

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

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## Situating the First Stations, 1947-48

As a result of studies made by Canadian officials, which took into consideration the views of the United States authorities, the Canadian Government has approved a plan for the establishment of a number of weather stations in the Arctic during the years 1947, 1948 and 1949. ... In carrying out this programme the Canadian Government wishes to work in the closest possible cooperation with the United States Government.

Lester B. Pearson for Secretary of State for External Affairs  
(1947)<sup>1</sup>

With the long-awaited Canadian cabinet approval in hand, technical experts met in Ottawa on 25–26 February 1947 to flesh out the details about the weather station program. Eight Americans representing the weather bureau, army, navy, air force, coast guard, and State Department arrived to reach a detailed agreement on the division of responsibilities to build and sustain the stations, to prepare schedules, and to determine transportation needs. They did not oppose Canada's proposed plan for nine stations, but Hubbard and the USWB insisted that available transport and supply would dictate the pace. Similarly, the Americans presumed that technical experts could adjust the precise locations of the stations based on operating problems and reconnaissance data gleaned from the field.<sup>2</sup>

The officials first deliberated on the location of the main base. Dr. Francis Reichelderfer recommended Winter Harbour. This site on Melville Island had lived up to its name for Parry in 1819–20 and Bernier in 1908–09, RCMP staff sergeant Henry Larsen had called there during his east-west transit of the Northwest Passage in 1944, and the US ice-breaker *Northwind* visited it two years later. Lieutenant-Colonel Graham Rowley of the Canadian Defence Research Board, who had extensive experience as an archaeologist in the eastern Arctic in the late 1930s and had commanded the advance party of Exercise Musk Ox<sup>3</sup> in 1946 before retiring from the Canadian Army, thought that they should consider other possibilities — a prescient suggestion, as subsequent events would prove. Hubbard, however, dismissed the options of Bridport Inlet, Skene Bay, and Dealy Island because they did not clear of ice or had poor beaches, and he insisted that Winter Harbour remained the best choice. The group concurred. Andrew Thomson of the Canadian Meteorological Service lobbied to have the next station built at Cape Kellett on Banks Island, given its favourable conditions for an airstrip, fine harbour, and accessibility by schooner from Aklavik. Hubbard, however, doubted that large ships could reach Cape Kellett regularly, and indicated that the US would not be able to supply this potential site in 1947. Everyone agreed to postpone the Banks Island station for at least one year. Instead, Hubbard made a successful pitch to establish a satellite station at Eureka Sound on the west coast of Ellesmere Island as soon as possible. There, the terrain and weather were better suited than the north coast of Ellesmere or Axel Heiberg Islands. Hubbard had successfully gambled on eventual Canadian consent, so all of the supplies needed to establish the satellite station already waited at Thule and the countries agreed to quickly assemble their civilian contingent for Eureka by mid-April — less than two months away.<sup>4</sup>

The officials also agreed to general guidelines on personnel and infrastructure. Canada would contribute the officer-in-charge (OIC) and half the personnel (including their clothing, pay, and subsistence) at each station, as well as a Royal Canadian Mounted Police (RCMP) representative at the main station. As suggested in earlier proposals, all permanent installations at the stations and adjacent airstrips would remain Canadian property (thus allaying possible sovereignty concerns). The United States would provide the other half of the personnel and would cover the bulk

of the costs, including “temporary” buildings, meteorological equipment, transportation, fuel, and supplies. The executive officer, as the senior American at each station, would oversee American staff subject to the Canadian OIC’s policies and would report to the US Weather Bureau on technical matters. The two weather departments also agreed to consult closely on rates of pay to avoid generating resentment along national lines — although officials acknowledged that, in practice, standardization would be difficult because the weather services in each country determined their own salary rates.<sup>5</sup>

The ambitious weather station program required multi-year planning, but senior officials were reluctant to get ahead of themselves before gaining some experience. Andrew Thomson recommended periodic assessments and a bilateral decision, after five years, about whether the joint initiative should continue. Reichelderfer agreed, and tentatively approved the plan for stations in 1948–49. The Americans would continue to stockpile supplies and identify potential sites for future stations, but the USWB officially deferred any long-term commitment until it had implemented and assessed the stations at Eureka and Winter Harbour.<sup>6</sup> While officials from both countries drafted a formal exchange of notes after the meeting, and repeatedly revised these drafts in subsequent correspondence, they ended up basing the actual implementation on the informal agreement reached in February 1947.<sup>7</sup>

