the international security environment" and that had reintroduced "a degree of major power competition") did not inherently threaten Arctic stability, given its vested interests in the region.

The resurgent major power rivalry raised questions about how Russia's behaviour on the global stage might undermine core assumptions about a peaceful and cooperative Circumpolar North. Since the Russian military intervention and later war in Ukraine that began in 2014, Russian bomber flights to the margins of Canada's Arctic airspace grew increasingly complex, and NORAD fighter aircraft routinely intercepted Russian military aviation missions inside the Alaskan and northern Canadian Air Defence Identification Zones (CADIZ). [93] Furthermore, advanced technologies allow would-be adversaries to compress the time that it takes for offensive weapon systems, such as cruise missiles, to cross vast distances. The need for would-be adversaries to actually enter into the Canadian Arctic to launch these weapons, however, remained unclear.[94]

In the context of being "strong at home," *Strong, Secure, Engaged* highlighted the security and safety challenges associated with rising commercial interest, research, and tourism, such as search and rescue and natural or human-induced disasters, rather than conventional defence threats. This confirmed the line of reasoning that had become well entrenched in Canadian Arctic defence planning over the preceding decade. The new policy justified the need to "maintain a robust capacity to respond to a range of domestic emergencies, including by providing military support to civilian organizations on national security and law enforcement matters when called upon, engaging in rapid disaster response, and contributing to effective search and rescue operations." As a desired end state, the 2017 defence policy anticipated that, once implemented, Canada's military would "have improved mobility and reach in Canada's northernmost territories" and established a "greater presence in the Arctic over the longer-term." This was not presence for the sake of presence. Instead, "Canadians can be confident that the Canadian Armed Forces will remain ready to act in the service of Canadians – from coast to coast to coast – and sustain a continuous watch over Canada's land mass and air and sea approaches, an area of more than 10 million square kilometres, ensuring timely and effective response to crises."[95]

The next chapter provides an overview of some of the key language in Canada's April 2024 defence policy update, *Our North, Strong and Free*, which inspired the commanding officer of 1st Canadian Ranger Patrol Group to propose Operation NANOOK-TAKUNIQ. Ottawa has announced plans to acquire a range of maritime, land, air, and space capabilities with Arctic applications; prioritize partnerships, including with Indigenous Peoples and Northerners, to advance shared priorities; invest in research and development; and urgently modernize Canada's contribution to continental defence through NORAD. Signature Arctic-related investments include:

- **Modernizing surveillance systems**, including by developing a more effective, layered surveillance system composed of over-the-horizon radars and satellites.
- **Enhanced long-term Arctic satellite communications**, providing coverage at extreme Northern altitudes, and **position navigation and timing air navigation infrastructure and systems** to support air operations in remote areas.
- **New infrastructure and support capabilities**, including upgrades to NORAD Forward Operating Locations at Inuvik, Yellowknife, Iqaluit, and Canadian Forces Base Goose Bay, and infrastructure upgrades for the new fleet of F-35 fighter aircraft.
- **Investments in science and technology**, including polar over-the-horizon radar systems, hypersonic and advanced cruise missile defence, novel and robust space systems in low Earth orbit, undersea surveillance, and enabling defence research and development in the Arctic.
- **Specialized maritime sensors** to conduct ocean surveillance and monitor Canada's maritime approaches, including in the Arctic and North.
- A new **satellite ground station** in the Arctic to improve Canada's ability to detect, deter, and respond to malign activities and to communicate those threats quickly with our most trusted partners.
- **Northern Operational Support Hubs** to better ensure Canadian sovereignty by establishing a greater year-round presence across the Arctic and the North, and investing in multi-use infrastructure that also meets the needs of the territories, Indigenous Peoples, and Northern communities.
- **Renew and expand Canada's submarine fleet** to enable the Royal Canadian Navy to project a persistent deterrent on all three coasts, with under-ice-capable, conventionally powered submarines.
- **All-terrain vehicles for Arctic mobility** adapted to ice, snow, and tundra that will allow the military to both maintain awareness in remote regions and along Canada's entire coastline and better respond to unauthorized activity.[96]

Announcements by Prime Minister Mark Carney in March 2025 of Canada's intention to collaborate with Australia on the development of over-the-horizon radar (OTHR) technology and to support a near year-round military presence through exercises and training to assert

Canada's presence and sovereignty, as well as refine information-sharing processes, also point to action. "Canada is, and forever will be, an Arctic nation, and we can never take our sovereignty and security in the region for granted," Carney proclaimed in Iqaluit. "Canada will remain a strong, secure, and sovereign nation."[97]

Journalist Gavin John, who joined Team Alpine for Operation NANOOK-TAKUNIQ, tidily summarizes that:

> Technological advancements are a pillar of Arctic security. The Arctic Over-the-Horizon Radar (A-OTHR) and a complementary Polar OTHR (P-OTHR) are intended to push Canada's eyes thousands of kilometres beyond the curvature of the Earth, helping NORAD watch the northern approaches. A classified program known only as CROSSBOW – a network of distributed sensors across the Archipelago – would add another layer. Together, these systems promise early warning of airspace threats from Russia. None of them, however, replaces the need to go there.[98]

Where do the Canadian Rangers fit into these plans? What role can they play in enhancing Canada's domain awareness, gathering and sharing practical information, and training and exercising to showcase a purposeful, year-round military presence in the High Arctic? "OTHR and distributed sensors widen the field of view; people on the land give that view fidelity," John explains. "Ellesmere Island and its neighbours sit so far north that many GPS and geostationary communications links degrade or fail outright. In the end, patrols like those under TAKUNIQ provide the resilience and interpretation that satellites and radars cannot."

Notes

Sections of this chapter are drawn from "Background: The Long Build-Up," in *The Joint Arctic Weather Stations: Science and Sovereignty in the High Arctic, 1946-1972*, ed. Daniel Heidt and P. Whitney Lackenbauer (Calgary: University of Calgary Press, 2022), 21–65, and Lackenbauer, "The Canadian Armed Forces and the North Since 1975: A Brief Survey," in Kenneth C. Eyre, *Custos Borealis: The Military in the Canadian North, 1898-1975*, ed. P. Whitney Lackenbauer (Peterborough: North American and Arctic Defence and Security Network, 2020), 239–285.

[1] Gavin John, "Higher Ground," *The Globe and Mail*, 17 October 2025, https://www.theglobeandmail.com/canada/article-canadian-rangers-arctic-far-north-defence/.
[2] George W. Wenzel, "Canadian Inuit Subsistence and Ecological Instability—If the Climate Changes, Must the Inuit?," *Polar Research* 28, no. 1 (2009): 89–99, https://doi.org/10.3402/polar.v28i1.6103. See also R.G. Barry et al., "Environmental Change and Cultural Change in the Eastern Canadian Arctic During the Last 5000 Years," *Arctic and Alpine Research* 9, no. 2 (1977): 193–210, https://doi.org/10.1080/00040851.1977.12003914; Robert W. Park, "The Dorset-Thule Succession in Arctic North America: Assessing Claims for Culture Contact," *American Antiquity* 58, no. 2 (April 1993): 203–234, https://doi.org/10.2307/281966; Robert McGhee, *Ancient People of the Arctic* (Vancouver: UBC Press, 1996); and Robert McGhee, "The Archaeological Construction of Aboriginality: The Inuit Case," in *Archaeologies of "Us" and "Them": Debating History, Heritage and Indigeneity*, ed. Charlotta Hillerdal, Anna Karlström, and Carl-Gösta Ojala (London: Routledge, 2017), 97–108.
[3] Wenzel, "Canadian Inuit Subsistence"; Milton M.R. Freeman, ed., *Land Use and Occupancy*, Vol. 1 of *Inuit Land Use and Occupancy Project Report* (Ottawa: Supply and Services Canada, 1976); Robert McGhee, "The Population Size and Temporal Duration of Thule Culture in Arctic Canada," in *On the Track of the Thule Culture from Bering Strait to East Greenland,* ed. Bjarne Grønnow (Copenhagen: National Museum of Denmark, 2009), 75–90.
[4] Andrew Taylor, *Geographical Discovery and Exploration in the Queen Elizabeth Islands* (Ottawa: E. Cloutier, 1964), 9.
[5] Hugh N. Wallace, *The Navy, the Company, and Richard King: British Exploration in the Canadian Arctic, 1829-1860* (Montreal and Kingston: McGill-Queen's University Press, 1980), 64.
[6] See Taylor, *Geographical Discovery and Exploration*, 53.
[7] Wallace, *The Navy, the Company*, 161.
[8] Isaac Israel Hayes, *The Open Polar Sea: A Narrative of a Voyage of Discovery Towards the North Pole, in the Schooner "United States"* (Philadelphia: D. McKay, 1867), 351.
[9] Hall later travelled by sledge to 83°05'N. See Chauncey C. Loomis, *Weird and Tragic Shores: The Story of Charles Francis Hall, Explorer* (New York: Alfred A. Knopf, 1971).
[10] George Nares and Henry Wemyss Feilden, *Narrative of a Voyage to the Polar Sea During 1875-6 in HM Ships Alert and Discovery: With Notes on the Natural History*, vol. 1 (London: Sampson, Low, Searle & Rivington, 1878).
[11] John Lotz, "Northern Ellesmere Island: A Study in the History of Geographical Discovery," *Canadian Geographer* 6, no. 3–4 (1962): 151–161.
[12] H.R. Holmden to A.G. Doughty, "Memo re the Arctic Islands," 26 April 1921, Library and Archives Canada (LAC), Record Group (RG) 85, vol. 584, file 571 pt. 5. On the transfer, see Gordon W. Smith, "The Transfer of Arctic Territories from Great Britain to Canada in 1880, and Some Related Matters, as Seen in Official Correspondence," *Arctic* 14, no. 1 (1961): 53–73, https://doi.org/10.14430/arctic3660.

[13] Order in Council PC 1839, 23 September 1882, quoted in Shelagh D. Grant, *Sovereignty or Security? Government Policy in the Canadian North, 1936-1950* (Vancouver: UBC Press, 1988), 5.
[14] Trevor H. Levere, *Science and the Canadian Arctic: A Century of Exploration, 1818-1918* (Cambridge: Cambridge University Press, 2004), 307.
[15] Kevin R. Wood and James E. Overland, "Climate Lessons from the First International Polar Year," *Bulletin of the American Meteorological Society* 87, no. 12 (December 2006): 1687, 1689, https://doi.org/10.1175/BAMS-87-12-1685.
[16] Adolphus W. Greely, *Three Years of Arctic Service: An Account of the Lady Franklin Bay Expedition of 1881-84, and the Attainment of the Farthest North,* 2 vols. (New York: Charles Scribner's Sons, 1886); Leonard F. Guttridge, *Ghosts of Cape Sabine: The Harrowing True Story of the Greely Expedition* (New York: G.P. Putnam, 2000). Expedition members died of starvation, hypothermia, drowning, and (in one case) execution for repeatedly stealing food rations. See also Pierre Berton, *The Arctic Grail: The Quest for the North West Passage and the North Pole, 1818-1909* (Toronto: McClelland & Stewart, 1988).
[17] Svenn Orvig, "A Century of Arctic Meteorology: From Discovery to Science," in *A Century of Canada's Arctic Islands, 1880-1980,* ed. Morris Zaslow (Ottawa: Royal Society of Canada, 1981), 133.
[18] Nancy Fogelson, "The Tip of the Iceberg: The United States and International Rivalry for the Arctic, 1900-25," *Diplomatic History* 9, no. 2 (Spring 1985): 132–33, https://doi.org/10.1111/j.1467-7709.1985.tb00527.x. On explorations of Ellesmere, see Lyle Dick, *Muskox Land: Ellesmere Island in the Age of Contact* (Calgary: University of Calgary Press, 2001). These expeditions also brought Inughuit of northwestern Greenland and European explorers into extensive contact for the first time. Beginning with Elisha Kent Kane's expedition of 1853–1855, a series of Euro-American expeditions wintered in the Thule District (Avanersuaq) and came into frequent contact with its inhabitants. Early encounters did not result in significant changes to material culture. However, between 1890 and 1909, explorer Robert E. Peary introduced firearms and steel traps, which radically altered Inughuit procurement strategies. As well, Peary transported whole families and communities from Greenland to Ellesmere Island for one or more years at a time. These extended absences contributed to psychological stress, as Inughuit displayed a range of anxiety reactions while serving on various expeditions, suggesting that the contact experience was more problematic than previously thought. Despite these difficulties, the Inughuit contributed greatly to the success of several parties during and after the Race to the Pole. Lyle Dick, "Aboriginal-European Relations During the Great Age of North Polar Exploration," *Polar Geography* 26, no. 1 (2002): 66–86, https://doi.org/10.1080/789609354.
[19] W.F. King, *Report Upon the Title of Canada to the Islands North of the Mainland of Canada* (Ottawa: 1905), 8, cited in Richard J. Diubaldo, *Stefansson and the Canadian Arctic* (Montreal and Kingston: McGill-Queen's University Press, 1978), 5.

[20] See, for example, Donat Pharand, *The Law of the Sea of the Arctic with Special Reference to Canada* (Washington: Arctic Institute of North America, 1973), 134–135; Donat Pharand, *Canada's Arctic Waters in International Law* (Cambridge: Cambridge University Press, 1988), 5–8; Janice Cavell, "Sector Claims and Counter-Claims: Joseph Elzéar Bernier, the Canadian Government, and Arctic Sovereignty, 1898–1934," *Polar Record* 50, no. 3 (June 2014): 293–310, https://doi.org/10.1017/S0032247413000466; and Janice Cavell, "The Sector Theory and the Canadian Arctic, 1897–1970," *International History Review* 41, no. 6 (December 2019): 1168–1193, https://www.jstor.org/stable/26797771.

[21] Quoted in Margaret W. Morris, "Boundary Problems Relating to the Sovereignty of the Canadian Arctic," in *Canada's Changing North*, ed. William C. Wonders (Toronto: McClelland & Stewart, 1971), 327.

[22] Gordon W. Smith, "Sovereignty in the North: The Canadian Aspect of an International Problem," in *The Arctic Frontier*, ed. R. St. J. MacDonald (Toronto: University of Toronto Press, 1966), 215.

[23] V. Kenneth Johnston, "Canada's Title to the Arctic Islands," *Canadian Historical Review* 14, no. 1 (March 1933): 33, https://doi.org/10.3138/chr-014-01-03.

[24] Alan MacEachern, "J.E. Bernier's Claim to Fame," *Scientia Canadensis* 33, no. 2 (2010): 43–73; Orvig, "Century of Arctic Meteorology," 134; J.-E. Bernier, *Master Mariner and Arctic Explorer: A Narrative of Sixty Years at Sea from the Logs and Yarns of Captain J.E. Bernier* (Ottawa: Le Droit, 1939).

[25] Vilhjalmur Stefansson, *The Friendly Arctic: The Story of Five Years in Polar Regions* (New York: Macmillan, 1921), 142–226, as well as Robert Borden's foreword, xxiv; Robert A. Bartlett, *The Last Voyage of the* Karluk*: Flagship of Vilhjalmur Stefansson's Canadian Arctic Expedition of 1913-16* (Boston: Small, Maynard, 1916), 306. See also Trevor H. Levere, "Vilhjalmur Stefansson, the Continental Shelf, and a New Arctic Continent," *British Journal for the History of Science* 21, no. 2 (June 1988): 238, 240, https://www.jstor.org/stable/4026981.

[26] Levere, *Science and the Canadian Arctic*, 382, 393, 406–407, 423. For McKinlay's account of the Canadian Arctic Expedition, see William Laird McKinlay, *Karluk: The Great Untold Story of Arctic Exploration* (London: Weidenfeld & Nicolson, 1976).

[27] See, for example, Michael F. Robinson, *The Coldest Crucible: Arctic Exploration and American Culture* (Chicago: University of Chicago Press, 2006).

[28] In many situations, the Mounted Police had no one but themselves to police, and, doubling as postmasters at the post offices created at their posts, they were often the only people around to send or receive mail. Their main activity was mounting long patrols around the islands of the High Arctic, showing the flag to demonstrate a Canadian presence. See William R. Morrison, *Showing the Flag: The Mounted Police and Canadian Sovereignty in the North, 1894-1925* (Vancouver: UBC Press, 1985). According to Gordon Smith, Ottawa officials "made a very big issue out of what had turned out to be a very small one, and then had mishandled it by overreacting to presumed

threats posed by Stefansson, Danes, and Americans." Gordon W. Smith, *A Historical and Legal Study of Sovereignty in the Canadian North: Terrestrial Sovereignty, 1870-1939*, ed. P. Whitney Lackenbauer (Calgary: University of Calgary Press, 2014), xvii.

[29] Later that year, the Canadian government paid Otto Sverdrup $67,000 for all his original maps, notes, diaries, and other documents relating to his expedition. On this era, see Janice Cavell and Jeff Noakes, *Acts of Occupation: Canada and Arctic Sovereignty, 1918-25* (Vancouver: UBC Press, 2010); Smith, *Historical and Legal Study*; and Peter Kikkert and P. Whitney Lackenbauer, eds., *Legal Appraisals of Canada's Arctic Sovereignty: Key Documents, 1905-56* (Calgary and Waterloo: Centre for Military and Strategic Studies/Centre on Foreign Policy and Federalism, 2014).

[30] Johnston, "Canada's Title to the Arctic Islands," 24–41.

[31] *Legal Status of Eastern Greenland (Denmark v. Norway)*, [1933] *Permanent Court of International Justice* (Ser. A/B) No. 53. See also Janice Cavell, "Historical Evidence and the Eastern Greenland Case," *Arctic* 61, no. 4 (December 2008): 433–441, https://doi.org/10.14430/arctic51, and Smith, *Historical and Legal Study*, 313–320.

[32] P. Whitney Lackenbauer and Peter Kikkert, "The Dog in the Manger – and Letting Sleeping Dogs Lie: The United States, Canada and the Sector Principle, 1924-1955," in *International Law and Politics of the Arctic Ocean: Essays in Honor of Donat Pharand*, ed. Suzanne Lalonde and Ted L. McDorman (Leiden: Brill, 2015), 216–239. See also the introduction and documents in Kikkert and Lackenbauer, *Legal Appraisals of Canada's Arctic Sovereignty*.

[33] On this theme, see Matthew Farish and P. Whitney Lackenbauer, "High Modernism in the Arctic: Planning Frobisher Bay and Inuvik," *Journal of Historical Geography* 35, no. 3 (July 2009): 517–544, https://doi.org/10.1016/j.jhg.2009.02.002.

[34] Kenneth C. Eyre, "Forty Years of Military Activity in the Canadian North, 1947-87," *Arctic* 40, no. 4 (December 1987): 294, https://doi.org/10.14430/arctic1786.

[35] See, for example, Grant, *Sovereignty or Security?*; Adam Lajeunesse, "Lock, Stock, and Icebergs? Defining Canadian Sovereignty from Mackenzie King to Stephen Harper," CMSS Occasional Paper No. 1 (Calgary: Centre for Military and Strategic Studies, 2008); and J.L. Granatstein, "The North to 1968," in *The Arctic in Question*, ed. Edgar Dosman (Toronto: Oxford University Press, 1976), 13–33.

[36] See, for example, William R. Morrison, "Eagle Over the Arctic: Americans in the Canadian North, 1867-1985," *Canadian Review of American Studies* 18, no. 1 (March 1987): 61–85, https://doi.org/10.3138/CRAS-018-01-03; David Bercuson, "Continental Defense and Arctic Security, 1945-50," in *The Cold War and Defense*, ed. K. Neilson and R.G. Haycock (New York: Praeger, 1990), 153–170; P. Whitney Lackenbauer, "Right and Honourable: Mackenzie King, Canadian–American Bilateral Relations, and Canadian Sovereignty in the Northwest, 1943–48," in *Mackenzie King: Citizenship and Community*, ed. John English, Kenneth McLaughlin, and P. Whitney Lackenbauer (Toronto: Robin Brass Studio, 2002), 151–168; P. Whitney Lackenbauer and Peter

Kikkert, "Sovereignty and Security: Canadian Diplomacy, the United States, and the Arctic, 1943-1968," in *In the National Interest: Canadian Foreign Policy and the Department of Foreign Affairs and International Trade, 1909-2009*, ed. Greg Donaghy and Michael K. Carroll (Calgary: University of Calgary Press, 2011), 101–120; and Lackenbauer and Kikkert, "Dog in the Manger."

[37] See Joseph Jockel, *No Boundaries Upstairs: Canada, the United States, and the Origins of North American Air Defence, 1945-1958* (Vancouver: UBC Press, 1987).

[38] Daniel Heidt and P. Whitney Lackenbauer, *The Joint Arctic Weather Stations: Science and Sovereignty in the High Arctic, 1946-1972* (Calgary: University of Calgary Press, 2022).

[39] Legal scholar Nigel Bankes noted that the Joint Arctic Weather Station agreement "ended the last potential legal threat to Canadian sovereignty over its Arctic *lands*." N.D. Bankes, "Forty Years of Canadian Sovereignty Assertion in the Arctic, 1947-87," *Arctic* 40, no. 4 (December 1987): 287, https://doi.org/10.14430/arctic1785.

[40] See Heidt and Lackenbauer, *Joint Arctic Weather Stations*; Peter Kikkert and P. Whitney Lackenbauer, "Setting an Arctic Course: Task Force 80 and Canadian Control in the Arctic, 1948," *Northern Mariner* 21, no. 4 (October 2011): 327–358, https://doi.org/10.25071/2561-5467.302; Daniel Heidt and P. Whitney Lackenbauer, "Flexibility, Leadership, and the Establishment of Arctic Scientific Stations," in *Cold Science: Arctic Science in North America During the Cold War*, ed. Stephen Bocking and Daniel Heidt (New York: Routledge, 2019), 42–60; and P. Whitney Lackenbauer, "Tolerant Allies: The Joint Arctic Weather Stations, Canadianization, and Canada-U.S. Relations in the Cold War Arctic," *International Journal* 75, no. 4 (December 2020): 487–502.

[41] William Wonders, "The Joint Arctic Weather Stations (JAWS) in the Queen Elizabeth Islands," in *Essays on Meteorology and Climatology*, ed. K.D. Hage and E.R. Reinelt (Edmonton: University of Alberta, 1978), 399.

[42] See Ronald Verrall and Garry Heard, "The History of Defence Science in the Canadian Arctic," Defence Research and Development Canada (DRDC) report DRDC-RDDC-2022-D128 (November 2022), and Matthew S. Wiseman, *Frontier Science: Northern Canada, Military Research, and the Cold War, 1945-1970* (Toronto: University of Toronto Press, 2024).

[43] Geoffrey Hattersley-Smith, *North of Latitude Eighty: The Defence Research Board in Ellesmere Island* (Ottawa: Defence Research Board, 1974).

[44] Ralph Allen, "Will DEWline Cost Canada Its Northland?," *Maclean's*, 26 May 1956, 16–17, 68–72.

[45] E.B. Wang, "The Dew Line and Canadian Sovereignty," 26 May 1969, LAC, RG 25, file 27-10-2-2 pt. 1. See also R.J. Sutherland. "The Strategic Significance of the Canadian Arctic," in *The Arctic Frontier,* ed. R. St. J. MacDonald (Toronto: University of Toronto Press, 1966), 271.

[46] Milton Viorst, "Arctic Waters Must Be Free," *Toronto Star*, 20 September 1969, 16.

[47] Morris, "Boundary Problems," 322; Smith, "Sovereignty in the North," 236–237; Elizabeth B. Elliot-Meisel, *Arctic Diplomacy: Canada and the United States in the Northwest Passage* (New York: Peter Lang, 1998), 140.
[48] Maxwell Cohen, "The Arctic and the National Interest," *International Journal* 26, no. 1 (1970–1971): 72, https://doi.org/10.1177/002070207102600105.
[49] Elliot-Meisel, *Arctic Diplomacy*, 143.
[50] Eyre, "Forty Years of Military Activity in the Canadian North," 296.
[51] M. Shenstone, "Joint Intelligence Committee 1970-71 Work Programme: The Canadian Arctic," 10 June 1970, LAC, RG 25, file 27-10-2-2 pt. 1, acquired under Access to Information.
[52] Eyre, "Forty Years of Military Activity in the Canadian North," 297.
[53] "A Draft Study of the Future International Scene," 5 April 1968, 4, 8, Directorate of History and Heritage, file 112.11.003 (D3), box 3.
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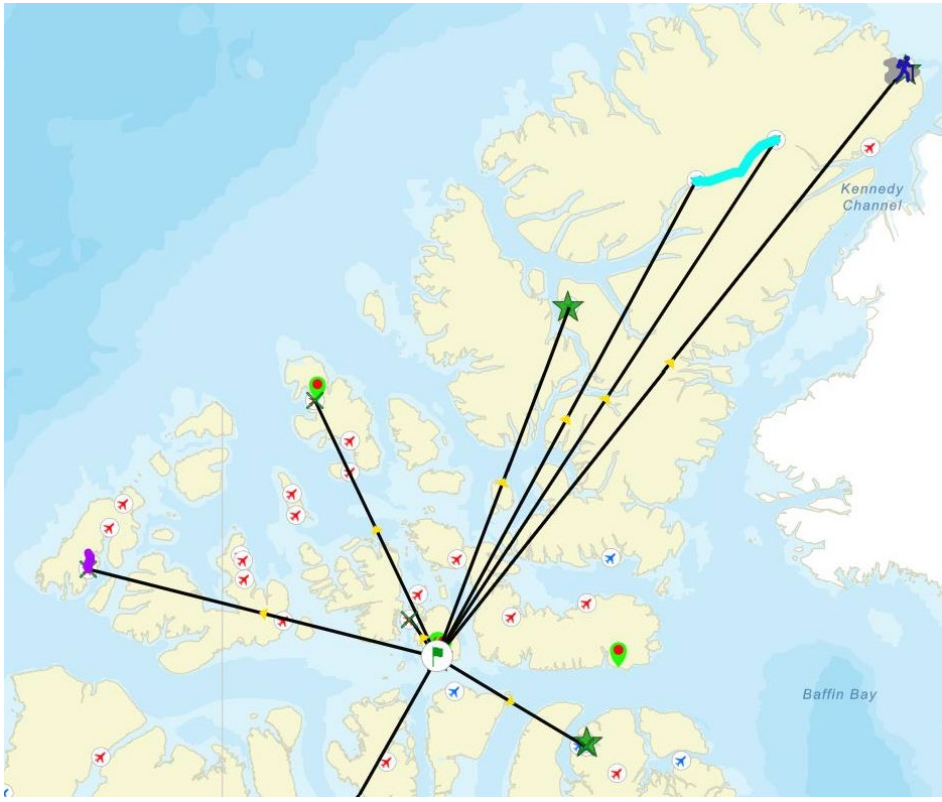

Kennedy
Channel
Baffin Bay

4

Conceiving, Planning, and Preparing for Operation NANOOK-TAKUNIQ

Lieutenant-Colonel (LCol) Travis Hanes
Commanding Officer, 1st Canadian Ranger Patrol Group

Ranger Sergeant (Sgt) John Mitchell was the most decorated Canadian Ranger of the last seventy years. He used to say that "you need to be there; it's not more complicated than that." If you want to help your community, if you want to know the land, if you want to be a Ranger, you need to be there. He rarely expressed where the "there" was. It was more an approach to being a Ranger, a way to deal with indecision, and a stance for tackling any obstacle life throws at you.

His motto guided 1 CRPG throughout the sped-up and sometimes messy TAKUNIQ planning cycle. It served as a touchstone for when we were losing faith in ourselves and our ability to bring the plan together. His touch was most felt in the design principles, choice of locations, and team selection, providing nuance to recent federal Arctic policies. It was by combining new higher-level direction and guidance with Ranger pragmatism that 1 CRPG was able to set a path, motivating the team through late-night planning sessions and last-minute emergencies. The patrol group imitated Mitch's style – someone who kept it simple and applied it to the bigger problems. Because 1 CRPG and 440 Squadron (Sqn) would be there – at the top of the country – working through the Ellesmere summer snowstorms, ice-fogged-out runways, the Mould Bay mud, and the Hazen hummocks, we needed to keep the plan ruthlessly simple, bake in redundancies, and remain flexible. Because the plan was to push teams "to be there," Canadians were there, too. With a clear signal from policy-makers, Commander Canadian Joint Operations Command's (CJOC) vision, and northern grit, the unit succeeded at force projecting across the High Arctic. Even the most conceptual of plans needs something to ground it. TAKUNIQ was grounded in a Ranger who exemplified the best of the North.

Policy Direction

In the context of being "strong at home," Canada's 2017 defence policy, *Strong, Secure, Engaged*, explained that the Canadian Armed Forces will "maintain a robust capacity to respond to a range of domestic emergencies, including by providing military support to civilian organizations on national security and law enforcement matters when called upon, engaging in rapid disaster response, and contributing to effective search and rescue operations." Once implemented, Canada's military "will have improved mobility and reach in Canada's northernmost territories" and will have established a "greater presence in the Arctic over the longer-term." This military presence is neither symbolic nor designed to intimidate would-be adversaries. Instead, the policy statement asserts that "Canadians can be confident that the Canadian Armed Forces will remain ready to act in the service of Canadians – from coast to coast to coast – and sustain a continuous watch over Canada's land mass and air and sea approaches, an area of more than 10 million square kilometres, ensuring timely and effective response to crises."[1]

Canada's April 2024 defence policy update, *Our North, Strong and Free* (*ONSAF*), places an unprecedented focus on the Arctic – and particularly on Canada's Arctic. Never before has Arctic sovereignty and security factored so prominently in a Canadian defence statement. Even *Defence in the '70s*, which shared the overarching idea that the top priority of the Canadian Armed Forces is the defence of Canada and Canadians, did not confer on the Arctic the idea that it was "the most urgent and important task" for the Canadian military. Neither did the 1987 White Paper on defence, with its three polar projection maps and its emphasis on a new Arctic defence imperative to deter the Soviet Union. Like these previous iterations of intensified Arctic security attention, however, the Department of National Defence has again produced a vision that conflates sovereignty, security, and the need for an expanded and enhanced military presence.[2]

The *Pan-Domain Force Employment Concept*, released in fall 2023, recognizes that "the CAF is currently configured to counter overt military actions in the traditional domains of land, sea, and air by recognizable force elements of an adversary's armed forces."[3] By contrast, Canada's adversaries are more effective in integrating various instruments of national power and employing them effectively. To compete in this context, increasing the military's "presence, reach, mobility and responsiveness across the country, particularly in our changing Arctic and North," can contribute to whole-of-government

and whole-of-society preparedness and responses. *ONSAF* summarizes that:

> Our military must be capable of undertaking a wide range of missions, including asserting Canadian sovereignty, conducting search and rescue, and assisting civil authorities when required. The Canadian Armed Forces also needs increased capacity to monitor our vast land mass, airspace and maritime areas, defend against threats to Canada as they arise, and be able to deploy quickly and efficiently across the country, especially in remote environments like our Arctic and North, or to assist Canadians facing wildfires, floods, or other climate-related disasters.
>
> To address new threats through, to and in the Arctic and North, we will prioritize detecting and understanding threats across all military domains, increasing our military's presence, mobility and responsiveness in the Arctic, and robustly responding to threats when and where they materialize. This will also help address challenges to the safety and security of Indigenous and northern communities.
>
> We will make investments to ensure that Canada remains well-defended. Collectively, these capabilities will address our biggest challenges in the Arctic and North—they will provide a broader footprint and prepositioned supplies and equipment in the region, much better eyes and ears in space, in the air, on the ground and underwater, striking power to deter threats far from our shores, and the ability to get to and deal with incidents faster.
>
> We will broaden our ability to monitor our approaches and detect and deter threats before they reach Canada, and to share that information securely with our allies.[4]

The policy update also notes that "as the Arctic becomes more accessible to foreign actors, we need to ensure our military has the tools to assert our sovereignty and protect Canada's interests."

On 6 December 2024, Canada released its revised statement on *Canada's Arctic Foreign Policy* (*CAFP*) in light of profound geostrategic changes globally that have spilled over into Arctic affairs. Minister of Foreign Affairs Mélanie Joly's foreword painted a dramatic picture, lamenting how, "for many years, Canada has aimed to manage the Arctic and northern regions cooperatively with other states as a zone of

low tension that is free from military competition. … However, the guardrails that we have depended on to prevent and resolve conflict have weakened. Russia's illegal war in Ukraine," she cautioned, "has made cooperation with it on Arctic issues exceedingly difficult for the foreseeable future. Uncertainty and unpredictability are creating economic consequences that Canadians are facing everyday [*sic*]." The statement notes that "while the risk of military attack in the North American Arctic remains low, the region represents a geographic vector for traditional and emerging weapons systems that threaten broader North American and transatlantic security." [5] Enhancing our sensor networks to detect, deter, and defeat these systems is a logical priority.

Polarization

Polarization takes on a whole new meaning in the High Arctic – there is an aspect of the absurd at play. This is particularly true in how deeply embedded the North is in our country's existential needs, hopes, and security. It is a land at the tip of things – a land of tipping points, the top of the map, climate change, forced resettlement, and snow blindness. Getting everyone on the same wavelength is not a light lift, and vision is difficult. As Dr. Lackenbauer describes in the opening chapter, political, cultural, and climate polarization is an imbroglio of perceived and real threats "in, to, and through the Arctic." Building coherence across the security enterprise is a necessary first requirement in conducting operations at such high latitudes and ensuring those operations achieve tangible results. It is no surprise that it is a consistent injunction from Commander CJOC that activities are cohered across the security establishment.

TAKUNIQ planning was initiated with Commander CJOC's new guidance and direction for Arctic operations. This guidance changed how 1 CRPG operated, and it included a significant increase in resources. Op NANOOK was the authorities' structure chosen to demonstrate the renewed importance of the Northern operational theatre, NATO's "Northern flank." The operation was redesigned, expanding its scope, increasing its funding, and establishing new ambitious objectives, cohering the efforts of Northern security stakeholders. NANOOK would now look to harness the underestimated and underutilized strengths of Canadian society: industry, academia, free and independent national media, other government departments (OGDs), and the Canadian Rangers, who would assume a greater role. The objective was to demonstrate a house undivided, presenting a united front. What more of a deterrence signal is there than that? Our

nation's skin is in the game. Our stick is on the ice, ready to deliver a crosscheck to the teeth. We don't even need to drop our gloves.

Polarization goes further than our national identity and working together. If we wanted to leverage the benefits of the whole-of-society team, the unit had to overcome many frictions throughout the planning process. Doing so was one of the most valuable accomplishments. First, we had to look in the mirror and accept the effects of skill fade after more than a decade outside the High Arctic game. This self-criticism is not easy. The unit's comfort working in a whole-of-society team, sharing authority and decision making with outside organizations, was equally challenging. Trusting views outside of one's own team can be a polarizing experience for those used to small, homogenous teams. It was this same sense of unease that also generated opportunities and solidified the operating picture by bringing better and divergent ideas to the table. It takes resistance to ideas to sharpen them. An example was the use, while transporting soldiers, of civilian aircraft landing on austere runways north of the seventy-fifth parallel. The Canadian Army does this yearly as part of its Northern Exercises (NOREXs). In the case of Operation NANOOK-TAKUNIQ, the use of Kenn Borek Air (KBA) was critical to mission success and providing casualty evacuation. Without KBA's support, the operation would have been aborted. The use of civilian air – and the regulations for that use – was a hotly debated issue, with 1 CRPG and 440 Sqn insisting that it was within policy and an acceptable risk, while Joint Task Force North (JTFN) and Air Component Coordination Element (North) (ACCE(N)) opposed. The result was a far greater understanding of the competing risks involved in High Arctic operations across "Team North," as well as better-informed commanders to take a decision on this issue. This is how you generate a common operating picture, by building consensus and not avoiding whole-of-society frictions.

Equally polarizing was motivating the broader staff teams to change and do something new when clear measures of success were not there yet. To go off a commander's intent and build a plan, without the larger orders format structuring the guidance, is not the norm. In this case, however, it proved more than enough. The critical hurdle that we faced throughout the operation was resisting the strong urge to hedge one's bets and underinvest until a sure thing came along – to be overly cautious and delay full investment until success was absolutely guaranteed. This psychological barrier stems from an analytical need to predict success as an expression of due diligence. Success is determined by actions in the field, however, and from this tension

originated many of the opposing views between the JTFN and Ranger planning teams.

Finally, we realized that fifteen years of inconsistent operational experience in the Arctic Archipelago had left JTFN, 1 CRPG, and 440 Sqn without the operational and tactical knowledge to conduct or support long-duration patrols during the shoulder season. Team North was well aware of its collective deficiencies and the need to rebuild skills, its lack of familiarity with operating above the seventy-fifth parallel, the general state of the decaying legacy infrastructure, and the need to adapt to climate-induced environmental changes. These factors were constantly on our minds.

Planning the First of Something: Call in Your Network

We started planning TAKUNIQ as part of a CJOC joint operations planning group (JOPG), mandated to redesign the NANOOK series of operations in January 2025. 1 CRPG was not invited but ultimately participated at the request of the Canadian Manoeuvre Training Centre's (CMTC) Director of Collective Training, LCol Mitch Atkinson. He did this because the JOPG lacked the internal Arctic expertise needed to operate in the North, and he wanted to ensure the design team was incorporating Northern experience into planning. Without LCol Atkinson's intervention, TAKUNIQ would not have happened and would have remained in the design cycle for at least another twelve to twenty-four months.

While participating in the Op NANOOK redesign meetings, 1 CRPG moved forward with creating a tactical plan. First, we incorporated the redesign into our annual operational planning (OPLAN) cycle. This made sure that we were integrated across pre-existing and future tasks. We developed an island-hopping strategy that would see us spread thin across the Arctic Archipelago. Aligning under a new NANOOK framework immediately offered consistency of authorities, higher levels of support, and resources from JTFN and the RCAF under the auspices of force employment. All military redesigns struggle to reconcile the need to maintain existing operational tempo with finding the energy to reorient in a new direction. This was a concern of all parties at the planning table so that we did not overcommit. There was a discernable anxiety associated with the risk of investing cognitive energy on initiatives that might not come to fruition. Every small team faces the risk of committing to the wrong path. With this in mind, the planning teams decided to keep the operation small, right from the start, and leaned heavily on JTFN for support. TAKUNIQ would be an initial foray back into High Arctic operations, but at a tightly calibrated scale.

The next step was to seek feedback on the concept of operations and refine the resource request. As with all missions in the North, 1 CRPG reached out to its friends in the Arctic community for consultation, advice, and help when building the plan. Elders within the Rangers were also contacted for guidance. The last Ranger visit to Mould Bay had been in 2003. These experienced Northerners provided information on the terrain and recalled that there was a bulldozer slowly drowning in the permafrost off the side of the runway – which is still there. As such, very early on in the process, we reached out to a number of organizations. Although the following list is far from exhaustive, it recognizes some of the standout support that was critical to our success:

a. The search and rescue (SAR) community. Through Dr. Peter Kikkert's Nunavut SAR network, we connected with the Joint Rescue Coordination Centre Trenton on areas of interest. The Centre was interested in Mould Bay as a potential staging area for SAR operations, specifically on the ability to land C-130J-model aircraft, the prospects for caching fuel, and the seasonal operational windows for landing. Their advice solidified the decision to make Mould Bay an operational objective.

b. The Polar Continental Shelf Program. 1 CRPG then turned to Glenn Parsons, the operations manager of Natural Resources Canada's Polar Continental Shelf Program (PCSP). Responsible for the support of over 1,500 scientists in dozens of sites within the High Arctic every year, he had an intimate understanding of all the legacy airfields, emergency shelters, and emergency resupply/casevac (casualty evacuation) capabilities in the High Arctic. He is also highly networked with OGDs and Arctic industry. His team was collocated with the Canadian Armed Forces Arctic Training Centre (CAFATC). The PCSP operates a command centre that coordinates scientific research sites across the High Arctic. Glenn's team provided us with details on the status of the key legacy airfields at Isachsen, Hazen Camp, Polaris Mines, Mould Bay, and many other sites that were important for developing air routing and safe emergency landing zones throughout the operation. 1 CRPG ended up collocating its command post with both the PCSP and the CAFATC to leverage their experience and crisis response capabilities in the event we needed to react to a fallen angel (downed aircraft) or casualties.

c. 440 Sqn. Located in Yellowknife, 440 Sqn is the RCAF's only Twin Otter squadron. The workhorse of the Arctic, the Twin Otter has the ability to reach across the Arctic and land on dilapidated

austere airstrips, ice, glaciers, or isolated mountain passes. LCol Steve Thompson, Commanding Officer (CO) of 440 Sqn, and his team were instrumental in planning the operation. They developed the air movement plan and arranged for Airfield Surface Assessment and Reconnaissance (ASAR) teams to conduct evaluations of austere runways throughout the operation. The role of ASAR teams is to conduct airfield surface assessments and, from this data, determine which airframes – in keeping with air mission requirements – the airfield can safely support (i.e., loading, number of take-offs/landings, etc.).[6]

d. Arctic industry. We reached out to Kenn Borek Air as a global industry leader in polar aviation, specializing in tactical landing on austere runways. They provided backup flights for casualty evacuation and air movements, allowing us to free up 440 Sqn Twin Otters for air reconnaissance and support for the teams on the ground. We also reached out to Clifton Engineering Group. From Glenn Parsons, we found out that Clifton was conducting remediation operations on Prince Patrick Island at Mould Bay and Satellite Bay. We reached out to their project manager, Dave, who provided mission-critical knowledge of the island. His team also fed our teams on the ground and offered aviation fuel, emergency casualty evacuation, and a nursing station in the event that anyone on our team sustained serious injuries. Clifton provided all of this without remuneration as a proud Canadian company.

e. Academia and media. As misinformation and artificial intelligence (AI) challenge the authenticity of any message, we needed trusted observers who could speak to what we were trying to accomplish. We partnered with Arctic security expert and historian Dr. P. Whitney Lackenbauer from Trent University. A veteran of many operations with the Rangers, he accompanied our teams to Resolute Bay and Eureka, then patrolled with us north of Alert. He provided a preponderance of historical information on legacy airfields and past activities in the High Arctic. We also embedded journalist Gavin John into the operation, who accompanied a team to Resolute Bay, Eureka, Tanquary Fiord, and Lake Hazen.

f. Parks Canada. Given that our plans involved operations in national parks, we needed to secure permits and environmental authorizations from Parks Canada. This coordination ensured that all of our activities would comply with the *Canada National Parks Act* and with specific park management plans to protect

ecological integrity. Additionally, we consulted with Parks Canada officials to align our logistics with local seasonal restrictions.

