

THE JOINT ARCTIC WEATHER STATIONS: SCIENCE AND SOVEREIGNTY IN THE HIGH ARCTIC, 1946-1972

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Finishing the Network, 1948-50

And what is it going to mean, all this? Well, it's obvious that we'll never be able to forecast the world's weather satisfactorily so long as we have that great blank space around the Pole. ... You remember that bad winter in Britain last year? Well if Isachsen and Mould Bay had been working then we might have been able to warn you about it, and – just as important – we might have been able to tell you when it was going to end.

Andrew Thomson (1948)¹

In May 1948, Andrew Thomson, the controller of the Canadian Meteorological Service, recounted to listeners of the British Broadcasting Corporation the details of his recent trip to the Joint Arctic Weather Stations. The US Air Force (USAF) plane had first set down at Resolute, the main weather station with “a joint staff of Canadian and United States meteorologists working happily together.” They lived comfortably in insulated, prefabricated houses heated by oil stoves while the temperature outside plummeted to minus fifty. The station staff worked long hours each day, seven days a week, but during their leisure time they played checkers, cribbage, and chess. They enjoyed their extensive library and radio receivers, and Thomson found it surprising that they preferred classical music to anything else. “The food and cooking are first-class,” he described. “There was all one could eat of the best beef and pork — not out of a tin, but fresh frozen — and it came to the table as choice as if it had just been bought

from a butcher store. For Sunday dinner there was a twenty-pound roast turkey on the table, with four or five fried chickens. The only things they miss are lettuce and fresh vegetables.”²

Thomson also insisted that the meteorological work was first class. The station provided regular surface weather reports of temperature, pressure, and wind, as well as twice-daily observations of temperature and humidity in the atmosphere to 60,000 feet. The radio controllers sent these reports to Edmonton. Within ninety minutes they were received in New York, London, and Moscow — evidence that by filling in “that great blank space around the Pole,” the Joint Arctic Weather Stations contributed to better weather forecasting the world over.³

When the weather lifted, bringing a sunny morning on 13 April, the USAF flew Thomson to Isachsen, an even more isolated outpost 330 miles from Resolute across broad channels of Arctic ice and islands with low hills. They landed on a bumpy strip of thick ice, only 750 miles from the North Pole. “All around were rolling hills, covered with swirling white snow that glistened in the sunshine,” Thomson described. “It was a most beautiful sight.” Piles of food and supplies and rows of oil drums dotted the ice. Air crews had already flown 75 tons of cargo from Resolute and planned to double that amount in the upcoming week. This would allow the new JAWS station, then taking shape, to be self-sustaining for a year. Richard Jones, the Canadian OIC (officer in charge), explained that the -17° weather was the mildest they had encountered since they had settled in ten days before. The station crew had spent their first few nights in a small nylon tent before moving into a larger canvas-covered house heated by an oil stove. Before the end of June they hoped to erect their permanent house. In the meantime, they were playing their intended role as gatherers of weather data and had started transmitting readings to the world.⁴

The establishment of the first stations at Resolute and Eureka represented the initial JAWS footprint in the Canadian Arctic Archipelago. The next phase involved building two stations in the western part of the archipelago. During the previous summer, the US Navy had brought up the initial supplies for the new stations, from prefabricated building materials to non-perishable food to bulldozers. According to plans, large military aircraft would conduct reconnaissance flights in April and May 1948 to identify specific sites on “the Isachsen Land portion of Ellef

Ringnes Island, and the southern portion of Prince Patrick Island,” before airlifting 150 tons of supplies from Resolute to each of the new sites. At this time in the year, temperatures remained low enough to ensure thick ice while continuous daylight was assured and favourable flying weather usually prevailed.⁵

The new construction and resupply operations that spring faced several unanticipated challenges. Unfortunately, the land runway built at Resolute in 1947 was unusable after being buried in up to ten feet of snow. Eighteen-inch ridges of gravel along both sides of the strip, left by the initial construction crew, created long, high drifts that became heavily compacted by the winds. In response, the station crew worked diligently to plow a temporary airstrip on the lake ice near the main camp, which supported continuous air operations throughout April. The Atlantic Division of the US Air Force’s Air Transport Command assigned nine aircraft to the operation, with supporting equipment that included snow removal machinery, aircraft heaters, maintenance parts, temporary shelters, food, and Arctic supplies. Approximately one hundred military personnel, joined by twenty-five civilians, flew to Resolute to accomplish this mission.⁶ It was a massive undertaking for the High Arctic at that time.

The visitors to Resolute were also overwhelmed by the huge snowdrifts that engulfed the supply dumps and camp area. “Large drifts as high as the tops of the buildings had formed in the lee of each structure,” Charles Hubbard and J. Glenn Dyer observed. “As an example, the storage and RCMP quonset hut was buried to the very top so that one could walk over the roof. Constable Aimé reached his quarters through a snow tunnel some 30 feet long.” While paths had been cleared between some buildings, they climbed over “drifts which were so hard that tractors could be driven over them without breaking through.” This posed a serious problem when crews tried to recover boxes and equipment for the new stations from the supply dumps. Heavy shovelling, unanticipated in the original workload plans, strained both morale and schedules. Some supplies were recovered by probing the snow with iron rods, while other items could not be located at all. Other essential items (particularly clothing and knives) had been pilfered.⁷

This frustrating situation compounded ongoing confusion over supplies more generally. To compensate for the shortages in the satellite

stations' stocks, and especially food, the crews drew heavily from the Resolute station's supplies. This meant that the station personnel had to do without some items until the snow melted and the original supplies slated for the satellite stations could be found. In other cases, particularly with respect to medical supplies and clothing, emergency shipments had to be flown up from the United States. Self-reliance at the satellite stations depended upon them. "With the added problem of concealment by snow it is inevitable that the new satellites will be bothered by shortages," Hubbard and Dyer conceded. They did not consider the situation to be critical, however, because "all major components were checked, and miscellaneous supplies were provided in generous quantities which will permit improvisation." Eureka had persevered through a similar situation the year before with "inconvenience but without hazard to the security of the camp nor its principal scientific functions."⁸ Adapting, improvising, and coping with material constraints would fall to the station personnel and their leadership.

To construct the new stations in the western archipelago, Hubbard again reached out to his wartime contacts, appealing to their Arctic interests and encouraging them to join in the next great Arctic experiment. "Perhaps you have heard through the 'Mukluk Telegraph' that there is a big project about to start in the Arctic," he messaged Willie Knutsen, who had been released from the US Army Air Forces at the end of the war. "I cannot tell you what it is, but I think you can guess. Can you make yourself available in the near future?" Knutsen tried to refuse, having just converted a desanctified church in Rockport, Massachusetts into a home for his wife and three children. Although he had already missed his children's births because of work and worried about the impact of another absence on his wife's mental health, he conceded to Hubbard's repeated appeals and went to Washington as a civilian officer with the JAWS program.⁹ Financial exigencies convinced American Alan Innes-Taylor, another of Hubbard's recruits, to return north as the executive officer for the station planned on Ellef Ringnes Island. By March 1948, the three men found themselves boarding an aircraft in Frobisher heading to Resolute, before venturing onward to remote points beyond to expand the weather station network.¹⁰

Isachsen, Ellef Ringnes Island, 78°46'40' N., 103°31'40' W.

Alan Innes-Taylor had extensive knowledge of polar life. Born in Berkhamsted, England, at the turn of the century, his family emigrated to the United States in 1906 and then on to Canada in 1908. He served as a pilot with the Royal Flying Corps from 1917–18, and after a few years working as a farmer and surveyor he joined the Royal Northwest Mounted Police in 1921. He had served for five years as a constable in northern British Columbia and the Yukon before working in the mines at Keno and then as a purser on a steamship running between Whitehorse and Dawson. This northern experience qualified him to join the first and second Byrd Antarctic expeditions, the first as a dog driver and the second as the lead of all field operations. He planned a systematic field science program that demonstrated the shift away from previous generations of simple geographical exploration. After the outbreak of war, Innes-Taylor volunteered to serve with the Canadian Armed Forces. Feeling personally humiliated when no one replied to his letters or telegrams, he was commissioned by a special act of Congress as a captain in the US Army Air Forces. For his first assignment he commanded Task Force 4998a, setting up search and rescue stations on the Greenland Ice Cap and along the east coast of the island in 1942–43. “He liked the Danes, he liked the Eskimos, he liked the climate and the country,” Arctic explorer and popular pundit Vilhjalmur Stefansson later noted. The following year, Innes-Taylor commanded the Arctic Training Group at Camp Buckley in Colorado. Ultimately promoted to the rank of lieutenant-colonel in 1944, he commanded the Alaska Division of the Arctic Training Group at Chip Lake, near Edmonton, Alberta before finishing his military career by training the Lovat Scouts (intended to invade Norway) in mountain warfare and Arctic survival at Jasper, Alberta in 1946.¹¹

Innes-Taylor’s early postwar optimism (and his enthusiasm for Canada) soon dissipated. After his discharge from the military, he and his wife leased 1,200 acres in the Canadian Rockies and set up a beaver ranch, supplementing this unique form of farming by guiding canoe and big game hunting trips on the Athabasca River. “We had a heavenly place in real wilderness country” only accessible by horse or air, he recalled. “We built a big log house and settled down to what we thought was a lifetime



FIGURE 4-1. Alan Innes-Taylor at Isachsen, 1948. Yukon Archives, Alan Innes-Taylor fonds, 2011/45, file 318 #4.

doing the sort of thing we had always wanted.” Two years later, they were bankrupt. Innes-Taylor managed to secure several paid lectures in the United States and “finally made it to Washington” with his wife. When the US Weather Bureau contacted him with the possibility of establishing the station at Isachsen, he leapt at the opportunity.¹²

Self-educated and interested in devising practical solutions to applied research problems in Arctic survival, Innes-Taylor did his homework before heading up to Isachsen. He corresponded with the venerable explorer Stefansson, who had camped near the proposed station site three decades earlier.¹³ He also asked Charles Hubbard to inquire with the Canadians whether the station staff could take two muskox, two caribou, and ten geese to compensate for the lack of fresh meat during the summer months. To balance the local ecosystem, Innes-Taylor proposed killing one wolf for each large animal. Canadian authorities refused the request, upholding their strict game regulations in the Arctic, but the exchange revealed that

the American executive officer was proactive and creative in seeking ways to ameliorate living conditions for his staff.¹⁴

Heading from Washington to Goose Bay, then on to Thule and Resolute, Innes-Taylor spent three weeks with his staff at the station on Cornwallis Island prior to setting up their new post at Isachsen. He was unimpressed with Hubbard. “The planning has been bad, and I am apt at this moment to say that Hubbard is a dangerous man to have planning Arctic projects,” Innes-Taylor reported to Stefansson. “He seems to have plenty of hair brained ideas which other people will listen to. But never having wintered in the Arctic he really doesn’t know. He was in Resolute for three weeks and I had to cross him pretty hard.” He griped about the poorly designed and “comfortless” wartime equipment, the starch-heavy (and low-fat) diet, and medical stores with tonnes of delousing powder and gas casualty outfits that were obviously intended for tropical environments.¹⁵ Innes-Taylor’s previous expertise in planning polar field expeditions made him a credible critic — although he obviously carried a solid chip on his shoulder.