The absence of a formal diplomatic instrument did not mean that Canada treated the program, or its potential sovereignty implications, lightly. Officials, particularly in the Department of Mines and Resources and the Northwest Territories Administration, carefully considered how Canada could maintain control over activities in the region without spending millions of dollars.<sup>8</sup> Convincing the Americans to comply with Canadian regulations was a direct and obvious way. In March 1947, David M. Johnson (the head of the third political division responsible for American and Far Eastern Affairs at External Affairs and the secretary of the Canadian section of the PJBD) reminded the US Embassy about the rules and regulations that all American personnel involved in Arctic operations would be expected to follow. The *Game Laws of the Arctic Preserve* forbade all but Indigenous people from hunting in the Arctic Islands Game Preserve, which the Canadian government had expanded in 1942 to

cover the entire eastern Arctic. Accordingly, no one would be authorized to carry auto-loading rifles or automatic pistols into the territories. The *Archaeological Sites Ordinance of the Northwest Territories Administration* stipulated that no visitor could excavate a site or take relics from the Canadian Arctic without a licence from the territorial commissioner. Finally, the *Scientists and Explorers Ordinance* stipulated that all scientists needed special permission from the territorial commissioner and had to make available all of their research to the Canadian government.<sup>9</sup> Most importantly, Ottawa insisted that Canadian observers would accompany all American missions and projects to serve as the government's "eyes" on the ground.<sup>10</sup>

With these understandings in place, the US and Canadian weather services were on a solid footing to launch the Joint Arctic Weather Stations. The Canadian-imposed delay in 1946 had meant additional time for Hubbard and his colleagues on both sides of the border to conduct research and analyze the results of the construction and operation of the station at Thule. This yielded better plans and better materials for the Canadian program. Nevertheless, modern planners, backed by scientific assumptions, icebreakers, airplanes, and complex logistical streams, still faced the practical environmental challenges of operating in the Arctic. Realities on the ground and in the waters of the archipelago would force decision-makers to reshape their plans and even their conceptual mapping of where, when, and how human activities could be accomplished. Practical experience demonstrated what was possible in the Arctic — and what was not. Thus, while establishing the first weather stations in the northern archipelago laid the physical infrastructure for science and for future expansion, activities and relationships on the ground — far removed from the comforts and predictability of southern North American life — exposed the human strains of operating at isolated sites.

Planners had identified relevant *spaces*. Now weather station personnel needed to create viable *places* to carry out their meteorological mission. Hubbard and his Weather Bureau colleagues carefully reminded their Canadian colleagues that they had to be flexible about specific locations. Preliminary survey data from explorers and previous scientific expeditions helped planners identify potential sites, but everyone recognized the limited knowledge about the islands in the far north. Preliminary air

and sea reconnaissance conducted the previous summer had already led the USWB to shift some of its plans and priorities given that these isolated stations would be completely dependent on aerial and naval resupply.<sup>11</sup> Geographer Peter Johnson, who in 1950 served as an American airstrip mechanic at one of the weather stations, explained that the main stations had to be “located on coasts expected to be open during the summer, so that the bulk of their supplies as well as those for the satellite stations could be brought by sea.” The satellite stations were also to be located along the coast but would be less dependent upon sealift: early plans anticipated that aircraft would deliver equipment and supplies in the spring and would drop supplies by parachute in other seasons.<sup>12</sup> To establish these smaller stations, aircrews needed a smooth strip of ice on which to land pioneering crews, equipment, and construction materials. The sites also needed to have the proper exposure to allow station staff to take reliable and appropriate weather readings. Equally important, the personnel needed access to fresh water, ideally from a deep pond or stream, and icebergs or two-year-old pack ice from which the salt had leached. Finally, planners looked for nearby stretches of land suitable for a permanent, “emergency” airstrip that could accommodate airplanes in the summer and fall when there was no solid ice upon which to land.<sup>13</sup> Slidre Fiord, along the eastern shore of Eureka Sound, served as a test bed for these criteria.

### **Slidre Fiord (Eureka Sound), Ellesmere Island, 80°15'N., 86°11'W.**

Plans to build a station in the Eureka Sound area of southwestern Ellesmere Island had taken general form in 1946. By the time Hubbard had learned that Canada had delayed its decision about the JAWS program, the Americans had already loaded the equipment and supplies destined for Eureka on ships. Consequently, the American task force carried them to Thule and stored them in anticipation of a 1947 spring operation. Once the Canadian government approved the weather station program, Hubbard needed to confirm a specific site. On 25 March 1947, the US Army Air Forces flew a second reconnaissance of the full length of Eureka Sound at low altitude, deciding upon a location at Slidre Bay on the northern end. Bold headlands protected the entrance to the fiord, which boasted “perfectly smooth” ice through its long, narrow reaches. Low, rolling country surrounded it, including a large flat area in a broad valley that could