The overall goal was to define the resource options available to us. In trying to identify everyone on whom we could rely for support, we better understood our constraints and restraints within a whole-of-society resource space. If we had framed our plans solely within the military paradigm, we would not have succeeded.

Setting Objectives

Once we understood the available resources and partnerships in our prospective area of operations, 1 CRPG submitted four operational objectives to CJOC and JTFN, which were subsequently reissued with clarifying orders. These objectives would drive the selection of our tactical tasks:

a. Set the conditions for a whole-of-society approach to Arctic security. We were directed to engage with and include partners from other government departments, industry partners, academia, and the Canadian media. Setting the conditions fully acknowledged the nascency of the task. It was a stepping stone to greater whole-of-society integration on larger NANOOK operations.

b. Assess the status of multi-use infrastructure in the High Arctic to inform future Op NANOOK serials and infrastructure renewal. This objective led us to select locations based on their accessibility to landing zones/airstrips and to assess rundown legacy infrastructure to discern what it would take to repair it or to expand operations from those locations. This included bridge reconnaissances (recces), logistic support recces, and runway assessments. In identifying locations, we also looked for resupply points for future project CROSSBOW development.

c. Force project and sustain forces in the High Arctic, signalling Canadian sovereignty. This objective led us to push out across the Arctic Archipelago, stretching our air and ground lines of communication to the most remote of locations, using whole-of-society resources to mitigate the risk. If we could sustain three six-person teams concurrently across the Mould Bay-Alert-Resolute Bay triangle, we could easily scale up.

d. Demonstrate CAF resolve in remote areas of the Arctic Archipelago. To achieve this objective, 440 Sqn and 1 CRPG pushed our abilities to the extreme. The operation was planned

to be strenuous for the pilots and the Rangers. We would show our resolve by pushing human endurance in the remotest corners of Canadian territory.

The Plan

The plan adopted a kilometre-wide-and-an-inch-deep approach, using various High Arctic islands to support the operation. The combined joint task force would be based in Resolute Bay and integrate elements from 1 CRPG, 440 Sqn, the PCSP, the CAFATC, and Parks Canada. The overall intent of the operation was to:

> Insert joint 440 SQN, [Air Search and Rescue], and Ranger teams across the High Arctic island chain as overt display of military capability to force project, while proofing legacy remote/isolated forward staging areas for other NANOOK missions. We will leverage industry & 440 SQN for airborne communications, resupply, and movement of patrols throughout JTFN's DEEP AREA. We will embed selected members from academia and Canadian media, providing them force protection, to ensure transparent/independent signalling of our mission to Canadian society. This will be the framework to layer on support to OGDs and will be the method for cohering security activities.

Our mission was:

> CJTF [Combined Joint Task Force] Ranger will screen named areas of interest in the vicinity of Mould Bay, Tanquary Fiord, Camp Hazen, and the United States Mountain Range (NW [northwest] of Alert) [in order to] set the conditions for future follow-on-forces operations.

A screen mission is a military task to conduct reconnaissance and surveillance within a specific area ahead of a larger force or to gather information on a specific area. Although our teams concentrated on three primary locations, we conducted preliminary movements to ensure that we had potential staging areas in Isachsen and Fort Eureka. We also conducted air search and rescue (ASAR) and engineer recces across the area of operations.

The locations that we identified were as follows:

a. Mould Bay. Located 560 kilometres west of Resolute Bay and 506 kilometres north of Sachs Harbour on Prince Patrick Island. It is the site of a legacy Joint Arctic Weather Station (JAWS). Clifton Engineering, under the employ of Environment and Climate Change Canada (ECCC), is remediating sites across

the island. Shelter, food, emergency services, and air transport were available through Clifton. Joint Rescue Coordination Centre Trenton requested a site survey in support of search and rescue contingency planning.

b. Tanquary Fiord. Located 500 kilometres northeast of Resolute Bay and 175 kilometres north of Eureka. It is the main staging airfield for Parks Canada activities in Quttinirpaaq National Park. It possesses a summer warden station.

c. Canadian Forces Station Alert. Located 1,046 kilometres north of Resolute Bay, this is a well-established CAF station, with 8 Wing Trenton as the custodians. The target areas northwest of the base consisted of mountainous terrain, little vegetation, and an erratic climate. The furthest approach by Team Alert was to Mount Patterson in the United States Range.

d. Isachsen. Located 800 kilometres north of Resolute Bay, this is an abandoned JAWS site strategically positioned with an austere runway. Its position in the centre of Canada's Arctic Archipelago lends itself to use as an intermediate staging area for project CROSSBOW.

e. Polaris Mine. A legacy zinc mine located 100 kilometres west of Resolute Bay, it has a relatively new airstrip with potential as an emergency landing location if the Resolute runway proved unusable. The mine's airstrip could also be used as a forward operating location for operations in the vicinity of Resolute.

f. Nanisivik. Located 400 kilometres southeast of Resolute Bay, this is a Royal Canadian Navy installation in a well-known and understood location that ASAR surveyed as a target of opportunity.

The Risks

Throughout the planning process, risk factored heavily into all discussions and decisions. The areas in which the teams would operate were isolated – so isolated that Peary caribou would walk into team bivouacs because they had never seen a human being. All casualty evacuations would be at least twelve hours from point of injury to a hospital. Team members faced countless personal risks, from falling or breaking an ankle in jagged rock gardens, to being swept away during river crossings, to rolling an ATV in the steep fiords, to snowstorms with winds gusting to 100 kilometres an hour, to encounters with polar bears. The team confronted the constant risk that air corridors would be severed by fog, and further challenges stemmed from the prospect of

mechanical issues with aircraft, the lack of navigational aids in the High Arctic, and the unknown status of emergency runways. For all the risks, however, the planning team found ways to mitigate dangers through team selection, sequencing, the caching of supplies, and leveraging whole-of-society partners.

It felt like a lot of pressure, and the risks often seemed intractable. Cautionary voices who warned of problems without offering solutions made the situation all the more difficult. This dynamic owed partly to these commentators' lack of familiarity with the resources available and their incomplete domain awareness, as well as to the skill fade in planning and conducting High Arctic operations. The planning team confronted opposition and doubt by showing the math, subjecting risk to a rigorous assessment and using the Canadian Army's *BG-381 Training Safety* publication as the doctrinal framework. Most military members would recognize the severity versus probability scales, as well as the definitions of low, medium, high, and extreme risk.

RISK ASSESSMENT MATRIX

SEVERITY (Impact)		PROBABILITY (Likelihood)				
		Frequent	Likely	Occasional	Seldom	Unlikely
		5	4	3	2	1
Catastrophic	4	EH20	EH16	H12	H8	M4
Critical	3	EH15	H12	H9	M6	L3
Marginal	2	H10	M8	M6	L4	L2
Negligible	1	M5	L4	L3	L2	L1
LEGEND: EH – Extreme High Risk H- High Risk M – Moderate Risk L – Low Risk						

Catastrophic. Death or permanent total disability. Loss of the ability to accomplish the mission or complete mission failure. Loss of major or mission-critical systems or equipment. Major property or facility damage. Severe environmental damage. Mission-critical security failure. Unacceptable collateral damage.b. **Critical**. Permanent partial disability or temporary total disability. Severely degraded mission capability or unit readiness. Extensive (major) damage to equipment or systems. Significant damage to property or the environment. Security failure. Significant collateral damage.c. **Marginal**. Lost days due to injury or illness. Degraded mission capability or unit readiness. Minor damage to equipment or systems, property or the environment.d. **Negligible**. First aid or minor medical treatment. Little or no adverse impact on mission capability. Slight equipment or system damage. Little or no property or environmental damage

Initially, the CO, Operations Officer (OpsO), and Operations Warrant Officer (OpsWO) sat down and started filling in the framework based on the above rubric. On the big screen in the 1 CRPG operations centre, they filled in step one with the main activities that expressed the greatest risk either to force (people), reputation, or mission. Once the framework was in place, the team leaders were brought in to conduct a collaborative risk assessment session involving the entire chain of command. Everyone's skin was in the game, everyone's assumptions and fears laid out in front of the group. The goal was never the product, the mitigation measures, or the final signoff: it was generating a shared understanding and acceptance of the risks to be taken, which is a direct reflection of the mission's criticality. The worth needed to justify the risks. The unit then went through the process of securing the additional

resources required to bring all risks to LOW or MEDIUM. Again, this entailed a whole-of-society approach – and the access to resources that such an approach facilitated – to bring the risk into acceptable margins.

The risk assessment drove the GO/NO GO decisions during the various phases and stages of the operation. With a solid assessment, the appropriate conditions could be verified prior to launch acceptance. If the conditions were not right, the team had already thought through the contingencies, timings, and abort criteria, with the associated immediate actions. The details that would keep everyone safe came out of our collaborative and team-based approach to planning.

Selecting Participants

Selecting and generating the right team was paramount; it was a central factor in developing the risk assessment. It was also a question of being in the right time and place. Concurrent with TAKUNIQ, 1 CRPG conducted a 1,600-kilometre reconnaissance down the Dehcho (Mackenzie River) from Fort Providence to Tuktoyaktuk, as well as our annual Enhanced Training Session for our Junior Canadian Rangers (JCRs). Both of these activities also required an experienced and skilled cadre of subject matter experts, so selecting participants for Op NANOOK-TAKUNIQ (Op NA-TK) 02 had to consider who across the unit was best suited to each line of effort.

Fortunately, 1 CRPG has access to a wide range of people – Rangers, Ranger Instructors, Headquarters staff, academics, and journalists – with the skills and empathy to take on a mission north of the seventy-fifth parallel. As with any group of talented individuals, there is the potential for mismatched personalities – particularly when pulling together an ad hoc team from across the military and broader Canadian society. For a successful operation, 1 CRPG needed people that look to the better angels of their nature before expressing an opinion. It sounds banal, but the unit looked for people with a trusting nature, a commitment to civility, and a high degree of empathy. The teams would need it: three weeks together in remote and isolated areas under extreme physical and mental conditions required teamwork and tolerance.

The team was made up of people who felt that "they needed to be there." All were volunteers who were excited at the opportunity. Even a small amount of cynicism in a small team can severely hamper or jeopardize the mission. We also had to have a balanced team with a wide range of skills in bushcraft, orienteering, mechanical repair, firearms proficiency, and – most importantly – judgement. No one

person possessed all of the skills that we needed, but they were there within each team as a collective.

Local Training and Preparations

Selecting the teams and securing participants opened room for local initiative. From Whitehorse Patrol, three Rangers – James Cleary, Maya Poirier, and Catherine Welsh – were selected to attempt what would be amongst the longest unsupported foot patrols in Canadian Ranger history: a long-range dismounted patrol to assess the airstrips at Tanquary Fiord and Lake Hazen Camp and, if time permitted, to recce and summit Barbeau Peak (Canada's highest Arctic peak east of the Rockies). They would be joined on Team Alpine by 1 CRPG Headquarters members Captain (Capt) Jake MacDonald and Master Warrant Officer (MWO) Patrick Murphy, as well as photojournalist Gavin John. While they traversed more than 150 kilometres, there would be no opportunity to resupply. They would need to carry their food and anything that they required for the entire duration of their trek on their backs. Each backpack would weigh over seventy pounds.

They were suited for what followed. The team had been chosen based on their skills and experience, with backgrounds in Dall sheep hunting, remote wilderness travel on foot, mountain hunting and guiding, glacier expeditions, and radio communications. Each member had a proven ability to manage risk, problem solve, be self-sufficient,

and keep a positive attitude and sense of humour in remote places and high-pressure situations for extended periods of time. Their varied skill sets, when combined, made them a very capable team.

The Rangers based in Whitehorse organized extensive self-led physical and skills-training sessions in the two-and-a-half months leading up to their primary mission. This training was in addition to the overall high level of physical fitness that they maintain throughout the year, owing to the personal lifestyles that they lead. Prior to leaving for the operation, the team dedicated time to weight training, fifty-to-seventy-pound rucksack walks and hikes, as well as practising their rope, mountaineering, and self-rescue skills for the glacier portion of the patrol. This included tying knots, travelling roped together, anchor building, crevasse rescue, climbing, rappelling, self-arrest techniques, and more. For one of the crevasse rescue and anchor-building sessions, Leandra Brient, a Ranger from the Atlin patrol in British Columbia – who would be part of the Alert Team – joined the Whitehorse patrol members at Whitehorse's local ski hill, Mount Sima. The hill's melting giant ski jump was a perfect location, close to town, for this training session. Even though the Rangers were not all going to be participating in the same patrol on Ellesmere, it was an incredible team- and skills-building exercise in which the members were able to work together and prepare for the upcoming Arctic adventures.

The Rangers understood the sheer necessity of being bonded and prepared as a team prior to such an expedition. Not only was being physically prepared crucial, but it was imperative to be mentally and emotionally prepared as well. No member of the team had been to Ellesmere Island before this operation, and despite being highly experienced people in remote places, none had ever stepped foot

anywhere as remote as Ellesmere Island. The feelings that accompany the unknowns of an expedition in a place this remote were very profound. Given that so few people (military and civilian) visit the Island itself and, in particular, the area of this patrol, the availability of updated, first-hand, and on-the-ground intel on the land and the environmental conditions – both recent and historic – was scarce. There was an element of trial and error: for gear, maps, objectives, and a group of people who had very little knowledge of each other. The team had to be prepared for everything and anything that they would find in their paths.

When it comes to safety and success in remote wilderness travel, the foundation of and commitment to the team is critical. While operating in the safest manner possible, there is no room for ego. There is only room for honesty – with oneself and with each other. To be able to address a concern openly with the team the moment it arises, and

collectively problem solve, offers the greatest opportunity for overall success. A very small problem can quickly turn into a big problem if not addressed immediately – and in a place as remote as Ellesmere, the risks and resources required for even a low-risk evacuation are much higher than in most places on Earth. Factors such as distance, weather, and aircraft availability contribute to risky, slow, and demanding evacuations. All of the members of the Alpine Team had Wilderness First Aid/Responder certifications and training, and all had dealt with remote medical evacuations leading up to the trip. These skills proved to be vital instruments when, a few hours into the patrol on Ellesmere, one of the team members sustained a head injury and had to be evacuated.

Reconnaissance Mission: 1 CRPG Returns to Isachsen

Capt Alexander Boom

"Time spent on reconnaissance is seldom wasted."
– Duke of Wellington

The first boots on the ground landed in Resolute Bay on 22 May during the operation's reconnaissance mission. Three members of 1 CRPG Headquarters launched from Yellowknife to get the ground truth of what to expect during the operation to come. OpsO Capt Alexander Boom, Logistical Officer (LogO) Capt Christopher Newman, and Intelligence Operator Corporal (Cpl) Graham Stanley-Paul spent two days in transit, stopping for a night in Iqaluit, in order to get to one of Canada's most northern operational CAF facilities. Located on Cornwallis Island, north of the Barrow Strait, the CAFATC was selected as the location for Operation NANOOK-TAKUNIQ's command post, as it offered a myriad of advantages. Indeed, it would be central to all deployed teams, allowing for shorter lines of communication, and it shares its location with the PCSP, a logistical hub for Arctic research. This collocation would allow for quick coordination with civilian industry such as Kenn Borek Air to facilitate air movement and potential casualty evacuation.

Each of the three members deployed with different objectives. However, the "gestalt mission" was to set the conditions for the success of the operation only months away. Tasked with overseeing the operation from inception to completion, the OpsO established networks with vital Arctic partners, as well as defining the scheme of manoeuvres for the operation. Being present in Resolute Bay permitted him to grasp the process of putting troops into the areas identified for the operation. Linking in with the PCSP and leveraging its contract with

KBA (a civilian air transport company, staffed with some of the best Arctic pilots in the North) was easy enough, as the PCSP used KBA's services regularly to insert researchers onto remote islands across the Arctic Archipelago. This whole-of-society approach proved both effective and essential during the operation. Due to the tight restrictions imposed on the flying conditions of 440 Sqn (an RCAF transport squadron based out of Yellowknife and the main CAF air asset for the operation), civilian pilots are often able to fly in conditions much worse than those in which their military counterparts are allowed to operate. As the High Arctic is notorious for its temperamental weather, and with the remote locations chosen for the operation, having a civilian redundancy gave the team flexibility to adjust their plan and react to windows of opportunity that could be missed by relying solely on the RCAF for air support.

Capt Newman's mission was to set and ensure the framework around all things required for the employment of 1 CRPG. He was there to assess the livability of the facility, checking the availability of food, water, fuel, bullets, and any additional supplies that the deploying force would require. Knowing what was already at the CAFATC – and more importantly, what was not – set Capt Newman up to establish a support plan for the operation. After returning to Headquarters in Yellowknife, Capt Newman activated his professional team of purchasers, supply

tech-nicians, and dangerous goods packers to create the mountain of equipment and gear that would fuel the operation. Covering distances nearly twice that required by Canadian troops on the journey from London to Juno Beach to Berlin, General Omar Bradley would have been impressed by the logistical discussions required to move troops, supplies, and machines from Yellowknife to the furthest reaches of Ellesmere Island. Having crunched the numbers and assessed the requirements, Capt Newman's reconnaissance set the conditions for 1 CRPG to stage a robust system of support for deployment – a feat not easily achieved when relying solely on CAF logistical assets. Accordingly, 1 CRPG staff reached out to civilian industry and augmented their supplies with lightweight rations, gear for crossing glaciers, communication methods capable of reaching across the Arctic, and a plethora of other equipment to carry out the upcoming mission.

The job of an Intelligence Operator is to gather nuggets of information and data to compile them into bespoke products aimed at the intelligence requirements that are essential to establishing a multi-domain situational awareness of CAF areas of operations. Cpl Stanley-Paul dismounted the Canadian North ATR 42-500 at the Resolute Bay airport with exactly this mission. Although the information existed, modernization, digitization, and a lack of curation had led to large gaps in the domestic Northern intelligence picture held by the CAF. With the shift in the CAF's focus toward the Arctic, we are required to know what is up there and if it is actually usable. Legacy airstrips, derelict weather stations, and Distant Early Warning (DEW) Line sites are examples of infrastructure that still exists in the region, but military personnel may not have visited it for decades. Cpl Stanley-Paul was tasked with compiling data from these locations, including which aircraft (if any) could land on those airstrips, what civilian industry was operating around and capable of reaching the sites, and what support would be required to forward project a force into the more remote locations. Taking a grassroots approach, much in line with the modus operandi of

the Canadian Rangers, Cpl Stanley-Paul engaged the staff at the PCSP, in hopes that their years of taking scientists to the far reaches of the Canadian Arctic would yield insights and desired data (or at least direct his efforts). When Cpl Stanley-Paul inquired with the PCSP Logistics and Operations Manager, Glenn Parsons, the latter produced a binder housing all the data the PCSP had collected over the years regarding the austere airstrips and their serviceability. This collection of handwritten notes and sketches of runways formed the foundation for Cpl Stanley-Paul to build an enhanced intelligence picture and to define objectives for future missions, such as Operation CROSSBOW. This proved the value of deploying on the ground and interacting with local experts.

Although the reconnaissance party's trip to Resolute Bay was originally planned to last seventy-two hours, the limited flights to and from that community required them to stay at the PCSP for a full week and work out of the CAFATC. The facility is reputed to have the best kitchen of any CAF facility, and the team was happy to extend their stay. The additional days also provided a unique opportunity, pending a clear forecast, for the three to fly into the decommissioned Isachsen High Arctic Weather Station on Ellef Ringnes Island. A tertiary objective of their mission had been to conduct additional preliminary reconnaissance on some of the austere airstrips found in Cpl Stanley-Paul's repository. Glenn Parsons at the PCSP informed the team that they would evaluate daily the feasibility of landing one of the KBA's DHC-6 Twin Otters on Ellef Ringnes Island, as Isachsen is notorious for having the worst weather in all of Canada.

On the fifth day of their trip, a small opening on the weather radar led both the 1 CRPG members and Kenn Borek pilots to leap into action. At 0900, the orange-and-white Twin Otter, loaded with fuel for the return trip and enough gear for the team to survive a few days should they be stuck, launched toward the northwest. Looking out the windows of the Twin Otter, the team saw the vast, beautiful desolation of the Canadian Arctic. Ocean ice, rich with pressure ridges, seal holes, and icebergs, contrasted with gaps of open water and the rocky ridges of the island chain below. Around the two-and-a-half-hour mark, the pilots notified the reconnaissance team that they would attempt a landing. It took several passes before there was enough visibility on the ground to see the mostly unmarked runway. Gaps in the fog and cloud cover permitted only stolen glimpses of the surrounding mountains and the buildings that comprised the old weather station.

The experienced Northern pilots' confidence yielded a successful and surprisingly smooth landing given the conditions of the runway. Once taxied and chalked, the flight crew opened the side door,

dismounted, and pointed the three CAF members in a direction that they assumed to be that of Isachsen – but was shrouded in fog thick enough to get lost in. Intimately aware of the risks of exploring in polar bear country, the reconnaissance team shared with the pilots the information commonly known as the 5Ws: what they planned to do, where they were going, what to do if they needed to be contacted, when they planned to return, and what to do if they did not. Guided only by the human-made straight lines of a dirt path, they set off for the station. As they walked, the fog grew thicker, and it was not long before the brightly coloured Twin Otter disappeared into the clouds behind them, leaving them isolated in the dense grey air. Soon after the clouds swallowed them, Isachsen emerged, building by building, from the fog cover.

As the team approached the station's old metal flagpole and now-empty sign, Cpl Stanley-Paul's expertise as an Intelligence Operator reared into full force as he began sharing with the team stories of the psychological research that had been conducted at the station, the photos he had seen of people abreast of the same sign frame, and the anecdotes he had scrounged from engaging past station members on Facebook. Planning to leave nothing but footprints and take nothing but photos, the team pushed deeper into the collection of buildings. Garages, snowed in with snowdrifts to the roofs, remained full of

vehicles and tools, alongside accommodation buildings with windows and doors broken from years of neglect. Unwilling to force or dig their way into the buildings, they looked for any means of reasonable ingress. The only building left ajar was the station's observatory. Finding the door busted and the entrance full of snow blown in from the tundra, the team paused before entering to listen for any movement inside and to smell the air, searching for any traces of bear. A deep inhale revealed a building saturated in mould and heavy with asbestos but void of the musk often associated with sheltering animals.

Once inside, the team shared an experience similar to those who have visited abandoned DEW Line sites. The evidence of human activity was everywhere: dishes still in cupboards, operating manuals still on shelves, and a letter from Thunder Bay, Ontario, still unopened. Due to the accumulation of snow in many parts of the building, exploring was restricted to the path that brought the team to the deck of the observatory. A white dome stripped of all important technology left the raw interior exposing yellow asbestos insulation. As the group stood on the metal deck, the wind shifted and the fog cleared briefly from the station, revealing the full layout of the site for further exploration. The team descended the worn, wooden stairs back into the core of the building,

following their own footprints and passing corridors akin to sets found in John Carpenter's 1982 film *The Thing*. The trio made their way back out into the central square and fanned out to investigate the vehicles strewn around the facility. Old trucks, tractors, and a fleet of tracked Nodwells left to rust where they had been last used indicated the activities conducted there. Closely approaching the time agreed upon to meet back at the plane, and not wanting to risk missing the window of departure lest they be stuck at the abandoned site, the team returned to the airstrip. Realizing that, at 79.3° latitude, this was the farthest north any of the three had ever been, and in keeping with Army fashion, they each relieved themselves, claiming an accolade for their northernmost pee. Seeing the Kenn Borek plane poking through the fog as they trekked back reinspired their confidence in the civilian pilots, who had already completed their preparations and were ready for takeoff.

With the intense cloud cover, the skill and wit of the aircrew allowed the plane to become airborne and avoid the unseen mountains only a few hundred metres away from the runway. When they landed back in Resolute Bay, the team exchanged patches with the pilots, thanking them for their contribution to the reconnaissance mission. The three CAF members then used the remaining days of their trip to write up their reports, compiling the data and producing products that would guide the upcoming work. Tying all three of these efforts together created a well-defined pool of knowns and unknowns that would ultimately shape Operation NANOOK-TAKUNIQ. In pairing operational limitations with

logistical requirements, blanketed with a robust intelligence picture, the team returned to Headquarters in Yellowknife and briefed the unit on the next steps to achieve mission success.

Notes

[1] Department of National Defence (DND), *Strong, Secure, Engaged: Canada's Defence Policy* (2017), https://www.canada.ca/en/department-national-defence/corporate/reports-publications/canada-defence-policy.html. For more on Canada's defence and Arctic foreign policy development, see P. Whitney Lackenbauer, ed., *Canadian Arctic Defence and Foreign Policy: Recent Developments* (Peterborough: North American and Arctic Defence and Security Network (NAADSN), 2025), https://www.naadsn.ca/wp-content/uploads/2025/03/Cdn-Arctic-Def-For-Pol-Recent-Developments-PWL-mar2025.pdf.

[2] See, for example, P. Whitney Lackenbauer and Peter Kikkert, eds., *The Canadian Forces and Arctic Sovereignty: Debating Roles, Interests, and Requirements, 1968-1974*, rev. ed. (Peterborough: NAADSN, 2024), https://www.naadsn.ca/wp-content/uploads/2024/05/CAF_and_Arctic_Sovereignty-rev_ed_2024.pdf.

[3] DND, *Pan-Domain Force Employment Concept: Prevailing in an Uncertain World* (2023), 9.

[4] DND, *Our North, Strong and Free: A Renewed Vision for Canada's Defence* (2024), https://www.canada.ca/content/dam/dnd-mdn/documents/corporate/reports-publications/2024/north-strong-free-2024-v2.pdf.

[5] Global Affairs Canada (GAC), *Canada's Arctic Foreign Policy* (December 2024), https://www.international.gc.ca/gac-amc/publications/transparency-transparence/arctic-arctique/arctic-policy-politique-arctique.aspx?lang=eng.

[6] ASAR is comprised of four main tasks: confirming Obstacle Limitation Surfaces (OLS), determining soil bearing strength (using the California Bearing Ratio, or CBR), calculating Pavement Condition Index (PCI), and conducting a surface profile survey of the runway and airstrip. Under the concept of operations, a two- or four-person ASAR team will arrive on site and gather all the required data for the airfield over a one- to three-day period, after which they input the data and provide an ASAR report back to 1st Canadian Air Division with recommendations as to the usability of the airfield for RCAF operations. Lt Khakan Zulfiquar, "Airfield Surface Assessment and Reconnaissance (ASAR) at 4 CES," Canadian Military Engineers Association *Chimo! Communique* (2013), https://cmea-agmc.ca/sites/default/files/CHIMO_572_ASAR_4CES_e.pdf.

5

Bringing the Teams Together in the Hub of the Canadian High Arctic: Resolute Bay

On 1 July, Canada Day, the Advance Party from 1 CRPG – Cpl Thomas Clarke (Signaller), Master Corporal (MCpl) Patrick Belanger (Quartermaster), Sgt Shawn Spencer (Team Alert Command), and Capt Alexander Boom (Land Task Force Commander) – along with six aircraft pallets filled with equipment and gear, flew in a CC-130 Hercules from Yellowknife to Resolute Bay. Resolute Bay's name in Inuktitut is Qausuittuq or "the place without dawn," often explained as a reference to the twenty-four-hour darkness in winter. In July, the description holds – but only because the sun never goes down or comes up.

The Advance Party unloaded most of the equipment into the Canadian Armed Forces Arctic Training Centre (CAFATC) facility, with Sgt Spencer flying on with the remainder of the gear to Alert. The Command Post (CP) team, using the information from the recce a few months prior, began immediately to set up at the Centre, which supports cold-weather operations and joint training. In Operation NANOOK-TAKUNIQ, it admirably served its function as a hub for pre-positioning military equipment and vehicles, also serving as a command post for operations. For 1 CRPG, the return to Resolute Bay to facilitate long-range High Arctic patrolling built on a long history of that location supporting military activities that projected soldiers and Canadian Rangers into some of the most remote corners of Canada's Arctic Archipelago.

Resolute Bay and the Canadian Armed Forces Arctic Training Centre (CAFATC)

The military has a long history in Resolute Bay, which played an important role as a High Arctic hub during the Cold War. In 1947, a joint Canada-US weather station was established there, including an airstrip

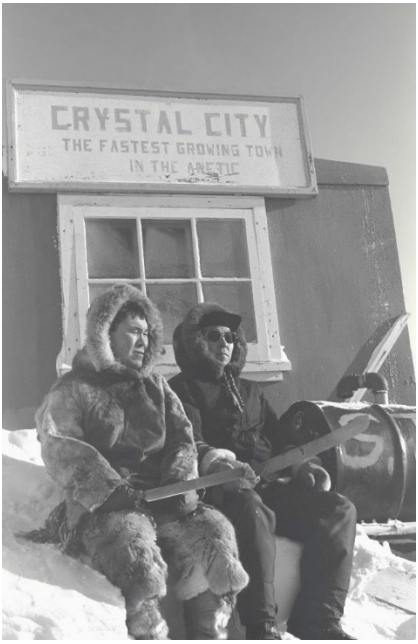
that was later improved upon by United States Army Engineers. Two years later, the RCAF established a small unit at Resolute Bay in 1949 to control air operations in the High Arctic. Built at a cost of approximately $1.5 million, the base became the jumping-off point for researchers, explorers, and government agents travelling in the High Arctic. In many ways, the establishment of the RCAF base at Resolute was an important step toward opening the High Arctic to human habitation and development.[1] By 1952, Resolute had a population of approximately 200, making it the second largest settlement in the Qikiqtani Region. There were, however, no Inuit living in the immediate area.

The Canadian government was awakening from its long period of "absent-mindedness" about its North in the early 1950s, partly as a result of development interests and partly out of a responsibility toward its Inuit citizens. American military personnel returned after the Second World War with reports of starvation and third-world conditions in the Eastern Arctic, reports that were subsequently popularized in southern newspapers, magazines, and books. Reading between the lines of sensationalism, the message was clear: Inuit life was changing. The introduction of family allowances, the increasing reliance on imported technologies, and the crash of the fox fur market had brought Inuit into a more dependent relationship with the state. The government, aware of the changing nature of the North, scrambled to address the problems of insufficient game resources, a health crisis that saw a large portion of the Inuit population being relocated to southern sanatoria, and a failing traditional economy.[2]

One government solution to the "Eskimo Problem" was to relocate Inuit from places where the game was dwindling to more abundant hunting grounds. The most famous of these government-directed moves were the High Arctic relocations. The Canadian government organized to send seven families – thirty-two people – from Inukjuak in northern Quebec to Craig Harbour on Ellesmere Island and Resolute Bay on Cornwallis Island.[3] Aware that the conditions in the High Arctic were different than in northern Quebec, planners recruited three Inuit families from Pond Inlet, a more northerly settlement, to help the Inukjuak Inuit adjust to life in the High Arctic. The government's intent

for the relocations was to relieve the pressures on the northern Quebec game and provide Inuit with a means to continue their hunting and trapping lifestyle. The plan was also, in part, "an experiment to determine how well Eskimos from southern areas could adapt themselves to conditions in the High Arctic."[4] By all accounts, the first years were difficult for the relocatees. The stories of plenty that convinced them to relocate were not easily reconciled with the poor variety of game and other foods in the High Arctic, where Inuit faced extreme environmental conditions, colder temperatures, a lack of wood, and (most significantly) three months of complete darkness.

The Resolute Inuit were settled just five kilometres away from the RCAF base. Despite this close proximity, Inuit and Qallunaat (Southerners or people of European descent) were kept apart intentionally, with government officials fearing that contact would lead to disease, social dislocations, and moral corruption. An RCAF Station Standing Order placed the Inuit village out of bounds "to all personnel except on business."[5] Nonetheless, the Department of Northern Affairs and National Resources turned to the RCAF for support in fostering the Inuit economy by training them on machines that they could use to unload supplies during the annual sealift.[6] While officials remained hesitant to unnecessarily interfere with Inuit hunting, they saw a place for wage employment in which Inuit could work as stevedores during resupply shipments. The combination of a small amount of income earned through casual work and the harvest from hunting and trapping made the economic life of the Inuit in Resolute quite stable.



The Eskimo Affairs Committee saw the flourishing mixed economy at Resolute as a success and planned to send a "few more families from Port Harrison to Resolute Bay to meet a developing demand for casual labour."[7] Accordingly, the second phase of the High Arctic relocations sent another thirty-four people to Resolute in 1955, and Inuit employment at the base became an increasingly important component of Resolute's economy. By 1960, younger Inuit men received vocational training so they could work in more technical positions at the weather stations, at the military installations, and with the growing oil industry. By May 1962, three men were receiving training from

the base, one as a mechanic and two as mobile equipment drivers.[8] In addition to the ongoing employment of Inuit during the shipping season, the RCAF also employed several Inuit to help with the Northern survival school that had been transferred to Resolute from Cambridge Bay in 1958. At "Crystal City," four kilometres west of the airport, Inuit instructors taught RCAF and Northern Affairs personnel survival techniques in case they were forced to make an emergency landing in the Arctic environment.

Beyond the economic sphere, Inuit derived other benefits from their proximity to the base. The RCAF medical attendant accompanied the RCMP on all medical calls, providing professional treatment. In serious medical cases, Inuit patients were evacuated aboard CC-130 Hercules aircraft to Edmonton or Thule, Greenland. This meant that professional medical services for the severely ill were available within a matter of hours – in stark contrast to the other remote communities, where it could take days, if not weeks, before outside assistance arrived. The Resolute base was also a focal point of entertainment. The RCAF provided weekly movie showings and hosted the social gathering of the year: the annual Christmas party. Base personnel also organized the first Boy Scout troop in Resolute. Known as the First Polar Troop, the eleven members attended weekly meetings at the base on Saturday afternoons. The governing committee of the troop was formed by four members of the RCAF, an Inuk, and the RCMP constable.[9] The airbase at Resolute also provided a closer link to the outside world. The regular flights to and from Resolute ensured efficient mail service. As a result, Inuit were "able to order a wide variety of clothing from stores such as Eaton's and Simpson-Sears at very low cost," RCMP officer R.R. Gordon commented in 1962. "The Resolute Bay Eskimo is well clothed as a result of a higher standard of living than most other Arctic towns."[10]

Ultimately, civil servants saw Resolute as a model for Inuit relocation programs. By the time the Air Force left Resolute on 1 April 1964, transferring the operation of its base to Air Services, Civil Aviation Branch, the local balance between a hunting and wage economy was yielding to the dominance of cash work. The following year, twelve Inuit were permanently employed at the base complex, and by 1966, the community had only one full-time hunter. Part-time subsistence harvesting for food continued (and was facilitated by the introduction of motorized snow vehicles), with supplements from carving and trapping remaining important. Officials saw the community as economically viable and even prosperous by Inuit standards. "Compared with other settlements in the Arctic, the Resolute Eskimo is fairly well off and continues to possess articles that are not owned by a good many other

Eskimos," one RCMP officer observed. "There are washing machines, tape recorders, record players, irons, sewing machines, transistor radios and 35mm [millimetre] cameras." Less favourable was the lack of government support for the Port Harrison (Inukjuak) people who wanted to visit or move back to their original home.[11] The federal government's apology in 2010 for the High Arctic relocations and the unfulfilled promises associated therewith, [12] however, should not be misapplied to the generally positive relationship between the Air Force and the Inuit in Resolute in the Cold War era.

During the 1970s, the military resumed its regular use of facilities at Resolute as part of its Arctic indoctrination patrols. During Exercise New Viking serials, Air Transport Command aircraft would fly troops to an advanced base at Resolute in the summer. Soldiers would shoulder their rucksacks and strike out on a week-long patrol, typically covering about fifty kilometres on foot. The entire Airborne Regiment parachuted into Resolute Bay in December 1971, and southern soldiers continued to train at Crystal City. As explained in chapter two, the Canadian Rangers also used Resolute as a hub from which to stage KIGILIQAQVIK RANGER operations, and Joint Task Force North (JTFN) and Canadian Joint Operations Command did the same for NUNALIVUT and NANOOK operations in the High Arctic.

In August 2007, Prime Minister Stephen Harper announced that the CAF would build a major support hub in Resolute Bay as part of his overall sovereignty and security agenda. The initial plan envisaged a multipurpose centre for military training in Resolute Bay, with a longer paved runway, hangars, fuel storage, and extensive infrastructure. In the face of budget pressures, however, these plans were scaled back and rescoped. Rather than building a standalone facility, the military chose to collocate with Natural Resources Canada's Polar Continental Shelf Program (PCSP), which has operated out of Resolute since 1960 and coordinates field logistics for Arctic research projects. The partnership with the military expanded the accommodations, training, and

warehouse hangar facilities for the PCSP, which provides logistical support to over 1,100 Canadian researchers annually.

The joint project that created the CAFATC and enhanced the PCSP facility is a great example of what can be accomplished when federal departments work together. Built ahead of schedule and under budget, the training centre can house more than 200 personnel when the entire infrastructure is leveraged (and sufficient notice is provided, given that it is also used extensively by scientists). The two-story, steel building is built on a concrete slab, with thermosyphons underneath to maintain the frozen permafrost. The bottom floor is an expansive warehouse to store military equipment and vehicles, with office space and six classrooms upstairs.

The military does not staff the CAFATC facility on a year-round basis (as it typically closes for two months each fall), but it serves as a key permanent location for training and operations in the High Arctic. Military courses and survival training conducted there make it "a key enabler in developing Arctic/northern skills at the individual and collective levels."[13] It is home to the Army's Arctic Operations Advisor (AOA) course[14] and the Air Force's Air Operations Survival course, and it is also an Arctic logistical support hub that serves as a staging location for vehicles and personnel involved in Operation NANOOK and the Canadian Army's Northern Exercises (NOREXs). (The support hub also has the necessary equipment for the Canadian Armed Forces to establish a forward operational command post in Resolute Bay should an emergency or crisis occur.)

Canadian Rangers are a regular fixture at the CAFATC, supporting these training courses and operations. Last year, for example, various Ranger Instructors and Rangers participated Exercise PILIMASARNIQ, an essential workup mission for 1 CRPG's return to High Arctic operations. Based at the training centre in Resolute Bay, it assembled Rangers from across all three territories to share best practices on the

land with the intent of reintroducing a High Arctic patrolling capability. "The exercise unleashed a wealth of traditional skills and modern capabilities latent in 1 CRPG across the living repository of Rangers, but that were not aggregated to diversify the knowledge throughout the unit," LCol Hanes explained. "By not being tied down to southern-designed qualification standards and training plans, the exercise was better adapted to Indigenous forms of teaching and knowledge sharing." In turn, PILIMASARNIQ helped to develop a core group of Rangers who would support subsequent NANOOK operations.

Now, in the summer of 2026, the CAFATC would serve as the Command Post for Operation NANOOK-TAKUNIQ. The Advance Party, almost as soon as it arrived in Resolute on 1 July, set up live GPS monitoring, communications, and a map table to track the progress of the various lines of operation. They also started unpacking and organizing the equipment for distribution when the teams arrived. They set up communications with the Mackenzie River patrol, the Junior Canadian Ranger Enhanced Training Session (ETS) in Whitehorse, and Sgt Spencer of Team Alert (who was stuck on station due to inclement weather). Unfortunately, the secure communications requested by 1 CRPG had arrived in Yellowknife, but they had come with no batteries or any of the required accessories.

The soldiers also familiarized themselves with the area and with local subject matter experts. Capt Boom met with a Parks Canada representative to discuss the permits required for reporter Gavin John to

document the Team Tanquary expedition. Cpl Clarke and MCpl Belanger used one afternoon to explore around on ATVs, finding two large caribou antlers (and then trying to arrange the requisite export permits to take them back to Yellowknife, but to no avail). The CP team also socialized with a group of researchers who were attempting to get to Melville Island but had been stuck at the PCSP for thirty-seven days due to weather delays. This generated a sense of foreboding about the planned deployment of Team Mould to the western part of the Arctic Archipelago in a few days.

Behind the scenes, the Advance Party worked concertedly to make final preparations before the other teams arrived. Over the next few days, MCpl Belanger finished organizing all the gear by team, which was ready to issue as soon as everyone arrived. The CP began organizing the VIP visit with JTFN and communicated with the Airfield Surface Assessment and Reconnaissance (ASAR) team to provide logistical support when it arrived. By dinner on 5 July, everything was ready for the arrival of the main body the next day. "Kit set, rooms designated and CP primed," the daily journal noted, and "the Advance Party stood down early to socialize and enjoy the last peaceful moment until August."