The station staff established a toehold in early spring 1948. Officials in the national capitals (none of whom had visited the site) had hoped to find a suitable location on the southern side of the western peninsula, which offered greater possibility of icebreaker access, but reconnaissance flights over Ellef Ringnes Island in late March discovered better building conditions in the north.¹⁶ The best site proved to be an unnamed bay just east of Deer Bay, with sufficient open ground to permit appropriate weather observations, hills to accommodate the main station buildings, and potential sources of fresh water. The first party of three men and camping supplies arrived at the site on 2 April 1948, establishing an initial camp near the end of the ice runway on the bay. Blowing snow and poor flying conditions prevented the next airplanes from landing for two days.¹⁷ Richard Jones, the officer in charge (still recovering from an earlier illness at Westover), selected a knoll upon which to build a prefabricated hut. At the foot of the hill flowed a considerable stream that would supply fresh water in summer and ice in the fall. Otherwise, Innes-Taylor reported that the sea ice was so old it could be melted and the water drunk.¹⁸ Later assessments by station staff proved that water supply was a more persistent problem at Isachsen than the site selectors had anticipated.

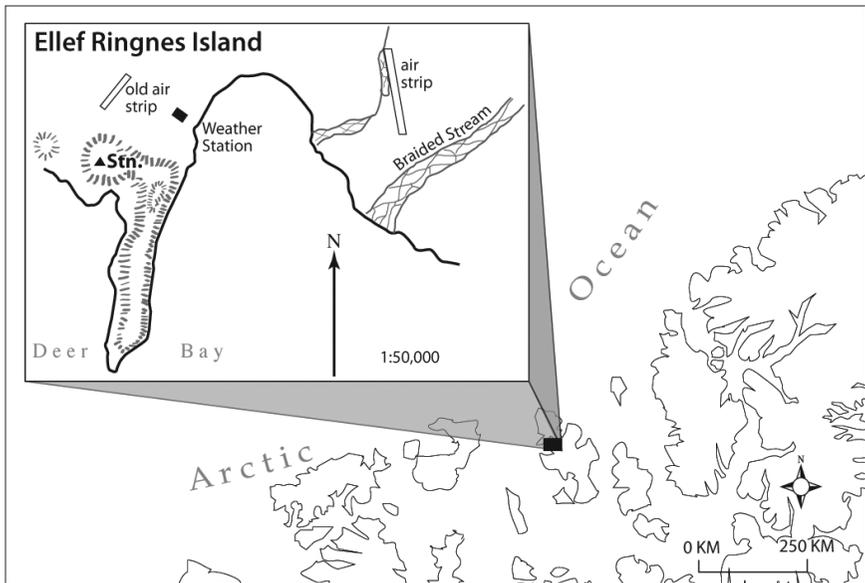


FIGURE 4-2. Isachsen site map, 1947. Jennifer Arthur-Lackenbauer

By the time Andrew Thomson visited the site on 13 April 1948, the station staff of six (plus a temporary American mechanic to build the air-strip) had settled in two Jamesway huts. The crew offloaded the 12,200 lbs. of building materials from a C-54 aircraft in twenty-five minutes, before heading back to Resolute to collect another load and return later in the day if the weather cooperated. The station staff made every effort to learn from previous experiences, carefully assigning the supplies to appropriate places in the storage dumps so that they could be readily shifted to the top of the knoll. Jones also planned to build the permanent prefabricated house as soon as all the materials arrived from Resolute, at which point they would complete the permanent installations and begin the radio-sonde program. The arrival of two huskies and four puppies the previous day “had added very much to the liveliness of the community,” and Jones reported high morale and no nationalistic tensions.¹⁹

Innes-Taylor, however, grew increasingly dismayed. His private correspondence revealed a strong anti-Canadian bias. “This area and many others have been entirely neglected” since the Canadian Arctic Expedition

had visited it three decades before, he told Stefansson, “and that even today the best we can do is stick up a weather station and to hell with finding out something about the country. I get sick when I think of it and I get particularly annoyed at the slow ponderous expansion of the Arctic by the Canadians. They don’t deserve to have it.”²⁰ Innes-Taylor also appealed to Lincoln Washburn, the American-born executive director of the Arctic Institute of North America in Montreal, to “see if you can’t stir up the sleepy Canadians to putting some good scientists up here to do a job.” The Canadians at Isachsen were not even meteorologists: “just dull fellows who know how to read machines, and send balloons up, and who ... have no interest in anything except the dull mechanics of their job, and count the days until they can go back to Toronto or Swift Current or wherever they come from.” After “taxiing” scientists and geologists around the world for a quarter century, Innes-Taylor’s visits to remote regions had filled him with fascination and exhilaration. “I never lose the joy of something new and the recording of it,” he noted. “But when I get to one of these new areas with a group of school boys who lack even a faint glimmering of imagination, THAT MAKES ME SICK AND SAD TOO.” If Washburn could not “stir up” the Canadians to recruit more adventurous candidates, Innes-Taylor wanted him to convince the Canadians to allow the Americans to “send up a good man or two.”²¹

Innes-Taylor’s strong opinions reflected a broader disappointment with modern methods of Arctic exploration. As an obvious disciple of Stefansson and other “heroic age” explorers, Innes-Taylor and his laments about the weather station program bore a strong undercurrent of anti-modernism. Writing for the Arctic Institute of North America’s new magazine *Arctic* soon after he arrived at Isachsen, he noted:

Here we were then, in this new land with a great mass of supplies; food of all kinds, an airborne tractor, sleds, clothing, three dogs — one ancient male, a pregnant bitch and a six weeks old pup; Jamesway huts, a prefabricated timber house, linoleum, chemical toilets, radios of assorted kinds, electric generator, medical stores, silex coffee makers, trail equipment of one kind or another, kerosene, motor fuel, aviation gas, diesel fuel, lubricating oils, unleaded gas and coal, a complete



FIGURE 4-3. USAF C-54 landing at Isachsen, 1950. NARA, RG XPOLA, Entry 17, Charles Hubbard Papers, Box 5, File Report on Airlift Operations, Spring 1950.

set of weather-recording instruments, hydrogen-making apparatus, lumber, beaver board, winch, antenna masts, stoves, paint, nails, tools, ice cutting saws, dynamite, Very pistols [flare guns], an ice-cream mixer and a library of twelve books. This was to take care of us, to make life easier and more comfortable, so that we could do our weather observing.²²

Unfortunately, the station personnel displayed “little excitement over being in a new country never before explored and about which little is known.” Innes-Taylor pondered why this was:

Man and his machines? Man and his gadget thinking? Man in his desire to explore, at the mercy of his machines? Amidst the mound of supplies, the man had forgotten that this land had not changed; it remained the same as when Sverdrup and Stefansson charted its coast. The great and beautiful clouds still swept over it, the blizzards still hit the mountains and roared into the valleys, the pinched vegetation was still soft

and glorious in the summertime. The landfast ice still clung to the shores as though to defy the ice breakers. The great stillness was still here. It would never change. Only man had changed. He had harnessed himself to the machine, and somehow the machine seemed a little tawdry, a little out of place, a little futile and dirty. Nothing was simple any more [*sic*]. There was comfort of a sort, but not the hominess of a snow house. There were typewriters, but gone was the effort of writing what one saw and felt with the barehand. Nobody sang, nobody whistled, it was a grim job. Only the land, misty in the drifting snow or brilliant under the high sun, remained the same. This would never change. There would always be that spiritual aloneness to be found here, but it was too simple, too basic; it was no longer what man desired. He had arrived here forty years after discovery, a stranger and an intruder in a strange land he would never understand.²³

Involved in a spiritless, modern experiment, the executive officer felt that his crew remained insulated and disengaged from the vibrant, majestic land.

In his official correspondence to Thomson in Toronto, however, Innes-Taylor acknowledged that the staff had made significant progress. From April 3–24, aircraft (mainly C-54s) had carried 338,086 pounds (169 tons) to Isachsen in thirty loads. Morale remained high — although people felt fatigued by this point. They had completed the operations building, set up the weather instrumentation, and took synoptics for the previous ten days. They planned next to tackle the warehouse, garage, hydrogen shelter, and permanent housing building. In the meantime, they still lived on the beach in two Jamesway huts (one of which would remain as an emergency building if their permanent building burned down). They had moved all of the equipment off the bay and into dumps — just in advance of the snow, which proceeded to bury everything and required daily digging. “There is no indication of summer,” the executive officer quipped. The temperature had risen since the airlift, but the weather had worsened. As they settled in, so too did the desolation and remoteness of their surroundings:

This is a strange and at times beautiful country pervaded with a stillness like death and at others roaring with the wind, but always lifeless. We have seen not a sign of life other than the track of a Leming [*sic*] and a fox. I suspect that we will see little game, although there is considerable vegetation in the valleys, grasses, mosses etc. The sea ice in this area is landfast and of great age, the only open water existing where rivers of some size flow into the sea.

Innes-Taylor suspected that parts of the area retained sea or lake ice upon which aircraft could land throughout the year, and he highly doubted that an icebreaker could reach Isachsen. “We shall probably remain an air service Station,” he noted.²⁴ Time proved him right.

Mould Bay, Prince Patrick Island, 76°14'16'N., 119°20'28'W.