The Team Grows

The members of the Alert and Mould Bay teams, alongside additional command post and support personnel, arrived on a Summit Air charter from Yellowknife on Sunday, 6 July. Two hours before the flight was scheduled to land, a dense cloud bank rolled in, reducing visibility to mere metres. To the credit of the RCAF pilots, the plane landed the first batch of the main body: nineteen additional personnel. For those who had left hot summer temperatures in southern Canada, the arrival in deep fog and falling snow was a wake-up call that this would not be a typical "summer" operation. "I'm not sure that I packed correctly," Lackenbauer immediately blurted out upon stepping out of the door of the plane. On the tarmac, they met their counterparts already on the ground in Resolute Bay, while the plane crew unloaded their bags and shuttled them to the CAFATC warehouse. They grabbed their essential "kit" (as the military

refers to clothing and gear) and carried it across the road to the main CAFATC accommodations building. After a long day of travel, they were keen to eat, organize their rooms, socialize, and get to bed early.

Amongst the new arrivals were two Rangers from Nunavut who would support the Command Post in Resolute Bay during the operation: Ranger MCpl Tony Kunuk from Igloolik, who looks after the Junior Canadian Rangers patrol in his community, and Ranger Sgt Gerard Maktar, the patrol commander in Whale Cove. Both are longstanding Rangers who had participated in Operation NANOOK-NUNALIVUT in the Western Arctic earlier that winter.

The Alert Team was comprised of two Rangers, one officer (LCol Travis Hanes), and an academic. Ranger Tanner Bowman is from Mayo, Yukon, where he works as a lineman. He joined the Rangers in 2017. Ranger Leandra Brient lives in Atlin, British Columbia, where she is a business owner and has been a Ranger since 2007. Dr. P. Whitney Lackenbauer, the Honorary Lieutenant-Colonel of 1 CRPG, is an academic specializing in Arctic security issues who teaches at Trent University in Ontario. They would link up with the fifth member of their team, Ranger Instructor Sgt Shawn Spencer, at CFS Alert in a few days.

The Mould Bay Team was led by Warrant Officer (WO) Mike Albright (1 CRPG HQ, former 2 PPCLI (Princess Patricia's Canadian Light Infantry)) and his second-in-command, Sgt Andrew Windsor (1 CRPG HQ, former 3 PPCLI). They were joined by five young soldiers from 2 PPCLI in Edmonton: patrol medic MCpl Preston Pitawanakwat and patrollers Private (Pte) Andrew Blakie, Pte Connor Minchin, Pte Hunter Way, and Pte Willem Rijpstra. Force protection was provided by Canadian Ranger MCpl Tom Harvey from the Ulukhaktok patrol, a former Patricia (3 PPCLI) and Ranger Instructor and Training WO with 1 CRPG who had served in the Regular Force for twenty-one years until he retired in 2019. Raised in Kugluktuk, Nunavut, Tom initially joined the military after completing a three-week Northern Native Entry Program designed for Northerners, and he deployed overseas three times during his career: once to Bosnia in 2000 and twice to Afghanistan in 2002 and 2008 (all with 3 PPCLI). The soldiers from 2 PPCLI had arrived in Yellowknife on Canada Day and conducted pre-deployment training from 2–4 July, during which time they received orders, conducted weapons training, received briefings about the area in which they would be operating, and learned from MCpl Harvey about the predators they might encounter. "It was easy to feel the anticipation within the group, with discussions focused on the coming days," WO Albright noted when they flew out on the charter flight to Resolute.

The next morning, the entire group met for breakfast in the shared PCSP-CAFATC dining hall amidst a mix of civilian scientists and staff. “The food situation at PCSP was incredible, which makes sense to maintain morale at one of the most northern and isolated CAF facilities,” the CP journal noted. With the prospect of eating freeze-dried rations while on the land, the teams indulged in the ample meals and desserts. The teams then headed over to the CAFATC, where LCol Hanes briefed the officers and 1 CRPG HQ staff on his plans for the winter 2026 Operation NANOOK-NUNALIVUT “campaign season” – a reminder that, even in the midst of one operation, forward planning cannot be neglected.

The framework that LCol Hanes articulated about campaigning in the High Arctic helped to situate TAKUNIQ. His force employment concept was one of a “kilometre wide and a metre deep” – meaning pushing forward as far as possible across various locations throughout 1 CRPG’s area of responsibility (AOR). This would furnish a better picture of the logistical footprint that the military could leverage to bring in different numbers of troops and vehicles. The problems were varied: vast distances with limited organic infrastructure, variable and inconsistent weather, climate change producing uncertain environmental conditions, and political pressures to demonstrate a military presence. The Rangers know the land and can share domain awareness, facilitating force projection and conducting joint or combined patrolling in key terrain. In turn, this demonstrates Canadian capabilities and control over the Arctic – an important message of reassurance for domestic audiences and for our allies.

Over video, Iqaluit-based Jennifer Lukacic, Area Superintendent for Parks Canada in Nunavut, presented to the whole group on safe travel in Quttinirpaaq National Park – Inuktitut for "land at the top of the world." As Canada's northernmost and second-largest national park (covering an area roughly the size of Switzerland), Quttinirpaaq boasts diversified terrain, from sprawling tundra to jagged black peaks and massive glaciers. Parks staff operate out of four locations: Ward Hunt Island, Fort Conger, Lake Hazen, and Tanquary Fiord (where most of the infrastructure is located). Because it is one of the most remote parks in North America, rescue services and facilities are very limited. Accordingly, poor weather conditions, geography, and aircraft or staff unavailability may delay search and rescue operations – and high-angle technical evacuations require flying in experts from Banff National Park in Alberta.

Weather can "change in a heartbeat," and Lukacic warned that hypothermia was the "number one killer in Quttinirpaaq." This meant paying heed to signs and treating it immediately. Lukacic emphasized that river crossings are the most significant hazard facing summer visitors to the park, with the cold water sucking out body heat 200 times as fast as the wind. Most streams and rivers in this area are glacial fed, so water volume and velocity change throughout the day and from one day to the next, thus making crossings unpredictable and susceptible to rapid change. As the day progresses, glacial melt caused by warming temperatures increases the volume of rivers and streams – making morning crossings preferable. Rainfall also affects the volume and velocity of rivers and streams at any time of day. She further explained that in recent years, severe flooding has led to several fatalities. Warmer-than-average temperatures produce higher river levels for longer periods of time, making glacier toes and river crossings more dangerous.

She also noted hazards associated with unstable terrain, such as eroded tundra, sinkholes, and "ankle-breaking" hummocks. Caution was advised around vertical rock faces: bare, freshly broken rock is a sign of active rockfall, and rain and periods of freeze-melt temperatures warrant particular vigilance. Furthermore, while low temperatures and low annual snowfall meant slow glacial movement compared to more southerly regions of North America, crevasses and icefalls still make glacier crossing difficult – and require expertise in glacier travel and crevasse rescue (which the Glacier Team has). Furthermore, when travelling across or near slopes of more than a 25° angle, visitors need to anticipate possible avalanches.

Wildlife encounters should also be avoided wherever possible. Arctic animals have a small window of opportunity to reproduce and fatten up for winter, so visitors must minimize the stress on them. Furthermore, foxes and wolves can carry rabies, and muskoxen have been known to charge people when they feel threatened (and should always be given the high exit route). Furthermore, birds and wildlife are inquisitive – particularly when they have had limited interactions with humans – and opportunistic. This requires that food and garbage be securely stored. As Ranger MCpl Harvey from Ulukhaktok reminded us, "being aware is the first step in respecting the animals."

Lukacic also noted that the possibility of polar bear encounters exists anywhere in the park, but the potential for an encounter is greatest along the northern and eastern coasts. Unlike grizzly and black bears, polar bears are predators who primarily eat seals, and they may consider humans as a food source. Awareness, staying together in groups, and maintaining a clean camp are essential to reduce the risk. She explained various non-lethal deterrents and noted that, in a hostile encounter, any potential weapon must be considered to defend oneself, such as skis, poles, knives, rocks, or blocks of ice. Ultimately, the best way to live safely with bears is to avoid contact with them by being alert and aware of one's surroundings and scanning with binoculars at regular intervals. Vigilance is key.

Handling a Polar Bear Encounter

Polar bears are the largest land carnivore in North America. An adult male typically weighs 300-450 kg [kilograms], stretching 3 metres from nose to tail. They are strong, fast, and agile on land or ice, and are expert swimmers and divers. Their sense of smell is exceptional, their eyesight comparable to a human's. Polar bears are naturally curious, not fearless as they have been labelled. They are shy and prefer to avoid confrontations with humans and other polar bears. Their primary prey is the ringed seal but they will also prey on birds, eggs, small mammals, and even humans. They also scavenge anything from beached whales to human garbage. In the heat of summer, polar bears may appear slow and docile, but they are capable of moving swiftly and with purpose.

Before your trip, discuss possible plans of action for dealing with bears in a variety of circumstances and be sure everyone understands. The actions of each individual either contribute to or detract from the safety of everyone else. Stay calm and assess the situation. What is the bear doing? What is the bear's behaviour?

IF a bear does not know you are there then:

- Quietly back away and leave the area either in the direction you came or by making a wide detour around the bear. Do not run, move quickly, or make motions that might attract the bear's attention.
- Stay downwind, if possible, so the bear cannot smell you and detect your presence.
- Keep an eye on the bear.

IF a bear knows you are there and shows signs of being curious, such as:

- moving slowly with frequent stops,
- standing on hind legs and sniffing the air,
- holding its head high with ears forward or to the side,
- moving its head from side to side,
- trying to catch your scent by circling downwind and approaching from behind,

Then:

- Help it to identify you as a human - wave your arms over your head and talk in low tones.
- Move slowly upwind of the bear so it can get your scent.

IF the bear has been surprised at close range or shows signs of being agitated or threatened, such as:

- huffing, panting, hissing, growling or jaw-snapping,
- stamping its feet,
- staring directly at a person,
- lowering its head with ears laid back,

Then:

- Act non-threatening. Do not shout or make sudden movements, which might provoke the bear. Never huff or hiss as this can cause a polar bear to charge.
- Avoid direct eye contact.
- Back away slowly. DO NOT RUN.
- Be prepared to use deterrents.

IF the bear shows signs of stalking or hunting you, such as:

- following you or circling you,
- approaching directly, intently and unafraid,
- returning after being scared away,
- appears wounded, old or thin,

Then:

- Fight back! Use any potential weapon, group together and make loud noises.
- DO NOT RUN!
- Be prepared to use deterrents.

IF a bear charges:

THEN:

- Stand your ground and be prepared to fight! Bluff charges are rare.

Never get between a bear and her cubs. If a female with cubs is surprised at close range or separated from her cubs she will likely attack to defend her cubs.

- Leave the area immediately.
- Stay in a group.
- Fight back if she attacks.
- Always leave an escape route for the bear.
- Carry deterrents and know how to use them.

In case of an attack follow this emergency check list:

1. STAY CALM and call for help by radio or satellite phone. (Get contact numbers during your orientation to the park).
2. Report location and time of incident.
3. Report number of people involved.
4. Report extent of injuries and property damage.
5. Check that all people in the group are accounted for.
6. Report numbers and last locations of all polar bears involved in the incident.
7. Report reason for the attack if known (Female protecting cubs, surprise, defending food source, etc.).
8. Report description of bears (male or female, size, markings, etc.).
9. Stand by to provide additional information to rescuers.

Source: Parks Canada website

The High Arctic landscapes bear traces of 4,500 years of successive waves of human habitation. Accordingly, the teams would likely encounter cultural heritage sites and would be expected to treat them with respect and care. These could include the remnants of Thule campsites, abandoned stations, or cairns. For most of the field portion, however, the teams would not encounter other people and would have to be self-sufficient while leaving as minimal an imprint on the landscapes as possible. Iqaluit, the closest hospital, was 1,578 kilometres away from Resolute – and even further from the remotest parts of the Queen Elizabeth Islands. The teams would have to carefully factor in time and distance when making risk assessments, given that they were travelling in some of the most isolated parts of Canada.

Basic Familiarization Training

Given that Team Alert would be using all-terrain vehicles (ATVs, also known as quads, four-wheelers, or hondas in the North), the next step was familiarizing the team with what they would be using. The newly-promoted Sgt Patrick Belanger conducted a basic ATV training course – something that was clearly unnecessary for the Rangers, all of whom were expert riders. Leandra, Tanner, Tony, and Gerard offered basic tips to the less experienced members of the team: if you feel like you are getting stuck, rock the machine back and forth to get traction; when going downhill, use the rear brake (foot pedal) and not the hand brake, which can launch you over the handlebars if applied abruptly, but vice versa when going uphill to avoid backsliding; and a reminder to keep feet and legs tucked because they could snap if used to try and stop the machine from rolling. If the ATV is going to roll, jump off and save yourself – plain and simple.

The four-kilometre route to Crystal City is well-established, easy terrain. Just beyond the site, Team Alert completed its first river crossing before pushing out onto the tundra. In low, boggy stretches, the group deliberately tried to get stuck – a way to gauge the limits of the machines in muddy terrain and to demonstrate the use of winches to pull out ATVs. Everyone enjoyed the chance to get caked in mud.

There were challenges. Capt Phil Pawlik, a former Ranger Instructor now commissioned and working at JTFN, joined the group for the day. The battery on the ATV he was riding died soon into the trip, and the Rangers jumped into action. First, they tried to jump the battery using snare wire. When that did not work, they laid a functioning battery on top of the dead one, which succeeded in starting it. Phil encountered no problems for the rest of the trip. Later, during a relatively steep uphill climb, Leandra's machine blew a clutch – something readily apparent given that the pin had blown clear through the plastic on the side of her ATV. For about an hour, the Rangers tried to get the machine started. Although it was beyond repair and ultimately had to be towed back to the CAFATC, the Rangers' knowledge and expertise were on clear display. Despite chilly, damp temperatures, morale never sank. Challenges were expected, and the key was to devise ways to overcome them. This requires composure and confidence.

The next morning (8 July), after breakfast, Teams Alert and Mould Bay met in the CAFATC stores building with their rucksacks for a ten-kilometre walk. This would allow everyone to test their footwear and clothing, get a sense of pace, sort out their packs, and acclimatize to the temperature (hovering around 1–2°C). While there is a tendency to dress warmly, hiking with a heavy pack would generate heat quickly. Even in the summer, sweating is dangerous, and this was a chance to "train as you fight" – to replicate the conditions that the teams would later encounter in the field so they could prepare for them.

Team Alert followed the road from the CAFATC partway to Crystal City before heading onto the tundra. The terrain varied from rocks to boggy ground to snow, and from flat stretches to hills. Fog limited visibility, inhibiting depth perception and making it difficult to discern whether someone was looking at a mountain in the far distance or a little hill fifty metres away. Scree slopes (accumulations of loose rock fragments on hillsides) required caution, given their instability, as did slippery knee-deep snow. After an 8.9-kilometre walk, the group returned to the Training Centre for lunch.

More ATV training ensued in the afternoon, this time taking the group out past the settlement of Resolute Bay. The river crossings were deeper and wider than the day before, and the terrain was rougher. Hummocky surfaces (meaning that the ground was covered in small, rounded mounds) were uneven and often hard, producing a familiar jostling on the ATV that tossed the body not only up and down but also side to side at irregular intervals. Sharp shale also required care and attention, given the danger that it could slice or puncture a tire (more likely through the sidewall than the tread). There were no major mishaps, although Whitney (whose ATV's gearbox failed near the end of the trip and had to be towed back to the CAFATC) managed to get Travis stuck in the middle of a river when the former firmly applied his brake on the bank – a rookie mistake that required winching the pair of machines past the obstacle.

For its part, Team Mould Bay had begun its pre-deployment preparations with kit inspection and issuing food for the operation. Mike, Andrew, and Tom had extensive discussions the night that they arrived in Resolute about how many calories the members of the patrol would burn each day (estimated at 4,000–5,000 calories) and the volume of food they should pack. They agreed to aim for a 2,000-calorie per meal day, based on three meals and snacks. This was a risk that they would mitigate by pre-planning resupply and rest days and by ensuring that resupply flights would bring in extra food to regain some of the calories that the patrollers would lose in the meantime. Each member of the patrol would carry five days' worth of food to make it to the planned "no later than" resupply date.

After kit inspection was completed, the members of the patrol packed their rucksacks and conducted a "shake out" on the morning of 8 July. This five-kilometre dismounted patrol would allow them to make any final adjustments to their gear and included the plan to practise river crossings so they would be prepared for Prince Patrick Island. The patrol succeeded in identifying remediable deficiencies in their kit, but the team was unable to practise water crossings owing to the lack of flowing water in the area around the CAFATC. Instead, the members conducted plenty of "ROC talks," or Rehearsal of Concept talks, going over scenarios and what to do during crossings. After returning to the CAFATC for lunch, the 2 PPCLI soldiers were given routes and developed route cards for each "leg" of the operation for which they would be responsible. At the end of the day, WO Albright received word that the first "chalk" of his team members would be flown to Mould Bay the next day – twenty-four hours earlier than planned – because of good weather. There was only one CC-138 Twin Otter from 440 (Transport) Squadron on location because the second planned airframe was down with mechanical problems. Due to the long distance, half of the patrol would be on this first flight, and the second chalk would be brought in at a later date, if weather conditions were favourable.

With the briefings, distribution of equipment, and preliminary training around Resolute Bay complete, the Alert and Mould Bay teams readied themselves for departure the next day. Bags were repacked, laundry finished, and final telephone calls made. Team Alert left on a Kenn Borek charter at 09h30, while the first group of Team Mould Bay

(Albright, Harvey, Pitawanakwat, and Rijpstra) took off at 14h00. "Excitement was high, especially for myself as I have been part of the planning of this event since LCol Hanes had first had a concept of the airstrip recces in November of 2024," WO Albright noted. "Finally, I am getting out to a place which is considered one of the most difficult places to get to within Canada." The rest of his team left the following afternoon, and Team Mould Bay reunited at their destination on Prince Patrick Island.

The Next Cohort Arrives

Most of Team Alpine united in Yellowknife on 9 July, where they met at 1 CRPG headquarters. Rangers Maya Poirier and Cath Welsh had arrived from Whitehorse, journalist Gavin John from Calgary, and Capt Jake MacDonald and MWO Pat Murphy had a short commute from their homes in Yellowknife. In the boardroom, MWO Murphy went over the patrol plan, maps, and forecasted weather. Everyone was encouraged to share their thoughts, feelings, and fears going into the dismounted patrol on Ellesmere. Fear, when channelled properly, helps to keep people safe and pushes them to use their skill sets to their highest degree of safety. This is integral to being in remote places. Team members expressed worries about the remoteness of the trek, old injuries coming back to haunt people, polar bears, water crossings, and missing friends and family.

Ranger James Cleary arrived in Yellowknife on a separate flight just after midnight on 10 July. By 02h30, he was experiencing a sudden and acute gastrointestinal illness, which persisted through the night. Recognizing that the team was flying to Resolute the next morning, he checked himself into the Yellowknife hospital's emergency department at 10h30. "I wanted to make sure it wasn't anything serious before getting on a plane and flying somewhere without a doctor or hospital," he explained. "I wanted to mitigate avoidable risk and ensure my condition wouldn't be a liability to myself or anyone else. I'd had my appendix removed twenty years ago so I knew it wasn't that at least." Cleary described his symptoms to the attending physician, as well as explaining that they were heading out on an expedition in the Far North. The doctor said he was good to go for the trip, took a blood test to be extra sure, gave him a prescription for heavy-duty anti-nausea medication for the flight and some broad-spectrum antibiotics in case the stomach bug came back, and pumped in a litre of intravenous saline for dehydration. Cleary persevered and hoped for the best.

On the morning of 11 July, Team Alpine left Yellowknife in a chartered De Havilland Dash 8 en route to Resolute Bay after a fuel stop in

Cambridge Bay. The energy of the team was buzzing with cautious excitement and optimism for what was to come of this patrol. Immediately after landing in Resolute, the team unloaded their kit and went straight for a briefing at the CAFATC, where they learned about the history of Resolute Bay and CAF operations in the area. The rest of the day consisted of settling in, enjoying a delicious steak dinner at the PCSP building (with Ranger Cleary limiting his intake to bananas and toast), and going for a walk on the land, visiting the site of a crashed Lancaster not far from the base, and soaking in the desolate landscape and vastness of Resolute Bay.

The next morning, they converged in the dining room at the PCSP for the five-star breakfast that would fuel a full day of packing gear for both the foot patrol from Tanquary to Lake Hazen as well as the glacier portion of the trip. The team had a comprehensive safety meeting and briefing, covering gear, travel and route plans/options, weather intel and updates, and safety operation procedures. All participants compared phone mapping applications and decided to use two complementary ones to aid in navigation for the trek. This meeting reinforced the connection and commitment the team shared, building confidence and preparedness. Maya recorded:

> Well, we are ready for Ellesmere Island tomorrow - Tanquary Fiord… Huge day of packing, board room meeting going over so much safety stuff for the trip. It was really important and reassuring to go over so much together… I can't believe this is happening. What an opportunity of a lifetime. I pray for safety, presence, peace, and resilience out there. Our team will be bonded and never the same again.

The workday ended after the team weighed and squared away their kits (averaging seventy pounds without water) in the 440 Sqn Twin Otters, ready for the next day's anticipated departure. Before bed, Cath shared in her journal:

> It's taken so much work to get this far and be here with the team and understand the roles each of us will have. I've been told I'll be leading the team and route-finding from Tanquary Fiord to Lake Hazen. I am so accustomed to being the border collie - rounding up people and keeping them moving forward together. This time I've been asked to lead, which means choosing a route and pace for a safe and successful trip - I am pumped, this should be fun!

With the fog ceiling low and minimal visibility, the weather on the morning of 13 July was less than ideal for flying. Over the course of the next few hours, the team waited in the warehouse on standby to see if the weather would improve enough for takeoff. "People are pacing and nerves are like auras here," Cath recorded. Around 13h00, the decision was made to call off flying out until the next day. A screenshot of conditions at Tanquary Fiord indicated that the weather might allow them to get in, but the incoming clouds were unlikely to allow 440 Sqn to return to Resolute. "Seems like this is not an uncommon occurrence," Cath surmised. "Up here, you have to measure probabilities [every day]."

The View from the Command Post

Throughout the operation, the Command Post actively monitored developments, solved logistical and medical challenges, fulfilled its role as a communications hub, and worked closely with the Air Task Force (ATF) from 440 Sqn that supported the mission. Experiences on 13 July serve as a case in point. Capt Boom, Capt Latimer (the medical doctor at the CAFATC), and Major (Maj) Wookie discussed the evacuation plan and medical response plan for each team, ensuring that everyone had a common picture of the process. Due to the sudden loss of several community and family members, the two Canadian Rangers assigned to the CP, MCpl Tony Kunuk and Sgt Gerard Maktar, requested a compassionate redeployment to support their communities. Capt Newman, the Logistics Officer, explored options and arranged for their flights home in the days ahead. The recently

promoted Sgt Belanger and Capt Pawlik spent the day developing and trialing door bundles, developing a system out of cardboard that could reduce the weight while increasing its load capacity. Furthermore, the receiving team could subsequently burn the packaging for fuel. "A huge boon for the team and an excellent display of the genius and creativity lurking around the CAF," the CP journal noted.

The next day, the CP had to manage the medical evacuation of Capt Jake MacDonald (discussed further in chapter 7). Team Tanquary called the CP to organize the extract. "Of course the sat[ellite] phone drops out half way through the calls and the inReaches are slow to send messages," Newman recorded, but "Alex [Boom] calmly handled the situation." Capt Boom, Capt Latimer, Maj Wookie, Maj Fettes (a pilot with 440 Sqn), and Capt Newman reviewed and executed the plans discussed the day before. By extending the flight day and attaching a medic to the aircraft, Maj Fettes flew to Tanquary Fiord with Sgt Angus (Medic) to be staged to conduct the evacuation the following day. On 15 July, Team Tanquary successfully extracted Capt MacDonald to the Twin Otter on foot, and the aircraft flew to Fort Eureka for fuel. Bad weather forced them to overnight at Eureka, however, before returning to Resolute, where Capt MacDonald continued to help the mission from the CP.

CP staff also grappled with aircraft issues that constrained what could be accomplished on the operation. On 14 July, Maj Wookie identified that one 440 Sqn Twin Otter would be grounded indefinitely due to issues with the tires. Coupled with an unresolved fuel situation in Mould Bay due to weather and contracting issues, this meant that

Team Mould could not be resupplied. Capt Boom discussed this with WO Albright (the commander of Team Mould), who ultimately determined that if they did not turn around the following day, they would be stuck with no food for a few days. Accordingly, Team Mould turned around and began to hike back to Mould Bay. Ultimately, the skilled 440 Sqn maintenance crew managed to get the downed Twin Otter back into service by swapping the tires and slightly restricting the plane's capable distance, allowing it to conduct some missions.

The CP also hosted VIPs and continued to lay the groundwork for future NANOOK operations. On 19 July, for example, Capt Newman and Cpl Stanley-Paul flew to Fort Eureka to conduct a logistical recce on the carrying capabilities of the site in anticipation of its use on Operation NANOOK-KIMAVIVUUT. "Weather was a bit miserable on location [when we] met up with Renee Cossitt, station manager at the weather station," Newman noted. Their tour of the site revealed that it would need some attention if the military wanted to conduct operations out of it in the future. "Due to the bridge being unsafe we were not able to go out to Skull Point so we could not get to the 80th Parallel," he lamented, falling a mere 150 metres short. The next day, BGen Daniel Rivière, Commander JTFN, arrived and received briefs on the mission: from Sgt Wade Chesnutt on the CP's communication and live GPS tracking capabilities; from Cpl Stanley-Paul on the intelligence product that he was developing to expand JTFN's intelligence picture in the Arctic; from Sgt Belanger on the kit and food issued to the teams; and from Capt Boom on the overall mission. On 22 July, BGen Rivière honoured several of the CP team members before his cadre went on an ATV ride to explore cultural sites around Resolute before flying back to Yellowknife.

Out of the main support hub at the CAFATC, the team at the Command Post oversaw what was happening in the dispersed operations in the High Arctic. As the teams returned to Resolute from their time in the field, they shared their stories with their colleagues in the CP who had enabled the operation. "I can hear the joy in their voices while they share both warm greetings and new stories," the CP journalist noted on 25 July. "Reflections on my Groundhog Day of nightshifts are overshadowed by the accomplishments of the teams and, although we at the CP claim a tiny portion of the credit, the success of TAKUNIQ is the result of contributions at every level. From the flight engineers to the kitchen staff to the medical team to the physical boots on the ground, all parties demonstrated what is possible when approached with art and with skill." The following chapters recount the experiences of those with their "physical boots on the ground" on Ellesmere and Prince Patrick Islands.

Notes

[1] P. Whitney Lackenbauer and Ryan Shackleton, "Inuit-Air Force Relations in the Qikiqtani Region During the Early Cold War," in *De-Icing Required!: The Historical Dimension of the Canadian Air Force's Experience in the Arctic*, ed. P. Whitney Lackenbauer and W.A. March (Trenton: Canadian Forces Air Warfare Centre, 2012), 83.
[2] See, for example, David Damas, *Arctic Migrants/Arctic Villagers: The Transformation of Inuit Settlement in the Central Arctic* (Montreal and Kingston: McGill-Queen's University Press, 2002); Gordon Robertson, *Memoirs of a Very Civil Servant: Mackenzie King to Pierre Trudeau* (Toronto: University of Toronto Press, 2000); and P. Whitney Lackenbauer, "Defence, Development, and Inuit: St-Laurent's Modern Approach to the North," in *The Unexpected Louis St-Laurent: Politics and Policies for a Modern Canada*, ed. Patrice Dutil (Vancouver: UBC Press, 2020), 193–221.
[3] On the debate over government motivations, see Shelagh D. Grant, *"Errors Exposed": Inuit Relocations to the High Arctic, 1953-1960*, Documents on Arctic Sovereignty and Security (DCASS) No. 8 (Calgary and Waterloo: Centre for Military, Security and Strategic Studies/Arctic Institute of North America/Centre on Foreign Policy and Federalism, 2016); P. Whitney Lackenbauer, ed., *Human Flagpoles or Humanitarian Action?: Discerning Government Motives Behind the Inuit Relocations to the High Arctic, 1953–1960*, DCASS No. 16 (Calgary and Peterborough: Arctic Institute of North America/Centre for Military, Security and Strategic Studies/Canada Research Chair in the Study of the Canadian North, School for the Study of Canada, Trent University, 2020); and Sam Hossack, "A Broken History: Examining the Events, Experiences, and Narratives of the High Arctic Relocations, 1950-2010" (PhD dissertation, University of Waterloo, 2025). For a first-hand perspective from a Canadian Ranger, see Larry Audlaluk, *What I Remember, What I Know: The Life of a High Arctic Exile* (Iqaluit: Inhabit Books, 2021).
[4] R.G. Robertson to C.M. Drury, Letter re: Relocation of Inuit Families at Resolute Bay, Library and Archives Canada (LAC), Record Group (RG) 22, A-1-a, vol. 298, file 40-8-1 pt. 4.
[5] "Conditions Amongst Eskimos – Resolute Bay," 5 January 1961, LAC, RG 18, vol. 55, file TA 500-8-1-14.
[6] R.G. Robertson to C.M. Drury, Letter re: Transport of Families to Resolute, 18 January 1955, LAC, RG 22, A-1-a, vol. 298, file 40-8-1 pt. 5.
[7] Report re: Economic Development and Actions Taken in 1953 and Proposed for 1954, LAC, RG 22, A-1-a, vol. 298, file 40-8-1 pt. 5.
[8] Memo R.R. Gordon to Officer Commanding, re: Conditions Amongst the Eskimos, 12 January 1962, LAC, RG 18, vol. 55, file TA 500-8-1-14.
[9] Conditions Amongst the Eskimos – Resolute Bay for the Year Ending December 31st, 1962, 14 January 1963, LAC, RG 18, vol. 55, file TA 500-8-1-14.
[10] R.R. Gordon, Memo to Officer Commanding re: Conditions Amongst the Eskimos, 12 January 1962, LAC, RG 18, vol. 55, file TA 500-8-1-14.

[11] Damas, *Arctic Migrants*, 134–136. See also Qikiqtani Truth Commission, *Resolute (Qausuittuq): Community Histories 1950–1975* (Iqaluit: Qikiqtani Inuit Association, 2024), https://www.qtcommission.ca/en/communities/resolute-qausuittuq.
[12] See, for example, Indian and Northern Affairs Canada, News Release, "Government of Canada Apologizes for Relocation of Inuit Families to the High Arctic," Government of Canada, 18 August 2010, https://www.canada.ca/en/news/archive/2010/08/government-canada-apologizes-relocation-inuit-families-high-arctic.html.
[13] CAFATC *Master Implementation Directive*.
[14] Although the Arctic Operations Course is managed by the Combat Training Centre's Canadian Army Advanced Warfare Centre in Trenton, Ontario, the course mainly operates from the CAFATC in Resolute Bay.


WARD HUNT ISLAND
Ward Hunt Island
Arctic Ocean
Canadian Forces Station Alert
McClintock Inlet
Disraeli Fjord
UNITED STATES RANGE
Grant Ice Cap
BRITISH EMPIRE RANGE
Gilman Glacier
BARBEAU PEAK
LAKE HAZEN
FORT CONGER
Lake Hazen
Ruggles River
Discovery Harbour
IDA
Ad Astra Ice Cap
Vent River
KETTLE LAKE
VICTOR
Tanquary Fiord
TANQUARY FIORD
N
0 10 20 km
MAP 2
Quttinirpaaq National Park
Operations Camp
Department of National Defence Tower Site
Archaeological Site
Park Boundary
Crown Land
Lake Hazen/Tasialuk Basin Special Management Area

6

To the Top of the World: Alert Team

In Resolute Bay, Leandra, Tanner, Travis, and Whitney boarded a Twin Otter (DHC-6) aircraft, chartered from Kenn Borek, at 09h30 on Wednesday, 9 July. Lindsay, the pilot, remained uncertain about the weather conditions but decided to give it a go. The overcast sky limited the views of the lands and seas below before the plane landed at the Eureka airstrip to refuel. The red DND Camp Eureka building would have provided accommodations for the group if Alert proved inaccessible, but the flight crew decided to push on. Fog persisted until the clouds cleared over parts of Axel Heiberg Island and then Lake Hazen – the destination for one of the other teams. The approach to CFS Alert was again overcast with a low cloud ceiling, and the requisite flyover because of visual flight rules (VFR) led the plane out over an ice-crusted Lincoln Sea before landing at 15h20.

The group was greeted with a light falling of snow as they disembarked the aircraft. The Commanding Officer and Station Warrant Officer greeted the team before they were ushered onto a small bus. The original plan was for the team from 1 CRPG to sleep in the gymnasium or a garage, but it turned out that individual rooms in the station were available to accommodate everyone. The fifth member of the team, Sgt Shawn Spencer (known to everyone as "Spence"), was at the station when they arrived.

Canadian Forces Station Alert

Located at the northeastern tip of Ellesmere Island, Nunavut, 817 kilometres from the North Pole and only forty kilometres from the northernmost point in Canada, CFS Alert is the most northerly permanently inhabited location in the world. This military station, operating on a permanent basis with 8 Wing Trenton of the CAF, has a long history of conducting important military operations and scientific research. Today, its mission comprises signals intelligence (SIGINT) collection, accommodating Environment and Climate Change Canada (ECCC) weather services, and supporting military operations and exercises, search and rescue (SAR), and scientific research.

Alert's origins as a Joint Arctic Weather Station (JAWS) in 1950 are discussed in chapter 9. Its evolution as a military facility dates to the early Cold War, when Alert's proximity to the Soviet Union afforded the possibility of intercepting radio communications between the bases and the submarines, ships, and aircraft operating in the Soviet Arctic. The RCAF took advantage of the existing JAWS airstrip and operating infrastructure at Alert to establish a one-hut signal intelligence unit 500 yards north of the weather station in 1955. This listening post, which was closer to Moscow than Ottawa, proved effective, and on 1 September 1958, Alert began its operational role as a signals intelligence unit of the CAF. At that time, it became the Alert Wireless Station (call sign VDH) and, under the command of the Canadian Army, became an important site for signals intelligence collection and geolocation facilities.

The Signals Corps continued to expand its facility at Alert in the ensuing decades,[1] with the unification of the RCN, RCAF, and Canadian Army in 1968 bringing the new name of Canadian Forces Station Alert. A new communications centre was added in 1969, and a new operations building (Polaris Hall) in 1980, with technical maintenance on the ground floor and the operators on the upper floor. "At its peak, CFS Alert had upwards of 215 personnel posted at any one time," Jerry Proc explains. "The station became a key asset in the global ECHELON network of the US-UK-ANZAC [United States-United Kingdom-Australian and New Zealand] intelligence sharing alliance, with Alert being privy to many secret Soviet communications regarding land based and sea-based ICBM [inter-continental ballistic missile] test launches and many operational military deployments." [2] Construction of the High Arctic Data Communications System (HADCS) was completed in 1982, involving the installation of two satellite earth stations in Eureka and six repeater sites between Eureka and Alert as part of *Project Hurricane*. The annual summer Operation HURRICANE (Honeywell Uninterrupted Radio Relay in Canada's Arctic Northern

Alert in 1980

Ellesmere) carried military technicians and support personnel by helicopter to northern Ellesmere Island to repair and resupply the otherwise unattended system. The name was changed to Operation NEVUS in 2009 to align with other Northern operation titles.[3]

Over the years, technological advances have led to the reduction in the number of personnel required for the operational/signals intelligence role. With the completion of an HADCS equipment remoting project in 1997, Alert's staff was reduced from more than 200 down to sixty-nine personnel. In 2008, the number of people was reduced further to twenty-one military and thirty-two civilians. Typically, most CAF personnel spend six months at CFS Alert, with some specialized positions being designated as requiring a rotation every three months. In recognition of this isolated tour, military personnel who acquire an aggregate of 180 days of honourable service while posted to Alert, or while serving with a military force operationally deployed to or at Alert, are eligible for the Special Service Medal (SSM) with the Alert Bar.[4]

On 1 April 2009, the CAF transferred command of CFS Alert from the Canadian Forces Information Operations Group (CFIOG) to the RCAF when it became a unit of 8 Wing Trenton, thus returning to its heritage as an RCAF installation.[5] *Globe and Mail* journalist John Allemang noted a few years later that "Canadian Forces Station Alert is many things to many people: a signals-intelligence listening post, a geolocation facility, a weather station and climate-change monitoring post, a search-and-rescue base, a cold-weather campus for Arctic researchers and explorers and an assertion of Canadian sovereignty at the polar limits of nationhood." He also noted that it can be "a life-threatening, life-enhancing jobsite where a blended team of military and civilian workers faces daily pressures unavailable down south." He described the distance involved in the "extreme commute" to CFS Alert, the isolation, the clubs and strange competitions that alleviate the threat of boredom and loneliness, and "the heightened reality of a place where everyone is devoted to keeping everyone else's spirits up." A fixation on morale permeates station activities, as do "hypervigilance," redundancy, and preparedness.[6]

Alert Team received a warm reception. As of late July 2025, 128 other people were living at CFS Alert: forty military personnel, seventy-seven commercial contractors (most with Nasittuq Corporation, the resident prime contractor providing on-site support, program management, and administration for the maintenance and operation of the ninety buildings and extensive grounds that comprise CFS Alert[7]), two Environment and Climate Change Canada employees, one Global

Atmosphere Watch (GAW) lab contractor, [8] and eight student scientists. [9] CAF personnel and contractors never leave the station grounds, Spence explained, which meant that everyone was "very intrigued" by what 1 CRPG was doing.

Before the rest of the 1 CRPG team arrived at the station, Spence had already built a relationship with the dedicated group of graduate students from Université du Québec à Rimouski conducting wildlife monitoring and ecological research at the station, pursuant to a memorandum of understanding with 8 Wing Trenton Environmental Management. Their activities, dubbed Operations "Snowbirds" and "HareForce," focused on collecting data on the ecophysiology of migratory birds, the behavioural ecology of Northern mammals, the ecology of the polar desert ecosystem, biodiversity monitoring, and the management plans for species at risk and other listed species. Several members of their scientific team had been to Alert previously as part of a program of field activities that had launched in 2018.

During the days, the military and civilian personnel are busy playing their myriad roles to keep the station functioning. The Ranger team soon discovered that fire drills and polar bear alerts remind everyone of the imperative to remain alert. Delicious meals at the "Igloo Gardens" mess bring personnel together for hour-long periods during the day. The food

was always well prepared, always appreciated, and always good for morale. The kitchen consistently offered a range of options to accommodate different dietary needs, and the group was constantly amazed by what was offered: from steak or surf-and-turf dinners to couscous, duck, walleye, and trout. Mornings began with the comfort of a dedicated chef ready to make your eggs however you liked them. A twenty-five-foot-long salad bar offered pre-made salads as well as build-your-own options, with a generous choice of leafy greens, cut vegetables, toppings, and dressings. There was always something sweet to end the meal, such as ice cream, berry cobblers, or fudge. The mess hall offered a place to connect with the CFS Alert staff and students, to talk about the events of the day. One standing tradition/game that Spence thankfully warned everyone about during their first meal involved stacking empty water cups into someone else's empty glass if they forgot to lay it on its side. Nearly everyone fell victim to the growing towers game at one point or another.

In the evenings, the station's social life becomes fully apparent. The myriad recreational activities at the station are indicated by the long list of clubs and amenities to sustain morale, build cohesion, and mitigate boredom at an isolated post. The Arctic Club – the station bar – also attracted a large crowd most nights, with the two-drink limit ensuring that everyone was in good shape the next morning.

Preparations and a "Shake Out" Day

Spence's presence on the ground for the week prior to the rest of the team's arrival ensured a smooth transition and a strong relationship with the station staff. Although he had been stuck at the station for the first few days owing to inclement weather, he took stock of the equipment and supplies. Joint Task Force North in Yellowknife had sent up six ATVs (four CanAm and two Polaris) and three trailers, although one of the ATVs did not run and one of the trailers had a broken wheel (with no replacement). Tri-wall containers with food, fuel, and equipment were stored at the "worm farm" – the name given to a Quonset hut garage located at the station. Spence went out on the land to complete a route recce on 4 July and found the conditions to be icy and unpredictable.

Weather conditions were unusually cold this year, with the snow and ice staying much later than normal. Returning students and staff shared that no lead had been visible in the sea ice offshore until a little over a week ago, and there was still a lot of snow compared to previous Julys. In their experience, the summer weather was roughly a month behind schedule. Although the snow was melting rapidly, it lagged noticeably

behind what they considered a typical melt pattern. As a result, many of the black tracks leading out of Alert remained snow-covered, and the ground was saturated from the ongoing thaw. Creek crossings were high and often unpredictable, fluctuating significantly throughout the day as temperatures rose and meltwater increased in volume. It was fascinating to see how, from day to day, the snow melted, snow patches disappeared, and the landscape changed. High water levels, remaining snow, and saturated ground made travel more complicated. Compounding these challenges, temperatures consistently hovered between 0 and 4°C – ideal conditions for developing hypothermia. It was essential for everyone to carefully manage their layers of clothing and check in on one another.

The next few days were dedicated to planning and preparations. On the morning of 10 July, the team completed a short ride to the high ground overlooking the Dumbell Lakes (where they received a blast of cold air) and visited other spots close to the station on the small road network. Spence then distributed personal and group equipment to everyone:

- Sleep system (mummy bag rated to -9°C) and foam pad
- IFAK (Immediate First Aid Kit)
- MSR Jet Boil 1.7L (litres) with fuel

- Survival membrane straw
- Nalgene water bottles
- Hydration 3L pack
- Purification and electrolyte tablets
- Waterproof socks (for river crossings)
- Gaiters
- Harness
- Carabiners
- Survival reflective blanket (for emergency use only)
- Tents, rope, generators, binoculars/spotting scope/range finder (distributed across team members to share the weight)

While in Resolute, team members had already gotten their rucksacks (Terminator XL Eberlestock 100L), hiking poles, and helmets (or brought their own personal ones). Freeze-dried rations and snacks (nuts and protein bars) were distributed as needed in the days ahead.

With equipment sorted, the team met in the Wolf's Den (a former bar space at the station) to conduct a "map recce": a pre-mission planning activity to examine the terrain, identify potential routes, and assess prospective obstacles before physically venturing into the area. In developing the team members' mental map of the area, Spence emphasized caution and safety above all else. Given the long distance from any search and rescue assets, it was imperative to avoid injury or unnecessary damage to equipment. Based on the maps, the plan would have the team first head southwest to Mount Hilgard and then proceed to Mount Foster to the northwest, continuing on to Doidge Bay if time and conditions allowed. ATVs were not allowed inside Quttinirpaaq National Park, so the team would have to dismount before Clements Markham Inlet and complete the rest of the mission on foot. The goal, then, was to get as close to the park as possible by ATV to reduce the amount of trekking.

That afternoon, the team continued with map preparations, supplementing the printed maps with satellite imagery available on their cell phones and GPS devices. While it was difficult or impossible to discern specific terrain features such as rocks or the depth of rivers using these tools, the exercise helped to anticipate what lay ahead. The original plan had a 440 (Transport) Squadron Twin Otter in Alert supporting the team, but the aircraft had damaged a propeller in Cambridge Bay and could not fly. This scuttled the possibility of conducting a thorough air recce of the team's route both before and during the operation, as well as precluding any resupply in the field. Because there are no Indigenous residents of this part of the High Arctic and the CFS Alert personnel seldom leave the station perimeter, local

subject matter expertise and situational awareness about current conditions were very limited. In this context, "take a chance, shit your pants" became a humorous mantra for the team once they were on the land.

The following morning, plans to head to the garage to load the trailers and sort out food and gear were delayed when three polar bears were spotted on station grounds. Everyone was ordered to stay indoors. Spence, however, went out with one of the polar bear management teams to assess the risk (see the photo on page 126). The group then laid plans for the next day to head to the crash site of BOXTOP 22, approximately sixteen kilometres from the station "as the crow flies."

Operation BOXTOP is the biannual airlift to remote military sites in Greenland and Northern Canada that has been conducted since 1956. "Over the years, the regularity of *Boxtop* operations has led many of its participants to assume that the mission should be routine and free of hiccups," historians Daniel Heidt and Richard Goette observe. In practice, however, Canada's largest annual aerial Arctic operation is "no milk run" and provides "a prime opportunity to explore the historical and contemporary environmental limits of modern technology," with the operation offering "important operational experience opportunities for generations of RCAF air mobility personnel." They explain why BOXTOP "straddles the traditional distinction between domestic and expeditionary operations," given the long distances, limited infrastructure and communications, and difficult weather conditions in the High Arctic.[10]

On 30 October 1991 at approximately 16h40, flight twenty-two of Operation BOXTOP was on its final approach to the station from Thule Air Force Base (now Pituffik Space Base) in Greenland. As the CC-130 Hercules from 435 Transport and Rescue Squadron, loaded with 3,400 litres of diesel fuel, began its descent, the pilot flying lost sight of the runway, and the aircraft crashed approximately sixteen kilometres south of the station. The crew of another CC-130 Hercules, also bound

for Alert, saw the fires of the crash and identified the location of BOXTOP 22. The crash took the lives of five CAF members – four of whom died in the crash and one who perished before help arrived. The survivors, some soaked in diesel fuel, endured high winds and temperatures between -20°C and -30°C. Many sheltered in the tail section of the downed aircraft, but others were more exposed to the elements.

The boldest air disaster rescue mission ever undertaken by the CAF in the High Arctic ended up saving thirteen lives. Within a half hour of the rescue call, a Hercules carrying twelve search and rescue technicians from 440 Search and Rescue Squadron in Edmonton, Alberta, was in the air. It reached the crash site seven and a half hours later, but the SAR technicians could not descend due to the weather. Another Hercules from 413 Search and Rescue Squadron in Greenwood, Nova Scotia, soon joined the search. Meanwhile, SAR technicians formed a ground rescue team at Alert and set out overland for the crash site, guided through the darkness and horrendous weather conditions by a Hercules. The 413 Squadron team finally got a break in the weather, and six SAR technicians parachuted into the site more than thirty-two hours after the crash and began looking for survivors. More SAR technicians soon joined them. When the ground rescue team finally arrived – twenty-one hours after it had set out – twenty-six rescuers were on the ground. They warmed and treated the injured and prepared them for medical evacuation. A Twin Huey helicopter from Alert made three trips to bring the survivors back to the station.

Many groups from CFS Alert have visited the crash site over the years, but few have done so during the shoulder (transition) season or by ATV. The proposed route, heading slightly south around Alert Inlet and then east to the coast around Mann Bay before crossing the mouth of the Sheridan River, closely resembled the path the rescue teams took in 1991. Knowledgeable station staff, however, cautioned that this was a difficult time of year to navigate this particular terrain. The Sheridan River, with its cliffs and snow, would likely prove impassable except at its mouth. Team Alert would find out.

Team Alert's "shake out" day on 12 July proved surprisingly gruelling. After a short delay because Whitney cut his finger badly with a knife and

required attention from the station medic, the group formed up at 09h00. Spence would lead, followed by Leandra. Whitney, the least experienced ATV rider, would be in the middle, followed by Tanner (towing a heavy wagon of gas) and Travis (towing a wagon of other equipment). When they started out, the temperature hovered around zero, with a moderate wind. Meltwater and overflow had washed out the road around Alert Inlet in a few places, requiring a few modest detours through deep snow, mud, and water.

Crossing overland provided exposure to the varied terrain of northern Ellesmere. Hummocky terrain – lumps of soil pushed up by frost action, often uniformly spaced in large groups – made for a bumpy and unpredictable ride. Water crossings proved to be a continuous challenge due to the meltwater-induced changing water levels. Shoreline riding was dictated by the tides, opening or closing shoreline routes throughout the day. The team had difficulty accessing the coast southeast of the station as quickly as planned owing to the snow and runoff creeks. Deep, slushy snow proved a challenge for Spence as trailbreaker and Tanner and Travis towing heavy wagons, meaning frequent delays when ATVs became bogged down. The Rangers' expertise shone through in the various techniques used to get the machines unstuck: winching, digging, pushing, and using Maxtrax (a

sort of polymer recovery board that provides traction) to drive vehicles out.

The ambient temperature remained steady, but the wind made it increasingly uncomfortable as the day wore on. Gusts of more than 100 kilometres per hour reminded the group that, even in summer, layered clothing with a windbreaking outer shell, gloves, and warm hats are necessary. If it had been winter, the group would have found itself in whiteout conditions with a dangerous wind chill factor. (In the High Arctic desert, it is the winds that scour the snow from exposed areas and form large, hard snowdrifts in sheltered areas.) Even at this time of year, wind chill diminishes the thin boundary layer of air that insulates the body from heat loss, increasing the rate at which people become chilled.

The group eventually arrived at Mann Bay, which offered a beautiful vista of icebergs grounded along the beach. The juxtaposition of the brown, compressed sand hummocks, the white bergs, the dark blue lead of open ocean, the white ice cap on the horizon, and the baby blue sky inspired awe, but the lure of Cape Sheridan pulled the group onward. After reaching the Sheridan River, however, Spence ordered the team to turn around. Some brief recces yielded no obvious place to cross the fast-flowing water. With everyone tired, wet, and muddy, there was no benefit in trying to push on. The team followed the same route back, with changing conditions making some parts easier and others more

difficult. The gas wagon that Tanner was towing blew a tire. High winds and a stubborn tire (without the proper tools to remove it) meant that the team fuelled up and left the wagon and gas to recover later.

The river crossing near "The Narrows," just southeast of the station across Pullen Creek, proved a significant challenge – and demonstrated the Rangers' mastery of ATVing. This had been a somewhat tricky crossing in the morning. The flow of the river prevented any easy gauge of depth, so Travis stripped down, donned his waterproof SealSkinz socks, and waded across to ensure that it was passable. The water came up to about mid-shin level on the riders on their ATVs at that time. Around 18h00 in the evening, however, the river had widened and deepened significantly, and the velocity of flow was much greater. Surveying the scene, team members commented that it hardly looked like the same river as earlier.

Leandra went across on her ATV first, using the same track that the group had followed in the morning. She made it nearly to the opposite shore when she discovered that the outer bank had been undercut during the day. This created a deep channel, which carried her downstream. She had confidence that the wheels would touch the riverbed again eventually and floated downstream for about twenty

metres before regaining traction and driving ashore. Whitney and Travis watched, hugely impressed by her poise as she kept her cool and reached a safe outcome. Without the same level of experience, and with Travis pulling a heavy trailer, they also doubted that they would have similar success at that spot.

The search for an alternative crossing first took the group upriver, with Leandra surveying from one side and Tanner from the other. After a treacherous climb up the riverbank, Tanner managed a tricky crossing that also involved floating his machine. It was readily apparent that only an expert could traverse the river at that point. The team decided that the crossing that Leandra had done was less risky. While the rest of the group explored that option, Tanner drove his ATV out into the delta and, manoeuvring with daring and aplomb, found a safer route and came across to guide Whitney, Travis, and Spence. With adrenaline pumping, Whitney followed him very closely (as directed), going through water up to his knees while standing on the ATV. "The water splashed over my body and face like a wave," he recorded, leaving him soaked from head to toe. "But I never doubted that I would make it, given the expert guidance that I received." The others followed, celebrating their successful traverse once safely ashore.

With the entire team soaked and the temperature around freezing with a modest wind blowing, Spence worried about hypothermia. He ordered everyone back to the station as quickly as possible. Within an hour, the team had arrived back, soaked, covered in mud, and quite exhausted. After dropping the trailer at the garage, they returned to their rooms to shed their drenched clothing and slip into more comfortable attire. Over a drink at the bar, Leandra and Tanner explained that the evening river crossing was the trickiest that either of them had ever done. Spence admitted that, with all of his patrolling as a Ranger Instructor over the previous five years, this day had been one of the most dangerous and gruelling. He also noted that, had Leandra not had the valour to cross the river first, and Tanner not found the delta crossing that he did, he would have insisted that the team set up camp on the far side of the river and wait until conditions improved overnight with lower temperatures and lower meltwater levels in the waterways.

With weather forecasts suggesting rain, snow, and wind, Spence decided to delay Team Alert's main departure for a few days. After a late brunch at the station on Sunday morning, team members went out to the "worm farm" to unload the working trailer and remove a wheel from the third trailer to replace the flat one on the trailer that the group had abandoned on the tundra. Leandra had brought a personal tool kit, but no other tools had been sent up to recover or repair the ATVs or trailers.

To resolve the issue, Tanner connected with some CFS Alert mechanic staff and borrowed tools from the station and quarry site that would allow the group to carry out field repairs. They set out at 06h00 the next morning (14 July) to recover the trailer with the flat, travelling with light packs on their ATVs and only spare tires in the functioning trailer. Crossing Pullen Creek proved much easier in the morning, and with the group having more experience, they were all able to "float" their machines with confidence. Thirty-kilometre-per-hour winds and occasional gusts made for cool travelling, but it was much more comfortable than Saturday's trip. They swapped out the flat tire quickly and returned to the station without incident by 08h45. By the end of the afternoon, they had sorted out the remaining items for the trailers and organized rations for up to eleven days in the field. The next day, they did final preparations, bagging and tarping all of the items in the trailers, packing personal kit, and resting.

From Alert to Hilgard Bay

At 08h00, the Alert Team headed to the "worm farm" to retrieve the trailers, where they met up with two young scientists from the Université du Québec à Rimouski who would join them for the first hour of the trip. Spence led the group along the station road network to the southwest, past the Dumbell Lakes to Kirk Lake. Here, at the literal end of the road, the scientists parted company to conduct their research while the 1 CRPG team proceeded toward Mount Hilgard. They had no idea how long it would take but presumed that this would be an obvious destination at which they could decide whether to push west or head north toward the coast.

The terrain was anything but forgiving, however. The group tried to go east around Hilgard Lake, but the small river flowing south from it was infested with sharp, vertical rocks. So, too, was the shore, with steep cliffs on both sides preventing the group from going up and over the obstacles. The team crossed the water several times to try to find a feasible path, but the conditions posed too much of a threat to the machines. Deciding that this route (which had looked promising on the map) was impassable by ATV, they headed back and around the lake toward Hilgard Bay.

Ascending high ground toward the saltwater bay, which feeds directly into Black Cliffs Bay of the Arctic Ocean, yielded a beautiful vista overlooking the ice-covered water and the hills beyond. The bay seemed to be about two kilometres across, with mushy ice covered in meltwater, so there was no way to cross it. Going around, however,

would not be straightforward. The shoreline was steeply sloped right to the water and was covered in rocks. There was no crossing to the north, so the team had no option but to head south toward the head of the bay. It was about eight kilometres to an unnamed river, which formed what appeared to be a sandy or mucky delta. Getting there required careful planning and patience.

With the tide still high and no obvious route through the rocks that would avoid side-sloping the hill, the team decided to conduct a "foot recce" – to walk the terrain and assess its suitability. The Rangers discerned a path during the 1.5-kilometre walk to a small river crossing, where the group stopped for a short break. A thin shoreline of black pebble sand, still submerged by the tide and encroached on by ice immediately offshore, seemed to offer the best option. Pursuing that route meant waiting for the tide to go down and then trying it. Accordingly, the group returned to their ATVs, enjoyed some Atlin Mountain Coffee (which Leandra generously shared), and waited.

Leandra and Tanner provided some tips. The key to riding an ATV over the rocks on technical, sloped terrain was to shift into low gear and keep momentum. While sitting provides the lowest centre of gravity, and thus the most stability, adopting a kneeling position on a steep slope, with your uphill leg standing on the running board and your downhill leg on the seat, leaning forward with your body, puts weight on the uphill track. When the vehicle felt like it was about to tip, the key was to decrease the uphill angle or even ride downhill for a stretch. If tipping was unavoidable, it was imperative to quickly jump off the ATV on the uphill side and simply "let it go." They had seen bad things happen when people tried to "save" their machines and had them roll over them. Particularly in this rocky, steep terrain, the results of a mistake or poor judgement could be catastrophic. For the inexperienced members, it would be a case of watch, mimic, and learn.

After a short break, the team decided to pick its way down the sloped coastline as far as possible. The descent was technical in places, with the Rangers expertly selecting routes through dense, sharp rocks that seemed insurmountable. Traversing this broken ground required care in finding rocks that would provide a relatively level base for the tires, even if the space in between was higher or lower. To the uninitiated, it seemed impossible, yet the team made slow, steady progress and stopped at the river along the south shoreline, waiting for the tide to go out. The charts indicated that low tide would be at 18h30, which would leave a couple of hours of idleness. Three members of the team took a short hike up to a snow cave in a river valley, which did little to satiate the hunger to push on.

By 17h30, the team decided that the tide had withdrawn enough to produce sufficient shoreline to proceed. After another technical ride to the water, the shore itself proved tricky. The dark black sand was littered with large, sometimes sharp, rocks that forced the team back onto the slopes. Leandra and Tanner swapped in and out of the role of lead scout, seeking the best routes suited to the skill level of the group as a whole. While both could handle this terrain with relative comfort, they had to be mindful at all times of who they were leading. Their patience and guidance proved once again why the Rangers serve as guides and mentors in the North.

At the head of the bay, the conditions shifted dramatically. The ground changed from rock to mushy ground, then to gravel laced with many small, shallow streams flowing from a glacial-fed river. This required countless water crossings – mostly uneventful at this point but still requiring vigilance. With abundant freshwater, a spectacular view of the hills enclosing both sides of the bay, a river valley to the south, and clear sightlines to the ice-covered bay to the north, the team decided to make camp on a dry, open plain of flat gravel. Patches of purple saxifraga (saxifraga oppositifolia) added colour to an otherwise grey palette, with fully overcast conditions finally yielding to some blue sky.

With the site chosen, the team slipped into various roles. Whitney and Travis set up the three tents: one ultralight, one three-person expedition, and one four-person expedition. Leandra and Tanner ventured up a large hill on the western side of the bay to search out a potential route for tomorrow. Ideally, this would yield a western outlet over the hills that would provide ready access to valleys on the other side. Spence went out to collect driftwood, which, while sparse, fuelled a small campfire. The Jet Boils were soon producing water for the freeze-dried pouches of dinner and coffee, and most team members went to bed early after a long day of travel.

Throughout the night, each team member was responsible for a two-hour block of "predator watch." Whitney's slot was from 02h00–04h00. "Twenty-four-hour daylight and a consistent temperature around zero and very light wind make it quite pleasant," he noted. "The stillness and silence (apart from the repetitive drone of a team member's distinctive snoring) of this landscape is most striking." The occasional duck call in the far distance was the only other sound. The remnants of the driftwood fire kicked off a bit of heat, but the mild chill stood in sharp contrast to the hot, humid weather he had recently left in Ontario. After his shift, he had no trouble falling back to sleep for another two hours before waking up with the rest of the team at 06h00.

After a quick breakfast, the group tore down camp, repacked, and was off by 08h00. Their first effort was to head down the black sand shoreline (infested with rocks of varying sizes) toward the ocean, hugging the coast as much as possible. In practice, this meant regularly going up onto the adjacent hillside to avoid obstacles – particularly overhanging snow or large rocks. Ice cover on the water made it difficult to discern depths, so driving into the bay was not a safe option. Encountering obstacle after obstacle and increasingly steep, slippery slopes, the route proved less than ideal. There was no obvious path up

and over the hills, with all of the potential passes filled with either ice or jagged rocks. The guides decided to reverse course and, rather than following the bay toward its mouth, headed back to the river and the head of the bay to explore the river valley flowing south toward Mount Hilgard. On the map, various valleys in this direction offered a theoretical route through the high ground to the Wood River system.

The day soon became one of "proving the route" – navigating to see if a chosen path was actually feasible. The river was shouldered on the west by a long gravel plateau onto which a Twin Otter could land, Travis and Spence suggested. While glacial runoff streams cut into the otherwise flat pad and created bumps, the conditions were gentle until a gravel delta at the head of the bay involved a tricky river crossing. Travis and Tanner dropped their trailers to offer better mobility – and there was no point risking damage if the team failed to find a navigable route. From there, the river valley seemed to open, with steep slopes again dominating both sides. The team would seek a way through, with creeks and rivers along the west side offering some enticing options. The gravel yielded to rocks and muddy hummocks, and the terrain soon demanded more technical riding to negotiate.

Tanner and Leandra proved their elite skills, particularly in finding paths that the entire team could follow. The first attempt to climb steeply up a rocky hill in hopes of finding a passable valley involved some tricky driving, with large, jagged rocks threatening to either throw riders off their machines or puncture the tires. The group dismounted partway up the hill, realizing that there was no point in risking the machines (or their bodies) unless this was a possible route. Walking up the river about a kilometre, they observed that it was replete with jagged rocks and utterly impassable by ATV, particularly with the large trailers. They would have to look elsewhere.

Returning to their southward course down the river, the group crossed the river to find a broad valley with a series of braided streams flowing through gravel and rock flats. In the middle stood a lone bull muskox. He watched the humans intently, likely never having seen these creatures before. The team was committed to avoiding placing any "pressure" on the wildlife that it encountered, so everyone patiently waited in hopes that it would leave and allow them to continue on their path. The muskox was in no hurry, however, so the group decided to check out a strange feature carved out of the gravel hillside that looked from the front like an Egyptian pyramid with its left corner eroded. Ascending to high ground, they climbed to the top of a lookout with a strange crater-like circle carved out near the top. The Rangers pulled out their flag for some dramatic pictures.

By this point, the muskox had decided to wander upstream, so the team returned to its ATVs and resumed its search for a western route out of the valley. Soft, hummocky ground with well-spaced rocks strewn about enabled only limited progress before steep inclines and massive, densely jumbled rock blocked the pass. Tanner and Leandra scouted ahead with their machines but soon signalled for everyone else to stop and dismount. A dry river valley between the steep hills was filled with rocks that would be challenging to navigate, but the path might be worthwhile risking if there was an outlet to the west at the other end. The team walked up the valley for about two kilometres, encountering a labyrinth of massive rocks, stranded shelves of ice – and no end in sight. To traverse this with ATVs would require an intense effort of "road building" using the rocks, and there was still no guarantee that the effort would lead to a feasible pass that would advance the overall mission.

With little wind and a constant temperature around freezing, everyone's spirits remained high. They proceeded to Mount Hilgard, the highest feature in the immediate area, and climbed toward its summit. This offered a spectacular view of the surrounding landscape and confirmed that it would be futile to continue in this southerly direction seeking a route to the Patterson River, which lay straight to the north. This might have been a useful way to get to Fort Conger – but that was no longer the plan.

The team members proceeded back to their previous campsite and pitched their tents before retrying the route that they had attempted that morning. At low tide, they managed to cruise along the sandy coastline, darting around or climbing rocks as needed, and plunging a tire into the generally shallow water or onto the ice as needed. Much trickier were the steep ascents to resume the search for a pass over the hillside. Repeated attempts revealed more muddy or icy slopes beyond the capability of the ATVs to climb, as well as a boulder-strewn river valley with snow in the middle that Tanner determined to be overly dangerous.

The group continued its search, with the guides charting paths and others honing their skills by following their tracks and studying their body movements. This terrain was not for the faint of heart, but the Rangers proving that something could be done was enough for others to do the same.

Patience and persistence paid off when they found a creek outlet that led up and over the high ground to Bowery Inlet. Gravel and soft, hummocky ground made for an easy descent to the ice-choked water. There were cheers and an obvious sense of exhilaration that they had found a way out of the bay by ATV. The shoreline looked promising, but the team did not push far given the late hour, instead returning to the campsite at Hilgard Bay, eating dinner while watching a Peary caribou (Rangifer arcticus pearyi) grazing in the valley, and then going to sleep after an arduous day.

Hilgard to Victoria Lake

The team awoke on the morning of 18 July to light snow and chilly temperatures. After coffee and a quick breakfast, they packed camp and departed on their ATVs at 07h00. Retracing their track from the night before, they made quick progress along Hilgard Bay to Bowery Inlet. Deep crevices and rock gardens blocked parts of the shoreline around the inlet, encouraging the group to seek a higher route. Leandra and Spence soon found a rocky pass to Egerton Lake, just west of Bowery, which required a steep climb and some technical manoeuvres. The terrain around the lake was the most treacherous that they had sought to traverse, with dense, sharp rocks of various sizes and shapes dominating the sloping ground. Ideally, the group could have stuck to the high ground to go around the lake, but steep cliffs to the north and west made that impossible. There was no choice but to descend to the shoreline, assess the state of the ice, and then pick a route around the lake. This would take an expert eye, nerves of steel, and extreme caution.

After several attempts, Spence, Tanner, and Leandra managed to "weasel" (Spence's favourite verb) a path down, up, and down toward the lake, weaving through knife-like rocks sticking out of the ground and finding ways to balance their machines as they surmounted other obstacles. They would frequently jump off their machines and walk over the ground, carefully assessing obstacles and discussing the safest path. "I could not see any path whatsoever through the rocky chaos, but they made one appear," Whitney observed. Fully attentive to Leandra's every motion, he followed her tightly, white-knuckling his way through the treacherous terrain, incredulous that someone could actually negotiate this landscape on an ATV.

Not all of the dangerous "rock gardens" could be avoided, however, and one along the eastern side of Egerton Lake proved particularly memorable. The slope was intense, covered in uneven, jagged rock that threatened to tear tires or launch a rider to serious injury. After a thorough recce, Tanner and Leandra said that it could be done, but only after a bit of "road building": removing some pernicious rocks, filling in holes, and levelling a few sections. The actual descent required careful balance and weight distribution, just enough throttle to overcome one obstacle before tackling the next one, and the exploitation of every centimetre of ground clearance to keep the belly of the ATV out of trouble. The Ranger guides not only demonstrated exceptional levels of control navigating their own machines through this technical section, but they also carefully guided and coached everyone else down the path without incident. Having done so, the team took a short break before Tanner and Spence recced a path through the rocks ahead while Travis and Leandra tested the thickness of the lake ice.

With the shoreline covered in snow and the lake ice too rotten to cross on ATV, the team continued to climb steep, technical lines as it pushed across the rock-strewn slopes around Egerton Lake. The tough slogging paid off when, to the north, a beautiful valley opened up before them. Although the skies remained overcast, colours burst from the landscape: rusty and yellow ochre-coloured hues in vegetated sections, and a vibrant deep crimson of lichens alongside a small creek. Soft, wet tundra (which did, at one point, require extracting Tanner's ATV from the mud using a winch) soon yielded to gravel hills. To the east, they could see the ice-covered waters of Black Cliffs Bay, with various valleys and plateaus lying to the north.

To reach the Wood River, the group had to navigate a challenging array of landscapes. From a distance, the route often appeared straightforward, but as they approached, the terrain revealed relentless hidden obstacles – large rocks and uneven ground that made travel slow and unpredictable. They crossed wetlands littered with standing rocks

camouflaged beneath thick moss and mud, forcing sudden stops when machines hit these rocks with their skid plates, despite being aware and careful. Gravel slopes looked promising from afar but were deceptive, riddled with veins of deep slits carved by melting snow. These narrow, sharp-cut trenches were especially dangerous. They were difficult to spot ahead, and hitting one at speed could easily throw a rider from their machine or cause serious damage, snapping axles, shattering CV (Constant Velocity) joints, or even cracking a chassis in an instant. It felt like there was no reprieve, each type of terrain demanding respect and caution. The hummocks proved slippery when wet, and slow driving was required when they were dry, as they made for a jarring, uncomfortable ride.

The team progressed steadily, delayed by the occasional route that seemed promising but led to impassable snow or rock, or extricating machines from the mud. After one particularly technical steep ascent up a sheer gravel slope, with a sharp left turn at the top to prevent the machine from going over a cliff on the other side, they spotted a stranded fuel drum on a gravel ledge in a canyon in the distance. Their curiosity piqued by the first evidence of any human footprint in the region, they continued along a flat gravel plateau and discovered another four drums on the ground. Having previously commented that this expanse “would make a good airstrip,” did this mark where a helicopter or fixed-wing aircraft had landed in the past? Was this a

cache site for one of the previous Ranger patrols that had passed through the area from Ward Hunt Island to Alert? The sighting of two Peary caribou with large antlers, feeding on the lichen and purple saxifrage with their hair radiating an almost luminous white glow around them, soon pulled our attention back to the regular denizens of this High Arctic world.

Across the Wood River, the landscape became more and more rocky, with waterways becoming fields of pointy rocks. At 17h00, Team Alert arrived at Victoria Lake, just south of Patterson Bay. Heading westward, they could not get around the south shore because the path was blocked by ice and the route around was dominated by steep, rocky ground. Instead, the team backtracked and tried another valley to the west that looked promising on the map and would have taken them closer to Mount Patterson. After picking their way through about 500 metres of dense, sharp rocks that showed no signs of abating, Spence ordered everyone to stop and dismount. “I cannot believe that the ATVs survived these conditions before we turned around,” Whitney wrote in his diary. It was “punishing to body and machine.” They trekked another half kilometre on foot through the hazardous rock garden, with the risk of a misplaced step leading to a sprained or snapped ankle, and any fall

likely to result in the sharp rocks puncturing skin or breaking bone. Arriving at a high point overlooking a valley revealed that the treacherous terrain continued down a steep slope beyond the limits of an ATV – or a person trying to hike it. In short, another prospective route to the west had proven impassable. By now, the physical strain was taking its toll on some members, with one complaining of a sore back, another harbouring a tender rib from a previous injury that the endless jostling on their ATV had reaggravated, and another battling a persistent cold. It was time to stop for the night.

The team returned to high ground just south of Victoria Lake to set up camp. With everyone knowing their place in camp routine, the tents went up quickly and water was boiled, freeze-dried food consumed, and coffee enjoyed. With a creek burbling immediately in front of the rocky campsite, the team members reflected on their day. Spence, who had led for most of the day, said that he "puckered" a few times because he was so scared and was glad he could turn things over to Leandra and Tanner to navigate when things got too hairy. "I feel like we got our asses kicked today," Tanner shared. The team had covered significant ground, but "not enough" to get them anywhere close to their original targets. And while "we had dangerously dared" at the end of the afternoon to try and navigate a very rocky valley – a "take a chance, shit your pants" moment – the team had not "proven" a route as systematically as they had in the valley south of Hilgard Bay the day before. While morale was not as high as previous days, everyone took solace in the fact that they were safe and nothing had been damaged. Spence decided that there was no need for predator watch this far inland, where the team had seen no signs of polar bears or wolves whatsoever. No one complained, and all welcomed the announcement that they would have a chance to sleep in.

Team Alert now faced new considerations when deciding how far and how hard to push. No longer close to the station, the risk of human injury or breaking a machine was amplified. Without spare tires for the ATVs and with no prospect of air resupply from 440 Sqn or medical evacuation in case of emergency, the risk calculus had increased dramatically. (Travis estimated that it would take three days to walk back to Alert from Victoria Lake.) Safety had to remain paramount. Furthermore, the absence of air reconnaissance as originally planned meant that the team was spending a lot of time and energy on exploring impassable routes, and Travis and Tanner had "burned lots of fuel trying to blast their ATVs and trailers through the boggy hummocks." The vehicles had "taken a pounding," and it was incredible that none of the tires were flat in light of the unforgiving terrain. Accordingly, Travis now

revised the goal: he wanted to get to the Patterson River and "get eyes on" Mount Patterson.

At about 02h00 on the morning of Saturday, 19 July, rain began to fall on the camp. Six hours later, when the team woke up, it was still raining, with intermittent snow – not heavy, but consistent. Given that Ellesmere Island is a polar desert, with some places only receiving seventy millimetres of precipitation annually on average, this came as a surprise. With everyone a bit quieter than usual over morning coffee and breakfast, team members grappled with a mix of emotions. They were disappointed by the relentlessly challenging terrain, requiring that they fight for every metre forward. They also realized that they would not obtain their goal of putting eyes on Mount Foster – from either side of Clements Markham Inlet – and would have to come to terms with another objective. The rain turned to snow by 09h00, and a blanket of wet snow soon covered the ground and the tents. Although the temperature hovered around freezing, the air felt chilly owing to the moisture. By 10h30, Travis and Spence decided to call it a "weather day." The danger of hypothermia would be heightened in these wet, cool conditions, and the snow on the ground would conceal dangerous

obstacles. Accordingly, the team would hold in place until the weather improved.

After covering their equipment outside from the elements, the five members of Team Alert all gathered in Travis's small survival tent. It was a cramped space, with the rocky ground jabbing through the sleeping mats upon which the group reposed, but the Jet Boil and body heat soon brought it up to a comfortable temperature. With the snow falling outside for most of the day, people dried their gloves and jackets, ate snacks, drank coffee, and began to tell stories. The conversations and friendly debates continued straight through until dinner at 18h00, covering a wide range of Northern, political, and sundry popular culture topics. Camping in the snow was not what many of the team members had in mind when they thought of a summer patrol on Ellesmere Island, but there was no fighting Mother Nature.

Notes

[1] David R. Gray, *Alert, Beyond the Inuit Lands: The Story of Canadian Forces Station Alert* (Ottawa: Borealis, 1997), 15–16.

[2] Jerry Proc, "CFS Alert," The Web Pages of Jerry Proc, last modified 21 April 2025, https://www.jproc.ca/rrp/alert.html.

[3] Beth Brown, "A Link to the North," *Esprit de Corps*, 18 October 2016, https://www.espritdecorps.ca/a-link-to-the-north/2016/10/18/a-link-to-the-north.
[4] Royal Canadian Air Force, "Canadian Forces Station Alert," Government of Canada, last modified 21 April 2022, https://www.canada.ca/en/air-force/corporate/alert.html.
[5] This shift of command also included Fort Eureka, located approximately 400 kilometres to the south, and all HADCS sites, minus the equipment, on Ellesmere Island. The transfer did not include signals intelligence personnel and equipment that directly support the SIGINT mission. Although CFS Alert shares the same mandate as CFS Leitrim Detachments in Gander and Masset, it is not considered CFS Leitrim Detachment Alert. CFIOG's responsibility in Alert is solely to manage the SIGINT personnel and equipment. Major Tanya L. Tebbutt, "CFS Alert Future Capability Recommendations," Canadian Forces College JCSP 47 Service Paper, 2020-2021, https://www.cfc.forces.gc.ca/259/290/23/192/Tebbutt.pdf.
[6] John Allemang, "Welcome to CFS Alert," *The Globe and Mail*, 21 May 2015, https://www.theglobeandmail.com/news/national/how-to-survive-at-the-very-edge-of-nowhere-life-at-canadian-forces-station-alert/article24486577/.
[7] "Maintaining a 5500-gravel runway, several kilometres of roads, a quarry operation, landfills, fuel farms, scientific labs, and antenna farms is just a small portion of the valuable work done by the Nasittuq team at Ellesmere Island," the website touts. The company also provides accommodation and food services, water and wastewater management, solid and hazardous waste handling, and vehicle maintenance. Inuit participation is important to Nasittuq's operations, which seek to combine traditional Inuit knowledge with logistical expertise and maintenance training. Nasittuq, "Ellesmere Island Commercial Support," https://www.nasittuq.com/projects/ellesmere-island-commercial-support/. In January 2021, Nasittuq reorganized its corporate structure to become an Inuit-controlled corporation registered as an Inuit Firm on the Nunavut Inuit Firm Registry (IFR #1043) and the Nunatsiavut Government Business Directory (#201). Its shareholders include Nunasi Corporation, Pan-Arctic Inuit Logistics (PAIL), and ATCO Frontec. Nunasi Corporation holds 51% voting rights, and ATCO Frontec holds 49% voting rights, with a 51% equity interest held by PAIL and a 49% equity interest held by ATCO Frontec. Nasittuq, "About Us," https://www.nasittuq.com/about-us/.
[8] Environment and Climate Change Canada operates two separate programs at CFS Alert, maintained by four personnel. The Alert Weather Station, or Upper Air Station, continues to launch weather balloons twice daily – as it has done continuously since 1950 – to generate data for use in forecasting and climatological studies. The Global Atmosphere Watch began observing to study the long-term effects of pollution on the atmospheric environment in 1975. Secondary programs include ozone sampling, climate data recording, air quality measurements, snow and ice measurements, precipitation collection, geomagnetic field observations, seismic and tidal monitoring, and geodetic positioning.

[9] Some data in this final section is derived from the CFS Alert in Brief, updated 22 July 2025.

[10] Daniel Heidt and Richard Goette, "'This Is No 'Milk Run'': Operation *Boxtop*, 1956-2015," in *Canadian Arctic Operations, 1941-2015: Lessons Learned, Lost and Relearned*, ed. Adam Lajeunesse and P. Whitney Lackenbauer (Fredericton: Gregg Centre for the Study of War and Society, 2017), 270–306. For Operation BOXTOP, RCAF cargo aircraft (typically CC-130J Hercules and the CC-177 Globemaster III), crewed by RCAF personnel primarily from 8 Wing Trenton in Ontario, resupply CFS Alert during two main supply periods when they conduct flights around the clock over a two-week period to bring thousands of pounds of fuel and supplies to the station. Typically, they concentrate on delivering fuel in the spring (Jet Propellant 8/JP-8 for aircraft, diesel fuel (DF-8 2) for heating, and ultra-low-sulfur diesel (ULSD) for vehicles) and dry goods in the fall (with additional resupply periods added if needed). Canadian Armed Forces, Current Operations List, "Operation BOXTOP," Government of Canada, last modified 10 October 2018, https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-boxtop.html. The modern Operation BOXTOP involves approximately fifty augmentees at CFS Alert and 100 at Thule Air Base/Pituffik Space Base, with personnel drawn from various trades, including pilots, air combat systems operators (formerly navigators), flight engineers, load masters, maintenance technicians, logistics, and traffic technicians in mobile air movement sections (MAMS), as well as other trades in support roles. The fall – or dry – Operation BOXTOP is focused on ferrying the supplies shipped by barge from the Port of Montreal to Pituffik Space Base early in the summer and usually consists of construction materials, dry goods, spare parts for equipment and machinery, and a fuel farm top-up. Major S.G. Marshall, "Finding Efficiencies in Operation BOXTOP," Canadian Forces College JCSP 42 Master of Defence Studies (2016), 2, https://www.cfc.forces.gc.ca/259/290/318/286/marshall.pdf.


PRINCE PATRICK ISLAND
Canada
Mould Bay

7

The Return to Prince Patrick: The Mould Bay Team

Prince Patrick Island, about 500 miles west of Resolute Bay, is the westernmost of Canada's High Arctic islands – a typical polar semi-desert with no permanent inhabitants. The objective of the patrol was straightforward: to conduct area and point reconnaissance of specific infrastructure (namely the airstrips at Mould Bay, Intrepid Bay, and Satellite Bay) and proposed sites for Operation CROSSBOW on the island. The Mould Bay Team would do so by conducting a dismounted patrol, which would involve leaving from Mould Bay and, over seven legs travelling in a northeasterly direction, reaching the airstrip at Satellite Bay. The team members, all current or former members of the Princess Patricia's Canadian Light Infantry (PPCLI) regiment, noted with interest that Prince Arthur William Patrick (Duke of Connaught), for whom the island is named, was the governor general of Canada from 1911–1916 – and was the father of their namesake, Princess Patricia.

Around 13h00, the decision was made to call off flying out until the next day. On 9 July, the patrol members were at the hangar in Resolute, ready to load kit onto the Twin Otter (CC-138) by 08h30. This consisted of their rucksack, follow-on kit (a kit bag or another ruck filled with gear that could be used to replace soiled or non-serviceable gear), and six days of rations in addition to the five days that they had already loaded into their rucksack. The first flight departed at 09h00 carrying four members of the team: WO Mike Albright, MCpl Tom Harvey, MCpl Preston Pitawanakwat, and Pte Willem Rijpstra. "To say I was excited simply wouldn't capture it," WO Albright recalled. "I haven't felt this kind of excitement since going to Afghanistan in 2013."

Over the next three-and-a-half hours, the skies were a mix of cloud, concealing most of the topography below. As the Twin Otter started to descend over Melville Island and the cloud cover cleared enough to see the ground below, Albright's initial glance led him to assume that he was looking at Prince Patrick Island. "My thoughts at first were 'Shit, that terrain is way different than what it appeared to be on SAT [satellite] imagery," he recounted, "and thought we were going to be in for a completely different adventure and could be ill-prepared. Luckily, we

continued to fly over and not long after we made our approach to Mould Bay."

On approach, they saw a remote airstrip bustling with activity. A Dash-7 and Twin Otter from Air Tindi and a Dornier from Summit Air were on site to support a Clifton Engineering Corp. remediation project in Satellite Bay on the north end of the island (where a tank leak had spilled fuel oil onto the ground in 2010).[1] Once wheels were down and they stepped out of the plane, WO Albright's first impression was that "this is the land before time." The uninhabited island also seemed "surprisingly lush with local flora, which made sense given that the weather station and airstrip were basically at the mouth of a small river delta low in a valley." This location also meant that, at this time of the year, it was "very wet and muddy with the melt from the high features ultimately making its way down there." Looking out to the ocean, Mould Bay proper remained ice-locked, and high tides ran up to within five metres of the weather station at the airstrip.

After the gear was unloaded and the Twin Otter was fuelled and gone, WO Albright met with the camp manager from Clifton Engineering Corp. to inquire about where they should set up their tents to avoid disrupting camp operations. They discussed how remediation operations at Satellite Bay had been going, and Albright soon had an explanation for all of the hustle and bustle when they arrived: the camp had just received its first resupply, almost seven days behind schedule. Site access and logistics were complicated, to say the least, given volume and weight restrictions, uncertain flying conditions, and unpredictable

weather. Resupply delays were commonplace. Little did Albright know at the time how much this foreshadowed what his patrol would experience in the days ahead.

Once the tents were set up near the weather station to avoid the muddy conditions below, the next thing to do was explore the station itself. As the patrol members looked inside each abandoned building, they found the name "Mould Bay" particularly appropriate. It was frozen in time. Posters on the walls promoted movies released in the 1990s, when staff still lived there full-time. Calendars from 1997 hanging on the walls indicated the year when everyone apparently got up and left everything in a strange stasis. The state of the station bar, the machinery in the sheds, and the abundance of spare parts for not only vehicles but for the entire station (including the hydrogen generator) all spoke to the suddenness with which the weather station operations had shut down. The hum of private sector activity at the site offered a striking contrast to the dilapidated buildings of the former station, abandoned on the shores of Mould Bay.