The station planned for Prince Patrick Island, about 500 miles west of Resolute Bay, would be even more isolated than Innes-Taylor’s outpost on Ellef Ringnes. Its primary attractiveness lay in its geographical location as the westernmost of Canada’s High Arctic islands. Historically icebound for the entire year, few non-Indigenous people had set foot on the island prior to 1948. Lieutenant George Meham, of Captain Francis Leopold McClintock’s 1853 expedition, had touched the southwest point and “explored” the island by spyglass, noting the “almost insurmountable” pack ice surrounding the flat, dreary, barren landscape, and McClintock himself had mapped the western coast by sledge.²⁵ 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.”²⁶ Sir Hubert Wilkins navigated a Consolidated PBV 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.²⁷ For all intents and purposes, this little-explored territory remained one of the most inaccessible corners of the dominion.

Aerial reconnaissance of the island 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. Hubbard's long-time friend Willie Knutsen, selected by the USWB to serve as executive officer at the Prince Patrick Island station, joined the search on March 30. 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."²⁸ Knutsen recalled the anticipation surrounding the first landing:

We flew over Mould Bay, found a frozen lake that looked landable, 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.²⁹

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, he noted, for the heavy snow accumulation that would have plagued flight operations on an ongoing basis.

A third reconnaissance mission on April 5 identified a suitable site on the east side of Mould Bay, about fifteen miles from the 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,

FIGURE 4-4. Willie Knutsen, 1944. From Willie Knutsen and Will C. Knutsen, *Arctic Sun on My Path*, 2005.



consisting of hard gravel ridges bounding a broad low valley with extensive delta at the mouth.”³⁰ With the site selected, the US Air Force flew Canadian OIC Paul Chorney, radio operator Patrick McKay, and Knutsen to Mould Bay on April 11. The three men established a temporary camp, then opened radio communications that same evening with Resolute and Isachsen.

Because the airstrip ended nearly a mile from the site selected for the station, the men urgently requested a caterpillar tractor and sled so that they could haul cargo and improve a taxiway to get aircraft closer to the camp site.³¹ 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. “McKay and Chorney were good arctic mates. The awesome stillness and the knowledge that we might as well be on the moon did not disturb them. In fact, they said they were having a ball!”³² 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 (Packet), poured supplies into Prince Patrick so fast we could hardly keep them classified and the perishables



FIGURE 4-5. Mould Bay site map, 1947. Jennifer Arthur-Lackenbauer

and instruments under cover.” The formal establishment at Mould Bay had identical staff numbers to Isachsen: three Canadians, three Americans, and an additional US mechanic to assist temporarily with building an air-strip. The seven men quickly built a Jamesway hut to store their inventory of essential supplies.³³ Thirty-two flights carried 170 tons of supplies into Mould Bay by April 25 without incident.³⁴

Unforeseen events, however, confused the local situation. McKay, the Canadian radioman, narrowly averted disaster when he knocked over a Coleman stove and burned down his nylon tent. Fortunately, his radio equipment survived. Knutsen, however, who had intended on a thirteen-month posting, was not as fortunate. He strained himself lifting a

cook stove into the main hut on 19 April. He tried to conceal the injury from everyone except the OIC (Paul Chorney), but his situation did not improve. Against his protests, his comrades called in a plane to evacuate him for treatment. On May 29 a ski plane glided in from Thule and took him out. "I nearly wept, being forced to leave so many months before my contract was up," he confessed.³⁵ Consequently, the station operated without an executive officer for the first year — there was not enough time to send a replacement before the ice strip became unusable. Station construction proceeded unabated, however, and Mould Bay carried on a full weather observing program from June onward.³⁶

Resupplying the Stations: The Trials of Task Force 80³⁷

While crews were building the satellite stations at Isachsen and Mould Bay, officials from Canada and the United States met in Washington to plan that summer's naval mission. Task Force 80 would resupply the weather stations at Thule, Resolute, Slidre Bay, Deer Bay, and Mould Bay and land the necessary materials to build planned stations at Winter Harbour on Melville Island and another on the northeast coast of Ellesmere Island.³⁸ In addition, the Americans hoped to resolve ice issues, unreliable charts, compass errors, and the lack of celestial fixes (for navigation).³⁹ The commander, Captain George Dufek, had extensive experience in the polar regions having commanded Operation Nanook in 1946 and then the Eastern Group (Task Group 68.3) during Operation Highjump in Antarctica in the winter of 1946–47.⁴⁰ Dufek realized that the 1948 mission called for far more than the ability to operate effectively in Arctic conditions. He would also have to navigate through difficult political issues — particularly Canadian sensitivities over participation in continental defence.⁴¹

The most pressing concerns revolved around the questions of sovereignty, control, and publicity. Although the Americans believed that they understood the issues and, "after numerous difficulties and altercations, finally have found effective answers," they still had to be careful "to ensure that small oversights do not occur to mar present friendly relations."⁴² Planning documents reflected the spirit of cooperation and accommodation between the two countries. The operational plan quoted a speech by Canadian Minister of External Affairs Louis St-Laurent on 29 April 1948, which set the tenor for the broader continental relationship. "One source

of whatever difficulties we have with our good neighbour is a flattering, if at times trifle embarrassing, tendency on their part to consider us so much as one of themselves that, with the best intentions, they occasionally forget we are as sensitive as any nation about having control over our own affairs,” St-Laurent noted. The operational plan reiterated the Canadian regulations that the USN had to follow during the mission, and senior American officials pledged to respect the conditions and rules.⁴³

Canadian officials remained vigilant when monitoring actual American activities. They had not regulated the previous naval operations heavily, asking the Americans neither to disclose the routes they would take nor to provide information on specific scientific studies. This changed in 1948. Now they sought, in advance, a “full picture” of the training, research and development projects, and scientific work the Americans hoped to accomplish, and scrutinized flight plans to ensure that they did not conduct unauthorized overflights over Canadian territory.⁴⁴ They also urged their American counterparts to be more vigilant in controlling publicity and curbing stories perpetuating incorrect or exaggerated ideas about joint activities in the North.⁴⁵ Furthermore, a larger contingent of Canadian observers (eighteen in total) than in previous years would participate in the upcoming mission, gaining first-hand knowledge about the High Arctic and ensuring that the dominion’s interests were represented and protected.⁴⁶

The growing interest of a few overzealous Canadians — particularly Trevor Lloyd, the head of the Geographical Bureau of the Department of Mines and Resources — also anticipated and portended bilateral friction. Determining the locations for future JAWS stations (and the routes to reach them) would likely result in important geographical discoveries, so Deputy Minister and NWT Commissioner Hugh Keenleyside wanted Lloyd involved in the deliberations.⁴⁷ A “northern nationalist” who constantly worried about Canada’s sovereignty in the North, Lloyd had already alienated himself from Canadian military and diplomatic circles when he badgered them for information about bilateral defence arrangements that fell beyond his bureau’s mandate,⁴⁸ and then “endangered the machinery for the exchange of reports and other material between the Services of the two countries” by going directly to the Americans for information.⁴⁹ While senior officials at Mines and Resources continued to support Lloyd

and his actions, the military establishment in both countries grew increasingly distrustful of him and his entire organization. The US Navy singled out all the personnel from Mines and Resources for security checks and “special going over,”⁵⁰ but they could not prevent Lloyd from carefully scrutinizing the Arctic mission. His colleagues participating in the task force, particularly Tom Weir, kept him apprised of progress and reported any questionable or worrisome activities. Despite all of the precautions taken during the planning stage, there was plenty to report.

The ships set sail from Boston on July 15–16, resupplying Thule before the two icebreakers set their course for northern Ellesmere Island at the end of the month. Here they would cache equipment so that work crews could build a runway on the sea ice the following spring to bring in the tons of supplies, equipment, and materiel needed to establish another satellite weather station.⁵¹ Loose and scattered floe ice delayed progress, and heavy fog led to damages to the icebreakers. Captain Albani Chouinard, the senior Department of Transport observer and a retired icebreaker captain with extensive Arctic experience, was appalled by the “abuse to the ship and equipment” wrought by the crew’s inexperience. “They wouldn’t listen,” he confessed to Constable Aimé later, “so I just went and got drunk.”⁵²

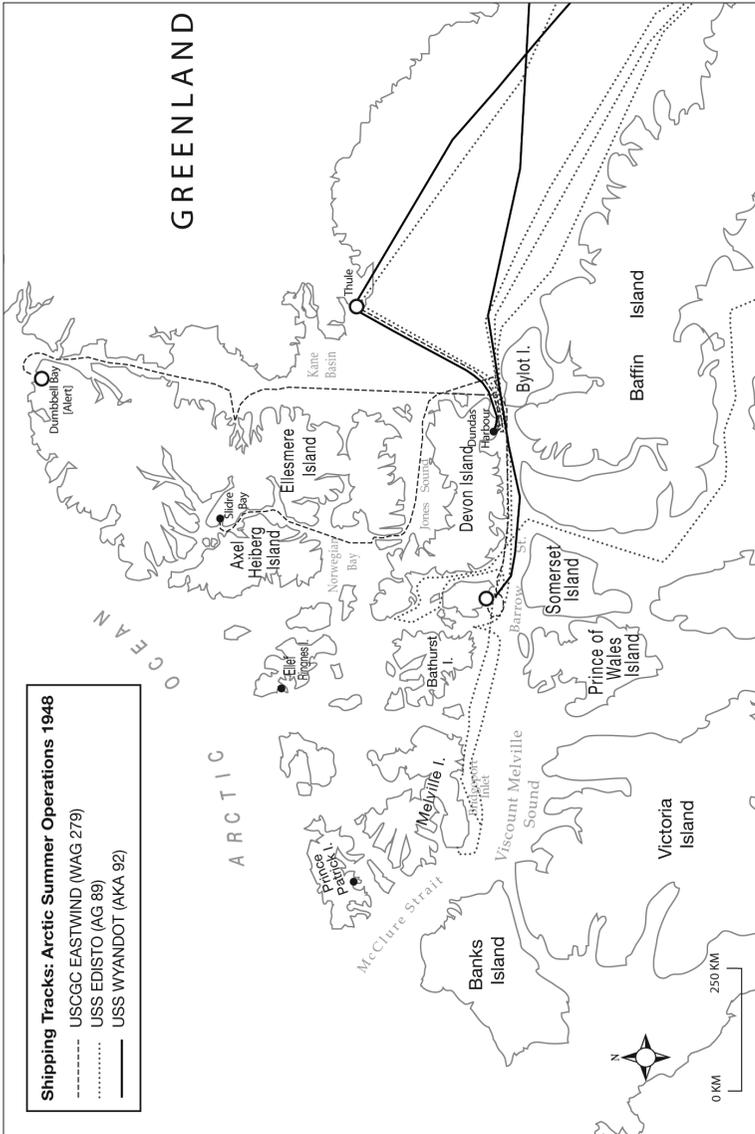
Edisto anchored off Cape Sheridan on August 2, near where Sir George Nares had wintered with HMS *Alert* during the British Arctic Expedition of 1875–76 and where Peary wintered during his attempts to reach the North Pole in 1907 and 1910. Heavy ice conditions inhibited plans to continue up the coast to Cape Columbia so, continuing a common trend, the men on the spot were forced to search out an alternate site given the realities on the ground. Previous reconnaissance flights had identified a potential location between Dumbbell Bay and the Dumbbell Lakes, a few kilometres to the northwest.⁵³ While the icebreaker lay at anchor in the bay, Hubbard and a Canadian representative selected the future site for the station. Although the mountainous terrain of Ellesmere generally posed a serious challenge to planners, the landscape inland from Dumbbell Bay had a relatively low relief and the United States mountain range was distant enough that it did not unduly disrupt weather patterns. Seaborne access would be limited to icebreakers in favourable conditions, but the lakes in the area offered fresh water and would also serve as backup airstrips if

the ice on Dumbbell Bay was overly rough. Finally, part of Cape Belknap was level enough to build an airstrip in due course.⁵⁴