Mould Bay: From Weather Station to "Toxic Ghost Town"

Historically icebound for the entire year, few Europeans or North Americans had set foot on Prince Patrick Island prior to 1948. Lieutenant George Mecham of Captain Francis Leopold M'Clintock's 1853 expedition had touched the southwestern point and "explored" the island by spyglass, noting the "almost insurmountable" pack ice surrounding the flat, dreary, barren landscape, and M'Clintock himself

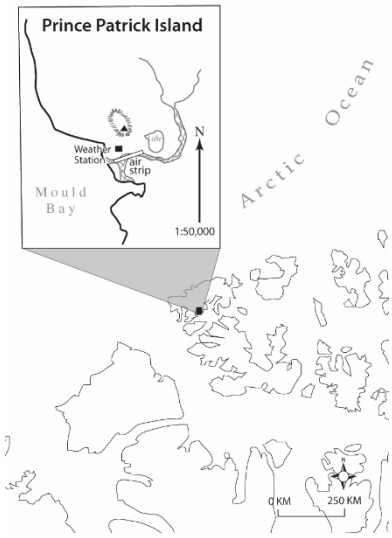
had mapped the western coast by sledge.[2] Vilhjalmur Stefansson corrected and completed the mapping of the island sixty-two years later – a challenge, given the snow and ice blanketing "the gentle seaward slope of the land, obscuring the actual shoreline, and foggy weather obscuring everything else."[3] Sir Hubert Wilkins navigated a Consolidated PBY flying boat that landed on the southeastern side of Prince Patrick while searching for six lost Russian aviators in 1937, but he did not remain there for long during his last major Arctic adventure.[4] For all intents and purposes, this little-explored territory remained one of the most inaccessible corners of the dominion through the Second World War.

After the decision was made to locate a Joint Arctic Weather Station on this uninhabited island in the extreme Northwest of Canada, aerial reconnaissance of potential sites began on 23 March 1948. Crews tried to examine Green Bay, but turbulence prevented them from completing a careful survey, and they proceeded down the west side of Mould Bay without success. Willie Knutsen, selected by the United States Weather Bureau (USWB) to serve as the executive officer at the Prince Patrick Island station, joined the search on 30 March. Staging at Resolute, they took off in a C-47 cargo plane on ski-wheels with a C-54 escort, passing over "the full length of rugged, rumpled Melville Island."[5] Knutsen recalled the anticipation surrounding the first landing:

> We flew over Mould Bay, found a frozen lake that looked land-able, and made our historic approach. Our stomachs were in knots as we wondered if the snow would be hiding boulders. The ground was coming up fast. We hit the lake with a hard bump, and then a series of more rapid, jarring bumps seemed to squash my insides, and I was afraid my teeth would lose their fillings. The pounding seemed to go on forever. We made the landing, of course, but it was a lousy place to land! And so we five Americans and two Canadians were the first men to land on Prince Patrick Island. I took unapologetic advantage of my position as mission leader, and was the first to step onto the island.[6]

Knutsen promptly went to high ground to survey for a landing field. Before he could pass along his report, the aircraft with Hubbard onboard decided to land. It touched down hard, kicking up a cloud of snow. The crew and passengers emerged unscathed, but the landing damaged the nose wheel. The pilot shut down the engines and quickly removed the fuel lines before they froze and cracked – something that the pilot of the previous plane forgot to do, with inevitable results. Knutsen and the crew spent the night in tents, awaiting the arrival of a

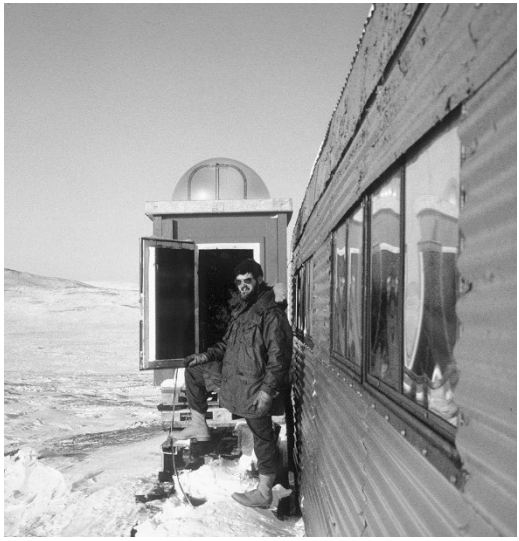
new oil hose for the C-47 the next day. Knutsen used the opportunity to examine the area around the lake, which would have been satisfactory except for the heavy snow accumulation, which he noted would have plagued flight operations on an ongoing basis.



A third reconnaissance mission on 5 April identified a suitable site on the east side of Mould Bay, about fifteen miles from Crozier Channel. The sea ice could accommodate a C-54 aircraft landing on wheels, and "the adjacent land areas were excellent for weather station construction, consisting of hard gravel ridges bounding a broad low valley with extensive delta at the mouth."[7] Three men soon established a temporary camp, then opened radio communications that same evening with Resolute and Isachsen. The airstrip ended nearly a mile from the site selected for the station, so the men urgently requested a Caterpillar tractor and sled so they could haul cargo and improve a taxiway to get aircraft closer to the campsite.[8] It arrived in dramatic fashion, with the plane slamming to a stop in deep snow, breaking the chains holding the bulldozer and sending the machine crashing into the cockpit wall. The crew again emerged uninjured but shaken. "After the plane was gone, and there were only three of us left there, that wonderful arctic silence descended on us," Knutsen recalled. "The awesome stillness and the knowledge that we might as well be on the moon did not disturb [my arctic mates]. In fact, they said they were having a ball!"[9] They set to work improving the landing strip on the ice by pulling a large wooden beam across the runway to scrape off the loose snow. "Then began the 'Prince Patrick Airlift,'" the executive officer recounted. "A process of C-54's, buttressed with one C-82 ("Flying Boxcar"), poured supplies into Prince Patrick so fast we could hardly keep them classified and the perishables and instruments under cover." The formal establishment at Mould Bay had identical numbers to Isachsen: three Canadians, three Americans, and an additional US mechanic to assist temporarily with building an airstrip. The seven men quickly built a Jamesway hut to store their inventory of essential supplies.[10] Thirty-two flights carried 170 tons of supplies into Mould Bay by 25 April without incident.[11] By June, the joint Canadian-American team carried on a full weather-observing

program at Mould Bay – an arrangement that continued until 1971, when Canada took over all of the responsibilities at the station.[12]

The station operated for another quarter century as part of the High Arctic Weather Station (HAWS) network. Flying operations, however, could still be dangerous. On 26 April 1996, a helicopter with a seasoned pilot that had been chartered by a polar research company to retrieve sea buoys and move an ice camp approximately three miles northwest of the station crashed. When the crew set out to fly to Inuvik, the automated weather observation system (AWOS) at Mould Bay reported the sky condition as clear below 10,000 feet with visibility greater than nine statute miles. Weather station personnel estimated the sky condition to be 500 to 1,000 feet overcast and the visibility to be one to four miles, and the flight crew on a Twin Otter that had departed Mould Bay for Mercy Bay earlier that morning had reported that, on departure, the sky condition was 500 feet overcast and the visibility was one to four miles. These were marginal VFR (visual flight rules) weather conditions in fog and light snow. The obvious differences between the weather information provided by eyewitnesses and that provided by the AWOS led investigators to conclude that the automatic system on site was not accurately recording actual weather conditions at the time of the accident.[13]



In early 1997, as part of budget cuts, the Canadian Atmospheric and Environmental Services (AES) decided to close the Mould Bay weather station and terminate the geomagnetic and seismology programs of the Mould Bay Geophysical Observatory.[14] Staff were flown out, leaving everything but their personal belongings. While reports suggest that Environment Canada had hoped to reopen the site at some point, its condition quickly deteriorated, and by 2002, the department decided to decommission it permanently. “A dark, dank two-story complex, nearly new when Environment Canada walked away in 1997, has become a giant incubator for mould,” a newspaper story observed a decade later,

with one scientist characterizing it as "basically a toxic ghost town."[15] The site is contaminated with hydrocarbons, heavy metals, and polychlorinated bi-phenyls (PCBs), amongst other contaminants. Furthermore, the abandoned station's buildings contain hazardous materials like asbestos and lead paint.

In the late 2010s, the Government of Canada put out a contract to reconstruct the causeway over Station Creek that connects the station to an airstrip, then conduct an environmental assessment and remediate the site. "The greatest challenges were related to site access and logistics for the construction equipment and machinery required to complete the work (culverts, excavator, floatable dams, vehicles, etc.)," an article in the *Canadian Consulting Engineer* recounted. "Six different types of aircraft, including a Lockheed C-130 Hercules, were used to transport equipment to the site." [16] The civilian company Englobe built the Mould Bay causeway in summer 2020 in what appears to have been a rushed project. Detailed engineering and client approval of shop drawings were completed in only eleven days. The causeway was built while the ground was still frozen. A modular panel bridge measuring 27.4 by 3.4 metres was put in place in nine days (five days had been lost to extreme weather) so that workers could ferry heavy equipment across. The causeway was built primarily of crushed shale placed on top of tidal silt, with the island in the middle of the causeway appearing to be artificially reinforced with a ring of fifty-gallon drums filled with crushed shale and silt, with crushed shale placed on top.

Part of the mission for the Mould Bay Team was to determine the state of the infrastructure at the site, including the capacity of the airstrip to support expanded military operations. At first glance, the causeway appeared to be in serviceable condition. The road, verge, culverts, and abutments appeared in good condition. Team members spoke with a wildlife monitor named William, who has been in and around Mould Bay for the past ten years. He stated that the area has changed drastically since he first arrived. The bay now partially thaws every summer, new plant life has been observed, and the melting

permafrost has pushed curious things out of the ground, such as sticks and fossils. The team members would keep their eyes open.

Assembling the Team and Contingency Planning

WO Albright called the Command Post in Resolute the following morning and learned that the second half of the team would be flown in that afternoon because weather reports indicated a favourable window. This was welcome news, and those already on the ground decided to conduct their initial recce of the Mould Bay airstrip. Although not systematically maintained, the runway seemed to be in very decent shape. Clifton Engineering Corp. used two noticeable terrain features – one about 500 feet tall and located approximately 1.5 kilometres to the east, and another 750 feet tall across the bay – to report ceilings to planes flying to the location. In the preliminary gap analysis of Sgt Andrew Windsor, a member of the Mould Bay Team who had yet to arrive, the airstrip seemed viable for expanded future operations, but any formal recommendation would have to await a more fulsome survey by 8 Wing Trenton.

Albright also liaised with the Clifton Engineering Corp. camp manager to discuss the possibility of having their Twin Otter pilots throw a "fast bag" in case 440 Squadron was unable to provide aerial resupply to the CAF. This would be timed to coincide with their planned flights from Satellite Bay to Mould Bay. The Clifton staff were very keen to help, but the Air Tindi crew explained that they were unable to drop anything

from their doors, and they were not cleared to drop packages from their windows. Accordingly, the military team would be dependent upon 440 Sqn for its resupply, and the members in place conducted a local area recce to assess if the route they had chosen by map recce actually appeared to be the right choice on the ground.

That afternoon, the weather turned for the worse, feeding worries that the Twin Otter carrying the rest of the team might have to turn around and return to Resolute. Twenty minutes before its expected arrival, heavy snow began to fall. Undaunted, the RCAF pilots landed in these deteriorating conditions with the remainder of the patrol: Sgt Andrew Windsor, Pte Andrew Blakie, Pte Connor Minchin, and Pte Hunter Way. The whiteout conditions meant that the team, from its tent lines about 400 metres back from the airstrip, could not see the yellow Twin Otter taxiing on the runway until the pilots turned its lights on. Confidently taking off in these low-visibility conditions was an impressive sight to see.

After the newly arrived members settled into their tents, WO Albright provided an area brief, and they explored the site. But the weather raised serious questions. What was the likelihood that 440 Sqn would be delayed in delivering the necessary fuel for future operations? Albright

again met with Clifton staff to gauge their estimate for getting fuel in location, and they indicated that they no longer expected to receive it as originally planned owing to their poor luck with the weather. The patrol commander conveyed this information to the Command Post in Resolute during his daily situation report (DSR) that evening. If delays were likely in getting fuel from Clifton, Albright recommended contracting a civilian operator to bring CAF fuel to the site as soon as possible, which would allow for a resupply to happen before 17 July. "Don't worry, we have confidence in the plan," Albright was told. His skepticism, however, proved warranted.

On the morning of 11 July, the team members did the final packing of their gear. Each would carry seventy to one hundred pounds on their back. They also prepared three "fast bags," with two days of supplies for eight people, that could be left at an austere airstrip if door bundles could not be used. Because of deep-seated concerns that the team would face delays in receiving its resupply en route to Satellite Bay, each member was ordered to pack an additional two days' worth of food. They hoped that this would buy them more time in the field to withstand weather delays, having little confidence that the resupply plan would actually go according to schedule, given the week-long delay that Clifton had encountered with fuel.

The rest of the day involved quiet preparations and relaxation in anticipation of starting the dismounted patrol the next day. Clifton had food arrive on a charter, and the team offered its help in unloading it. The group also stopped at a gravesite outside of the Mould Bay weather station, which was of an Inuit child named Zipporah (aged five when they passed, according to the cross). They paused for a moment of silence to show their respect to the area and to the island itself. The group also discussed the possibility of conducting an area recce of a

proposed Op CROSSBOW site, which was an estimated four- or five-day return trip, rather than embarking on the 160-kilometre trip to Satellite Bay. WO Albright decided to continue with the original patrol route because they were unable to conduct an in-depth satellite imagery recce of the unknown route. He remained confident that their time would be best spent trying to reach the most isolated spot en route: Intrepid Bay. (Terrain complexities at the other location ultimately vindicated his choice.)

Stepping off for Satellite Bay

The patrol began early on 12 July, with winds gusting from the northwest at up to eighty kilometres per hour, a mix of rain and snow, and temperatures hovering around 0°C. They started off west of the river in hopes that they would be able to stay on high features and avoid elevation change. This did not pan out as hoped, owing partly to the faulty terrain description that he had found and inaccuracies with the DND-produced maps. Frequent elevation changes of between 100 and 150 metres sapped energy, with the low ground tending to be muddy and tedious. The temperature also affected morale. "In my career," Albright noted, "although personnel are not very tired on the first day, they are tough when weather is terrible because most people are not mentally prepared for it." These challenges meant that the group only made it half as far as they had planned. Nevertheless, they set up tents and got some much-needed rest.

At the end of the day, Albright reflected on the value of having MCpl Tom Harvey attached to a section of infantry to boost morale and showcase perseverance. “Since he was once a Regular Force member, with a very successful military career as the brigade master sniper in 1st Brigade and a Ranger Instructor before the COVID era, he knew the lingo, the right things to say at the right times (no matter how he felt), and continued to ensure the troops’ morale was kept higher.” The fact that MCpl Harvey wore the Ranger red hoodie also made him less intimidating to the young soldiers. He and Albright laughed together that night, when the wind was howling and whipping the sides of the tent. “Mike,” Tom exclaimed, “I don’t think any other Ranger would have agreed to walk in this shit.”

The team awoke, still a bit stiff from the gruelling day before, to about an inch of snow on the ground. They packed up and were on the move

by 09h00, with the goal of making the first proposed camp location north of Mould Bay. Although the temperature had dropped, the wind had eased, and the team found more high ground that they could traverse to avoid the energy-sucking mud below. “Always keeping the bay to our left side as a handrail ultimately led to some amazing views,” Albright noted, with partly frozen waters on one side and a picturesque valley on the other. The flora yielded to rock formations, with patches of lichen throughout, the further the team extended out of the delta.

A turn to the northeast led the team to skirt along the north face of the southern side of a valley, roughly seventy to one hundred metres above the valley floor, which they dubbed “Patricia Pass.” About three-quarters of the way through the valley, Albright began to note some small pieces of wood. Thinking that they were observing driftwood brought up by birds, the group began to make jokes that they could make a fire if needed. As the number and density of the objects increased, they looked to their right side and observed significant chunks of non-petrified wood sticking out of the hillside, ranging from half an inch to six inches in diameter. “Although the team thought it strange, the sporadic amounts hanging out led to many theories of how it got there,” Sgt Windsor noted. “Too many theories appeared to be plausible, so we chalked it up to an interesting find … and continued on our route.” Rounding a corner, they noticed an area with very densely packed wood, one to 1.5 metres in height, hanging out of the cliffside. “The wood appeared like most other dead twigs and branches, in varying states of decay,” Windsor observed – “not unlike wood one could find on a forest floor or shoreline.” They marked the area on the GPS and committed to get the information to Professor Lackenbauer as soon as they could.

Windsor, being a "fossil nut," energized the patrol whenever they encountered a fossil or rock that appeared to be interesting, always taking the time to talk with members about what they had found. Research later revealed that the patrol had discovered detrital woody layers associated with the Beaufort Formation: a Late Miocene (approximately 23 to 5.3 million years ago) to Pliocene (5.33 to 2.58 million years ago) fluvial (river) deposit on the western Canadian Arctic Archipelago that represents an old contiguous coastal plain. The wood and fossil record provides evidence that Prince Patrick Island once boasted a warm, high-latitude boreal forest ecosystem. Paleontologist Edward Tozer, who named the rock formation during his geological surveys on Prince Patrick Island in 1956, noted that the most striking feature was the large amount of fossilized wood that remains soft and has not turned to stone or carbon. On the lightly coloured hillsides, beds or units (groups of beds) of thin wood wedged out laterally, varying in size from logs and large sticks to small sticks, twigs, and chunks, to tiny wood detritus (such as wood chips, bark, needles, seeds, moss, and fragments of twigs).[17] The Mould Bay Team, in their trek, had found a key material example of past climate and landscape evolution, indicating significantly higher temperatures and different environmental conditions than exist today.

In the moment, however, the team's interests in the terrain were more immediate. Thankful that the conditions continued to be more manageable than on day one, map recces guided them to move through the bottom of a drainage to reach their final camp location. "When reaching this valley, it was almost surreal in terms of the temperature change and what seemed to be a much more humid climate," Albright noted. MCpl Harvey had seen what appeared to be coal on the floor of the valley – likely an example of the thin and laterally impersistent coal beds that geologists had previously identified in the Beaufort Formation. After a morning of discovery, they stopped for lunch and to refill on water.

When the group came out of the end of the valley, Pte Minchin acted on what everyone had discussed in Yellowknife and Resolute: that if, at any moment, a team member was uncomfortable, they were to let the patrol know, and they would take a break and look to resolve the issue. At this point, Minchin acknowledged that his big toe was in serious pain.

Pitawanakwat got him to take his boot off and confirmed that his toenail was lifting, with a significant blood blister under it. The toenail would fall off at some point – that could not be helped. As for the blister, Preston decompressed it by taking a needle and punching a hole through the toenail, thus allowing blood to release. "As infanteers do, we made sure to 'chirp' Connor about his funky-looking toes," Albright admitted. "These chirps led to the valley jokingly being named 'Goblin Toe Valley' whenever we referred to it from that point onward."

Morale was trending high as the team reached the campsite, but concern now focused on a possible infection of Connor's toe. To mitigate this scenario, Preston (a former medic) had asked the Practitioner's Assistant (PA) at the Canadian Armed Forces Arctic Training Centre (CAFATC) to give him antibiotics that could be "prescribed" by the medical officer or PA over the phone in case of an infection in the field. WO Albright had seen a similar arrangement when working with Canadian Special Operations Forces Command (CANSOFCOM), but the PA was unwilling to assume the risk when it came to Operation NANOOK-TAKUNIQ. The team discussed how their current situation warranted a follow-up with higher command on what tactical medicine should look like during dispersed Arctic operations, with constraints on who could be flown out in case of emergency.

The team woke up to fog – and lots of it. They could no longer see the route that they had planned to take the evening before. Eventually, visibility deteriorated to twenty-five metres, forcing them to delay their

departure. The map indicated that this would be the day where they would traverse the low-elevation plateau – a dissected, sandstone plateau that forms the central and northeastern parts of the island, rising gently from a low coast to a maximum elevation of about 250 metres in the southeast. While the island is largely composed of Devonian sandstone bedrock, the central and western lowlands consist of Mesozoic-age sediments, with gently sloping surfaces, shallow drainage channels, sparse tundra vegetation, and some areas exhibiting desert-like conditions.[18] Based on the map recce, they believed that this would be their easiest day of walking, with no elevation changes and drainage to the east, thus leading them to anticipate dry and smooth walking. These assumptions proved very wrong. Within a few hundred metres, they found themselves traversing a rutting area for Peary caribou in the fall, when the ground was frozen. Shed antlers gave this away. When the ground was not frozen, however, as was the case in this part of July, it was a muddy hellhole. They had no way of keeping their feet dry, with the average depth of the mud reaching up to the middle of their shins. Traversing mud of this depth, over any distance, takes the wind out of a person very quickly. This long stretch of terrain was no exception.

After persevering through this section, they discovered that the long-awaited plateau did not drain to the east as they had anticipated. The melted water remained in place, leaving the ground a morass – and making the day's travel a veritable "slog." With the wind howling in their faces and no surrounding cover, they had no option but to push on. On

the plateau, they found little "creeks" of running, muddy water that they used their filters to drink. This was a necessary evil, but it led to clogged filters and pump failures near the end of the trip.

During their lunch break, the patrollers had seen a Twin Otter flying to Mould Bay from Satellite Bay, signalling a crew change or perhaps a resupply. "At this time, the soldiers from 2 PPCLI realized just how isolated we were on Prince Patrick Island," WO Albright noted. "They believed me, Andrew, and Tom when we told them that we were probably walking where no other person has walked before."

That day, they also ran into lots of "spore" from old weather balloons, presumably launched from the Mould Bay weather station. They also encountered three Peary caribou: a bull, a cow, and a calf. MCpl Harvey, who works for Environment and Natural Resources in the Northwest Territories, had conducted surveys of the Dolphin and Union caribou, whose range includes Victoria Island and the mainland near Coronation Gulf, Bathurst Inlet, and the Kent Peninsula. He was excited to see the caribou on Prince Patrick Island, as there was little data about the population there. The 2 PPCLI members learned the Inuvialuit name for caribou – *tuktu* – and adopted this throughout the day. The team also spotted what they initially thought were old caribou herd tracks but later assumed might be vehicle tracks. They were definitely not recent, but they were faintly noticeable on the ground. Later, when conducting an aerial recce as they flew out, they surmised that these were old Cat train tracks on the route used to travel from Mould Bay to Satellite Bay during the winter.

Having walked the longest that day – a total of nineteen hard-earned kilometres – the group was tired and sore. After they set up their tents and boiled water for dinner, the ambiance was much quieter than usual. Everyone fell asleep, comfortable that they had reached the planned campsite for day two – which meant that they were still only twenty-four hours behind their original schedule.

Disappointment: The Failure of Resupply and a Forced Return

WO Albright woke up on the morning of 15 July and, as per his morning routine, called the Command Post in Resolute on the SAT PTT (satellite push-to-talk radio) to get a meteorological report (met rep) for the day. "This was becoming amusing for myself, because due to the Environment and Climate Change Canada weather station at Mould Bay not being operational, the met rep data was always significantly different than what would actually happen," he recalled. "At times, the exact opposite. Which would have me, and others, laugh when it was received." This morning, however, he was asked to call the Command Post on the satellite phone after the weather update. "I called, and as I had worried from the beginning, it was confirmed that the resupply would not happen," Albright recounted. 440 Sqn remained unsure when they would be able to return to Mould Bay because they had dedicated one Twin Otter to deal with a casevac (casualty evacuation), and the only other Twin Otter had "only tundra tires after blowing a normal tire and not having parts on site." The patrol commander noted:

> At this point, I had thought for a split second that maybe we could compile our rations within the patrol and continue on. But the day prior, it was confirmed that one of the junior members did not pack the food which he was ordered to,

> and members had to give him extra rations to accommodate. Not to mention, we had no idea how long this delay in resupply would last. The only choice I had was to turn around and go back. Now to break the news.

Albright informed the patrol what was happening and explained the rationale for why they had to turn around and go back. "Of course, many junior members wanted to continue and were confident they could make it work," he noted. "But they were unaware of the extra risk that this would pose." Accordingly, "with wind out of our sails," the team packed up and headed south. This time, they decided to avoid the plateau and chose to skirt the drainage "tops," which proved advantageous. "Though we were walking in a straight line, there was no mud and walking was fairly easy," Albright recalled. Although fog reduced the visibility down to thirty metres at some points, "the nice thing about snow is that it reflects light, allowing you to identify where drainages were, even in the thick snow, due to the natural 'glow' they had in thick fog." By day's end, morale was low – but the team was less physically tired than it had been the previous night.

The next day, the Mould Bay Team continued on the same route as before, skirting along the drainage tops. The plan was to end on the ridgeline to the east of the valley where they had started their trek, which was a shorter overall distance back – and they hoped the terrain would be less arduous. Instead, they found that the tops of these drainages were lower than those encountered the day before and wet, as had been the case on the plateau. This meant another day of "slogging":

traversing drainages, coping with lots of mud, but exploiting the "rock walls" of the drainages to cut the distance. They ended the day on the ridgeline, after extending past their usual 17h30 and pushing on to 20h00. This would leave them less distance – and an easy day – to wrap up the patrol. The spot that they chose for a campsite was soon shrouded in fog, leaving only twenty-five metres of visibility as they settled in for sleep.

Awakening on 17 July revealed that the campsite they had chosen was the most breathtaking that they had encountered on the operation. "The silence of the area, overlooking the vast valley below and the sea ice in the distance, left me standing in awe about how beautiful the place is," WO Albright recorded. "What a great morning to end the patrol. I wanted to order everyone to stay in place for an additional twenty-four hours just to enjoy the area. Unfortunately, the lack of food forced us to move." Fortunately, the day offered the nicest weather that they encountered – a fitting way to end the patrol. The members looked physically fine, but the patrol commander observed that "on the last three kilometres to the Mould Bay Weather Station, you could see members slowing down, some showing signs of physical pain. But we ensured that we finished as a complete patrol, walking through to the end as quiet professionals."

The team celebrated their return with a "morale bag" that they had packed before they left. Fresh food and snacks, which they had anticipated would be delivered as part of the planned resupply, instead served as a fitting way to wrap up. "We stuffed our faces with as many

calories as possible," Albright explained. He then ordered forty-eight hours of forced rest. They would not simply sit around doing nothing (as they assisted Clifton Engineering with unloading cargo and daily work around the camp), but this was his way of ensuring that everyone on the patrol took time to relax – especially after not being able to complete the trip to Satellite Bay on which they had set out.

The Return to Mould Bay: A Changed Environment

The team found that the Mould Bay site to which they returned looked rather different than the one they had left. "Ten years ago, the island was ice-locked and permafrost dominated its entirety for most, if not all, of the year," Sgt Windsor noted. Their foot patrol had proved that this was no longer the case. Plateaus and high features contained ankle-deep mud, and now the patrol members found that the ice had moved out 100–300 metres from the shoreline. High tides no longer reached anywhere close to the airfield by 20 July 2025. These were indicators of climate change, and it was reshaping the physical environment – including the single-lane causeway connecting the station to the airstrip over Station Creek. Sandbags were slowly getting washed out from higher-than-typical tides into the creek, causing the verge to erode and slowly collapse inward and outward. The tidal silt in low-tide events harboured large amounts of water underneath and could not be walked on without sinking several centimetres. "I assess that this very drastic change of tides and a thawing Mould Bay was not considered at the time of causeway construction," Sgt Windsor recorded. "There is a massive

amount of deterioration in just five years from its construction, especially to the centre island, shoulders/verge, and abutments." He assessed that "it is highly likely that a catastrophic failure will occur along the causeway in 5–10 years or less time (with foot and ATV traffic only). If anything heavier is to use the causeway in the summer (in conditions similar to July 2025), I assess the causeway to have a catastrophic failure in as short as 1–4 weeks."

In the six days that they had been gone on patrol, Clifton Engineering had gotten a legacy Ford F350 ¾-tonne pickup truck from the early 1990s running and was using it to ferry equipment from their former camp next to the airfield to the station. Already, after three days of truck use, the causeway showed signs of obvious damage. For example, the upper 50% of the verge was eroded where it had not been before they had left. Furthermore, large divots had appeared on the abutments between culverts, clearly from the ¾-tonne pickup driving over them at low speeds. The road bore multiple depressions up to fifteen centimetres deep from the truck. The truck suffered a "catastrophic failure" soon after the Mould Bay Team arrived back at the site, and they could not get it started again.

This may have been fortuitous. "Continued use with heavy equipment would likely crush the in-near-perfect-condition culverts already in place," Sgt Windsor noted. The fifteen-centimetre-deep ruts after just three days of use by the ¾-tonne truck raised concerns about bringing in and operating almost any military vehicles larger than an ATV. He recommended that military engineers rebuild the causeway as soon as possible "to expedite future OP CROSSBOW site placement. There

are few places on Prince Patrick Island that could support a 10,000-lb sea container–sized object (in the summer months) without an immense amount of work done prior." Without a functional causeway, there would be no way for anything other than very light vehicles to cross from the airstrip to the hardpack of the Mould Bay Research Station. The 2020 causeway reconstruction may have won a Canadian Consulting Engineering award – but five years later, it had not stood the test of time in the changing High Arctic conditions.

The Mould Bay Team had a gruelling experience. Their dismounted patrol had covered significant ground, but various factors stymied its progress: uncertain flying conditions; the difference between expected terrain, based upon map reconnaissance, and actual conditions; and failed resupply. The team, however, had demonstrated professionalism, discipline, and prudent judgement. The mission was less about achieving a specific geographical objective than determining what could be accomplished with the given time, resources, and personnel.

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8

From Tanquary Fiord to Lake Hazen: The Alpine Team

For the members of the Alpine Team, the morning of 14 July was "fly day" from Resolute. Despite the forecast calling for rain and snow, they woke up to unexpectedly good weather, and the lead pilot gave the go-ahead. The team gathered for a team photo before stepping into the two 440 Twin Otters at around 09h00, destined for Eureka for a refuel and then for Tanquary Fiord in Quttinirpaaq National Park on Ellesmere Island. As Ranger Maya Poirier noted in her journal:

> July 14th, Twin Otter somewhere north of Resolute Bay, Nunavut. Weather permitting, it will indeed be Ellesmere arrival day at Tanquary Fiord. A place so far North and remote that only those willing to pay many, many thousands of dollars will ever be able to go. To have the opportunity to be going as a Canadian Ranger with 1 CRPG on a never before done patrol, is beyond words. We are on a Twin Otter on our way to do a massive backpack trip on Ellesmere Island – the furthest north Canadian Arctic Island that there is – to do something the Canadian Rangers have never done. It is unbelievable.

The first half of the flight was spent above the clouds with no visibility down to the Arctic Ocean and landscape below. Ranger Cath Welsh noted:

> We are completely in the clouds flying with instruments. It is 2025. The pilots that flew here in the 1940's must have had nerves (balls) of steel. With breaks forming in what feels like continuous sea ice, it immediately condenses into clouds in the summer, and probably only over larger islands would it dissipate. Occasionally, I catch a glimpse of the patterned sea ice through the clouds. It feels endless. And vast. The mapping of the Canadian Arctic Archipelago was not for the faint of heart. Neither is this.

Ranger James Cleary recorded a similar reaction in his journal. "Looking out the window and seeing frozen sea ice," he noted, "this is

crazy and I can't believe it's real and that I'm actually doing this. It's not clear from this angle where the glacier ends and the sky begins."

About half an hour before landing in Eureka, the clouds cleared and exposed the incredibly desolate, vast, other-planet-like landscape of Ellesmere Island. The bright landscape made up of tan, brown, and grey hues, alongside the partly ice-covered deep blue fiords and the stratification in the mountains, with spread-out stream-shaped patterns of lush green, was a sight permanently ingrained into the team members' memories.

The quick stop to refuel in Eureka was short, windy, and cold. The gravel airstrip that services this remote research base was surrounded by what looked like a colourful ATCO camp, with lines of fuel bowsers and fifty-gallon drums of fuel. Heavy equipment was operating at the east end of the strip; otherwise, there was very little sign of life anywhere. Nonetheless, the team stood outside and breathed in their first breaths of Ellesmere Island breeze coming off the cold, salty water. It was a special moment to finally set foot on the land they had anticipated, day and night, over the preceding months. The temperature was cool, likely around 5 or 6°C, and the wind was strong. Ranger Poirier was very grateful to have left behind her lightweight hiking pants and shorts, and she anticipated employing every layer of clothing that she had brought with her.

Soon, they were back in the sky, observing unbelievable mountains, glaciers, small icebergs, and muskoxen throughout the last leg of the flight. These observations precipitated some major excitement to erupt amongst the team. They soon found themselves above Quttinirpaaq National Park, meaning "Top of the World" in Inuktitut. Covering 37,775 square kilometres at the crown of Ellesmere Island, it is Canada's second-largest national park and amongst its least accessible. There are no settlements. Access is by charter only to a single airstrip and a small Parks Canada outpost at Tanquary Fiord, staffed by five Parks Canada employees. The cost to visit can run into the tens of thousands, a natural filter that keeps the number of visitors to an average of seventeen per year.

Tanquary Fiord

Tanquary Fiord is a long, deep, narrow inlet of the sea flanked by mountains rising as high as 1,500 metres. The confluence of four large river valleys (three ending in a common floodplain and the fourth in an elaborate river delta system on the southeast side of the fiord) creates a massive, flat expanse criss-crossed by endless river braids. In 1963, the Defence Research Board launched Operation TANQUARY in the

area, which focused on oceanography in the fiord until it wound up in 1972. This project led to the construction of an austere airstrip, a cluster of Quonset huts, and other modest infrastructure, where visitors today have access to electricity from a generator, laundry machines, and even internet.

Despite the wet gravel runway at Tanquary, the short take-off and landing (STOL) Twin Otters had no difficulty landing the Alpine Team smoothly in two separate flights. Parks Canada staff met the team along the airstrip (there is certainly no airport terminal), where their packs were loaded into a little four-wheel trailer and driven back to the Park's orientation weather haven "hut." The Alpine Team enjoyed the shortest walk they would experience over the next nine days, soaking in their new surroundings. A mandatory orientation session on Quttinirpaaq National Park covered the history of the island, its fauna and flora, as well as polar bear safety, muskox etiquette, and the high standard of respectful land stewardship required of anybody travelling on the land. The team then reviewed old Parks Canada maps and cultural areas that they might encounter on their trek.

As part of their training in Whitehorse, Yukon government archaeologists had already introduced the Rangers to the history of

northern Ellesmere. The Dorset people lived here from around 500 BCE, surviving the extreme cold with seal oil lamps and semi-subterranean homes. Centuries later, the Thule migrated from Alaska, bringing dog sleds, skin boats, and a more mobile way of life. Scattered across the landscape, the team could anticipate coming across tent rings, longhouse foundations, and small carved tools that marked their presence. These insights added a layer of excitement and relevance to the trip, reminding the team that the path they would follow had been shaped by generations of resilience and adaptation.

The complexity of the Macdonald River and its outflow system commanded special attention, and the team discussed the most efficient and safest locations to cross the river. One thing that all groups must prepared for is to spend the night at water crossings. With July being the warmest month here, waters can rise quickly in the day, and crossings are best at night or in the early hours of the day. It was supposed to be the team's last moments in touch with any kind of civilization between Tanquary and Lake Hazen.

Around 18h30, the team strapped their backpack straps as tightly as possible, threw on their gaiters, and hauled their heavy backpacks up onto their shoulders to embark on their dismounted and unsupported patrol to Lake Hazen. The weather was significantly warmer at Tanquary than in Eureka, and the team began their walk under a bit of cloud cover and blue sky. They formed up in the line that they would retain for the remainder of the patrol, with Ranger Welsh leading the way, followed by

MWO Pat Murphy, Ranger Poirier, Ranger Cleary, journalist Gavin John, and Capt Jake MacDonald keeping the team together from the back.

"As soon as I had my pack on, I felt at home," Ranger Welsh recorded in her journal:

> I am so glad we had a relatively short lead-up for this trip, the prep-work and guessing has taken up so much of my bandwidth. Now that I am moving here, doing what I know so well, I am so excited to be moving and see what is around every corner. It's just like sheep hunting, except this time, there are no sheep – which means I don't have to add another 50 or more pounds to my pack half way through!

Ranger Clearly also felt his anxiety subside:

> I had been pretty nervous for the past few months. At Tanquary, I put my gear and pack on, looked in the direction we would be heading, and felt the nervousness give way to excitement and focus. I remember thinking, 'You got this, you've done this before. You're walking from A to B, one step at a time.' I don't know that I've felt that level of focus before, and it lasted the rest of the patrol.

Within thirty minutes, the team passed by ancient tent rings made of rocks by the Thule people of the Arctic. To witness artifacts so old, originating from a time in which incredible skills, intelligence, and relation to the land allowed the Thule to inhabit a seemingly uninhabitable land, was astounding – an incredible, intriguing, and mysterious reality.

The team continued slowly along Kettle Lake, where they were told by Park staff that essentially everything and anything in the area has the potential to be an artifact and that they should not touch or move anything other than the ground beneath their feet. The team's

objective for the evening, due to a late start in the day, was to travel ten kilometres before making camp for the night.

Medevac: Managing a Scary Situation

The park's remoteness turns otherwise manageable problems into crises. A minor injury far from the Tanquary Fiord strip can become life-threatening; weather, distance, and aircraft availability mean that evacuations are never guaranteed and never fast. Stepping into Quttinirpaaq is to accept that self-reliance outweighs any promise of help – a tough lesson that the patrol found out on the first day.

About 4.7 kilometres from Tanquary, Capt MacDonald fell and briefly lost consciousness. Ranger Cleary was the closest to him at the time, immediately called for help to the team ahead, and began delivering medical attention to MacDonald. It was a serious and intense situation that the team took on with skill, professionalism, and compassion for one another. While Ranger Cleary took on the role of primary medical attendant for MacDonald, Rangers Welsh and Poirier took turns assisting and tending to MacDonald with reassurance while he was being stabilized. The team supported MacDonald by using their gear and equipment to make him comfortable and warm where he was, while also setting up the camp tents nearby and getting hot water boiling for their freeze-dried meals. At the same time, MWO Murphy was in communication with the command base in Resolute Bay, as well as Parks Canada staff at Tanquary, to determine the safest evacuation plan for MacDonald and everyone else involved.

The team efficiently stabilized MacDonald, keeping calm, staying positive, and getting the situation under control. The evening was spent ensuring that Capt MacDonald was as comfortable as possible, as well

as supporting each other through this scary situation. Around 23h30, the team headed into their designated tents. MWO Murphy shared a tent with MacDonald, monitoring him throughout the night. The decision was made, early the next morning, that MWO Murphy and Cleary would carry MacDonald's kit and walk with him back to Tanquary Fiord, where they would wait for the arrival of 440 Squadron carrying the military's medical team, based in Resolute Bay.

Around 02h00 on 15 July, 440 Sqn's Twin Otter aircraft appeared overhead. Given their duty day and earlier flights to drop the team at Tanquary, this still fit within flying hour thresholds, and continuous daylight made this possible. Typically, a pair of aircraft would fly in tandem to respond to an incident of this nature. In this case, one of the Twin Otters was out for service, and Chuck, a pilot who has been flying search and rescue in the Arctic for more than two decades, had no issue heading out with one aircraft to come for Capt MacDonald.

The Alpine Team got up four hours later, tore down the third tent (which was no longer needed), and determined what equipment and gear they would need to continue – and what they could send back to Tanquary and then onward to Resolute with Capt MacDonald. Pat and James loaded their packs, and Maya, Cath, and Gavin said their goodbyes to Jake. On a shaky ankle he started off, with James and Pat carrying loads to safely escort him out. When they arrived at Tanquary Fiord, they were greeted by a medic from the Canadian Armed Forces Arctic Training Centre (CAFATC) in Resolute. After debriefing the situation and indulging in a cup of coffee offered by Parks Canada staff, Pat and James said goodbye to Jake as he departed on the Twin Otter, before heading back to camp.

The Patrol Resumes

They arrived at camp at around noon, where everybody ate lunch before continuing with the patrol. That afternoon, they walked ten kilometres as the crow flies, enduring wind with a light spit of rain at the beginning of their trek. We "walked 45 mins, breaked [for] about 15 mins [minutes] and it was good," Maya noted in her journal. It is "amazing how your body fluctuates depending on its fuel supply. Or how heavy the pack feels, or light. How much pain you feel or not. Just a lot of fluctuation… I did feel a lot more fueled and stronger than yesterday." Team members recalled how the energy of the individual members felt disconnected that day, given the departure of one member and the ample time for quiet contemplation as they walked in formation, twenty metres apart. Within two hours, the patrol passed over mountain avens and tufts of qiviut (pronounced KIV-ee-ut) wool left by muskoxen that

had passed through. This wool is prized as one of the warmest and rarest natural fibres in the world, given its softness and insulating value.

The surrounding terrain was vast and stark, whispering stories of the ice that kept it hidden for the last 10,000 years. The mountains were ground down by ice as it advanced and then retreated, leaving broad U-shaped valleys (like the Macdonald River valley) sometimes reaching several kilometres across. Behind the hills and along the Macdonald River, remote mountains towered – rugged, austere, and untouched by human feet. Reminiscent of an ice age, the team earnestly mistook muskoxen for mammoths early on, feeling as though they had been deposited back in time – or to another planet. The landscape "is absolutely stunning and otherworldly," James recorded in his journal. "Some parts looked like a scene from [the] original series of Star Trek."

The terrain varied from hard ground covered by tiny rocks and pebbles to stretches of saturated grasslands, tussocks, rock streams, and sandy gravel bars along the Macdonald River (named by Lieutenant Pelham Aldrich during the Nares Expedition of 1875–1876 to honour Canada's first prime minister). "We made it across the Macdonald River and hiked up onto the beach then walked along this beautiful flat and

made our way around the corner to the Very River," Maya described. "Everybody was pretty whooped when we arrived."

By the end of their first full day, Gavin, Cath, and Maya had walked ten kilometres from their first camp location. James and Pat had covered twenty kilometres after delivering Jake to Tanquary. The packs were heavy, and that evening, Cath and Maya swapped notes about waist-belt welts, crossing their fingers for the numbness to set in so the rubbing and discomfort would go away. Maya went down to the river for water after they set up their tents. It soon boiled, and the dehydrated meals appeared: a choice between beef mandarin or pad thai – the only two meal options for the entire 150-kilometre trek. Now down to two tents, Cath and Maya shared the four-person tent with their "new roomie," Pat, while Gavin and James shared the other: a fortuitous pairing, as James snored like a diesel engine, and Gavin is an exceptionally sound sleeper.

The following day (16 July), the team packed up their tents after a short breakfast. They decided to distribute the weight of their equipment amongst all members, ensuring that everyone felt good about what they were packing and that they could rely on each other in any situation. This spirit had already shone through clearly in the few days that they had been on patrol thus far.

The team covered fifteen kilometres (as the crow flies) under an overcast sky with some patches of blue skies toward the end of the day.

The landscapes varied significantly, beginning with an attempted route that progressed higher up along the side of the valley. It soon proved impractical, however, prompting the team to turn around and make their way down to the valley floor. There they walked along the river for approximately nine kilometres before approaching the foot of the Viking Ice Cap, gaining a few hundred feet of elevation owing to the glacial moraine.

Leading up over a hill, Cath came within eighty feet of a bull muskox. It stood uphill and watched as Pat and Maya caught up. The sight of this animal in such a seemingly uninhabitable place was almost haunting. The muskox's tattered wool blew in the wind, and it looked down at the approaching team

with cautious curiosity, likely having never seen humans before. “It stopped and looked at us,” Maya recorded. “It wasn’t scared. It was magical.” Cath climbed for some photos, and, after one more pause to look at these four unknown creatures, the muskox made his slow and steady exit uphill to a bench out of sight. In some instances, like with bears, you stand your ground when aggressive behaviours are shown. With muskoxen, Parks Canada advised the team to stay back and, if necessary, run. This muskox showed no sign of aggression as it watched and then ascended into the hills.

Crossing the glacial moraine required focus on every step taken, as the team crossed through deep streams and a large boulder field full of rocks holding millions or billions of years of sedimentary history. The colours of the rocks varied, with quartz, grey, white, red, purple, and orange hues. Walking within a few hundred yards of the toe of the ice cap, a sight so majestic and impressive, was exhilarating, and the entire team was taken aback. The glacial white and blue of the ice was breathtaking. Everyone shared a sense of honour at being so proximate to this ice that seemed to transcend time and history. Nevertheless, vigilance remained paramount in navigating the bouldered terrain to avoid rolling a rock and causing injury. Cath charted a careful path, and everyone chose their steps with care. This slowed the speed of the team to a snail’s pace to ensure safe passage. Everyone was acutely aware that any injury in this remote place would be critical.

The Very River

Despite the technical crossing of the moraine, the day’s trek was smooth. The route continued to climb gradually on the north shore of the Very River (pronounced veery) to a campsite below a hummocky field of “baby heads” – circular mounds of soil and rocks formed by the repeated freezing and thawing of the active layer of permafrost. The team made camp on a small bench, which allowed them to wake up with the stunning view of Mount Reeds and the Scylla Glacier, with its maze of crevasses and seracs, from their tent vestibules. Everyone basked in the beauty of the place in which they were immersed, sharing laughter and gratitude for being the Canadian Armed Forces’ “eyes and

ears" in this dramatic Arctic land and demonstrating 1 CRPG's ability to conduct such an epic dismounted, remote, and extreme patrol.

Day four started off with low clouds and cool temperatures – something familiar to all Rangers living "north of sixty" in early August. Here, north of eighty, the team welcomed these temperatures in July, which offered relief with their heavy packs. They spent the day exclusively in the U-shaped Very River valley, which ranged from hundreds of metres to several kilometres across. Like each day before, the team walked for forty-five minutes, then rested for fifteen, continuing this routine for eight hours each day.

Each day, every hour seemed to bring a new corner to turn and a fresh sight to see. Sometimes, something as simple as turning 180° brought a new perspective that made one pause and marvel at the splendour and vastness of Ellesmere Island. James wrote:

> I hadn't been expecting the sheer beauty and majesty of it. It seemed like every hour we would be transported somewhere completely new. I'd never seen landscape like it – the colours of the rocks, mountains, ground, the shape of the valley and mountains, looking at the toe of a glacier at eye level with your feet on rocks the glacier probably left there not too long ago. It also felt like we'd been taken out of time. It felt like we were walking through the ice age or something.

Emotions ebbed and flowed accordingly. "I started out really sore and tired and quiet, about an hour in, emotions were hitting me – gratitude, elation, awe, disbelief – so, so, so many things – and I just let

the tears fall," Maya disclosed in her journal on 17 July. "It felt really good. And then shortly after the day of laughing began. We have laughed so, so much this entire time. Our team is incredible and we really are having such an amazing time all together."

The team travelled 17.7 kilometres into a valley junction where Lewis Lake is located. The Rangers had been told that this was a sensitive site, home to a wolf den that has been used for more than a millennium, and they would have to respect at least a three-kilometre radius around it. None of the participants would forget the view: multiple glaciers, the lake, the wide-open valley, the browns and greens, the beautiful blue sky with streaks of thin cloud. "There was a muskox on the other side of the wide-open valley just feeding," Maya recorded. "A huge glacier on the Mountain in the backdrop… It was absolutely phenomenal. The old bones we saw today, birds, flowers: speechless." The team took an extended break to admire the sheer beauty of this pristine, almost surreal, place.

The junction of valleys diverged into two separate paths. At this intersection, many visitors to Quttinirpaaq National Park travel toward Lewis Lake and Mount Timmia, heading north and west and then southwest along the Rollrock River to complete an eighty-kilometre loop back to Tanquary Fiord. (Many visitors is a relative term, with an average of seventeen annually, and this year fifteen including the Ranger team). The second route, along the Very River toward Lewis Lake, led toward Lake Hazen and opened into the broadest valley that the team had experienced thus far, widening at the intersection to three kilometres across. Its gentle, downward convex slope created a sense of anticipation, as the view ahead remained partially hidden, inviting curiosity about what might come into sight further ahead.

The team continued five kilometres past the valley intersection and navigated their first field of hummocks or "baby heads" (as the team

dubbed them). Navigating these tough tufts of raised grass required the deliberate selection of a path. “It was like experiencing the Japanese game show ‘Wipe Out,’ where contestants face hilarious obstacles to overcome before a live audience,” Cath recounted. “Here, with our seventy- to eighty-five-pound packs, the game was about slowing pace as to not break an ankle. The reward for traversing this stretch of land was no more baby heads – at least for a while.”

While the team spent most days walking without much conversation, the evenings brought the opportunity to get to know each other better. That evening, the team set up camp along the Very River and had the privilege of hearing MWO Murphy speak about his long and impressive career in the Canadian Armed Forces. Pat enrolled in the CAF in Montreal in 2003 as an infantryman. After completing his basic training the next year, he was posted to 2nd Battalion, Royal 22e Régiment (2 R22eR), based in Valcartier, Quebec, where he began his career as a rifleman. During his time with 2 R22eR, he completed various advanced courses, including Mountain Operations Instructor, Patrol Pathfinder, Helicopter Insertion/Extraction Master, and Round and Square Parachutist qualifications. Twice he deployed to Afghanistan (in 2006 and 2009) in support of coalition operations. In 2013, he was posted to the Canadian Army Advanced Warfare Centre in Trenton, Ontario, where he served as a Mountain and Pathfinder Instructor. During this posting, he explained, he contributed to the development and delivery of

specialized training programs focused on Arctic, airborne, and mobility operations. Three years later, he returned to Valcartier to serve with the 3rd Battalion, Royal 22e Régiment (3 R22eR), where he was a Platoon Warrant Officer in the Parachute Company and Reconnaissance Platoon. In 2019, he deployed to Gao, Mali, as part of the Force Protection Element supporting the Canadian Medical Emergency Response Team. When he returned from overseas, he was posted to the Osside Institute in Saint-Jean-sur-Richelieu, Quebec, where he instructed on the Intermediate Leadership Program (ILP), mentoring future non-commissioned officers of the Canadian Army. Then, in 2022, he joined 1 CRPG, where he currently serves as Company Sergeant Major. In this role, he oversees the training, administration, and operational readiness of Rangers operating across Canada's Arctic and Northern regions. Here was a deeply committed soldier, distinguished leader, and true expert in specialized operations.

Emotions continued to run high. At camp, Ranger Welsh learned through an inReach text that one of her closest friends had died of a fast-moving cancer. The day before leaving Yellowknife, she had said goodbye to him, anticipating that it would be her last opportunity to do so. The news of the loss was a sobering, sad moment, but also one filled with love and connection as Rangers Welsh, Poirier, and Cleary stood together and cried together. Concurrently, Gavin had stepped away from the group to call his wife by satellite phone, returning replenished with love and with a boost of morale. There was something about this stage in the patrol, in the bond that they felt as a team, in the vulnerability that everyone shared, that made this fourth evening on Ellesmere special and unforgettable. Tears of both happiness and sadness, witnessed with compassion and respect for and from one another, were a testament to how cohesive the team had become.

Once up and on their feet on 18 July, the team moved at a slightly faster pace than average up to this point. They had consumed a lot of food (thus lightening their packs) and had been building strength along the way. Early in the day, the team crossed ground cracked by what appeared to be human ditches, resembling the skin of an alligator from above. Then they encountered the Very River. The water crossings to this point of the trip had been shallow enough to cross with gaiters and hiking boots. This particular crossing, however, inspired the team to play it safe and remove their pants and footwear to cross in sandals. The water was knee deep, which offered the swarms of local mosquitoes an ideal opportunity to viciously attack the team members' legs. "Five days in, having only seen three muskox and not a single other mammal, we wondered how long these swarms of mosquitos had been waiting for

the five of us to snack on," Cath recorded. "It makes no sense that they are here – until I learned they do not need blood to survive, only to thrive – and after today, that [they] owe so much [of] their increased quality of life to all of us."

Ranger Cleary was the exception. Eager to avoid any unnecessary contact with cold water, he put rain pants on over his trousers, tightly wrapped his gaiters around his boots, unbuckled the waist belt on his pack, and crossed the river with legs and hiking poles popping in and out of the knee-deep water, like a knobby-limbed moose on the move. His feet remained dry through the crossing – and his legs less covered in mosquito bites than the rest of the group's.

Soon after successfully fording the river, the team came across a lone muskox bedded along the riverbank, seemingly unbothered – and directly in their intended path. As the rules in Quttinirpaaq National Park state, visitors are to remain at a minimum of 100 metres away from these large animals and, if confronted, to not "stand your ground" but to run away. The team had no desire of disrespecting or displacing animals along their travels. They understood by the muskox's assertive behaviour that it intended to stay right where it was and not share its territory with anyone else. Accordingly, the team made a large detour around it. Even though they did not approach the animal and kept as much distance as they could, the animal displayed body language of

standing its ground, stomping its feet and kicking the earth behind it as though it might be signalling a willingness to charge. It clearly wanted the five strange interlopers to leave its home turf. The team, avoiding a challenge, continued on their way without any issues. Later that day, they were fortunate to see a muskox female with a calf down in the valley bottom, bathing in the sun. It remained undisturbed as they quietly passed by at a distance.

"The terrain is like science fiction," James recorded in his journal entry. After noon, they weaved through rock formations, muskox trails, Arctic wildflowers, and ponds, securing solid footing on higher ground to avoid the tussocks (clumps of thick grass) and softer ground at the bottom of the valley. "The terrain … was like mars, and we got up high and stayed high all day," Maya noted. "The scenery and the terrain we walked on, the rocks, the flowers, the kiviat (muskox hair), the baby bird (unidentified), the little lakes up high in those ridge hallways, the laughter, all of it was incredible." Cath also relished the experience. "With so much time out on the land, I know that it's day three when all parts of me become fully present in my environment," she wrote in her journal. "Day five out here, has me feeling so connected to the team and this place." She described how "Ellesmere feels so pre-historic and effortlessly wise in its age and solitude," which encouraged her to listen to its primeval rhythms.

The team (naively) set up their camp on the valley floor, knowing they would be crossing the valley the next day, and positioned themselves in the direction of the north side of Lake Hazen. There was no cover in the area to offer respite from the wind that had significantly picked up throughout the afternoon. The Mountain Hardwear tents with which the CAF had supplied them proved secure and sturdy, and they were relatively easy to set up even in the wind. Maya, on water and food duty, endured the strong winds before visiting and laughing with the others over a quick dinner. The night ended with the team observing another lone muskox, making its way westward in a full run from the direction of Lake Hazen. In

hindsight, they thought that the muskox knew something that they did not.

Coping with the Wind

A wicked windstorm with gusts up to eighty kilometres per hour hit the area overnight. The tents, pegged down into sand, would have blown away if not for their inhabitants holding them down. At 04h00, Cath moved to avoid the tent flapping on her face, only to realize that her body had been holding the upwind side on the ground. The tent pegs flew out, and the tent fabric flapped like a psychotic tube man (think the wacky, arm-flailing inflatable stick figure dancing in front of a car dealership). Maya got out of the tent, its vestibule flapping aggressively in the wind, and spent the next forty-five minutes collecting large rocks to reinforce the pegs on both tents. Fortunately, because the sun was as high in the sky at 04h00 as it was at 16:00, the task was less arduous than it would have been in the dark. Nevertheless, the storm launched a three-metre-high layer of sand and dust airborne that blanketed the entire valley.

The next morning, with the wind blowing unabated, MWO Murphy made the call to stay in place until the winds died down. In the meantime, the team caught up on well-needed rest, shared laughter, and joked about the difficulty of going to the bathroom in extremely windy conditions. It was a challenge to remain upright in an eighty-kilometre-per-hour wind gust, and getting sandblasted on a "bio break" made for a rather unpleasant experience.

The team stayed hunkered down in their tents, whipped by the incessant wind, into the early afternoon. At this point, MWO Murphy connected with LCol Travis Hanes, who was just north with the Alert Team, about logistics. The Alpine Team learned that they would be extracted from Lake Hazen camp on 24 July and that the glacier portion of the trip had been cancelled. Following Jake's evacuation, the command team had re-evaluated its risk assessment of their unsupported foot patrol and proposed glacier traverse. Given the lost time, and now being one team member down, they would err on the side of caution and stick to the primary objective of reaching Lake Hazen camp.

When the winds abated later in the afternoon, the team broke camp at 18h00. The

evening sky was grey, but the members were vibrant in spirit and energy: they found something exciting about starting the "day" so late. As they ascended a mountain separating the Very River and the Adams River, they caught their first glimpses of ice-covered Lake Hazen, about fourteen kilometres in the distance. It was exhilarating and bittersweet at the same time: seeing the lake signified the completion of a huge part of the patrol and signalled that they were nearing the end of an unbelievable adventure.

The Muskox Way: Onward to Lake Hazen

After about three hours of hiking, covering just under seven kilometres, the team decided to stop at a quiet, beautiful campsite in a lush green saddle overlooking the lake. The Lake Hazen area is often characterized as a High Arctic "oasis," considerably warmer than many other Arctic localities located much further south, which results in a thermal oasis within a polar desert. The glacier-carved Hazen Plateau is a natural haven for a diverse range of flora: Arctic cotton, purple saxifrage, and dwarf willow. "We ended up in the most beautiful saddle pass, green grass, it was like a hallway going down to the valley," Maya described. "It was purely magical, and it was the most calm quiet night of the trip." The contrast with the raging windstorm the previous night and earlier that day could not have been starker.

After an incredibly peaceful night's sleep, MWO Murphy fired up the Jet Boil the next morning and broke out the AeroPress. This meant that the team members enjoyed their first real coffee on the trip. Little things like this are not little in remote places, and the pleasantly rich, smooth liquid fuelled the team's morale. The team packed up and set off on their way, enjoying their first full day of sunshine since the beginning of the patrol. Rather than skirt around the northeast side of the mountain on

the river flats, the team headed west before going up and over, then descending into the Adams River valley. On the way down, they followed the path of least resistance through rock, dirt, and hummocks, separated by sections of grassy slopes decorated with muskox skulls and Peary caribou antler sheds. Seven days into the journey, the Ellesmere landscape, pristine and breathtaking, continued to leave the team in awe.

At the Adams River, the team again stripped down to their underwear and waded across – apart from James, who was nicknamed "posting moose" because of his ability to high-step quickly across the rivers and make it to the other side without getting water in his boots. Beyond this point, the trek was a mix of side hills, lateral moraines, sandy spots, small boulder stretches, and the relatively easy crossing of the Turnstone River. The latter appears as an enormous alluvial fan on topographic maps, but this translated on the ground into dry, cracked mud flats extending over one kilometre before reaching Lake Hazen.

Camp that night was set up just beyond a beautiful lush little creek, in a hard clay saddle with a knoll separating the team from the lake. Nearby, they encountered material evidence of previous human occupation. "We crossed a slope near our camp with 7 or 8 almost level platforms, built up with rocks and soil," Cath described. "I think this may have been a seasonal Thule site. With fresh flowing water, access to arctic char, and a good vantage point for ambushing muskox, it is a practical choice. It is so visceral to be so close to this kind of history." She could not help but conclude that "we are not tough, the Thule were."

The evening was sunny and clear with a bluebird-coloured sky. While the group felt tired after seven days of walking, buzzing swarms of mosquitoes ensured that they would not rest peacefully that evening. The camp looked like a yard sale, particularly after Gavin set up a clothesline to air out his clothing. The team members did their best to

enjoy the sound of music over the constant droning and whining of the insects seeking to siphon off their blood, sharing laughter, stories, and good banter as they had done throughout the trip. Behind it all was also a looming sense that the adventure would soon draw to a close, Maya reminisced, "after months of anticipation, excitement, fear, training," and the realization "that we're not going on the glacier." The journey that they had been on together, patrolling from Tanquary Fiord to Lake Hazen, was simply "crazy." The idea that it was a "once in a lifetime experience" seemed trite and cliché considering the magnitude of what they had accomplished already.

The team awoke on 21 July and took turns playing music they had downloaded for the traverse. The music led to a discussion of favourite songs, some that spoke to people's lives, others to their weddings or to their heritage. From this point forward, the team became oddly familiar with Irish session musician Cormac Begley "slaying" on the concertina. The whimsical music made for an excellent morning-coffee-drinking and gear-packing soundtrack.

For Maya, the eighth day was the most exhilarating day of the patrol. The team would finally cross the glacial rivers and the three-kilometre stretch of glacial sand below the toe of the Henrietta Nesmith Glacier (the same glacier the team had been preparing to traverse up to Barbeau Peak until that plan had been called off). Parks Canada staff had warned the team about this crossing in their orientation seven days earlier. The water could be cold and deep, and a park warden who had recently flown over surmised that it looked to be at least two kilometres across. This distance meant that the team would need to walk an additional ten kilometres after the crossing before their legs would be warm enough that they would be able to feel their feet again.

The hike was stunning, with the sun shining brightly – and the heat adding an additional factor for the team to manage. Crossing grassy fields amidst rolling hills, side hilling, and then navigating unstable hummocks (baby heads) drove the team to take their first break earlier than usual. A large part of this patrol was management: management of mental and physical resources, management of pains and discomfort, management of injuries, and management of food and water (in and out of the body). Without words, team members constantly assessed themselves and each other, noticing when somebody was more tired than another, or who might need a snack, a break, or even a hug. All of this was contemplated with the intention of helping however anyone could to support the other.

At this point in any trip of this nature, a person is likely to be feeling fatigued in one way or another. That morning, before their first "scheduled" break at forty-five minutes, Maya noticed that Gavin was moving a little bit slower than usual, just as if his body was saying, "wow, this has been a lot of work to get here, and I am really feeling it today." It cannot be understated how impressed everyone was with Gavin – the only member of the team without considerable back-packing experience. MWO Murphy served as a pathfinder and is a mountaineering instructor in the CAF. Rangers Welsh, Poirier, and Cleary are avid thinhorn sheep hunters, regularly carrying heavy packs in and out of remote, mountainous areas and navigating complex, technical terrain. The other team

members noted Gavin's steely determination throughout the trip, as well as the "gonzo-esque" approach he took to documenting the trip as a photojournalist. He had thrown himself right into the middle of it, bearing – indeed, embracing – in real time all the challenges of a long, remote, physically demanding backpacking expedition. This morning, James, following at the tail end of the patrol, also kept a close eye on him and carefully observed the way his body was moving.

Maya raced ahead to catch up to Catherine and Pat and recommended that the team, only thirty minutes into the day, take their first break right where they were. Once Gavin and James arrived, they threw their backpacks down, and Gavin's body attempted to reject its breakfast from earlier that morning. This is a sign of over-exhaustion and likely a case of dehydration, compounded by all of the other factors affecting a person while doing major physical exercise on the land. It all made sense given that, some mornings, a body does not feel like being force-fed the same breakfast for seven days in a row and may not feel thirsty even when dehydrated. Once Gavin began gagging, Pat quickly said, "No, man, you have to keep it down. Try and keep it down – you need that energy." The team was still more than ten kilometres away from Hazen Camp. Everyone offered verbal reassurances to Gavin, knowing that feeling this way at all – let alone in one of the most remote places on Earth – can be extremely stressful and worrisome. A positive and calm attitude is a huge part of being on the land and overcoming situations like this.

Gavin handled the situation with grace, strength, courage, and grit. He spent some time hydrating, ate one of Pat's energy gel packets, and allowed other team members to each take a bit of weight from his backpack to lighten his load. Before long, they were back on their way. This moment demonstrated vulnerability, support, mental fortitude, and genuine teamwork. Each person's safety contributes to the team's safety, and it is always worth taking the extra time to get somebody back on track. Soon, Gavin's state improved drastically.

The terrain between their previous camp and the glacial mudflats was like climbing a hill only to discover it was a false peak. In this instance, it was lateral moraine upon lateral moraine, winding through lower vegetated areas and over boulders, telling the story of retreating and pausing ice as the glaciers withdrew. When the toe of the Henrietta Naismith Glacier was in sight, the team stopped in their tracks, awe-struck. Spanning about fifteen kilometres across at its widest and standing approximately sixty metres tall at the toe, the behemoth left them spellbound. It was like laying eyes on a wonder of the world. Copious photos were taken before the team stripped down to their

underwear yet again to traverse the sediment flat, with the enormous glacier to their left. “There were many braided channels flowing from it,” James noted. “We pulled off our boots and got down to our undies and hiked 3km [kilometres] through it.”

Pat made the first stream crossing of about fifty feet, the water reaching just above his knees. The rest of the team followed, grateful that there was a bottom beneath the silt and that the small, inconsistent patches of quicksand proved easy to wade through. Bare feet in the sand, following a lone muskox track that reassured the team of a safe travel route, the motivated team speed-walked across the large expanse of glacial flats. “As you stepped into the icy water, you could feel the soft silt billow up your legs, as your feet slipped further down – we had to keep moving to keep from sinking,” Cath described vividly. “If you lost your balance here, you would ‘turtle’ and be stuck on your back with the weight of your pack. So we stayed close to right each other if necessary. At one point I did sink, and sank right to what felt like a full layer of flat ice still intact about thigh-high down. It was so fun.”

When the team reached the last, wide stream crossing, they watched as Pat – an incredibly strong man over six feet tall – carefully chose his route. When the water reached his upper thighs, Catherine and Maya (who are much shorter than Pat) recognized that they needed to find a shallower crossing. Cath, with years of experience on and around glaciers, used the water’s riffles as a guide to a shallower traverse, and the rest of the team followed her lead in their final water crossing. They had overcome the last significant obstacle of the expedition. “I was really scared that it could be 2km of quicksand, maybe that we can’t even pass, cold water, I just didn’t know what the f*** to expect at all,” she recorded. “We got down there and the start seemed ok. We crossed the first braid and made it. Oh my gosh it was

so exhilarating… Teetering on the edge of fear and determination. On the other side we hugged, cheered, had a delicious coffee. Such a special, beautiful and serene moment."

The team continued for about eight kilometres along the edge of Lake Hazen, whose northern side, from the glacier on, is a ridgeline of tall and steep mountains that border the southeast side of the glacier. The contours on the map for this portion of the traverse were the tightest that the team had seen during the operation. At times, the team stayed high on the hillside, while at other times, they walked right beside the lake, where there was either twenty feet of open water between shore and ice, or candle ice that the wind had stacked up on the shore.

The diversity of terrain that the team had moved through over the last eight days made for sore ankles and knees by this point. This necessitated very focused travel over the hummocky stretches of "baby heads," where it would be easy to sprain or break an ankle. It took discipline, both mental and physical, to ensure careful footing and to remain attentive to everyone's safety and capacity after an already eventful day. The scenery was stunning, with the open water reflecting the surrounding landscape on its glassy surface. Although the sun was out all day, a cool breeze demanded that the team layer up during all of their breaks. Breaks now were for intentional full-body relaxation. There was no upright snacking; instead, most team members laid completely flat, giving every muscle a chance to catch a break.

The Alpine Team set up camp at the base of the west side of an alluvial fan from Ptarmigan Creek. Cath and Pat scouted the route for the final morning of hiking before settling in for the evening. There were two choices: one to climb and jump a creek; the other, to go to the lake

and traverse the extra distance around the alluvial fan. Here, Cath suggested that Gavin make the final decision. With eleven kilometres to go, he reasoned that the team should take the lake route, which would be easier on their joints and, albeit at a slower pace, facilitate a successful arrival at Hazen Camp on 22 July. Like every other night, the team spent the evening eating, laughing, and farting. They were living the dream.

The final push to Hazen on 22 July, the ninth day of the expedition, was bittersweet. The team was eager to accomplish their mission and to report their news of success back to LCol Hanes and the Command Post in Resolute. At the same time, they were hesitant to complete a journey that, only nine days earlier, they had built up as the biggest, grandest unknown adventure of their lives. Given the several months of training and preparations, the incredible long flights to the High Arctic, and the 140 kilometres that the team had travelled thus far, the day signified so much. As is the case with an archetypal adventure, it is ultimately less about the final destination than it is about the journey. At this point, the team had only a short distance left.

A mild, sunny morning started off slowly at 07h00, when the team had breakfast and coffee before gathering up their clothing, taking down the tents, and calculating and packing their remaining snacks. When the team donned their packs for the final trek to Hazen, Cath reminded everyone to move at a gentler pace than before and silently take in Ellesmere, given that this might be the last time that team members would ever experience it. The steps were slower than normal, partly reflecting the Rangers' reluctance to accept that it was the final day of hiking, and also to ensure that the team arrived safely at Hazen Camp after having successfully completed their mission.

The team only had ten kilometres to complete on their final day, so their breaks were longer than usual, and they soaked in the last few hours of patrolling, with little wind to alleviate the heat and mosquitoes. The waters of Lake Hazen were like glass, reflecting its surroundings like a mirror. They passed over the sands and rocks on its shore, the steep bank looming over them, candle ice to the other side. They encountered wolf and polar bear tracks, a reminder that they were transiting a wild homeland. For Cath, the final walk seemed like "a gift, … and I slowed our pace and tried to breathe the air in just a little more deeply.… A friend of mine talks about crying as 'leaking,' which I love. When we experience a feeling so big, our containers just can't hold it in any longer. This time, the leak was an overwhelming sense of gratitude and pride for our team."

After the team traversed the last of the many alluvial fans – this time "Blister Creek" at the base of "Blister Hill," where a group of McGill

students decided to break in their hiking books with an outcome obvious in the topographical names – they knew they were getting close to their destination. Bridging the last ridge, Cath spotted antennae. She stopped in her tracks and waited for the team to catch up. Rather than completing the final walk into Hazen camp in a line, the team would travel together through this final section, deliberately celebrating the unity that had gotten them this far.

Hazen Camp (81°49'N, 71°18'W)

The camp was an extraordinary sight to see, offering their first glimpse of civilization since departing Tanquary Fiord nine days earlier. Originally established by the Defence Research Board in 1957 for the "Operation Hazen" scientific studies that were part of the International Geophysical Year, it functions as a warden station for Quttinirpaaq National Park and a hub for researchers, providing all-weather shelters and space for scientific work. The Weatherhaven accommodation building is essentially a rugged insulated tent with a solid floor and interior walls, with other Parks Canada buildings, a kitchen tent (the original Atwell tent set up in 1957), a small visitor centre, a solar-powered shower box beside the aerial, and outhouses filling out the camp footprint. Visitors set up tents in the camp area. "It looked just as though the Canadian textbooks had shown it 30–40 years ago," Cath described. "Strange buildings designed for the arctic, sitting in the middle of nowhere where nothing seems to live and wondering why or how it got there." Following a dried-up sandy stream bed down toward the small cluster of buildings, their backpacks had never felt lighter, and there was eager anticipation of biting into cookies from Resolute in the food resupply that 440 Sqn had dropped a few days earlier.

The team arrived at Hazen Camp and went straight for the single picnic table in the centre of all the buildings. Backpacks were dropped, and the team finally slowed down and maybe even ceased to function

for a few minutes. There was no more ground left to cover, and their mission was officially accomplished. The team hugged and cheered, with high fives and smiles all around. Pat made contact with the Command Post in Resolute to report the team's safe arrival. Immediately after, they headed over to the tri-wall that had been dropped at the camp, filled with spare rations and snacks. The team excitedly dug in and found fresh fruits, cookies, Rice Krispie squares, beef jerky, and freeze-dried meals. The feasting began!

The rest of the day was spent resting, enjoying a cold plunge in the lake under the bluebird sky, eating, and setting up camp. Not far from Hazen Camp, two muskoxen grazed, an inviting reminder of this serene place's permanent denizens. A few hours after the Alpine Team arrived, a Parks Canada and Environment and Climate Change Canada (ECCC) crew arrived by Twin Otter. Everyone helped to haul supplies to camp, and Pat completed a recce of the short, modestly improved airstrip along the shore of the lake. That night, the exhausted group needed no coaxing to have a long and restful sleep.

The next morning, the team enjoyed giant breakfasts and fresh coffee, then packed up their tents in anticipation of returning to Resolute Bay with 440 Sqn. James confessed that he had already had breakfast: four

freeze-dried granola and blueberries packs at around 04h00 after he woke up ravenously hungry. This pre-breakfast appetizer would, under normal circumstances, be a day's worth of caloric intake. Having recognized early in the trip that he was in a chronic caloric deficit, however, James had no hesitation in digging in. Indeed, all the team members' bodies were hungry.

The Command Post in Resolute confirmed that the Alpine Team would be picked up the next day, so they enjoyed relaxing and reminiscing together. That evening, Catherine, James, and Maya walked about two kilometres to Blister Hill, soaking up whatever they still could of Ellesmere. Having successfully completed their mission, they no longer worried about an injury that could prevent them from completing it. A sprained ankle at this point would not have been a big deal. Free of worry, they followed muskox, Arctic fox, and wolf tracks all the way up the 400-metre-high hill. The hill's slopes are part of a polar desert ecosystem with surprising biodiversity, with several plant species growing on the barren, rock-strewn hill. Known for its outcrops of Mesozoic and Permian sediments, primarily sandstone and shale, the minerals near the top of its peak make for a spectacular palette of a cream colour to bright orange (in contrast to the more subdued colours

that the team encountered elsewhere in the region). Pat and Gavin relaxed back at camp, where Gavin devoured the book *Does Anyone Read Lake Hazen?* about four young graduate students who spent the winter there as part of Operation Hazen back in the 1950s.

The next morning, laughter and banter carried loudly through the air between the two tents by 07h00. After coffee and breakfast, the team took down their tents and packed up camp. It was decided via rock-paper-scissors that Catherine, James, and Gavin would be on the first flight from Hazen to Eureka, and Pat and Maya would be on the second. The team watched the yellow RCAF Twin Otter land on the bumpy airstrip and shouldered their packs for the last time. The 440 Sqn pilots brought along salty snacks, which the team devoured in no time. The outbound flight on a beautiful clear day afforded a new perspective on the 150-kilometre trek that they had just undertaken, showcasing the river valleys and Barbeau Peak poking higher than the surrounding hills and mountains. "It was glorious to see the terrain and distance we have covered from the sky," Cath wrote. "I was back and forth to look out both sides of the plane trying to take it in and not miss any perspective." The view from the air confirmed that its approach was long and gradual, leaving the team lamenting a lost opportunity – but also prompting conversations about how they would love to hone their skills to return for a subsequent attempt. For his part, James recorded that the Henrietta Nesmith Glacier, just south of Barbeau Peak, "looked divine. It looked blissful and heavenly, like a different dimension altogether, a sea of ice and snow lapping against peaks." They arrived at Eureka on schedule, and the plane returned to Hazen Camp to pick up Maya and Pat, who had played cribbage at the picnic table while waiting, and reunite the group at Eureka – the third-northernmost permanent research community in the world.

The Eureka station consists of three areas: the Eureka Aerodrome, which includes Fort Eureka (a distinct accommodation building adjacent to the airstrip for military personnel who maintain the communications equipment on Ellesmere), the ECCC weather station, and the Polar Environment Atmospheric Research Laboratory (PEARL), operated by university and government partners. The Alpine Team enjoyed delicious meals at the ECCC base, where they relaxed in the recreation room, playing pool and guitar. They were also encouraged to check out Fort Eureka, where the rooms told stories of the various military personnel who had been stationed there over the years: the rec room that resembled a stereotypical curling club bar, logistics stations, medical offices, warehouse space, gym, and hallways of dorm rooms.

With no one around, it resembled a space station – and may well have been, considering how far the team was from any town in Canada.

Even with the option of rooms on their own, Maya and Cath refused to be apart and shared a room with four bunk beds. They also decided to make lots of noise, banging on the walls that separated them from Pat's neighbouring room, to emulate the winds out on the land. This way, the final night on Ellesmere could resemble all the others before it.

On 25 July, after a delicious breakfast and a tidying of Fort Eureka, the team was ready to step onto the 440 Twin Otter one last time and head back to Resolute Bay. This time, the team would not split up, as all their packs and gear had left on an early morning flight, and the team would take a second. It felt like they had come full circle, prompting the team members to revisit in their minds the months of anticipation and preparation, the excitement and nerves leading up to and during the flights to Tanquary Fiord, and the elation and pride of completing a historic dismounted, unsupported patrol on Ellesmere Island. Cath's journal captured the sentiment elegantly:

> With each pause in our return back to Resolute I find I am reflecting on the trip already.... The sound of the [Twin Otter's engines] could have me asleep in seconds, only I don't dare miss a second of what I get to see here. I may never see it again. I was told I was quiet on the trip. I was. Out in front, I had this gift of only my footsteps in front of me and this ever-present awareness of myself, the team and everything around me. I asked curious questions in my mind about pretty much everything. To be away from what seems like constant stimulus and expectations and to just have one objective is really incredible. I think I was quiet just because I could be.

9

CFS Alert: Past, Present, Future

For Team Alert, plans had changed. The actual conditions encountered on the ground to the west of the station had proven more arduous than expected, dashing their dreams of a quick breakthrough to the Patterson River and an accessible route westward south of the James Ross River and north of the Grant Ice Cap. With no advance air recce or substantive information about the areas into which they were travelling, the group had to crawl its way through difficult terrain, encountering more snow and higher water levels than anyone expected. Given their remoteness and the absence of air support, they had to drive with extreme caution, always balancing progress with preservation to ensure that their machines and trailers would last to get them back to CFS Alert. Their ambitions tempered by High Arctic realities, they had recalibrated and were anxious to push onward on the morning of Sunday, 20 July.

Seeking Mount Patterson

Weathered in for a day at their camp just south of Victoria Lake, the team was keen to press on to get "eyes on" Mount Patterson, about fifteen kilometres due west of their position. They harboured no delusions that it would be a straight path, however, as the hilly, austere terrain all around them had proven tricky: impassable creek beds with steep cliffs on both sides, snow-covered valleys, rock gardens, seemingly endless fields of hummocks, deep hidden fissures in gravel fields, sharp rocks, and vast stretches of wetland. Gobbling down breakfast and tearing down camp, they mounted their ATVs at 09h00 and headed toward the Patterson River.

After proceeding down a promising valley, the group soon found itself blocked by a creek and bank strewn with vertical-pointing slate rocks threatening to puncture tires. They were too far from the station to risk trying to run it by machine. Instead, they decided to don their rucksacks with supplies for forty-eight hours and see how far they could proceed on foot toward Mount Patterson.

Although cool and overcast, there was little wind in the high-altitude valley, which made for relatively comfortable hiking weather. The ground conditions, however, were not as favourable. The path was fully covered with “ankle breakers” – uneven rocks of varying sizes, offering very few flat places to put one’s feet, with the ever-present danger of slipping into a hole and twisting or snapping an ankle. Even with hiking poles to provide three points of contact with the ground at all times, the fifty-pound packs and tough terrain made for slow going. While the fittest members of the group seemed to pick their way through with modest effort, a couple members started to fall behind. Old injuries resurfaced, and, within an hour, Spence voiced his concern about someone getting hurt. The decision was made to drop the rucksacks, leave them on a rocky promontory, and travel up the valley, in ultralight fashion, for a short day trip. For the first time, a few audible grumbles of discontent were discernible in the group. Leaving the backpacks ended the prospect of a long walk to Mount Patterson and beyond, or of an overnight camp as part of a dismounted patrol.

No one was willing to disrupt the consensus by vocalizing explicit disagreement, however, so the team proceeded to carefully pick their way along the rocky creek bed before finding a clear path up the elevation to their right. It was a scrambled ascent of several hundred metres over broken ground, involving a few modest switchbacks and some calf-stretching inclines. At the top, the team enjoyed a sweeping view of the United States Range (part of the Innuitian Mountains) in the distance and Mount Patterson to the left. After requisite group photos, they compared the map with what they saw in front of them. With no easy routes readily apparent, and some members with no appetite to explore further on foot, they retraced their steps back to the place where they had parked their packs, enjoyed soup and a cup of coffee, and then returned to the ATVs.

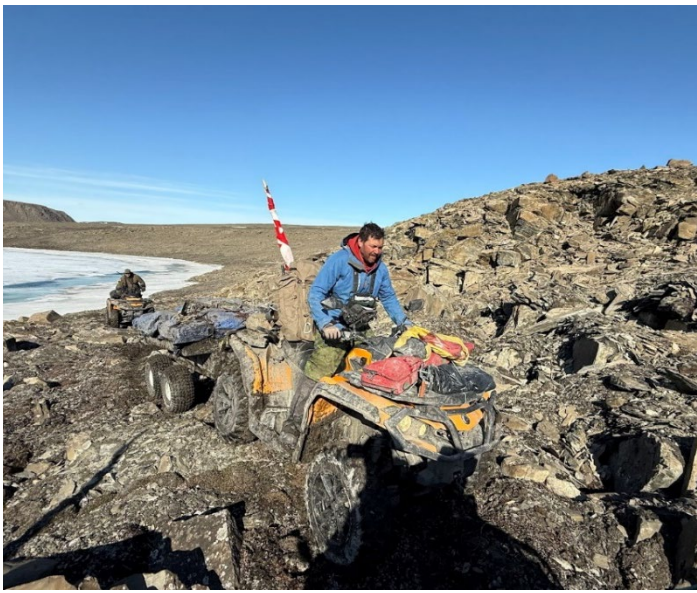
The vista looking out over the Patterson River valley would be the furthest that they would get from CFS Alert on this trip. At 17h15, with the ATVs and trailers reloaded, Team Alert reversed course and headed down the valley in the opposite direction, where the conditions proved much more favourable. After negotiating a rocky riverbed, they drove down a shallow creek, gunned their way through large expanses of marshy ground, bumped over hard hummocks, and cruised over gravel patches. The sun, shining overhead, made it an enjoyable ride. In just over an hour, they covered more than ten kilometres – fast progress by previous standards – before arriving at a picturesque spot along a burbling creek that offered a flat, dry, soft mossy campsite. The panoramic view could not be beat, with a sweeping valley around them, gentle rolling hills and a mountain in the distance, and surreal cloud patterns in the sky. A moderate wind blew up, dropping the temperature to below zero and encouraging everyone to add layers for warmth. The

conditions also made for sensational photos with flags blowing straight and proud in the wind. After dinner and conversations, it was early to bed.

The Return Trip

The group woke at 07h00 at their idyllic campsite to overcast but comfortable conditions. They did not rush, enjoying their surroundings with coffee and breakfast rations, leisurely packing their gear and taking down the tents, and carefully loading the trailers. Departing at about 09h00, they found that the route that they had scouted out the day before was ideal, following a creek through a valley and linking up with their old trail back to Hilgard Bay. By this point, everyone in the group was a seasoned ATV rider, which meant that following a proven, familiar route made for quick progress. Avoiding the areas where they had been bogged down or turned around on the outward journey, they covered in a couple of hours what had taken many more only a few days before. By 11h00, they enjoyed an early lunch at the north end of Egerton Lake, while Spence proceeded to recce a potential route around the western shore in hopes that they could avoid the treacherous rock gardens on

the other side. Ultimately, it was impassable, and they had to return to the route that they had proven, with much difficulty, on the way out.