With the location settled, *Edisto* started to offload a cache of heavy tractors, huts, fuel, and field rations on August 2. Although several men were stranded at the site after ice threatened the ships, prompting a frenzied retreat to Black Point, they were retrieved and the final stores of construction supplies and equipment offloaded two days later. With their mission on the northern end of Ellesmere Island complete, the ships slowly pushed northward into the Lincoln Sea. Damage and all, the icebreakers eventually reached 82° 34' N, farther north than any previous surface vessel navigating under its own power (rather than drifting in pack ice).⁵⁵ Maritime history had been made in the Canadian Arctic — by an American icebreaker.

Completing the weather station resupply mission thus fell to USS *Eastwind* and *Wyandot*, which had travelled alone to Resolute Bay. Here the coast guard icebreaker rejoined the supply ship and began the long process of offloading supplies on August 13 — an effort complicated by ice lodged in the bay. Although *Eastwind* headed for the station at Slidre Bay a few days later, it returned after an urgent message from the transport ship saying it was caught in the ice and being driven to shore. The icebreaker returned to Resolute as fast as possible, discovering that the cargo ship had managed to escape the ice but not without sustaining damage to its propeller blades, causing vibrations throughout the ship and a significant loss of speed. Undeterred by this near disaster, the task force made another attempt to unload the supplies for Resolute on August 20. Heavy ice again rolled into the bay, stymied all progress, stranded forty men on the beach, and almost crushed a landing craft. Once more ice threatened *Wyandot* and the icebreaker had to tow it clear. Still unable to finish unloading supplies at Resolute, *Eastwind* left once more for the station at Slidre Bay (Eureka) on August 25 and reached the site three days later. It landed supplies there without incident (the first part of the resupply operation to go as planned), completing its task in only twenty-three hours. The next afternoon the icebreaker headed back to Resolute, rendezvousing with the newly returned *Edisto* on September 2. Though the unloading of supplies was continuously upset by drifting ice in the bay, by September 4 all materials had been transported to shore and Task Force 80 dispersed.⁵⁶

FIGURE 4-6.
 Task Force 80
 (1948) map.
 Jennifer Arthur-
 Lackenbauer



On the way home, *Eastwind* navigated Fury and Hecla Strait, the first vessel ever to do so, thus opening “a new route to the northern Canadian Arctic.”⁵⁷

On the operational level, the cruise of Task Force 80 had been a success. Beyond simply resupplying the weather stations, the hydrographic, geodetic, and oceanographic information gathered during the mission corrected Arctic navigational charts. But the Americans had been at the helm, and this continued to worry some Canadian officials. *Edisto*’s achievement of a new record for “highest north” showed the effectiveness of American icebreakers — and highlighted Canada’s inability to operate independently in the region, let alone control activities within it.

Given lingering sovereignty concerns in Ottawa, perceived indiscretions continued to generate alarm and over-sensitivity. Canada’s consent to the expedition had stipulated that the US commanders would have to seek official approval before they changed their proposed routes.⁵⁸ Captain Dufek’s subsequent decision to return via transiting Fury and Hecla Strait therefore upset Canadian officials — and proved the shortcomings of an informal approach to planning and operations. Although Dufek notified the senior Canadian task force observer, critics accused him of failing to inform the Canadian government directly.⁵⁹ This alleged breach of protocol, indicating Canada’s lack of direct control over Arctic activities, prompted Ottawa officials to ensure that Americans on future naval operations did not undertake “excursions into areas that are quite irrelevant to the weather station programme.”⁶⁰ The Canadian ambassador in Washington passed along a stern message to the US Navy that deviating from established plans would jeopardize Canadian approval for subsequent projects.⁶¹ More careful investigation revealed that the situation was not as clear as some Canadian officials believed,⁶² and Hubbard insisted that the expedition had passed through Fury and Hecla Strait at the suggestion of the ranking Canadian naval representative on board (and with Canadian Navy approval). The Canadian complaint, Hubbard alleged, reflected the attitude of Trevor Lloyd more than anything else.⁶³

Lloyd remained a committed defender of Canadian interests in Ottawa whenever he believed the Americans acted without permission. When Charles Hubbard discovered a cairn erected by American explorer Robert Peary in 1906 and took a whisky bottle full of historical documents

from it onto *Eastwind*, Captain Dufek asked the senior Canadian observer, Commander Thomas Fife, to open the bottle and review the papers.⁶⁴ Fearing American retaliation if he demanded custody of these documents, Fife told another observer to present the Americans with a copy of the Canadian *Ordinance Respecting the Protection and Care of Archaeological Sites*,⁶⁵ and left any formal action to senior officials in the nations' capitals. Lloyd, kept well informed by observers on the ships, pressed the issue in Ottawa, believing that he had finally secured hard evidence of tangible American indiscretion.⁶⁶ Senior decision-makers, however, took every step to ensure the mission faded in the public's memory. The Under-Secretary for External Affairs explained that the authorities in Ottawa "wanted the Mission to drop into obscurity,"⁶⁷ including Minister of National Defence Brooke Claxton who instructed that "everyone ... forget about the Sea Supply Mission."⁶⁸ Deflecting attention away from Arctic projects would have the dual benefit of reducing public anxiety about the extent of American activities in the region and avoiding any further strain in Canada's relations with the Soviet Union.⁶⁹

Maintaining control over media coverage proved a Canadian pre-occupation. Prior to Task Force 80's departure, Canada insisted that the countries only issue joint press releases at the beginning and at the end of the mission and that officials rigidly adhere to the publicity directives for joint defence projects. Although it would be impossible for Canada to suppress news that the American "ships went further afield than did that of the British explorer Nares (who went much further himself by sled),"⁷⁰ Ottawa sought to make the extraordinary feat as ordinary as possible in the final press release. As soon as the expedition returned to Boston, however, leaked information began to find its way into the newspapers, including a front-page story in the *New York Times*. Furthermore, US government sources intimated that the Truman administration wanted to release more details on the expedition but Ottawa would not allow it.⁷¹ The Canadian government looked like it was hiding something from the public, thus deepening suspicions about American defence activities in the Arctic.⁷² Charles Hubbard was the main source of the press leaks, and his "mania for publicity" and blatant breach of protocol also upset the Americans.⁷³ Infelicitous media coverage irritated bilateral relations, but clear-headed

Canadian officials recognized that there was no American conspiracy to undermine the dominion's position in the Arctic.

Early Life at the Stations

Whereas Lloyd had seen American indiscretions everywhere, Canadian and American personnel at the stations generally got along well. In his March 1949 handover report identifying problems at Isachsen, Executive Officer Alan Innes-Taylor noted that “there have been no difficulties of any kind” regarding foreign relations — a welcome relief to Andrew Thomson, who received more questions from his Canadian superiors about the bilateral relationship than any other topic.⁷⁴ On a personal level, however, Innes-Taylor harboured deep-seated prejudices and his frustrations towards Canada festered at the isolated weather outpost. “I would never take a Canadian on any Expedition unless I knew him well and had seen him in action,” Innes-Taylor told Stefansson in November 1948. “They live in a country which has an Arctic empire, but they know less about it than an American schoolboy.” He generalized that Canadians were temperamentally unsuited to Arctic work, lacking enthusiasm, adaptability, and (with the exception of the few people who actually lived in the North) mental and physical toughness. Although he claimed to retain his love for the Canadian North and its people, he declared that he could “no longer struggle against the awful inertia which lies like a pall over the whole country when it comes to development of their great north land; and so long as I live I shall continue to drive that point home on every occasion.” By this point, he had shaken “the dust of [Canada] from my feet and when I get home shall become an American citizen.”⁷⁵

At the core, Innes-Taylor remained convinced that the stations represented a missed opportunity for expanded scientific knowledge. Both governments had invested tremendous money in the JAWS program, which he assumed would reap dividends in weather data. When it came to the exploration of Ellef Ringnes Island, however, the impact was negligible. Aircraft proved useful for basic mapping and quick transport, but not detailed, substantive work to get to know the actual environment. “The botanical, biological, geological angle ... is not being done,” he complained in a private letter to Stefansson in November 1948:

Here is a station with 7 men, comfortable quarters, electric light, ... and excellent food. Good beds, radios, etc. We are doing weather but what else? Absolutely nothing. This station could house at least three more men, who could do some really valuable work, but it [isn't] being done. We are discouraged from going more than five miles from the station, although I must admit I have exceeded it many times. The policy is dictated by Arm Chair Arctic Experts at Toronto and Washington who have never wintered in the Arctic and who keep on continually harping on the heroic adventurous story book conception of the country. We end up having too much materially and too little exploratory.... All these lads want to do with one exception is eat well, live well, and do their weather observations which do not take up more than 4 hours of their day. So they are bored and count the days until they leave.⁷⁶

During the summer season at Isachsen, mobility was constrained: the entire area was “a sea of mud.”⁷⁷ When the winter set in and mobility was possible, only two of the seven men walked more than 300 yards daily. When Innes-Taylor had brought in nineteen “plump and delicious” ptarmigan in late August — their first fresh meat since May — the men ate the birds reluctantly and did not like them. He was appalled. “I would[n't] give hell room for a carload of this type of man,” he complained. “I’m afraid there are many of them in these days of press the button everything.”⁷⁸