The rapid progress that they had made earlier in the day was not replicated around Egerton Lake. Attempts to find an easier route along the high ground on the eastern side proved futile, and Leandra and Tanner again took turns guiding the team up, down, and across the steep, uneven hillside carpeted in sharp rocks. Although not all side-hill crossing could be avoided, they worked carefully to discern the least arduous paths. Regardless, the machines again took a pounding. With careful guiding, they climbed the steep rock garden that they had proven on the way out without mishap – although it still brought an adrenaline rush, required the utmost attentiveness, and almost led Travis to flip his heavy trailer. An accident on that stretch could have been disastrous.

While the most difficult terrain was now behind them, the group continued to battle adversity. On the way down to Bowery Inlet, Whitney notified Travis that his trailer had blown a tire – likely a casualty of the chaotic conditions around Egerton Lake. It was the first sign that the equipment was wearing down from its intense usage over the previous five days. With Travis parked along the shoreline, Whitney was instructed to go up the hillside and use his winch to pull the trailer on its side in lieu of a jack. Tanner, Leandra, and Travis had the tire replaced in a few minutes, and the journey continued. Proceeding around the western side of Hilgard Bay, the team crept along the shoreline as much as possible but had to traverse the hillside in stretches to avoid obstacles. The pin holding Tanner's trailer hitch to his machine popped and had to be found and then fastened with wire. Then, along the rough terrain on the eastern side of the bay, Travis flipped his trailer on tall rocks along the shoreline. As a group, the team righted the trailer and then continued.

Morale was high as they selected a beautiful, rocky beachfront site for their camp overlooking the bay and set up their tents. Soon, a solitary Peary caribou appeared on the hilltop close to the camp, grazing without any concern for the humans below. While careful not to pressure the animal, Tanner crept and crawled his way up to a ledge in front of the animal for photographs. Concurrently, Spence spotted a polar bear about one kilometre out across the bay. The off-white colour was barely discernible to the naked eye, but binoculars and a spotting scope brought it into clear view. The group watched it amble toward the ocean for a few hundred metres before it smelled a seal hole, circled for a while, sat for a while, rolled onto its back, and then decided to lie down for a nap. The bear's presence nearby prevented the group from exploring the shoreline up the bay, as they had planned. The team had gathered driftwood along the shoreline in anticipation of an evening fire, which they lit in hopes that the bear would soon proceed on its way. It continued sleeping. A curious fox paid a visit and then scuttled off. The caribou kept grazing nearby. The bear kept sleeping out on the bay.

At 19h45, Spence decided that it was unsafe to camp with a bear so close by. While it had shown no signs of aggression, the chance of it detecting the group's scent when it awoke and approaching the camp-site represented an unnecessary risk. The prospect of having to shoot a bear, when the humans were

encroaching on its home (not vice versa), was unacceptable to everyone present. So the tents were packed away, and the group was told that, with CFS Alert so close, it made sense to head back to the station. There were some quiet grumblings in the shadows. Why not find another campsite nearby? Why head back to CFS Alert when there was so much more exploring to do? After all, they had brought eleven days' worth of rations, had ample fuel left, and still had everything in good working order. But the decision had been made, and the enticement of comfortable beds and a warm shower was too strong to overcome.

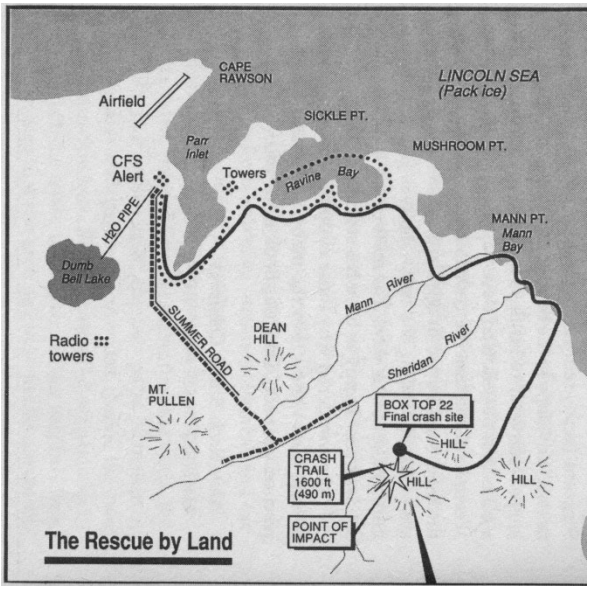
The team soon linked back up to the station road network at Kirk Lake, but muddy patches continued to demand a lot of throttle to push through, particularly for Travis and Tanner pulling their trailers. One long stretch of uphill mud, about two kilometres from the station, finally proved too much for Tanner's ATV. The engine blew, sending parts bursting out of the right side of his machine and striking his ankle. Although Tanner was bruised, he also expressed a sense of luck that he had not been more seriously injured. Leandra pulled his ATV and trailer back to the "worm farm," where the group dropped the trailers just before 21h00 before proceeding on to the station to shed their mud-laden clothes and rucksacks. After a quick shower, they converged at the Arctic Den, which the Station Warrant Officer had kept open late in anticipation of their return. Station personnel and scientists gathered around the various team members to look at pictures and hear stories about the trek, ending the evening with the request that the group pull together a more formal presentation about its experiences later that week.

The next day was relatively low-key, comprised of doing laundry, catching up on email, downloading photos, and sorting out the equipment in the trailers. Now that Tanner found himself without a functioning ATV, he worked diligently to get the sixth machine running. This ensured that no one would have to double up on a machine for the day trips planned for the next couple of days. CFS Alert would now be the hub, and Whitney's exuberant suggestion that they plan an overnight patrol was quickly shot down. Instead, they would head out the following day to visit the crash site of BOXTOP 22, bringing minimal equipment and no trailers. The large bonfire that night at the station

burned much brighter than the ones that Team Alert had enjoyed while out on the land, but no one could claim that it was fuelled by High Arctic driftwood.

Navigating the Sheridan River to the BOXTOP 22 Crash Site and Floeberg Beach

On Wednesday, 23 July, the team set out for the final resting place of the remnants of BOXTOP 22. Rather than retracing the route that they had used to reach the mouth of the Sheridan River eleven days earlier, they would try a new trajectory south of the station, between the "Crystal Mountains" (Mount Pullen and Dean Hill) and then across the river. In the past, people had driven to the Sheridan River on ATVs before crossing the steep ravine and the river on foot and walking about five kilometres to the site. For the "Royal Canadian Mounted Rangers," as one of the team members jokingly suggested that their crew should be renamed, the point of the exercise was to see how they could get there by ATV at this time of the year.



Once again, this was no leisurely Arctic safari. The Sheridan River did not yield any feasible places to cross by ATV – even though the faint tracks of old BV 206 routes up and over the steep hill to the east revealed that others had crossed by vehicle, although likely not in the transition season with the ground wet and the river levels high. Instead, the group followed the high ground in a northeasterly direction before encountering a tricky rock garden leading down into a ravine, with the river at its base.

Getting to the water crossing required skilled navigation. Crossing the river involved a healthy dose of risk. The ascent of 800 metres on the other side proved the most perilous of all, given the steep pitch. Whitney lost his nerve about 100 metres from the top and tried to gun it straight up, spinning out and requiring Tanner and Leandra to push the ATV until it gained some traction. The plateau above was more benign, with rocks yielding to hard hummocks to boggy tundra to deep snow. Long stretches of the latter required some digging, pulling, and winching to free some of the machines – which the sunny skies, comfortable ambient temperature, and light wind made an enjoyable exercise marked by laughter and strenuous work.

The BOXTOP 22 crash site was still partly shrouded in snow. The group parked their ATVs about 300 metres away, reverently approaching by foot through snow and marshy ground. The detritus of the crash, a tragic event described in chapter six, is still strewn about the site, preserved by the desert-like Arctic conditions as if it had happened much more recently than 1991. Stepping through the snow required caution, given that smaller debris remained concealed beneath. The tail of the downed Hercules is the most prominent landmark, poking out of the snow and offering a natural congregation point. The thought of the survivors in frigid temperatures, huddled together in the metal tail section trying to shield themselves from the wind while awaiting rescue, was difficult to imagine, given the snow and "spaghetti of wires" (to borrow adventurer Jerry Kobalenko's memorable description[1]) that filled the space. At the

site, the team paid quiet tribute to the five CAF personnel who lost their lives: Capt John Couch, Capt Judy Trépanier, MWO Tom Jardine, Warrant Officer Robert Grimsley, and MCpl Roland Pitre. They also talked about the search and rescue effort. While the crash site is only sixteen kilometres from CFS Alert as the crow flies, the ground rescue team travelling overland did not have an easy path to get there, particularly in the darkness and horrendous weather conditions at that time. The group found that gorges and slot canyons that might not prove insurmountable to hikers can be impassable obstacles for motorized vehicles, and search and rescue teams must always remain vigilant to avoid becoming subjects of a rescue themselves. Imprinted with a strong sense of isolation and the precarity of life, Team Alert paid its final respects and headed east toward the coast, seeking to avoid the difficult terrain that they had encountered earlier.

Once again, the map proved deceiving, and there was no straight path from the BOXTOP crash site to Cape Sheridan by ATV. The hilly terrain concealed as much as it revealed, with large patches of snow indicating no sense of depth – and thus preventing the group from trying to go through them. Snow overhangs blocked access to several places where they might have forded rivers and streams, forcing long digressions to seek out a different route where terrain and water levels

Thomas Mitchell, "The Last View of the "Alert's" Winter Quarters at Floeberg Beach, Ellesmere Island," watercolour, 1876. Library and Archives Canada 2834013, Accession 1936-259-17.

were more favourable for a water crossing. More fields of hummocks made for a bumpy ride, and scattered snow patches forced diversions. The upside of the snow patches on hummock fields was that it was easier to ride along the edge of a snow patch, where the snow had filled in the gaps between the mounds, briefly smoothing out the terrain and offering a short-lived reprieve from the jarring ground.

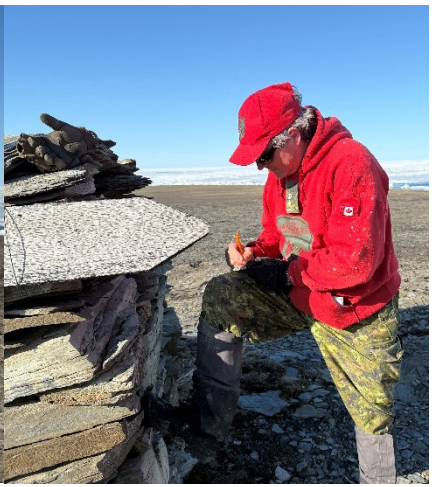
Given these efforts, the group was relieved to reach Floeberg Beach by mid-afternoon. When Whitney had recounted the history of this area earlier, other team members had conjured up ideas of finding treasure left behind by previous explorers. With two ships, George Nares led a British expedition in 1875–1876 that attempted to reach the North Pole by way of Smith Sound, the narrow channel separating Ellesmere Island from Greenland. Nares's ship HMS *Alert* reached Floeberg Beach, marking the furthest north that any vessel had sailed to that time. His expedition team wintered at the south end of the beach toward Cape Rawson, and one of the crew members coined the word "floeberg" to describe the massive ice floes that ground themselves in the shallow bay along this stretch of shoreline. Nares and his men discovered that the shoals lying just offshore prevented the active ice pack of Nares Strait from entering the shallow bay, thus protecting his ships from getting crushed.[2] Thirty years later, US explorer Robert Peary and his crew (accompanied by twenty Inughuit families from Greenland who lived in tents) built structures on the central part of the beach before shifting to the more protected northern end during their 1908–1909 overwintering. Here, they cached supplies in preparation for their push to the North Pole when daylight returned in the spring.[3] The 1 CRPG team did not search for the remnants of shelters or camps, but they could not miss other material evidence left by previous visitors.

Cairns are typically erected on high points of land to make them readily detectable to the human eye. "Nowadays, hikers build cairns as an 'I was here' statement, but in polar exploration, that was only one of

its roles," modern-day explorer Jerry Kobalenko explains. "Cairns also alerted other explorers that a particular party had passed that way. Usually, the explorer who built a cairn left a note saying where he was going." He also notes that it was convention for whoever later found the note in a cairn to take it, but only after copying the message and replacing it in the cairn, along with a new message. "If undisturbed, a cairn will remain in place for 1,000 years," Kobalenko observes. "If you do your homework, you can usually determine who built a particular cairn, and when."[4]

Team Alert first encountered the massive rock cairn that twenty members of Nares's *Alert* crew built at Floeberg Beach. Getting there required a short hike over uneven, jagged rocks, some of which stuck out from the others like natural tombstones. From this natural apex, the view over the beach and the Lincoln Sea was spectacular. Peeking between the rocks that formed the cairn, Whitney noted a rusted barrel – likely part of the original Peary cache. With no time to disassemble and reassemble the cairn, the contents had to remain speculative, and its other secrets remained hidden. The team could see the *Roosevelt* cairn that Robert Peary built, about a mile to the north, which binoculars confirmed was topped with a cross made of iron-shod sled runners. Some members of the group thought that viewing it from afar was enough, and the historian could not convince them to take another detour to actually visit it.

Proceeding along the coastline, they came across another cairn – this one with a modern marker lying on the ground in front identifying that this was a historic site that was not to be



disturbed. A close examination revealed that it was the Marvin Memorial, erected in honour of Ross G. Marvin, Peary's young secretary and assistant and the only casualty of the 1908–1909 North Pole Expedition. A plaque with words painstakingly hammered out by George Wardwell, the chief engineer on *Roosevelt*, indicated that Marvin drowned on 10 April 1909 after falling through thin ice forty-five miles north of Cape Columbia. But was this the case? Kobalenko left a note in the cairn suggesting that Marvin had been ordered murdered by Peary, with whom he did not get along. Whitney, the team's resident historian, looked further into the case when they got back to the station, confirming that the circumstances of Marvin's death remain controversial. Kudlookto, one of the Inughuit who was closest to Peary, confessed to a Danish missionary two decades later that he had shot Marvin while out on the ice.[5] Was this because the recent civil engineering graduate from Cornell had discovered that Peary's latitude readings were unreliable? Had Peary directed Kudlookto to kill him?[6] Whatever the case, Peary noted that "the bones of Ross G. Marvin lie farther north than those of any other human being."[7] Team Alert added their own note to a glass jar in the cairn containing those of a few others, thus acknowledging their visit in the traditional manner.

From the beach, the group headed west to find a way across the Sheridan River. A small creek with a deep snowy bank required some work, with Leandra pounding a path through the dense snow with repeated bursts of her ATV. She would burst forward about a metre, get stuck, then Tanner would winch her back using his machine, and she would take another run. With the path broken and a MAXTRAX recovery board strategically laid in the deepest tracks, the other ATVs made it through. Wet feet, sweat, and tiredness were growing realities, but the

weather continued to cooperate. Several prospective valleys that led down to the main waterway proved false leads when the river in those sections flowed too fast and deep, or the opposite shoreline offered no access through the snow or steep banks. With patience and perseverance, the team eventually found a comparatively narrow crossing with a modest current that looked feasible – but there was no way of gauging the actual depth of the water. "Take a chance, shit your pants," Tanner exclaimed as he thrust forward into the water, his ATV plunging deeply into a channel on the far side before immediately popping back up and climbing the bank. The route proven, the others promptly followed suit without hesitation.

Soon reconnecting with the route that they had taken on their "shake out day" on 11 August, the group completed the rest of the trip back to CFS Alert with few stops. The crossing at Pullen Creek still required caution and a carefully considered path, but the seasoned team traversed it with confidence. Arriving back at CFS Alert in time for an evening drink, they changed clothes and convened in the bar to debrief on what was their last grand adventure of the operation.

Winding Down

The following morning after breakfast, the team gathered at the "worm farm" for a 13.8-kilometre ride out to what the station residents call "Crystal Mountain" and the maps refer to as Dean Hill. One veteran member of the station staff likened the hill to Superman's "Fortress of Solitude," a sparkling oasis in the middle of the tundra that lit up on a sunny day. Team Alert had passed between this feature and Mount Pullen the morning before, promising to return and see what they could find. They ascended the 400-metre-high mountain slowly by foot, picking their way through the broken rock with their eyes cast downward to look for the quartz crystals rumoured to be everywhere on the south-facing slopes. After several hours climbing toward the top, they

discovered that they should have been focused on the summit all along. Hand-dug pits dotted the top, indicating how many generations of visitors had sought their own prime specimens. After an hour or so of filling their pockets with small crystals of various colours (from clear to smoky black), they descended and drove back to the station.

That night, Team Alert shared its story with the staff at CFS Alert in the main theatre-style briefing room on the second floor. They began with a short video that Leandra had prepared, featuring some of the video footage that they had taken on the trip. Travis began the formal presentation with a short overview of the objectives and planning behind Operation NANOOK-TAKUNIQ. The rest of the team then took turns speaking to PowerPoint slides with photos depicting what the group had done, offering humorous anecdotes, describing the varied topography beyond the station, and explaining how they had dealt with obstacles. The presentation left the audience with a clearer sense of who the Canadian Rangers are, the distinctive skill sets that they bring to the military, and the importance of a comprehensive approach that leverages 1 CRPG and all of Team North, including private sector partners, to achieve strategic and operational objectives.

The Command Post in Resolute informed Team Alert that they would be leaving Alert earlier than expected and should be prepared to leave on 25 July. This was soon pushed back to 26 July, owing to a shortage of available RCAF aircraft because of the Operation LENTUS missions dealing with wildfires in southern Canada, and then delayed again to 28 July. This provided a couple of days to sort equipment and pack the tri-walls, return tools that had been borrowed from the station, wash the ATVs, and weigh everything with the air freight handlers. Packing and return preparations were completed by the afternoon of 26 July, when the team drove their ATVs to the airport and parked them in preparation to embark when their plane arrived.

Weekends at CFS Alert begin with brunch at 10h30, encouraging everyone with non-essential tasks to sleep in and leaving the cooks with one less meal to prepare. For their day of rest on Sunday, 27 July, Leandra, Travis, and Whitney decided to make the most of their final free

time on northern Ellesmere Island by hiking to Mount Pullen. The day was grey and overcast, with a light drizzle, so they dressed accordingly. Without machines, they were free to take a different route out to the site and left the roadway as soon as they rounded the head of Alert Inlet and the creek that flows into it. The ground was hilly, typically covered with soft hummocks laden with rocks or firm gravel hummocks, steep rocky climbs around river valleys that either had flowing water or were filled with snow, and long expanses of slushy snow that quickly exposed the limitations of waterproof boots. Low cloud cover meant that they were close to Mount Pullen when its foothills and base finally came into view. The two blue peaks on the CFS Alert coat of arms depict Crystal Mountain and Mount Pullen, between which the sun rises each March to end the winter darkness. This day, however, there was no sun to be seen.

The graduated slope leading up to Pullen soon yielded to the familiar broken terrain of sharp rocks that carpeted the steep, inclined surface of the mountain. Even without heavy packs, the uneven ground required deliberate footwork to avoid injury. Thin mossy traces on the rocks afforded traction and relief, but it was a case of slow and steady

zigzagging up to the summit. By the time they reached the top, the weather had changed to freezing rain and snow, with a strong wind making it feel much colder. They surveyed various holes that previous visitors had dug (presumably in search of quartz crystals, none of which shone in the dreary conditions) and studied an old barbeque box, cairn, and wooden cross erected by the 3rd Battalion of the Royal Canadian Regiment (Travis's home regiment). The dismal conditions meant that they did not stay long before starting the long descent and walk back to CFS Alert, this time following the well-established ATV route. About two kilometres away from the station, Spence and Tanner appeared in a truck and offered to drive them the rest of the way. Travis and Leandra were hesitant to concede, but Whitney leapt into the vehicle immediately. Tanner had picked them up dinners-to-go before the Igloo Gardens closed, which they consumed heartily at "The Beach" – the common area on the ground floor at the station – after a long day of hiking.

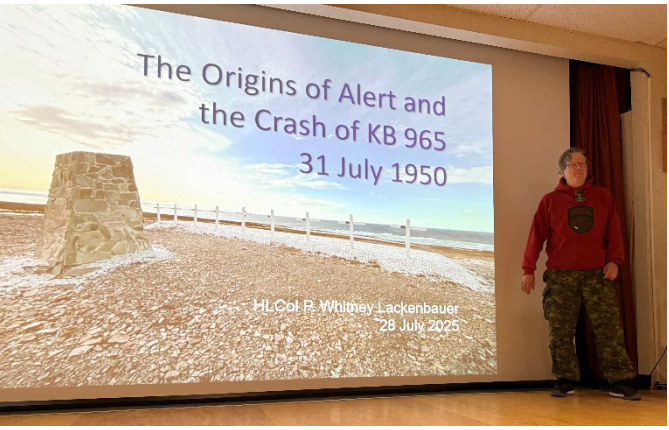
Commemorating the Origins of CFS Alert and the Crash of KB 965 on 31 July 1950

Team Alert visited the station on the seventy-fifth anniversary of its creation as a weather station and of the crash of a Lancaster aircraft resupplying the fledgling outpost. Just south of the "worm farm" lies strewn wreckage from the crash, left at the site as an enduring memorial to the accident. Just beyond the airstrip, about 600 metres north of the station (Lat. 82.49884, Long. -62.34619), is a commemorative stone cairn with nine white crosses in front of it overlooking the ocean, each adorned with a brass nameplate:

FLYING OFFICER J.R.G. DUBE
WING COMMANDER D.T. FRENCH
CHARLES HUBBARD

DOCTOR D.W. KIRK
FLIGHT LIEUTENANT L.M. MACLEAN
FLYING OFFICER T.D. MARTIN
FLYING OFFICER J.E. MCCUTCHEON
LEADING AIRCRAFTMAN R.L. SPRANGE
FLIGHT LIEUTENANT F.L. SWINTON

This memorial is dedicated to the crew of 405 Squadron Lancaster KB 965 and two passengers who were killed when their aircraft crashed on 31 July 1950 – a tragic loss serving as a reminder of the perils associated with High Arctic operations.



Just after lunch on Monday, 28 July, Whitney – a history professor – was invited to deliver a presentation to station personnel on the origins of Alert and KB 965. He outlined how Alert began as a small weather station forming part of the binational Canada-US Joint Arctic Weather Stations (JAWS) program that extended meteorological data gathering to the northernmost parts of North America in the early Cold War period.[8] In the summer of 1948, the US icebreakers *Edisto* and *Eastwind* reached Dumbbell Bay on the north coast of Ellesmere Island, where a cache of heavy equipment, fuel, and field rations was deposited for a fifth Canadian station. The facility would become the "most northerly scientific post in the world," lying 1° north and 350 miles west of the northernmost Danish meteorological station at Independence Fjord in Greenland.[9] Although the 1949 summer sealift did not reach these far northern waters, the Americans had stockpiled another 321 tons of supplies and materials (mostly diesel oil and gasoline) for Alert at Thule.[10]

Geographer Peter Johnson Jr., who worked as a labourer during the construction of the Alert station in 1950, explained how it was established by air from Thule in April 1950. Unlike earlier satellite stations, the eight regular station personnel were supplemented by four extra men to aid in the construction of the buildings and a gravel airstrip. Once the initial airlift was complete, the station settled into a new routine. The officer-in-charge set construction priorities and daily schedules. "Twelve-hour days were the norm, but Saturday evenings

and Sundays were free time," Johnson explained. "Initially, everybody, aside from the cook, turned his hand to whatever manual tasks had to be done. Later, after most of the heavy labour and basic construction had been completed, those with technical skills needed for normal operation of the station spent proportionately more of their time setting up equipment or preparing facilities for those jobs."[11] By the middle of May, the bright orange operations building was standing and established the foundation for permanent living quarters once air temperatures rose above freezing. Southern scientists bombarded the station with requests for measurements of ice, snow, and auroral activity, while the station crew reciprocated with "a steady stream of small (almost daily) orders for parts and materials lost or damaged in transit."[12]

By summer, station life improved considerably. Meals were served in the mess hall within the operations building. The buildings had electricity. "The space, light, proper furniture and separation of functions in the eating and lounge areas of the operations building, although simple and basic, provided a much-appreciated luxury compared with the cramped quarters of the previous two months," Johnson recalled. "There was even a small library, the contents of which suggested somebody had ordered several metres of books from a secondhand bookstore." The station also sported a darkroom, equipping personnel to take up various scientific projects and amateur photography. [13] Nonetheless, the environment took its toll on the machinery. Work on the airstrip ground to a halt when both bulldozers and the scraper at Alert broke down from incessant use and limited maintenance. Charles Hubbard, the head of Arctic operations at the US Weather Bureau and the engine behind the JAWS program, tracked down spare parts, which an RCAF 405 Maritime Squadron Lancaster, conducting ice reconnaissance out of Thule (now Pituffik Space Base) in Greenland in support of US Navy Task Group 49.2, would airdrop to Alert.[14]

Just after noon local time on 31 July 1950, the station personnel on the ground watched as the Avro Lancaster arrived overhead. After passing over to chart progress on the airstrip, the plane turned to approach the station from the east to drop its payload. The parachute, however, caught the aircraft's left elevator and fouled the controls, sending the Lancaster plunging 500 metres to the ground. It exploded about 450 metres west of the main station. "For a moment, everybody was shocked into immobility," Johnson recalled. "Then they started running toward the column of smoke from which flames, flares and other minor explosions were now coming."[15] Because there was no

firefighting equipment on site, they had to wait more than an hour before they could safely approach the wreckage to recover the bodies.[16] None of the nine men – seven RCAF personnel and two civilians, including Hubbard – onboard the airplane survived.

The RCAF sent a Canso flying boat north on 3 August 1950 with personnel to investigate the crash and retrieve the victims' bodies. Although the crew planned to leave within a few hours, the plane's starter failed. By the time it was repaired, ice and fog trapped it in the bay. When the aircraft tried to depart five days later, the wind turned, and it plunged through some loose ice. Fortunately, no one was injured, but the plane was badly damaged. Although the Canso was repaired and operable within a week, the delay forced the station staff to bury the Canadians alongside Hubbard, whose widow asked that he be interred at Alert. Their gravesites – the northernmost cemetery in the world – are located near the northern end of the Alert airstrip, overlooking Cape Belknap and the Arctic Ocean.[17]

To assist with the investigation, USS *Edisto* and USCGC *Eastwind* left Thule early on 1 August. Once again, the passage to northern Ellesmere proved hazardous. As in years past, *Edisto* sustained ice damage to its starboard propeller and had to retreat. *Eastwind* proceeded to Alert alone. On 10 August, the ship's crew and the station staff held a joint military funeral for the victims, convened by a US Navy chaplain. The Canadian and US personnel aboard the icebreaker had made Union Jacks, which they draped over the coffins of the Canadian victims. An American flag adorned Hubbard's. The name of each victim was inscribed on each flag, which were delivered to the next-of-kin down south. A line of white crosses with nameplates marked each grave at Alert.[18] Hubbard's grave, surrounded by a small white picket fence, remained a solemn testament to the dangers of Arctic operations – even in the modern era.

Life went on at the stations in the wake of this tragedy. At Alert, the station crew found the spark plugs for their vehicles amidst the charred wreckage, installed them in the tractor, and resumed work on the

runway. *Eastwind* offloaded its precious cargo, including another bulldozer, a large scraper, and a towed grader.[19] This new equipment sped up construction, and a 1,350-metre runway was serviceable with a hard, dry, smooth surface by 24 August. By the end of the month, the station crew completed the dome-like rawindsonde shelter, and staff began to operate the upper-air measuring and recording systems. In early September, most of the airstrip construction crew departed, a thin cover of ice formed over the bay, and station life became increasingly routine. Synoptic weather observations, made three times daily since July, were complemented by rawindsonde flights and pilot balloon observations. "Ice was cut and stored by the buildings to be used for water during the winter," Johnson reminisced. "The foxes had settled under the Quonset hut, and wolves began to visit the compound, only to be chased away."[20] These Arctic denizens would have to share their homeland with people now permanently resident at Alert.

Rather than clearing away the debris from the crash site, it was left in place as a lasting memorial to those lost in the accident. Over the years, strips of metal skin have been removed from the hull, and the rear tail turret has disappeared from the site – likely to join the collections of souvenir hunters who served at or visited the base. Nevertheless, it is incredible how much of it remains today, with the station and its tentacles of cables and pipes continuing to grow toward and around it.

At a time of intensifying geostrategic competition, heightened attention to threats through, to, and in the Canadian Arctic[21] portends a renewed flurry of activity in the region. Maintaining its quiet vigil in the northernmost part of our country, CFS Alert is destined to continue to play a pivotal role in Canadian and North American defence, deterrence, and scientific leadership. On the seventy-fifth anniversary of the crash of KB 965, Whitney also suggested that it behooves us to take a moment to reflect on the risks and sacrifices of those who have undertaken the

task of resupplying this High Arctic hub – an essential mission that continues today as Operation BOXTOP.[22]

Departure

Team Alert's departure came later that afternoon. The group offered their sincere thanks to the CFS Alert personnel for their hospitality, generosity, and support, before embarking with their personal kit to the airport. Two chartered planes from Buffalo Air were waiting for them. Loading the ATVs and pallets onto the larger aircraft took longer than expected, but the planes took off at around 20h30. Low clouds on the flight meant that there was little to see through the windows, and most team members caught a bit of sleep before reconnecting with their comrades from the other patrols in Resolute Bay.

Notes

[1] Jerry Kobalenko, *The Horizontal Everest: Extreme Journeys on Ellesmere Island* (Toronto: Penguin, 2002), 298.
[2] George S. Nares and H.W. Feilden, *Narrative of a Voyage to the Polar Sea During 1875-6 in H.M. Ships 'Alert' and 'Discovery,' vols. I and II* (London: Sampson Low, Marston, Searle, & Rivington, 1878).
[3] Genevieve M. LeMoine, Susan A. Kaplan, and Christyann M. Darwent, "Living on the Edge: Inughuit Women and Geography of Contact," *Arctic* 69, no. 5 (2016): 1–12, https://doi.org/10.14430/arctic4624; *Polar Continental Shelf*

Program Science Report 2011-2012 (Ottawa: Natural Resources Canada, 2013), 22, https://publications.gc.ca/collections/collection_2013/rncan-nrcan/M78-1-1-2012-eng.pdf.
[4] Jerry Kobalenko, "The Stories That Arctic Cairns Tell," Explorersweb, 7 March 2021, https://explorersweb.com/the-stories-that-arctic-cairns-tell/.
[5] George Palmer Putnam, "Eskimo Killed Prof. Martin, Peary Aide," *New York Times*, 25 September 1926, https://www.nytimes.com/1926/09/25/archives/eskimo-killed-prof-marvin-peary-aide-confesses-arctic-crime-of-17.html.
[6] See Kobalenko, *Horizontal Everest*, 72–73.
[7] "Peary's Own Story of Marvin's Death," *New York Times*, 25 September 1926.
[8] See Daniel Heidt and P. Whitney Lackenbauer, *The Joint Arctic Weather Stations: Science and Sovereignty in the High Arctic, 1946-1972* (Calgary: University of Calgary Press, 2022).
[9] Can US Meeting Minutes, 9 December 1949, 26 January 1950, Library and Archives Canada (LAC), Record Group (RG) 85, vol. 303, file 1009-5 pt. 1B.
[10] J. Peter Johnson Jr., "The Establishment of Alert, N.W.T., Canada," *Arctic* 43, no. 1 (1990): 25, https://doi.org/10.14430/arctic1587; Report on Operations During 1949 of Joint Canadian-U.S. Arctic Weather Stations, c. December 1949, LAC, RG 85, vol. 803, file 100-9-5 pt. 1-B. The air distance from Pituffik Space Base (formerly Thule Air Force Base) to the northern tip of Ellesmere is 220 miles shorter than Resolute–Alert, making the Greenland base a more convenient hub for airlift operations.
[11] Johnson, "Establishment of Alert," 27.
[12] Johnson, "Establishment of Alert," 28.
[13] Johnson, "Establishment of Alert," 29–33.
[14] Johnson, "Establishment of Alert," 30–31; Richard Mayne, "'We're About to Crash': The Ghosts of KB 965 and Other Lost Aircraft at Canadian Forces Station Alert, 1950–1991," *Royal Canadian Air Force Journal* 10, no. 2 (Spring 2021): 32.
[15] Johnson, "Establishment of Alert," 30–31.
[16] Mayne, "'We're About to Crash,'" 32–33. See also Bomber Command Museum and Archives, "An RCAF Lancaster Bomber Named 'Dumb Dora,'" https://bombercommandmuseumarchives.ca/s,kb965dumbdora.pdf.
[17] Johnson, "Establishment of Alert," 32.
[18] S.T. Wood to USSEA [Under-Secretary of State for External Affairs], 20 September 1950, LAC, RG 25, vol. 3841, file 9061-G-1-40.
[19] Johnson, "Establishment of Alert," 32.
[20] Johnson, "Establishment of Alert," 33.
[21] P. Whitney Lackenbauer, "Threats Through, To, and In the Arctic: A Canadian Perspective," in *On Thin Ice? Perspectives on Arctic Security*, ed. Duncan Depledge and P. Whitney Lackenbauer (Peterborough: North American and Arctic Defence and Security Network, 2021), 35–47.
[22] See Daniel Heidt and Richard Goette, "This Is No 'Milk Run': Operation *Boxtop*, 1956-2015," in *Canadian Arctic Operations, 1941-2015: Lessons Learned, Lost, and Relearned*, ed. Adam Lajeunesse and P. Whitney Lackenbauer (Fredericton: Gregg Centre for the Study of War and Society,

2017), 270–306. On the BOXTOP 22 crash in 1991, see Robert Mason Lee, *Death and Deliverance: The Haunting True Story of the Hercules Crash at the North Pole* (Toronto: Macfarlane Walter & Ross, 1992), and Lieutenant-Colonel Erik Rozema-Seaton, "BOXTOP 22: The Cost of Focusing on an Operational Culture," *Royal Canadian Air Force Journal* 8, no. 4 (Fall 2019): 7–23.

10

"You Have to Be There"

> "*Hear the challenge, learn the lesson, pay the cost*."
>
> Robert Service, "The Call of the Wild" (1907)[1]

"You have to be there," longstanding Canadian Ranger John Mitchell from Dawson, who sadly passed away in July 2025, always said. Over the last two decades, I have come to appreciate the difference between travelling *to* remote communities and regions and operating *in* those places. While pundits who do not live in the Arctic or visit the region frequently refer to sovereignty and security in the abstract, Canadian Ranger patrolling provides more substantive insight into what "sovereignty operations" look like in practice as a form of purposeful military presence and as a pathway for cohering the whole-of-society approach.

The general consensus is that the world is becoming a more dangerous, complicated place, beset with wicked problems that defy traditional solutions. Unlike clear challenges for which there are preexisting lessons and answers, complex problems require action to probe, sense, and respond while grappling with ever-present uncertainty.[2] "It seems there are far too many excuses to plan more, seek more metrics, delay until a more complete picture arrives," LCol Hanes notes. "All these reasons can paralyse, make one less confident in ourselves. We cannot be immobilized by the risk of potential failures – just embrace the simple truth that being there is better than not." Inspired by this logic, 1 CRPG built an ambitious plan and seized opportunities as a first mover, developing a new line of effort under the proven framework of Operation NANOOK and the CAF's ongoing efforts to expand and enhance its Arctic operations.

The planning for Operation NANOOK-TAKUNIQ did not take place in an ideal environment or with upfront orders. The value of planning, however, is in identifying and dealing with uncertainties and, by extension, recognizing and managing potential risks. The risks proved manageable because planning followed the well-established Operation NANOOK framework, led by specialized staffs based in the North at Joint Task Force North (JTFN), 1 CRPG, and 440 Squadron. In military

parlance, it is faster to adjust fires from a known point than it is to bring everyone onto the target with no existing point of reference. Equally important, longstanding relationships are an underestimated advantage in planning and conducting successful Arctic operations, and there is great potential to expand, enhance, and entrench best practices.

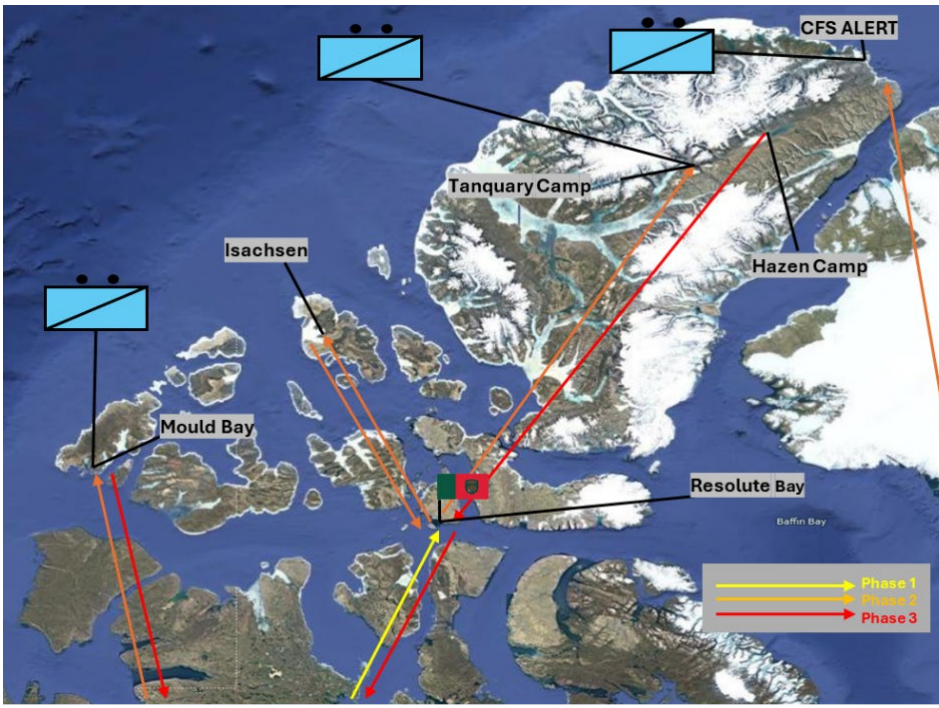
The grafting of TAKUNIQ onto the NANOOK structure offered a chance to exercise planning and execution over a much shorter timeline during the High Arctic shoulder season and project persistent presence into the Arctic Archipelago. The commander of Canadian Joint Operations Command (CJOC) intended for Operation NANOOK-TAKUNIQ "to provide greater coherence to elements of national power within the Arctic Archipelago, incorporating the capabilities provided by [other federal government departments and agencies], and industry into the overarching security landscape." The Government of Canada had already signalled its intent to expand activities in the region, initially around multi-purpose austere and legacy airfields, with Northern Operational Support Hubs (NOSHs) slated to become operational in the long term. Military guidance anticipated a substantive shift in the Government of Canada's strategic approach, most recently articulated by Prime Minister Mark Carney in terms of "variable geometry… a term that describes mechanisms that can adjust to changing environments … and a useful guide to action." Operation NANOOK-TAKUNIQ exhibits important components of this strategy, helping to discern opportunities for investments in shorter-term infrastructure repair projects. It would also clarify and generate options to project CAF resources into the High Arctic in response to a crisis, providing an opportunity to exercise and enhance interoperability between the Canadian Army and Air Force, as well as military and civilian partners.[3] This sets essential conditions for layering in allied partners on future serials.

Strategic direction must be translated into action. With Operation NANOOK-TAKUNIQ, 1 CRPG returned to the High Arctic after more than a decade, with the operation also representing the first High Arctic deployment during the shoulder season since Operation NEVUS. The results were clear. A total team of less than seventy-five members covered more than 35,000 kilometres by air and ground; surveyed twelve austere locations; conducted four remote airfield reconnaissance and survey operations; cohered elements of the Polar Continental Shelf Program, Natural Resources Canada, as well as Parks Canada, Trent University, and *The Globe and Mail*; and partnered with

Canadian industry (Clifton Engineering Corporation Inc., Kenn Borek Air, Buffalo Airways, and Air North). This is what validating and "cohering" look like on a small scale – a necessity when scaling up operations at the speed of relevance.

On 29 July, there was a moment in the Canadian Armed Forces Arctic Training Centre (CAFATC) warehouse during the final return leg of the mission where the entire team assembled for the first time. Everyone had worked indirectly with each other over an extended air bridge and satellite phones throughout the operation. They had seen supplies appear magically in the most austere of locations and glimpsed the pilots' faces through the cockpits, but the teams had mostly worked and trained separately. They had overcome uncertainty, adversity, and isolation, knowing the others were out in their respective areas. To finally see everyone during Team Alert's half-hour layover in Resolute was a cathartic release. "For all of the experiences, people and places I have been in the last few weeks, meeting all the TAKUNIQ teams in the warehouse is a total trip highlight," Cath recorded. "Having trained with Leandra and knowing Whitney, I wanted so badly to see and hear about their trip in a place without life distractions. They were so lifted and full of energy it was contagious. We listened intently to CO Hanes's message about our successes" and his plans for 2026, leaving everyone "excited for more."

The short window when the teams met in the warehouse was filled with hugs, frenetic chats on what the various teams had achieved, and lamentations on what could have been done better. WO Mike Albright explained the wonder of seeing a petrified forest north of the seventy-fifth parallel – and the rewarding challenge of leading four brand new Princess Patricia's Canadian Light Infantry (PPCLI) privates across



Prince Patrick Island. Maya hugged people she didn't know. Tanner recounted how he had almost had his foot taken off when the ATV engine exploded. Gavin and I enthusiastically connected the achievements to Canada's overarching goals for Arctic security. TAKUNIQ demonstrated the CAF's ability to project and sustain forces and people from all walks of life in the High Arctic. Three teams of six people and an Airfield Surface Assessment and Reconnaissance (ASAR) team had ventured further north into more remote areas of the Arctic Archipelago than any NANOOK or Canadian Ranger operation in the last fifteen years. Given the short time with which the operational planners had pulled it all together, it represented a tremendous accomplishment.

The Alert Team

1 CRPG achieved the initial tactical objectives for the Alert Team of forward projecting motorized vehicles and equipment in cooperation with JTFN. Conducting motorized patrols that pushed out from CFS Alert as a hub proved feasible, but various factors reduced the limit of exploitation. The commanding officer's decision to reinforce his main effort at Mould Bay, after a mechanical issue grounded a 440 Sqn Twin Otter, stripped the Alert Team of its aerial reconnaissance element and air resupply. Satellite imagery, while useful, did not provide the degree

of fidelity needed to avoid or navigate through rock gardens. Lingering wintry conditions and high snow loads translated into the treacherous fording of runoff rivers, which complicated actual mobility on the ground.

Ultimately, the Alert Team succeeded in pushing into a region that had not seen military activity during a shoulder season in living memory. The group penetrated 250 kilometres northwest of Alert into the United States Range, proving the utility and application (as well as the limitations) of ATVs to reach remote locations. It also defined the operating parameters for light vehicles required to operate in the shoulder season. This included the transition to dismounted operations and the work required to reduce soldier weight loads.

Although some members of the Alert Team joked that the Canadian Rangers should be renamed the "Royal Canadian Mounted Rangers" because they preferred to drive vehicles over walking, the application of motorized vehicles significantly extended lines of communication and increased the self-sustainment of the team. It also allowed the team to verify routes, centred around Alert as an operational hub. Furthermore, the team demonstrated its ability to move camps quickly when faced with unwanted visitors, such as polar bears. In this operation, it proved easy to adjust plans and relocate to avoid unnecessary confrontation or an encounter that would stress the local fauna.

The Alert patrol affirmed the central importance of leveraging a whole-of-society approach to mount and recover the team. It took a combination of military and industry partners to get the team in and out of Alert, while concurrently sustaining two other TAKUNIQ teams thousands of kilometres apart. The forward positioning of supplies by integrating this requirement into the RCAF's resupply runs to Alert under the Op BOXTOP series of sustainment flights proved instrumental, as did the use of contracted commercial air services to insert the team into Eureka and Alert. Kenn Borek pilots embody the legacy of the iconic northern bush pilots, rooted in world-class navigation skills, expert knowledge, and extensive experience in landing on austere runways in the High Arctic and Antarctica. Buffalo Airways flew the team and all vehicles out of Alert back to Resolute Bay. They sent two aircraft that were self-sustainable, as CFS Alert did not have enough aviation fuel on station, and they loaded their aircraft in a fraction of the time that it would have taken the RCAF. These private sector partnerships represent a significant competitive advantage that translates directly into efficient and effective crisis response, in addition to positive benefits in bolstering security. This latent capability and source of domain awareness cannot be highlighted enough.

When it was over, it all felt surreal on a team level. The operation had taken unexpected twists and turns, proving Dwight D. Eisenhower's famous maxim that "plans are useless, but planning is indispensable." They had not covered the breadth of the northern Ellesmere coastline that previous Ranger operations had, but they had explored uncharted terrain in shoulder season conditions, proving the impassability of certain routes on ATVs and the feasibility of projecting a small land element without continuous air support. In their final few days of rest at CFS Alert, they socialized with station personnel who rarely get the opportunity to leave the installation itself. "It was like being a local celebrity," one of the team members noted. "They don't get visitors very often, and they had an insatiable appetite for our stories and insights on the terrain around them." The team's interactions also served as a reminder that their mission would have been impossible without the support of CFS Alert and the private contractors that help run the station. Their assistance in providing tools to fix ATVs, knowledge of weather and terrain conditions immediately around the station, and gracious hospitality was indispensable. For the team, the opportunity to pay their respects at the BOXTOP 22 crash site, the Lancaster crash site adjacent to the station, and the memorials to the fallen along the frozen sea was a poignant reminder that High Arctic operations can be treacherous and unforgiving. In their case, they emerged physically unscathed – but altered by a humbling and empowering experience that produced a new, grounded perspective of themselves and of the realities of an austere, desolate, and breathtaking part of our country.

The Alpine Team

The Alpine Team's primary objective was to conduct a long-range dismounted patrol to assess the airstrips at Tanquary Fiord and Hazen Camp and to validate 1 CRPG's capability for unsupported Arctic operations. Its secondary mission was to reconnoitre and, if feasible, summit Barbeau Peak via the Henrietta Nesmith Glacier. Of course, all did not go according to plan. The team showed adaptability in responding to the injury of a team member on the first day that required a medical evacuation. It managed weather delays, difficult technical terrain, limited support, and disappointment when their plan to summit Barbeau was cancelled.

Nevertheless, the Alpine Team achieved significant operation outcomes. They covered more than 150 kilometres of ground on foot, carrying seventy- to eighty-five-pound packs through Arctic terrain that included braided rivers, glacial moraines, hummock fields, sediment flats, and severe winds. This patrol tested endurance and resilience. The

team faced isolation, harsh conditions, and setbacks, but trust and humour carried them through moments of awe and vulnerability alike. Journalist Gavin John, who was part of the Alpine Team, observed that:

> For all the beauty surrounding the Rangers, the march was steady and unsentimental. They moved eight hours a day on foot, working a 45-minutes on, 15-minutes off rhythm, averaging 15 km, and pitching camp wherever water could be found – river, lake or melt-pool.
>
> Swarms of mosquitoes, fields of car-sized boulders, and knee-numbing fords of glacial rivers slowed the pace; harsh winds scoured the bare plains; and one day demanded a three-km traverse across a braided glacial delta pocked with quicksand.
>
> The Rangers carried one another, sometimes literally, their support as physical as it was emotional. Despite the intensity and punishment, laughter was common throughout, on the trail, from the tents at night and in moments of shared contemplation. Throughout the patrol, Ranger [Maya] Poirier would exclaim out loud to her phone, the nearest Ranger, or, seemingly, the land itself. "Can you believe where we are?", "Look at that!" or "I can't believe we're doing this!"[4]

As the first unsupported foot patrol on this route in decades, the Alpine Team proved 1 CRPG's ability to operate in one of the world's harshest environments and reaffirmed the Ranger ethos: adapt, endure, and look after one another. Completing the traverse left the team with pride, gratitude, and a renewed respect for preparation, humility, and collective strength. When it was all over, Cath Welsh recorded:

> What made this patrol such a unique, once-in-a-lifetime, and life-changing experience for the members of the team, was that without this opportunity through 1CRPG, they would most likely never have had the opportunity to step foot in such an ancient, barely-touched by modern civilization landscape. The unbelievable honour it was, for everybody, to be in such a place, made every footstep and every sight feel completely surreal.

The transition to "normal" life would take time. "With each degree of dropping latitude, the team attempted to reconcile their experience on Ellesmere," Cath explained. When the Alpine Team returned to the CAFATC at Resolute Bay on 25 July, what others might consider a remote and rather austere training facility offered familiar comforts. After so

The Alpine Team: Cath Welsh's Daily Summary Log

CAMP ONE: 81.396939° N, 76.603787° W Elevation 349m [metres]
Estimated Foot Distance: 4.7km
Estimated Accumulated Distance: 4.7km
Crux move: Being hyper aware of team dynamics to support a high-calibre medical extraction.

CAMP TWO: 81.402185° N, 76.027611° W Elevation 532m
Estimated Foot Distance: 13.1km
Estimated Accumulated Distance: 17.8km
Crux move: repeatedly donning a 70–80lb pack, not whining about the things that hurt

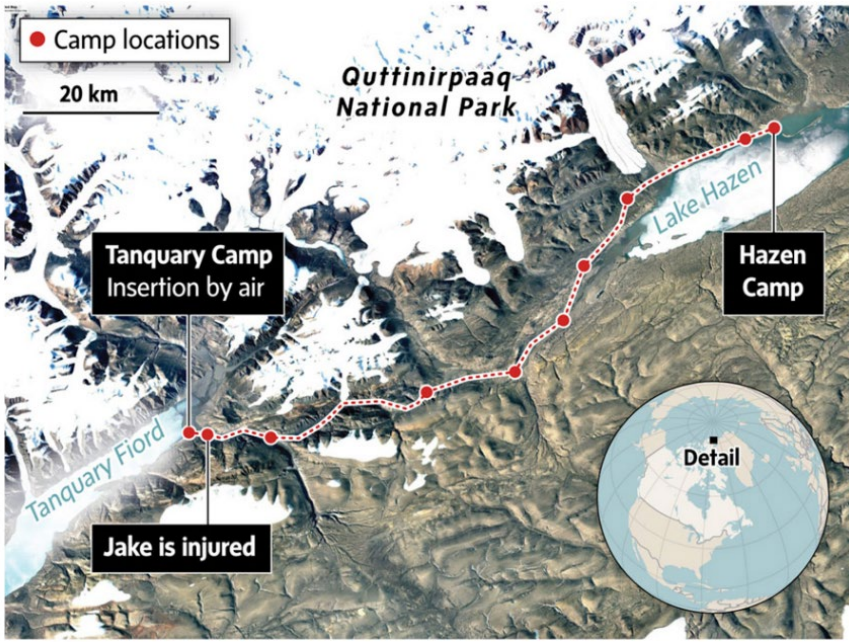
CAMP THREE: 81.448673° N, 75.149596° W Elevation 428m
Estimated Foot Distance: 17.3
Estimated Accumulated Distance: 35.1
Crux move: Navigating terminal and lateral boulder moraines, not breaking an ankle in the most remote place ever

CAMP FOUR: 81.494081° N, 74.254959° W Elevation 315m
Estimated Foot Distance: 22.2
Estimated Accumulated Distance: 57.3
Crux Move: Finding words to express what I am experiencing and seeing here.

CAMP FIVE: 81.554092° N, 73.526833° W Elevation 205m
Estimated Foot Distance: 21.8
Estimated Accumulated Distance: 79.1
Crux Move: Remaining upright in … 80km/hour wind gusts while getting sandblasted on bathroom breaks

CAMP SIX: 81.599279° N, 73.314597° W Elevation 320m
Estimated Foot Distance: 6.9
Estimated Accumulated Distance: 86.0
Crux move: Finding the quietest and most beautiful camp spot after what felt like a raging sandstorm at Burning Man.

CAMP SEVEN: 81.703475° N, 72.715937° W Elevation 222m
Estimated Foot Distance: 23.8
Estimated Accumulated Distance: 109.8
Crux move: Satellite calls to our people!



CAMP EIGHT: 81.785661° N, 71.955084° W Elevation 165m
Estimated Foot Distance: 23.9
Estimated Accumulated Distance: 133.7
Crux move: Gavin keeping his puke down and saving this energy for sheer badassery

HAZEN CAMP: 81.824343° N 71.320541° W Elevation 161m
Estimated Foot Distance: 14.5km
Estimated Accumulated Distance: 148.2km
Crux move: Not stealing anyone's allotted cookies from the Resolute resupply/care package supplied by Pat Belanger. And ruining everything we'd built.

many days on the land, she described a "top-10 life shower," a pillow, a place to lean back, and a chance to "hammer back the best cookies north of 66°03'N." Over the next five days, the team disassembled their traverse and glacier kits, returned equipment to the warehouse, and worked with MWO Murphy to complete their after-action review. Over puzzles, movies, and meals, the team talked about family and how they would share this experience with them. With each passing day, the heap of food on their plates at each meal dwindled. The caloric deficit that they had amassed during the trek from Tanquary to Hazen was quickly recovered with bacon, roast beef, and donuts. Now, with endless

access to food and no commensurate physical demands, it was time to bring balance back. By the final few days in Resolute, breakfast consisted of fruit, an egg, and a cup of coffee.

Now comfortable again in Resolute, each team member regained their autonomy, drifting back into taking private time, reconnecting with family south of the Arctic Circle, and turning their minds to their jobs back home. Between meals, team members napped, organized photos, and worked out in the gym. "Collectively, it wasn't as collective anymore," Cath observed, "and there was a bit of heartache knowing their time together was almost over." Nevertheless, everyone found time to celebrate. On 27 July, the Alpine and Mould Bay teams, members of 440 Sqn, and Polar Continental Shelf Program (PCSP) and CAFATC staff gathered in the recreation room and shared stories of their activities over the last few weeks. Gavin John, who reduced his 16,000 photos to under 100 for a slide show, set it to a dramatic Lord of the Rings soundtrack. Members of the Command Post formed the first Resolute Bay Pipe Band and performed a "concert" with their bagpipes, to the delight of the other teams. Four days later, "bags upon bags were thrown in giant plywood framed-boxes, lifted and moved by loader down the gravel road to the Resolute airport," Cath recalled, and a chartered Summit Air Avro RJ100 flew the rest of the 1 CRPG group to Yellowknife, "back to full 'civilization' and full speed."

The Mould Bay Team

The objectives in Mould Bay represented the main tactical and operational effort for JTFN, 1 CRPG, and 440 Sqn. JTFN has committed to improving its domain awareness in the northwestern reaches of the Queen Elizabeth Islands. Projecting air and ground teams to operate in this section of the High Arctic anticipated capabilities signalled in CJOC's future NANOOK campaign plan renewal.

The Mould Bay Team endured a difficult dismounted insertion on Prince Patrick Island, covering more than 150 kilometres by foot and witnessing firsthand the impacts of climate change. They tackled thawing permafrost, requiring them to wade thigh-deep through thick mud at great physical exertion. They faced blizzards that chilled their hard-working bodies and inhibited their vision. At one point, flash flooding severed lines of communication and resupply for several days. They were unable to reach Satellite Bay when 440 Sqn could not access the requisite meteorological data to ensure an alternate landing strip if the weather turned at Mould Bay. All told, the Mould Bay Team's detailed reports exposed the thin margins of operability out of the Mould Bay airhead.

The team also significantly increased the military's understanding of who was operating in this part of the Arctic Archipelago. Clifton Engineering, which managed the airhead at Mould Bay as part of an Environment and Climate Change Canada (ECCC) remediation effort, proved a pivotal contact. With over a decade of experience in the High Arctic, they indicated how some private sector partners can project and sustain summer operations effectively and efficiently. By heightening this awareness, TAKUNIQ set the conditions for future public-private partnerships that actualize a whole-of-society approach to operations. "The need to conduct operations is incredibly important for sovereignty," WO Mike Albright concluded. "Things will happen if the CAF is behind it, but it is equally important to get OGDs (other government departments) and companies like Clifton energized to commit to and support us in the North. As we found out, they are willing and eager to do so, but no one is bringing them into the fold." This should change.

Once the operational window closed and the Mould Bay Team had outstripped its supplies, they returned to Resolute Bay and were retasked to support other lines of effort. On 27 July, the team members flew with Lt Pawlik to conduct a bridge reconnaissance at Fort Eureka, following recommendations from the earlier logistical recce conducted by Capt Newman and Cpl Stanley-Paul. The next day, they went with the ASAR to Nanisivik to conduct a final airfield recce. While in Resolute, they lifted others' spirits by sharing videos of the team slogging through knee-high mud while a member of the team holding the camera mocked them in good humour. "Oh, are you boys afwaid of a wittewl mud," he chided. It was typically soldierly cajoling, a way of enduring hardship and prodding the soldiers to draw deeper into their energy reserves and persevere. After all, the cameraman also had to plod his way through the same terrain. All of them made it through, and the shared experience had bonded them as a group.

The Command Post

Throughout the operation, the Command Post (CP) continued to support and enable the various teams in the field while briefing JTFN, orchestrating flights, organizing resupply and site visits, and correcting misconceptions held by outside stakeholders that could have inhibited mission success. It also worked diligently to plan and coordinate the extractions of the teams in the field from their various locations. Doing so was far from straightforward, with some contracts and outside direction demonstrating limited awareness or understanding of local conditions and scarce resources. Last-minute requests from CFS Alert

to move forward the departure of the TAKUNIQ team there because of the memorial service for the seventy-fifth anniversary of the Lancaster crash described in the previous chapter, and from JTFN calling an ROC (rehearsal of concept) drill for the next NANOOK operation, forced the CP to revise plans on the fly. It was a classic case of the need to improvise, adapt, and overcome.

As the operation began to wind up, the tempo for the CP began to change apace. On 25 July, with all of the teams in "hard shacks" (either in the CAFATC or CFS Alert), the CP stood down its twenty-four-hour watch and only operated during the working hours of the teams. "The mission is nearly over, and I can hear the joy in their voices while they share both warm greetings and new stories," Capt Boom recorded in his log. "Reflections on my Groundhog Day of nightshifts are overshadowed by the accomplishments of the teams." He noted that "although we at the CP claim a tiny portion of the credit, the success of TAKUNIQ is the result of contributions at every level. From the flight engineers to the kitchen staff to the medical team to the physical boots on the ground, all parties demonstrated what is possible when approached with art and with skill."

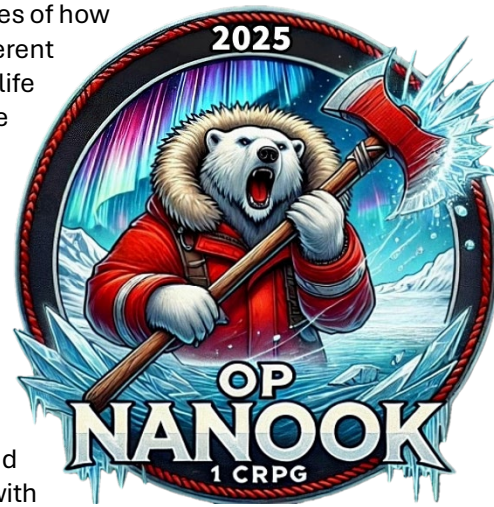
Nonetheless, the CP's work continued to the very end. Air scheduling issues required continuous adaptation and adjustment, as did missed opportunities to load equipment onto contracted flights when the CP was never looped into communications with the commercial airline. When rumours circulated that the remaining CP staff would be delayed returning to Yellowknife on 31 July, morale sank, as everyone was "looking forward to getting back to summer." Fortunately, the chartered flights with Summit Air to fly out the cargo and remaining personnel went off as planned. Nevertheless, it was confusing to the end, with Capt Newman struggling to contact the company responsible for baggage handling at the airport and coordinate where to put all of the cargo being sent out on the other flight. "CAFATC staff assisted," he stated. "We got it done." They departed at 19h30 and arrived in Yellowknife at 21h00, where they were met by Commanding Officer Hanes and Operations Officer Boom at the airport. The adventure was over.

Operational Lessons Observed

In directing the Canadian Army to discern how best to enhance the Canadian Rangers in the 2020s, Lieutenant-General Wayne Eyre (who later became Chief of the Defence Staff) noted in January 2021 that any changes would have to "ensure flexibility to incorporate the diversity of [Canadian Ranger] communities" and the environments in which

Rangers operate. Furthermore, he emphasized that plans "must not change the nature of the [Rangers] as a unique sub-component of the Reserve Force."[5] These are important considerations. The Rangers are a vital bridge between the CAF and the Canadians who live in remote areas, providing a grassroots and persistent military presence in our Arctic and Northern regions. They continue to offer vital "routine surveillance" during their daily activities, guidance to other CAF personnel, local cultural advice, and local liaison capacity.[6] As Operation NANOOK-TAKUNIQ reminds us, Rangers also bring transferable skills from different parts of the North to Arctic spaces in which there is no local population base upon which to draw.

Over the years, my writings have celebrated the Rangers' skills, resilience, adaptability, and resourcefulness. I also see the Ranger organization as an example of one way that Canada has struck a proportionate balance between defence requirements and community-level security and resilience needs in sparsely settled areas of Canada. The Rangers are strong examples of how Canadians from different backgrounds and walks of life come together to serve the greater good of their peoples, their communities, and their country. Rooted in intimate ties to the land and deep local knowledge, Ranger service ensures that Canadians living in isolated coastal and Northern communities are key players in the defence and security of their homelands and that military activities align with community and national interests. These are attributes that embed a Canadian Armed Forces presence in the region firmly within the spirit of "nothing about us, without us" – a philosophy that "weaves federal, territorial, provincial and Indigenous ... interests together for mutual success."[7] The Rangers serve such a weaving function between military and civilian cultures and practices, interlacing them without one inherently dominating the other.[8]



Through a Canadian Army lens, the Canadian Rangers represent a mature capability that serves as a force multiplier and force enabler for other CAF elements, as well as a source of domain awareness and a proven way to project military presence in itself. Ongoing Ranger

modernization efforts seek to fulfill the commitment in Canada's 2017 defence policy, *Strong, Secure, Engaged*, as part of its Arctic initiatives, to "enhance and expand the training and effectiveness of the Canadian Rangers to improve their functional capabilities within the Canadian Armed Forces."[9] The language is telling. It is not about expanding numbers or changing the Rangers' longstanding and relevant mission. It is not about retooling them into a more conventional Reserve Force mould. It is about giving them more training, opportunities, and support. It is about allowing them to operate in an unconventional manner – at least in military terms – that leverages the diverse experiences and expertise of Rangers with less fixation on rank and structure than other CAF elements.[10] A leader in one situation can be a follower in the next, depending on the skills and knowledge that they can contribute. "We couldn't afford everyone to be a leader or everyone a follower," LCol Hanes told reporter Gavin John after the operation. "Team leads were chosen for their ability to share decision-making."[11] Rangers tend to shine in activities that are animated by this philosophy.

TAKUNIQ also reinforced the centrality of relationships and partnerships across the Defence Team, both within the CAF and with the academic and private sectors. Canadian policy places significant emphasis on people as the central element of defence and security, recognizing that Canada's military capabilities depend not only on equipment and technology but on trained, experienced, motivated, and well-supported personnel. CAF members from 1 CRPG, 2nd Battalion Princess Patricia's Canadian Light Infantry (2 PPCLI), 1 Combat Engineer Regiment (1 CER), 440 (Transport) Squadron, and 2 and 8 Mission Support Squadrons (2&8 MSS), as well as JTFN, CFS Alert, and the CAFATC, conducted and supported the operation. Existing Canadian Army relationships, through 1 CRPG and the Canadian Manoeuvre Training Centre (CMTC), the national centre of excellence for collective training and validation located at Canadian Forces Base (CFB) Wainwright, also significantly shortened operational planning timelines. Furthermore, the exercise represented a whole-of-government effort in which other government departments and agencies (e.g., Natural Resources Canada, ECCC, and Parks Canada) proved instrumental to planning, preparations, staging, and execution.

Moreover, leveraging the expertise and resources of private sector partners also showed how a whole-of-society approach contributes to mission success. TAQUNIK played a forcing function for JTFN to improve or establish new networks and to better integrate its decision-making processes. For example, the CAF can further leverage the Polar Continental Shelf Program's contracts with Kenn Borek Air for resupply

and movement by aligning with that program's annual planning cycle. Without the support of the PCSP and Kenn Borek, this operation would not have achieved mission acceptance or launch authority (MALA) – meaning that it would not have received the "go ahead" to proceed. The latter private sector partner has proven consistently indispensable to the Canadian Army's Arctic Operations Course and its flagship Northern Exercise (NOREX). Once again, the flexibility and combat enablement generated by Canada's Arctic air industry directly contributed to mission success.

The inclusion of an experienced academic and a journalist, both with extensive field experience, also proved crucial to cohering a whole-of-society approach. In a world of disinformation, "fake news," and self-aggrandizing social media influencers, it is important to support trusted, professional voices that can provide independent insights into operations and share those with broader audiences. As 1 CRPG's Honorary Lieutenant-Colonel and a university researcher well versed in the history and contemporary activities of the Rangers, I was resolutely committed to sharing the story of the operation with broader policy and practitioner audiences. Gavin John, the embedded photojournalist, showed a similar dedication to not only sharing the experience but also to communicating it to public audiences through a *Globe and Mail* newspaper story with vibrant imagery. "The lesson from TAKUNIQ is neither romantic nor technophobic," he reflected. "A rearming Canada is investing in the sensors and networks that will define modern detection and deterrence. But in the North, physics, climate, and politics still reward those who can move, endure, and interpret on the ground. The Rangers, by their presence, give the flag credibility across a geography that no technology can fully tame."[12]

The operation also proved valuable in assessing the status of multi-use infrastructure in the High Arctic. For example, sharing the findings of the ASAR survey of the Mould Bay airstrip with the Joint Rescue Coordination Centre (JRCC) will inform search and rescue planning. The survey of Polaris mine on Little Cornwallis Island also revealed an alternate landing area in the vicinity of Resolute (where the airfield is prone to thick, dense fog that complicates landings). Other information on the state of legacy infrastructure can be used to inform future Op NANOOK serials in the region, as well as to identify priorities for infrastructure renewal or replacement. For example, various groups noted that Fort Eureka and the surrounding infrastructure need significant maintenance and improvements. Various building facilities no longer function, the bridge linking the airstrip to the Eureka research station is washed out, and the road connecting Fort Eureka and the

research station needs significant repairs. In Mould Bay, the team identified that Environment and Climate Change Canada's small camp can be used as a jumping-off or tactical caching point, depending on the season. With some improvements, the site could be used for NUNALIVUT operations in the winter. The team also noted that, by late August or early September, weather and thawing would reduce its viability as a potential Operation NUNAKPUT location.

The operation also yielded various points for improvement. For example, Joint, Interagency, Multinational, and Public (JIMP) networks need to be put into practice. While the Arctic Security Working Group (ASWG) brings together federal and territorial representatives twice each year to address safety and security across the North, collaborative relationships between stakeholders could be more fully operationalized to coordinate support to Operation NANOOK and cohere a whole-of-society approach. Furthermore, TAKUNIQ revealed various other government departments and agencies, scientific teams, and commercial actors working in the High Arctic. Operational design should incorporate their resources and capabilities where appropriate. For example, Clifton Engineering, a medium-sized Canadian company based in Calgary that is conducting site remediation on Prince Patrick Island, proved a valuable partner in sharing information and possesses air and ground resources that can be leveraged for crisis response. It also has world-class engineers who know how to operate in extreme conditions, again demonstrating the depth and breadth of Canadian polar capacity.

Private and public sector partners operating in the High Arctic can serve as force multipliers based on their practical knowledge of the physical and human terrain. Current mechanisms, however, are not conducive to timely, proactive information sharing. Furthermore, despite policy statements including the private sector as part of the Defence Team, many prospective partners do not see themselves as contributors in a whole-of-society approach to security. The JTFN commander's visit with Natural Resources Canada's Polar Continental Shelf Program reinforced the value of the relationship between the CAF and the program in Resolute Bay, as well as setting the conditions for a further alignment and integration of efforts. Furthermore, NANOOK planning must broaden its aperture to consider a more diverse range of stakeholders to better leverage non-military resources in the North, and that planning should moreover emphasize the importance of providing industry partners with as much advance notice as possible about anticipated activities. This will allow diverse partners to adjust and increase their contributions.

Secure communications from the field back to JTFN also proved problematic, confirming a significant gap at the tactical level. 1 CRPG and 440 Sqn do not possess secure UHF (ultra high frequency)/VHF (very high frequency)/HF (high frequency) radios to establish a combat net radio or rebroadcast capabilities. This is essential for air–land integration, as well as for interoperability with allies (as intended for Op KATIMAVVIK, the pan-domain international exercise with partner nations that Canada will host in its Arctic every two years). These communication gaps will also impede the integration of remotely piloted aircraft systems (RPASs)/drones into further NANOOK serials. Accordingly, both force employers and force generators must make it a priority to ensure secure communications across the electromagnetic spectrum.

Planners also underestimated the support requirements for this scale of operation in the High Arctic. Three remote teams, concurrent to surface assessment and reconnaissance at austere airstrips, required significantly more air resources than anticipated. 440 Sqn CC-138 Twin Otters conducted an impressive 120 air missions during the operation, but the demand exceeded the resources of the detachment. The long distances between operating locations, staging airfields, and alternate landing locations, coupled with the minimal availability of aviation weather observations and forecasts, highlighted the limited range of the CC-138 and required constant compromises between aircraft payload and fuel. For operations of this type, more resources would have allowed increased mission profiles to include air reconnaissance, air drop bundles, and tactical fuel caching at some locations to enable air operations. As a result of limited air support, the teams were unable to reach some of their site objectives. Further integration between 1 CRPG and 440 Sqn will build trust and allow mutual support for capability development, increasing the range and duration of activities in remote locations in the High Arctic. Furthermore, a clearer assignment of tasks for both RCAF and commercial aircraft would have allowed the military to focus on key tasks.

Looking Ahead

When the Alpine Team arrived at the Parks Canada base camp on Lake Hazen, Ranger Maya Poirier exclaimed to Gavin John, “Can you believe what we just did?!” For each of the teams, their individual lines of effort warranted a hard-earned sense of accomplishment. On foot or on ATV, the teams navigated arduous terrain, adapted to unexpected or changing operating conditions, and demonstrated a CAF presence in

the High Arctic. Beyond these immediate tactical outcomes, what did TAQUNIK achieve, and what groundwork has it laid for the future?

I began the book by discussing threats through, to, and in the Arctic. In its various facets, Operation NANOOK-TAKUNIQ contributed to addressing all of them. As discussed, the main kinetic military threats to Canada and to North America would pass through the Arctic and do not target the Canadian Arctic itself. Instead, the Arctic's place in the Northern Hemisphere makes it a key theatre to deploy systems that can be used to detect, deter, and defeat strategic threats. Toward this end, Canada is embarking on a "generational investment" in advanced sensors that will enhance all-domain awareness and heighten the CAF's – and NORAD's – ability to respond proportionately to different threats. While satellites provide surveillance over vast swaths from far above the Earth, ground-based systems such as Polar Over-the-Horizon Radar (P-OTHR) and CROSSBOW sites will have a footprint in particular Arctic places. The teams on TAKUNIQ provided a reconnaissance function, indicating the types of knowledge that small ground teams can provide about prospective sites, which will, in turn, bolster continental domain awareness.

While most threats to the Canadian Arctic are not primarily "military" in orientation, TAKUNIQ still demonstrated the "home turf" advantage that the CAF has when it comes to projecting and sustaining forces in the High Arctic. Demonstrating the CAF's ability to reach and operate out of remote areas in the Arctic Archipelago is a form of both deterrence and reassurance – reminding competitors of the real difficulties of executing operations in the region, while reminding Canadians and our allies that we can do so. By benchmarking measurable objectives, gathering information about the state of legacy infrastructure, and reinforcing ties between the military and other government departments, the operation also laid an essential foundation for future CAF operations and strategic investments.[13]

Northern Canadians emphasize that the threats in the Canadian Arctic are often related to climate change and its impacts on the physical and human environment. The Rangers' observations confirmed how environmental changes are not inherently making the region more "accessible" when it comes to land operations and air support. Without a clearer perception of how climate-related factors heighten uncertainty and unpredictability, Canada and its allies run the risk of misconstruing how climate change acts as a threat multiplier. Furthermore, assessments of the state of multi-use infrastructure in the High Arctic, such as airfields and bridges, are important to maintain and improve mobility to, from, and in remote places. In an era when new

patterns of activity are driving up the demand for whole-of-government and whole-of-society responses to emergencies and disasters, knowing the status of infrastructure that can support sustained deployments in austere locations takes on heightened importance. Work with industry partners can leverage their expert knowledge about the state of infrastructure and, more broadly, sets the conditions for a more robust whole-of-society approach to Arctic security – a key pivot for Canada to leverage all of its capacities, inside and outside of the military and of government.

Perhaps the greatest Canadian threats to our Arctic and North are misguided ideas propagated by commentators in academia and in the news media that downplay Canada's well-established sovereignty and CAF capabilities to operate in our part of the Arctic. Many well-entrenched narratives about Canadian Arctic sovereignty being "on thinning ice," which are borne of distorted or misplaced notions about what is driving changes in the Arctic security environment, need to be critically re-examined or discarded. Fake news and misinformation about Canada lacking a military presence in the Arctic should be jettisoned. In their place, it behooves us to get back to dedicating commensurate energy to discussing what we are doing, and to celebrating resourcefulness, resilience, and shared stewardship.

The stories that we share as Canadians matter, and we have inspiring stories to tell and hear. They breathe life into the policy statements and political promises that we hear or read in the news. They also remind us of the importance of being bold, taking chances, accepting and learning from failures, overcoming challenges, and cherishing successes – not toward self-aggrandizement but as markers of growth and the realization of capabilities.

We can take policies as words and statements, but more important are the actions that they inspire. TAQUNIK marked an additional step in signalling Canada's progress in achieving the Arctic defence outcomes laid out in its 2024 defence policy update, *Our North, Strong and Free*. Projecting an active, year-round military presence in the Arctic through regular deployments under the banner of Operation NANOOK helps affirm Canadian sovereignty by showcasing and building operational capabilities in a challenging and changing environment. TAKUNIQ, conducted in the early to mid-summer, fills a gap between Operation NANOOK-NUNALIVUT in late winter and NANOOK-NUNAKPUT in late summer. It also helps to fill gaps that could develop between Canada's ability to deliver on key military infrastructure projects and high domestic and allied expectations to meet these commitments. By putting boots on the ground in the High Arctic, TAKUNIQ not only

demonstrated presence. Rather, it showed presence with a *purpose*, by being the jumping-off point for more decisive operations under NANOOK.

In stitching together the various threads that comprise Canada's Arctic defences, we can convey deeper understanding to Canadians and to the world about how we assert sovereignty in and over our North, as well as our capabilities – both existing and forthcoming – to anticipate, detect, and counter threats. The Canadian Rangers, as Reservists who use their Northern knowledge and expertise to provide a strategic reconnaissance screen as well as tactical mobility, bring skill sets and capacities that complement promised investments in infrastructure and technology. Celebrating the Rangers' contributions is a way for Canadians to highlight our vigilance in watching over our Northern territories and waters. It affirms that we are strong and responsible stewards of our Arctic homeland and that we are serious about defending it in ways that are proportionate to the actual threats that we face. Our elected political officials decide on policy. Military commanders give direction, and their staff devise and execute plans. Intrepid Canadian Rangers, daring 440 Sqn pilots, and other CAF members carry out missions like TAQUNIK, enabled by partners in the public and private sectors. Academics and journalists also play their roles, striving to capture experiences in photos and prose, and then sharing the stories.

It has been about six months since the team completed TAQUNIK. We all keep in touch, sharing stories for the book and building on the friendships that the operation fostered. Yet, it is also more than that. It is difficult to distinguish hardship from the sublime. They feed into each other. There is a magnetic majesty to the High Arctic, where your approach march adds to the grandeur. Cold, windburned, and with a heavy pack dropped on the slushy permafrost, you look upon the Patterson Mountains, or Barbeau Peak, or the traces of an ancient Arctic forest, and it feels like the appropriate benediction.

Gavin John's front-page article in *The Globe and Mail* faithfully represented the beauty of the land. "The Arctic Cordillera rises along the Baffin and Ellesmere islands to the edge of the polar ice cap," he described in words that accompanied his striking photographs. "It is into this unyielding and largely unvisited terrain that the Rangers were deployed."[14] He captured the eeriness of isolation, as well as the thin air bridge that represented our ultimate safety net. Gavin, like the other participants in the operation, knows the uncanny spell that only tired muscles, spit-grey isolation, and untouched fiords can cast on the imagination.

The place names blur together, like the flat light of the midnight sun: Sheridan River, Mount Patterson, Mount Hilgard, Barbeau Peak, Mould Bay, Satellite Bay, Resolute Bay, Sachs Harbour, Isachsen, Polaris, Eureka, Tanquary Fiord, Lake Hazen. In the living history of the Canadian Rangers, these places are added to the long list of those visited on previous High Arctic operations, such as Polar Bear Pass, Ward Hunt Island, Hans Island, Devon Island, Axel Heiberg Island, Melville Island, Bathurst Inlet, Gascoyne Inlet, and Griffin Inlet. We joined the pantheon of previous Canadian Rangers, including the late John Mitchell, who applied their skills, demonstrated courage and resourcefulness, and showed the Canadian flag in some of the remotest parts of the Arctic Archipelago. For all of us, TAKUNIQ heightened our appreciation of what it means for the Canadian Rangers to serve as the eyes, ears, and voice of the Canadian Armed Forces in remote regions, and it illustrated their important place in the broader Defence Team that keeps us safe, secure, and defended in our vast and resilient country.

Notes

[1] Robert W. Service, *The Spell of the Yukon and Other Verses* (New York: Barse & Hopkins, 1907).

[2] See, for example, the Cynefin Framework at https://thecynefin.co/about-us/about-cynefin-framework/.

[3] OP NANOOK-TAKUNIQ 25-02: ARCTIC & NORTHERN OPINTSUM 30 1700Z JUL 25.

[4] Gavin John, "Higher Ground," *The Globe and Mail*, 17 October 2025, https://www.theglobeandmail.com/canada/article-canadian-rangers-arctic-far-north-defence/.

[5] Lieutenant-General W.D. Eyre, "Commander Canadian Army Planning Guidance – Canadian Ranger Enhancement," 13 January 2021, Department of National Defence (DND) file 1901-1 (DCR).

[6] P. Whitney Lackenbauer, "Canada's Eyes and Ears in Northern Communities: Aboriginal Peoples in the Canadian Rangers," in *Hidden in Plain Sight: Contributions of Aboriginal Peoples to Canadian Identity and Culture, Vol. 2*, ed. Cora J. Voyageur, David R. Newhouse, and Dan Beavon (Toronto: University of Toronto Press, 2011), 306–328; Magali Vullierme, "Towards Human Security in the Arctic: Lessons Learned from the Canadian Rangers," *Arctic Yearbook 2019* (2019): 1–14; P. Whitney Lackenbauer, "The North's Canadian Rangers," in *Strengthening the Canadian Armed Forces Through Diversity and Inclusion*, ed. Alistair

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[7] Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), *Arctic and Northern Policy Framework* (2019), https://www.rcaanc-cirnac.gc.ca/eng/1560523306861/1560523330587.

[8] See P. Whitney Lackenbauer, "The Canadian Rangers: A 'Postmodern' Militia That Works," *Canadian Military Journal* 6, no. 4 (Winter 2005–2006): 49–60; Lackenbauer, *The Canadian Rangers: A Living History* (Vancouver: UBC Press, 2013); and Lackenbauer, "'Indigenous Communities Are at the Heart of Canada's North': Media Misperceptions of the Canadian Rangers, Indigenous Service, and Arctic Security," *Journal of Military and Strategic Studies* 19, no. 2 (2018): 158–192, https://jmss.org/article/view/62819.

[9] DND, *Strong, Secure, Engaged: Canada's Defence Policy* (2017), 80, https://www.canada.ca/en/department-national-defence/corporate/reports-publications/canada-defence-policy.html.

[10] See, for example, P. Whitney Lackenbauer, "Teaching Canada's Indigenous Sovereignty Soldiers … and Vice Versa: 'Lessons Learned' from Ranger Instructors," *Canadian Army Journal* 10, no. 2 (2007): 66–81; Lackenbauer, *If It Ain't Broke, Don't Break It: Expanding and Enhancing the Canadian Rangers*, Working Papers on Arctic Security No. 6 (Toronto: Walter and Duncan Gordon Foundation and ArcticNet Arctic Security Projects, 2011); Peter Kikkert with Doug Stern, "Finding Ihuma: Inuit Leadership Norms and Canadian Ranger Operations," in *Canadian Arctic Operations, 1941-2015: Lessons Learned, Lost, and Relearned,* ed. Adam Lajeunesse and P. Whitney Lackenbauer (Fredericton: Gregg Centre for the Study of War and Society, 2017), 370–386; Magali Vullierme, "Cultural Understanding and Dialogue Within the Canadian Armed Forces: Insights from Canadian Ranger Patrols," *Northern Review* 52 (2021): 127–144; Magali Vullierme, "The Social Contribution of the Canadian Rangers: A Tool of Assimilation or Means of Agency?," *Journal of Military and Strategic Studies* 19, no. 2 (2018): 193–211, https://jmss.org/article/view/62820; and Bianca Romagnoli, "Patrolling North of 60: Military Infrastructure in Canada's Arctic Communities" (PhD dissertation, University of California, Los Angeles, 2023).

[11] John, "Higher Ground."

[12] John, "Higher Ground."
[13] LCol Hanes elaborated that Operation NANOOK-TAKUNIQ "all happened in an expedited planning cycle, but it still took months to arrange and sequence resource delivery. What Team Alert achieved was the forcing function required when mounting High Arctic operations. Being inside the air planning cycle and air tasking orders, it required creativity and marshalling private industry. It further normalized JTFN's industry relationship and sent a signal to industry, aligned with *ONSAF* [*Our North, Strong and Free*] and the CAF's pan-domain doctrine. It is a modest step, but a rational and incremental approach. The next step will be doing this at speed."
[14] John, "Higher Ground."

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TAKUNIQ

The Canadian Rangers and Canada's High Arctic in an Era of Strategic Competition

P. Whitney Lackenbauer

with contributions by Michael Albright, Alexander Boom, Travis Hanes, Maya Poirier, Cath Walsh, and others.

"You have to be there," Canadian Ranger John Mitchell from Dawson always said. Ranger patrolling not only demonstrates a purposeful military presence but is a pathway to cohere a whole-of-society approach to Arctic defence and security. This book provides an intimate overview of Operation NANOOK-TAKUNIQ in July 2025, setting rich historical, geographical, and policy contexts before taking you with the Alert, Mould Bay, and Alpine Teams into some of the remotest regions of Canada's High Arctic. Operational lessons grounded in the centrality of relationships and partnerships through the eyes, ears, and voices of Canadian Rangers are woven throughout the human stories that defined the operation.

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