The first year at the station brought its share of hardships. The Canadian OIC at Isachsen, who was unable to overcome serious medical problems, displayed few leadership qualities. He had difficulty motivating the crew, so work progressed too slowly for his executive officer. “It is a little difficult to understand the men,” Innes-Taylor admitted. “They get up when they please ... and generally behave like spoiled children.”⁷⁹ In an isolated station, everyone needed to pull their weight — and accept unpredictability. Even basic contact with the outside world through air mail drops proved unreliable. By late November 1948, the station personnel were busy planning for Christmas, writing letters, making cards — and anticipating a mail drop. When flights failed to arrive week after week, morale sagged. “No mail. Nothing to read. Talk about run-out,” Innes-Taylor noted on 10

January 1949. From his frustrating vantage point at the station, he speculated on the cause: old aircraft, improper winterization, inexperienced crew, and a lack of “drive behind the mission.” A thirteenth attempt finally delivered the mail on February 24 — and fortunately eleven of twelve chutes opened.⁸⁰

Some things could be controlled, however, and Innes-Taylor reported that deplorable living habits both reflected and perpetuated poor morale at Isachsen. The living room, dining room, and kitchen were habitually messy, and “little thought was given to helping our good natured cook keep the place clean and one man cannot do it all.” The men tossed cigarette butts on the floor or left them to burn holes in the bookshelves. “There were times when the interior looked quite sordid and certainly most depressing,” the executive officer admitted. If every man did his part, the station would be easy to maintain — but not when one or two men had to pick up constantly for the other five. Innes-Taylor was also appalled by the dirty language that matched the physical filth. “Most men swear at times, but the filthy blasphemous language which has flowed from the mouths of three of the men in a constant stream hardly makes for good morale,” he reported. In a small station in particular, it was essential for men “to show consideration for the other fellow.”⁸¹ When men failed to display basic respect for others, such as failing to do their chores, they placed an unfair burden on their colleagues.⁸²

Innes-Taylor’s reports failed to disclose, but his private papers reveal, an undercurrent of humour and a burgeoning station culture rooted in a shared sense of isolation, confinement, identity, and resilience. A quirky manifestation of personnel enduring such hardship appeared in a home-made booklet on the “Arctic Male” written by “The Skipper” at Isachsen in late 1948. “Dedicated to The Arctic Experts in the fond Hope that they may freeze in Hell,” this irreverent, sarcastic, and colourful artefact shows how station personnel perceived their lack of agency and distance from the south. It also suggests that the crew had already formed a distinct station culture, represented by what the author called (with his tongue in cheek) “The Arctic Male Society” — an exclusive order in Isachsen clearly separate from “The Arctic Experts” who ran the program from Ottawa and Washington south. This was the time of year when yearning for the south

was at its peak, and the personnel had settled into their winter routine — thus giving them time for such creative pursuits. The narrative began:

Once upon a time there was a weather station on Isachsen Land, away in the Arctic near the North Pole.

On this station were Seven men waiting for the Christmas mail. They had been waiting a long time.

A long way off, many thousands of miles away in the cities of Washington and Toronto there were a group of Arctic Experts. These men had devoted a lifetime to sitting on their fat rumps — giving orders in a loud and vulgar voice and reading Buck Rogers, Superman and a few Arctic books. Some of them had even appeared on the Radio and on occasion had appeared on the famous show “It Pays To Be Ignorant.”

They were all known as Bureaucrats but had recently coined a new word for themselves[,] “Polarcrats.” As one bright Isachsenite glibly remarked “Sounds too much like Polecats and boy — how they stink.”

These Arctic experts were strong on Protocol & White Papers, but a little short on fur lined under wear [*sic*] and frozen Noses.

From Time to Time they were in the habit of making wild dashes in an Aircraft to the Headquarters Base in the Arctic at Resolute Bay. Immediately [after] they arrived they would scream for a mike and get on the air to all the stations —

Arctic Expert: Calling all Stations — Come in Isachsen

Isachsen: Mad Dog calling Resolute — You are loud and virile

Arctic Expert: How are things up your way — Thomas says Hello[,] Hubbard says Hello — We are sending you a new Tractor[,] nineteen Thermometers and a Kiddie Car on the Spring Airlift. We know what you

fellows want and we'll get it, if we have to go to Harry [Truman]

Isachsen: What about the mail?

Arctic Expert: As soon as I return to Washington we will hold a conference to see what can be done. You fellows [mustn't] be impatient. After all, we promised you an airmail once a month, and that was only a campaign promise. Also remember there is still 120 shopping days to Christmas. Be brave — Think of Peary — Think of Franklin — Think of Greely — You too may be an Arctic Expert some day.

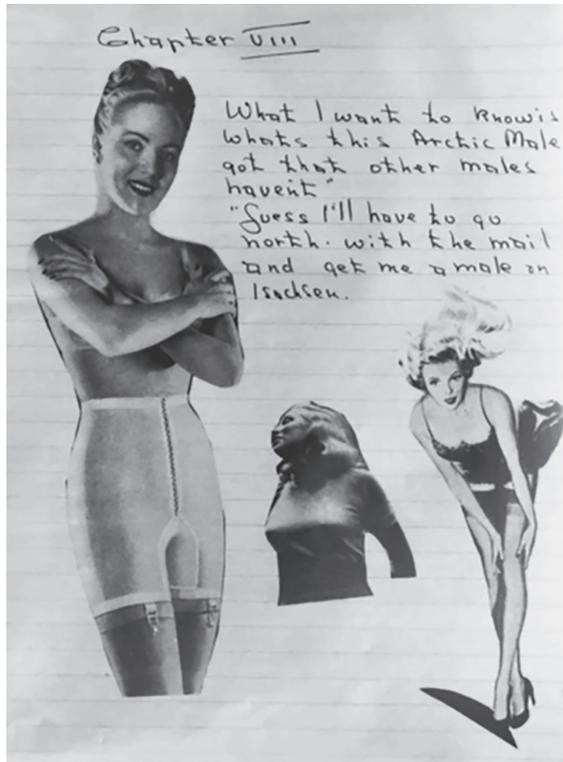
Isachsen: But we haven't had any mail in a year and Christmas is coming.

Arctic Expert: The static is getting bad — I cannot hear you — Your signal is weak and impotent — My plane is taking off in an hour. I must get back to conferences. Remember we are with you every foot of the way.

The invented dialogue continued in the pages ahead, complemented by cartoons and silly images cut out of magazines.⁸³

The booklet was intended to be humorous, but the author's fixation on various themes is telling. Operating out of a distant metropole, an "Arctic Expert" is defined as "an individual who never having lived in the Arctic knows more about how to live there than the Eskimo, or one who having lived for short periods of time in the Arctic knows all about it, or one who having lived a long time in the Arctic is sure that he has learnt all there is to know." In the fictitious narrative, the "Polarcrats" and "Arctic Experts" had no real sense of the conditions or needs at an isolated outpost, yet had power over whether the men at the station received their coveted Christmas mail. In this fantasy, Congressional hearings are held to solve the dilemma of getting the mail to "these heroic men" at Isachsen. State officials are self-glorifying buffoons, dressed in formal suits and seeking career advancement. The artefact is filled with photo

FIGURE 4-7. A page from the “Arctic Male,” produced by the station personnel at Isachsen in 1948. Yukon Archives, Alan Innes-Taylor collection, MSS 508, acc. 2011/45, f. 2.



clippings of beautiful women, with captions dreaming of them wanting to head up to Isachsen “with the mail and get me a male in Isachsen,” or seeking to comfort “these poor dear boys, so cold and lonesome.” The longing for female companionship is unambiguous, reinforcing prevalent gender stereotypes at the time, but the document simultaneously mocks and bemoans the “virility” and “manliness” of a crew far removed from such comforts who were “impotent” to change their plight. It served as a good-natured way of venting frustration, as well as promoting small group cohesion and distinctiveness.⁸⁴

Individual personalities, not nationality, created most of the tension at the stations. The hardship of isolation and the boredom brought out the best and worst in the personnel. When Captain Albani Chouinard, a Canadian naval observer with the 1948 resupply mission, visited Resolute Bay he “found a very poor set-up ashore. After a few enquiries we found that they had trouble during the winter. The people on the station are

not congenial, housing is poorly situated and very badly kept. One of the Department of Transport radio operators who is stationed at Resolute Bay, is a Union man and this has created ill feeling amongst the others.”⁸⁵ There were also similar interpersonal challenges at Isachsen. While *Collier’s* magazine would later glamorize the sensational but outdated masculine bravado of another station member, Willis (Bill) “Blowtorch” Morgan, his actual contributions were less constructive. The magazine described him as an Oklahoman “famous throughout the Far North for his ingenuity, especially with the blowtorch which, carried in his belt at all times, he uses to perform mechanical miracles.”⁸⁶ Léo Lafranchise, who arrived at Isachsen as the new OIC in fall 1949, was less enamoured with “Blowtorch.” Lafranchise observed “the ruin and destruction [Morgan] accomplished with his blowtorch, his lack of knowledge for the equipment and irresponsible action at Isachsen in 1949 where he left 95% of the equipment unserviceable. Because of his charm or big mouth plus his knowledge on how to make home-brew,” Morgan divided the camp staff, and fist fights were “prevalent.”⁸⁷

Such tensions did not, however, hinder the program’s maturation. When Chouinard visited Eureka Sound, for example, he found everything under perfect control and clean, complete with well-dressed weather bureau personnel in splendid spirits. No complaints existed between the Canadians and Americans, only “good cooperation and feelings.”⁸⁸ A similar sentiment prevailed internationally. Although the United States had already invested millions of dollars in the weather stations, State Department officials did not believe the two countries needed to negotiate a formal agreement. Hubbard sought more certainty from a Weather Bureau standpoint, hoping that fixed arrangements would prompt future procurement decisions. Budgetary limitations in early 1949 had precluded the USWB from building a station at Melville Island for two years (and it would never be built), and these constraints forced Hubbard to narrow his main effort to consolidating the facilities at Isachsen, Mould Bay, and the yet-to-be-built station at Alert. During the initial period of operation, everyone had been prepared to accept improvised methods and make-shift accommodations. Hubbard therefore concentrated on improving the “permanency” of these facilities, and this compromise helped him to secure support for a five-year joint plan between the USWB and the

Canadian Meteorological Division.⁸⁹ The existing arrangement, where conclusions reached at an annual meeting between each country's major contributing departments formed the basis for the following year's work agreement, served all parties' interests just fine. Such comparatively informal yet close collaborations would characterize the working cultures between personnel at the stations as well as between bureaucrats further south.

Adapting to the Environment

Other challenges, however, were beyond anyone's control, forcing adaptation. Each winter, the stations were isolated from southern assistance. The darkness that persisted through most of the lunar cycle, in addition to the extreme cold, made winter the most challenging time to land at the stations. From 1947 to 1949, some pilots persevered against these challenges and made dark period landings at the satellite stations. These flights were usually timed to coincide with a full moon but remained hazardous. One aircraft, for example, landed at Eureka on 23 December 1947. Although the weather was good, the weak moonlight fooled the pilot into believing that there was a hill at the south end of the runway, and he made "seven or eight" approaches before setting down.⁹⁰

After landing at these remote outposts, flight crews did not linger. On 23 February 1949 an American C-54 landed at the Eureka ice strip. Upon inspecting their aircraft, the crew discovered an 80-drop per minute gas leak in the starboard wing tank. Normally this rupture would have grounded the aircraft, but the station's diarist noted that the crew were "not very enthusiastic about Eureka's cold temperatures and are eager to leave as quickly as possible even though the gas leak also constitutes a great fire hazard." The engines started but the brakes had frozen. Station personnel placed Herman Nelson heaters near the brakes for twenty-minute intervals to no avail. Further inspection of the aircraft revealed that one of the engine's carburetors was "spilling gas by the quart." The plane's reluctant captain had to admit that the plane could not fly. The next day an American B-17 airdropped the necessary replacement parts, and the flight mechanic repaired the engine. The station and aircraft crew again heated the C-54's undercarriage with Herman Nelson heaters, but only three of the four wheels on the aircraft's main landing gear turned when the pilot



FIGURE 4-8. Changing an RCAF Lancaster's oil at Resolute Bay on 19 June 1950. LAC, DND fonds, a066234. © Government of Canada. Reproduced with the permission of Library and Archives Canada (2021).

applied throttle. Those assisting on the ground aborted a further taxiing attempt with “frantic waving and pointing” when another wheel blew and hung “limp and frozen in an odd shape.” The station diarist judged that most of the plane’s crew would have preferred “to brave the cold weather and crowded quarters of Eureka to flying in this sad and broken down airplane,” but the pilots decided otherwise. The crew piled in and, “with a gasoline leak of now over 100 drops per minute, with one of its right wheels flat, and with one of its left wheels frozen and dragging uselessly,” took off “without incident.”⁹¹

Warmer temperatures only partly alleviated aerial logistics challenges. When visibility improved and warmer temperatures eased mechanical

strain, the thawing active layer of permafrost rendered the initial and hastily-prepared “postage stamp” mud strips at the satellite stations extremely treacherous. During the spring of 1949, for example, a C-82 at Isachsen and a C-47 at Resolute crashed without loss of life, but had to be written off.⁹² Once they declared the planes inoperable, station personnel stripped the fuselages from both aircraft to use as warehouses. The ongoing reliance on mud strips “stretched our luck to the limit,” a 1950 USWB report concluded, convincing the USWB that more permanent land strips were necessary. The “limited equipment available and the small number of personnel who can be provided,” led the USWB and DoT to plan the construction of a “frozen” airstrip at each satellite station. “The basic plan,” a brief to the construction crews explained, was to “produce a level surface of soft material which will freeze smooth and which will resist heaving. In the summer it should be at least hard enough to carry a tractor so that the surface can be worked.”⁹³ The new strips were built on the existing sites or at new locations clear of major topographical features into which aircraft might crash in conditions of poor visibility, and laid out away from topographical features that would create snowdrifts. The brief explained that planners had “no intention of attempting to build a hard all-season strip” because “we cannot move any large quantity of fill any distance” or “dig hard material.”⁹⁴ It would be several years before dedicated station airstrip mechanics were able to build useful lengths of runway by adopting new techniques that avoided disturbing the permafrost and respected the seasonal cycles and local soil conditions.

The threat of fire at the stations created a persistent source of anxiety, given the station crews’ dependence on buildings and stores to survive in a depauperate environment where they did not have the skills or resources to otherwise subsist. Fires destroyed several buildings (Quonset hut and Jamesway) at Eureka on Christmas Day in 1948, after an overheated stove ignited oil that had dripped onto the floor. It started off small, but the fire raged out of control within a few minutes. With little water on hand and an outside temperature of -35°F (-37°C), the staff were helpless. The inferno destroyed the main mess building and garage, radio equipment, power generator, and weasel and tractor that the personnel used to haul supplies, ice, and fuel, thus placing the station in a precarious position. Using a small emergency radio transmitter powered with a hand crank, personnel still

managed to send out synoptic weather reports each day — but it took up to two and a half hours to complete a basic transmission. Rawinsonde ascents were even more challenging under the circumstances. Although the USAF offered to loan the station new generators and equipment that it had available at Goose Bay and arranged a special relief flight, the Eureka staff had to wait almost seven weeks when, owing to extreme cold, mechanical failures prevented airplanes from completing the resupply mission.⁹⁵

After two more close calls with malfunctioning Evanaire heaters at Eureka and a small fire at Resolute claimed another building and its contents in 1948–49, all stations implemented more rigorous fire prevention and protection measures. In addition to establishing fire-danger points with asbestos rock-board insulation and fire extinguishers, each station implemented twenty-four-hour fire watches.⁹⁶ This latter measure proved effective and allowed Isachsen's staff to avoid major fires in their living quarters and operations buildings after their Evanaire heaters blew back on four separate occasions. Each time, the man on watch immediately extinguished the blaze.⁹⁷ In short, experience yielded hard-learned lessons and best practices that improved safety and the weather station crews' confidence in their austere outposts.

Canadian Capabilities, Sovereignty, and the Resupply Missions of 1949-50

Although the Americans had asked for little Canadian assistance beyond the occasional chart or map during the previous resupply missions, the American dominance of the program's resupply missions began to shift in 1949. In early March the State Department indicated that, owing to the demands of the Berlin airlift, the USAF would be unable to carry supplies to the proposed site for a new weather station, now named Alert, on the northern tip of Ellesmere Island.⁹⁸ The Soviets had blockaded Berlin, and the US committed most of its heavy transport aircraft to keeping the city supplied from June 1948 to May 1949. In addition, the US icebreaker *Eastwind* collided with a merchant ship, sustaining serious damage and rendering it unable to support that summer's Arctic sea supply mission. Canadian and American officials nevertheless agreed on the importance of establishing the station at Alert as soon as possible, but neither country

possessed the icebreaker capacity to pick up the slack for this voyage to the extreme north of the Arctic Archipelago.⁹⁹

Once in motion, the 1949 naval mission went relatively smoothly. Stevedores loaded fuel, food, building materials, and scientific equipment onto the icebreaker *Edisto* and the cargo ship *Wyandot* at Davisville, Rhode Island. The ships then stopped at Halifax to take on additional RCAF equipment and supplies for Resolute. When they arrived at Resolute Bay, ice conditions forced the ships to wait offshore. On August 23, winds finally cleared ice from the bay and unloading proceeded efficiently. Planners had drawn upon previous experience to improve the process. To speed up the handling of bulk fuel oil, for example, the icebreaker pumped it directly into 4,000-gallon tanks on the landing craft, which ferried it onshore. On the beach, personnel pumped the fuel into empty drums. To assist with sea supply operations, planners recruited six Canadian university students to check supplies and equipment (and repacked them as necessary) before departure. Once in Resolute, they ensured that station supplies made it to proper warehouses, and that work crews cached supplies destined for the satellite stations in well-marked, segregated caches near the lake, where personnel could conveniently access them for the spring airlift. When the ships departed the weather station hub on August 29, four of the students volunteered to stay behind to help erect two new prefabricated buildings before the onset of winter. Thanks to these students' contributions, the station boasted a warehouse and a power garage by the time they flew south in late September.¹⁰⁰

During this voyage, the Americans also tried to enhance bilateral relations with their Canadian partners by ensuring that they did not repeat previous mistakes. Charles Hubbard went ashore at Radstock Bay and discovered two wooden mallet heads, which he showed to J.W. Burton in hopes that he could take them home as souvenirs. The previous summer, no one had rebuked him when he violated the NWT archaeological ordinance by removing artefacts. This time, Burton explained to Hubbard that no one could disturb any site of historical importance or remove any artefact without a permit from the Canadian government. Hubbard denied any knowledge of the ordinance, insisted that he did not want to breach any Canadian regulation, and immediately turned over the mallets to Burton. When Burton recounted the event in Ottawa, he concluded that

“Canadian Sovereignty has been recognized by an Official of the United States Government.”¹⁰¹ A few months later, after Canadian experts decided that the mallets bore little historical value, they handed them back to Hubbard. Because the Americans had complied with Canadian law and respected Canadian sovereignty, the matter was settled soberly and positively.¹⁰²

As planning for the 1950 mission progressed through the following spring, the close relationship between the Canadian and American planners was even clearer. Many of these men had worked together for years at this point, and they handled the planning in an efficient and friendly manner, quietly managing controversial topics with confidence and understanding. For example, when Hubbard spoke to Burton privately about retrieving some old meteorological instruments from the ill-fated Greely expedition at Fort Conger on northeastern Ellesmere Island, he knew to secure Canadian permission in advance.¹⁰³ Ottawa officials readily supported Hubbard’s formal request, and Burton touted Hubbard’s “wide field of experience” and his keen interest in “sound Arctic exploration, development, and research.” More pragmatically, Hubbard and the USWB had shared Arctic data with Canadian officials over the past year, and Burton anticipated that the American would “be of considerable assistance in future years” when the Arctic Division planned exploration projects of its own.¹⁰⁴ Unfortunately, fate had something else in store for Charles Hubbard.

Alert, Ellesmere Island, 82°30′06″N., 62°19′47″W.

In early 1950, newspaper readers learned about the long-awaited establishment of the fifth Joint Arctic Weather Station at Alert. “Spearing their way deeper into the Arctic than man has ever permanently established himself before,” John Dalrymple reported in the *Ottawa Journal*, “the technicians will ‘drop’ the base from the air.”¹⁰⁵ 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.¹⁰⁶ The cache of heavy equipment, fuel, and field rations delivered to the site in August 1948 remained undisturbed. Although the 1949 summer sea lift did not reach these far northern waters, the Americans had stockpiled another 321 tons of supplies and materials (mostly diesel

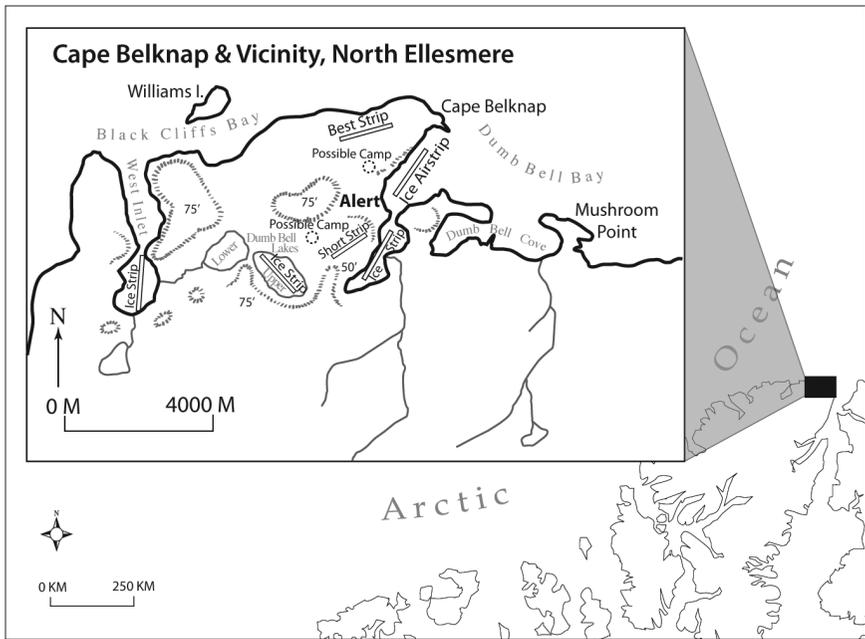


FIGURE 4-9. Map of the northeastern coast of Ellesmere Island, 1950. Jennifer Arthur-Lackenbauer

oil and gasoline) for Alert at Thule.¹⁰⁷ The raw materials were in place. People would make the station a reality.

Planners acknowledged that the success of a station at the northern tip of Ellesmere Island depended upon setting appropriate personnel requirements and selecting the right people. Original plans envisaged a starting crew of eight men, two of whom would return south after the first summer. The delays in establishing the station, however, meant that some men recruited in 1949 were no longer available and had to be replaced. Lessons from the past year also led planners to bolster the permanent contingent at satellite stations to eight personnel: four upper air observers, two radio operators, one cook, and one mechanic. Furthermore, construction mistakes and tragedies at the other satellite stations led decision-makers to supplement this staff with four temporary employees: a carpenter and a three-person airstrip construction and maintenance crew. Given the

planned station's extreme latitude, planners stressed the importance of experienced leadership to the station's success. For the task, the Department of Transport selected Léo Lafranchise, who had set up the weather station at Baker Lake and restored smooth operations at Isachsen as OIC.¹⁰⁸

Peter Johnson, Jr., who participated in the construction of Alert as a labourer, has carefully documented the origins of the station. Johnson was a senior major in geology who, prior to signing up for the JAWS program, had worked for the Geological Survey in Alaska in 1949 and served with the United States Coast Guard near the end of the Second World War. He had "no formal training" but had taken some Arctic-related programs at Dartmouth College, including one on Arctic survival that had piqued his interest in the North. He also had read extensively about Arctic exploration, so he "was aware of a lot of the things that could go wrong, and how to avoid them." He also anticipated what he would be expected to do at the station and some of the skills he would need to have. He later recalled that his father was able to arrange for "a crash course for a week or ten days on the types of bulldozers I knew were up there; and that was a life-saving experience!" The Canadian Department of Transport provided no additional training but this crash course, combined with his past experiences and education, sufficed. "I suppose I was as well prepared as I could be," he later recalled, "and I was certainly better prepared than a lot of other people up there."¹⁰⁹

By 3 April 1950, the personnel assigned to Alert had gathered in Thule. Six days later, on Easter Sunday, an advance party flew to Dumbbell Bay on a USAF ski-wheel C-47 plane to prepare an ice runway. "The snow-covered surface of Dumbbell Bay had been packed by the wind into ridges, which made the landing very rough," Johnson recounted. "The temperature was -46°C; the cache on the small peninsula midway along the western side of the bay was drifted in and needed to be dug out. A lightweight dog sled had been brought to man-haul a reliable engine preheater (in case the one at the cache proved unserviceable), tent, meat, radio, batteries for radio and tractor, emergency supplies, and an aircraft altimeter. The sled collapsed from the weight of its load and manhandling in deep snow." Despite these challenging conditions, the men erected a Jamesway hut on top of a knoll, set up bunks and an oil space heater, and sent up a weather balloon with a wire to serve as an aircraft beacon antenna. "Blowtorch"



FIGURE 4-10. Erecting the walls of Alert's operations building, 13 May 1950. Peter Johnson Collection.

Morgan, now the senior airstrip mechanic, recovered the T-9 bulldozer that had been cached at the site two years earlier and laid out a runway on the bay. Apart from one radio technician who maintained continuous radio watch in a tent, the advance party cleared snow “around the clock.” By April 14, they had carved out a kilometre-long runway and, with their fuel supply for the tractor waning, awaited the main airlift.¹¹⁰

On the ground, a power struggle tested the mettle of the officer in charge, Léo Lafranchise. Given the binational command structure, some American staff harboured mistaken assumptions that they should be reporting to the ExO, not the Canadian OIC. This was a manageable issue, but individual personalities compounded tensions. The Canadian official was formally in charge of construction at the camp site and airstrip, but “Blowtorch” Morgan tried to impress upon the others “that he was an expert of the North and that he was in charge.” When a DC-4 carrying Hubbard and Archibald subsequently landed on this ice strip, Archibald convened a meeting with his superiors to set things straight.

The supervisors immediately agreed that Lafranchise was in charge and, when Morgan was invited into the room, Hubbard “was fast to make a decision and he didn’t mince his words,” insisting that all of the men had to comply with the OIC’s direction or face consequences.¹¹¹

Lafranchise was similarly decisive when a Canadian carpenter, J.W. Scovil, also “believed that he was the foreman.” Lafranchise recalled that “it took a lot of patience on my part not to boil over” and he continued to work on the problem for some time. When the OIC learned that a Consolidated PBY “Canso” flying boat would arrive in August, however, he took decisive action by securing permission from DoT to send the in-subordinate carpenter out on this aircraft. After Scovil departed, other station personnel apologized to Lafranchise for having fallen under the influence of Scovil and Morgan and for not cooperating.¹¹²

Still, the situation remained less than ideal. Had Lafranchise driven the men too hard, leading some of them to doubt his leadership? “He is not a leader and it is only through his own efforts that so much has been accomplished,” J.D. Lee of the RCMP reported. “Instead of giving an order and seeing the order was carried out, the O.I.C. would give an order and then do the work himself, with the result that very little discipline existed.”¹¹³ Although Johnson was critical in his diary about the OIC’s zeal, he later recognized that Lafranchise “understood that this was not a game or holiday and that there was work to be done, and if it was not done people would pay a great price.” The OIC “was more aware than anybody how tenuous the actual situation was; that we were beyond reach of any assistance and how quickly the seasons can change and how things that needed to be done can no longer be done.”¹¹⁴ Lafranchise, picking up the slack where necessary, placed a priority on getting the job done and led by example. The men delivered. The six men who remained in camp erected a second Jamesway hut for sleeping quarters and converted the original building into a kitchen, dining room, radio room, and operations centre. They also worked continuously on the ice runway so that it could safely accommodate the USAF’s C-54s and the RCAF’s North Stars carrying maximum loads. “The monotony of pushing snow to lengthen the runway ended as the frequency of aircraft arrivals began to increase,” Johnson recalled, “and once the runway was ready, aircraft flew around the clock, weather permitting.” The men “snatched” either sleep or food between

arrivals. On average, 20–30 tons were delivered each day. “Food, stoves, panels for prefabricated buildings, spare parts, meteorological equipment, radio towers, furniture and lumber ... were placed in piles according to category,” Johnson explained. “Whenever there was a lull in the airlift, they were hauled away from the bay and up the hill to the plain where the station was to be built.” After the fire at Eureka, they followed guidelines stipulating that these caches be well separated. By the time the airlift ended on May 2, 308 tons had been delivered to the station. Now that the last of the station crew had arrived, Johnson reminisced how “the balloon holding up the aircraft beacon antenna was shot down, stillness settled on the camp and everybody had their first uninterrupted sleep since the beginning of the airlift.”¹¹⁵

With the airlift 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.”¹¹⁶ By the middle of May the bright orange operations building was erected, establishing 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.”¹¹⁷

The situation still demanded ongoing improvisation. Planners had dedicated considerable energy to ensuring that essential materials were delivered, given the challenges experienced when building the previous stations, but many items still failed to arrive: “parts of buildings, the airborne grader, the hot water tank for the station washing machine, plumbing materials, paint, the station barber kit and cartridges for the Canadian rifles, among other things.” Usually, station personnel did not know that these things were missing until they failed to turn up in the caches. Shortages required adaptation and self-sufficiency. “Everyone was doing something all the time,” Johnson recalled, so “you just ate when you felt

like it.” When the new station cook finally arrived in the spring, he had “almost no experience cooking” and could do little more than “open cans” and heat whatever was in them. Nevertheless, he was “a good plumber, and a good guy, and that was very helpful.”¹¹⁸

Securing water also required some ingenuity. During the coldest months, the station crew collected fresh water from small floes of multi-year ice that had frozen in at the mouth of the bay. When the sea ice was no longer safe to traverse on a tractor, they drew water from one of the Dumbbell Lakes southwest of the camp. Rather than drilling a new hole every time they needed water, they improvised by filling a hole with gasoline and then burning it off so that water could be pumped out. “It was a simple but effective system,” Johnson recalled, “and served until the lake ice melted in the summer.” As the ice melted in July, crews began hauling larger quantities of water from the lake to the operations building using a tank trailer. Even this task, however, could be precarious: on one occasion the driver of the weasel went through the ice, fortunately close to shore. The vehicle and driver were recovered quickly and were soon back in service. The incident, Johnson later noted, served as a reminder “that in that environment nothing should be taken for granted.”¹¹⁹

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 [*sic*] bookstore.” The station also sported a darkroom, equipping personnel to take up various scientific projects and amateur photography.¹²⁰

The three members of the airstrip crew toiled a separate existence from the others. Living out of a tent and eventually a Jamesway hut, they established “Little Alert” or “North Alert” at the south end of what became the gravel airstrip on Cape Belknap. It became “a popular watering hole,” Johnson recalled, “and a gathering could be expected Saturday nights and occasionally other nights of the week, thanks to a small but effective still that had been set up there. Needless to say, the smell of the mash, made of

dehydrated potatoes, corn meal, sugar, yeast and water, permeated everything in the hut." The alcoholic concoctions were considered harmless until "production approached demand" and one of the crew imbibed too much. "The OIC put an abrupt stop to the production of both the home brew and moonshine," he noted. "They were not missed."¹²¹

By early June, Johnson and the other workers had brought 500 metres of runway up to grade, but it remained unlevelled. On other stretches of land, "where the mat-like growth of low but sparse tundra vegetation had been cleared of snow, plants such as purple saxifrage began to bloom," he observed. Construction destroyed this thin cover at the airstrip, which meant that after the snow melted and the surface dried, tractors kicked up enough dust to block visibility across the runway and strong winds produced frequent dust storms. "In one instance, a cloud of fine soil, estimated to be more than 150m high, whirled off across the pack ice," Johnson recounted. "The airstrip crew, whose water supply was a fuel drum of water and who bathed in a hand basin, quickly became the dirtiest and most unkempt members on the station and took a lot of kidding whenever they appeared at the main camp." The environment took its toll on the machinery. Work on the airstrip ground came to a halt when both bulldozers and the scraper at Alert broke down from incessant use and limited maintenance. Hubbard and his deputy, J. Glenn Dyer, who directed the resupply of the satellite stations, tracked down spare parts that an RCAF Lancaster, conducting ice reconnaissance out of Thule, would airdrop to Alert.¹²²

Just after noon on July 31, the Lancaster arrived over the weather station. 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, fouled the aircraft's elevator and the Lancaster plunged 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." No one onboard the airplane survived. Snow began to fall, and the RCMP at Resolute authorized the station crew to cover the bodies and erect snow fences to keep foxes away from the charred remains.¹²³ Among the nine victims was Charles Hubbard.¹²⁴



FIGURE 4-11. Station personnel approach the crash site, 31 July 1950. Pete Johnson Collection.

On August 3, the RCAF sent a Canso flying boat north 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 it tried to depart five days later, the wind turned, and the aircraft plunged through some loose ice. Fortunately no one was injured, but the plane was badly damaged. Although repaired and operable within a week, the delay forced the station staff to bury the Canadians alongside Hubbard, whose family asked that he be interred at Alert. His gravesite, near the northern end of the airstrip, overlooked Cape Belknap and the Arctic Ocean.¹²⁵

To investigate the crash, USS *Edisto* and USCGS *Eastwind* left Thule early on August 1. Once again, the passage to northern Ellesmere proved hazardous. Similar to years past, *Edisto* sustained ice damage to its starboard propeller and had to retreat. *Eastwind* had to proceed to Alert alone.



FIGURE 4-12. The funeral ceremony at Alert, 10 August 1950. Pete Johnson Collection.

On August 10, 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 with which they draped 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 name plates marked the graves at Alert.¹²⁶ Hubbard's grave, surrounded by a small white picket fence, remained a solemn testament to the perils 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.¹²⁷ This new equipment sped up construction, and a 1,350-metre runway was serviceable with a hard, dry, smooth surface by August 24. By the end of the month, the station crew completed the dome-like rawinsonde 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 rawinsonde 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.”¹²⁸ These Arctic denizens would have to share their homeland with people now permanently residing at Alert. The human footprint would be small, however, and the specific faces would change. Johnson and most of the original crew left that fall for the south, their replacements picking up where they had left off.

By 1950, the initial JAWS construction phase was complete. What had started out as a plan for nine stations ended up producing five. A sixth weather station, built and operated by Canadians at Sachs Harbour on Banks Island, was often associated with the JAWS network but was formally apart from it. Plans for the extension of the High Arctic network to other locations (particularly Bridport Inlet) did not last. By the early 1950s, continued Canadian and American budget pressures forestalled further construction, and the system of stations shifted decisively into their operational phase. The logistics stream that fed JAWS was Atlantic-oriented, at least by sea, rendering unattractive any ideas about establishing other meteorological outposts in the remote northwestern reaches of the High Arctic. Journalists reported that each station cost about \$200,000 to build, not including the “colossal transportation costs” incurred by the US Navy and Air Force. Sources revealed that the US and Canada shared the total cost at an 8:1 ratio.¹²⁹

Canadians did not, however, allow this preponderance of American resources to compromise their control of the Arctic. The Americans arrived with a “can do” attitude and came to respect Canada’s sovereignty concerns, as an August 1948 memorandum from the American section of the PJBD to James Forrestal encapsulated:

Bearing in mind that the Canadians are extraordinarily sensitive about their sovereignty and independence and as they live, so to speak, under the constant shadow of the ‘Colossus to the South’ such Canadian apprehensions have been inevitable. It has therefore behoved the United States to act with the utmost circumspection and restraint... On the whole, the U.S. record...is good.¹³⁰

Critics in the 1940s took aim at the Canadian government's inability to "Canadianize" the Arctic weather stations within the first few years of their existence, as have historians in retrospect.¹³¹ They blame Ottawa for its unwillingness to devote the time and money needed to assume full responsibility for the program. Several factors, however, contributed to the government's response. First, the Canadian Meteorological Service lacked the personnel to operate the stations independently. It considered continuing the operation of its stations along the Atlantic and Pacific coasts and assuming control of American-run sites in the northeastern Arctic and Subarctic — which completely lacked a Canadian presence — far more important than taking similar action at the jointly-run Arctic stations.¹³² When it took over the northeast stations from 1948–50, limited availability of personnel precluded fully "Canadianizing" the Arctic weather stations.¹³³

Furthermore, as Ottawa's sovereignty anxieties abated, so too did a sense of urgency to Canadianize the JAWS program. By 1948, the Americans had incontrovertibly recognized Canada's sovereignty over the High Arctic islands, the stations ran well under joint staffs, and Canadians commanded them. The Canadians were vigilant about formalized route planning and best practices for American resupply operations, and the Americans dutifully followed Canadian direction. Most American personnel at the stations harboured no ill-feelings towards their Canadian counterparts, and those who did (such as Innes-Taylor) generally reserved these thoughts to their private letters and diaries. Able Canadian leaders such as Lafranchise and increasingly savvy American leaders such as Hubbard managed the rare outspoken individuals who refused to comply with Canadian authority. In addition to this increasingly strong compliance with Canadian wishes, the US provided sophisticated equipment that Canada lacked, and these considerations made it difficult for Canada to contemplate assuming responsibility for the stations.¹³⁴ In short, there was little impetus for the Canadianization of the weather stations once American diplomats, planners, and personnel proved that they posed no threat to Canada's terrestrial sovereignty.

Historians are divided when analyzing Hubbard's zeal for promoting the High Arctic weather station program. Matthias Heymann recently argued that Hubbard "complicat[ed] the situation ... in promoting new

US-established weather stations in Canada and Greenland, although he was neither a meteorologist nor a scientist, but an ambitious, self-confident engineer and polar explorer seeking a new postwar role ... [who] lacked an appreciation of smaller states' sovereignty."¹³⁵ On one level, this damning indictment recognizes Hubbard's unyielding tendency to promote himself and his projects. On the other hand, is it fair to summarily dismiss a person with ideas, political connections, and influence who conceived and fought to implement a bold vision to enhance Western meteorological knowledge and forecasting? Shortly after Hubbard's death, his widow recounted that "Charlie adored [those whom] he called 'his boys' and I believe they all respected and liked him. He felt, generally, that good personal relationships are the most valuable things in life, and it was easy for me to see that he had really inspired some of the people who worked with him, to do marvels through his trust and confidence in their ability to do their very best under the most trying conditions."¹³⁶ Cultivating the necessary relationships to make these stations a reality had not been easy. Hubbard clearly blundered when he initially pitched the stations to Lester Pearson and Escott Reid. Yet, did he not learn from his mistakes and treat the Canadians as partners, despite Canada's modest initial contributions to the program?

With the construction phase complete, the stations moved into their operations phase. Despite the installation of northern amenities, life at the stations was no picnic. Hubbard's 1946 vision of a "new residence with a white picket fence and a red roof" never materialized, and JAWS personnel learned how to work with — rather than attempting to overcome — the natural elements. As station crews improvised and adapted to their surroundings, the cycle of activity at the JAWS stations settled into more of a routine. "How the north has changed," Knutsen told *National Geographic* readers in October 1949. "Yet in the vast reaches between the few places where men have brought their civilization skills to bear, the north actually hasn't changed at all."¹³⁷ These small scientific installations proved that "you could live in the north," Johnson recalled. Though Innes-Taylor expressed disappointment with the scientific activities, most applauded the stations' quick undertaking of meteorological observations and recognized that the diverse scientific undertakings Innes-Taylor desired would begin once the stations were properly organized. The early crews

were “pioneers in the sense that they went where no one had been before,” Johnson described — a statement true with respect to a Euro-American presence in the High Arctic. “They built settlements, even though they were very small.” They established hubs from which scientists would set out to “discover what was in the North.”¹³⁸

A year after the fatal crash of the RCAF Lancaster at Alert, a final sentence on the monument and plaque erected over Hubbard’s grave proclaims: “The task in which they gave their lives continues.” Hubbard had initiated the JAWS project and oversaw much of its planning as well as the construction phase, but it would fall to others to build on this legacy by creating lasting places that would produce historical meteorological datasets and provide logistical support to diverse field science expeditions. To suggest, as Heymann does, that “the USA would almost certainly have established weather stations throughout the postwar Arctic even had Hubbard never been born” unfairly discounts the latter’s pioneering contributions.¹³⁹ Like the embryonic outposts that housed the crews, interpersonal best practices were still being established and would require a few years to mature into full-fledged station cultures. Personnel would have to be recruited and managed. Cultivating amicable binational relations would require constant attention in the national capitals down south, and at each station. Resupply efforts would have to continue and grow with the stations themselves.

Securing personnel who had the right skills and personalities to work in these harsh conditions and complex situations would not be easy. Every year, the stations required new personnel ready to meet these challenges. Finding individuals willing to answer the call would prove to be one of the program’s greatest challenges.