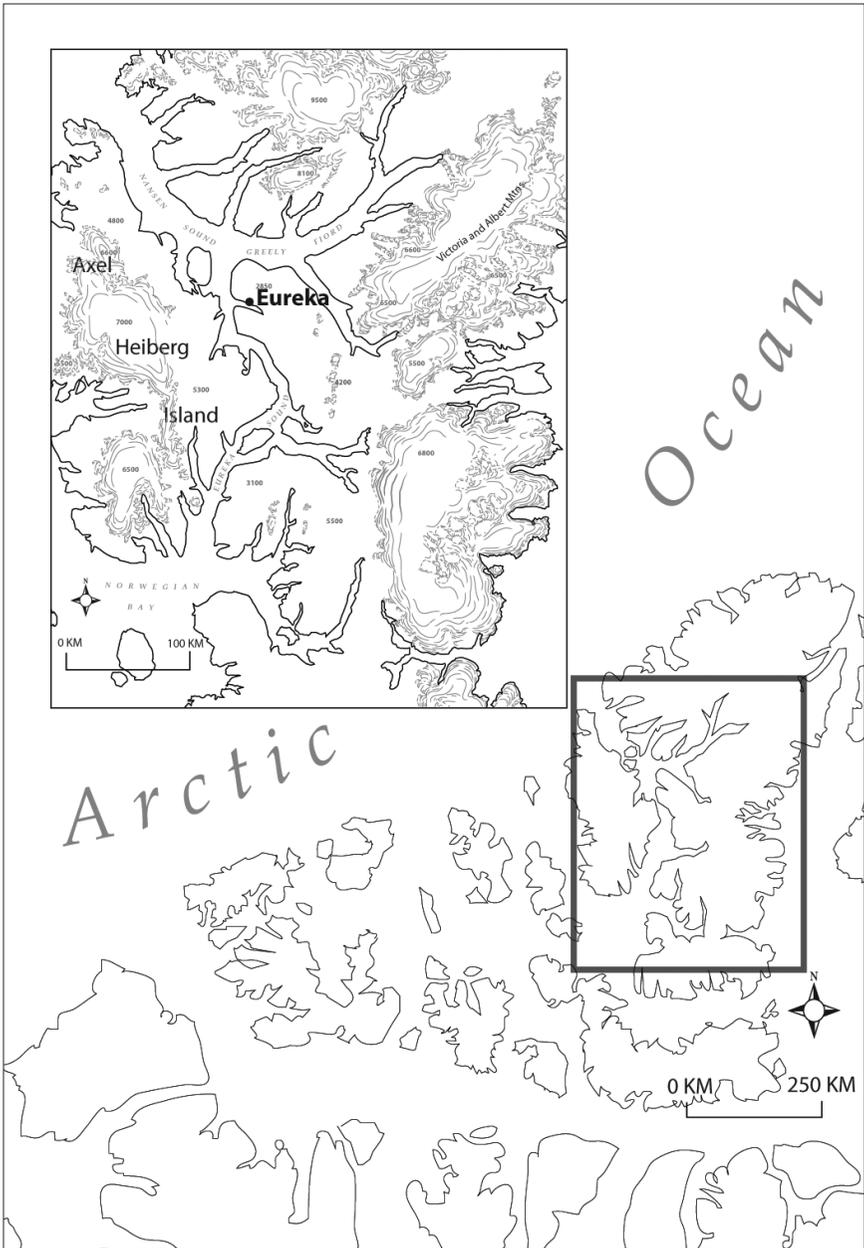


FIGURE 3-1. Ellesmere Island and Slide Fiord (the site of the Eureka station). Jennifer Arthur-Lackenbauer

accommodate an airstrip. The crew identified several potential camp locations near the shore, fed by two rivers and somewhat protected from the prevailing northwesterly winds.<sup>14</sup>

This vista, facilitated by airplanes, opened up new possibilities for the area. While ships had frequently visited the southeast coast of Ellesmere Island, the same could not be said of the west. Although nineteenth- and early-twentieth-century explorers found evidence of an historic Inuit migration from Baffin Island to northern Greenland via Ellesmere, Inughuit (northern Greenlandic Inuit) only periodically visited the island after 1860. These “foreign” hunting trips aroused sovereignty concerns in Ottawa for a short time after the First World War, but Denmark was actually the first foreign state to confirm Canadian sovereignty over Ellesmere in 1921. From 1900–02 members of Sverdrup’s expedition had traced the western coastline of the island which A.P. Low claimed for Canada two years later. Remote RCMP stations at Craig Harbour (1922–25 and 1933–40) and Bache Peninsula (1926–33) provided for “effective occupation” on an island without any other year-round human inhabitants before the Second World War. The Mounties’ epic sledge patrols through the Queen Elizabeth Islands led them through Eureka Sound, but they had no intention of establishing a post at such a remote location seldom visited by anyone. Consequently, the weather services’ decision to set up a small, permanent station at Slidre Fiord significantly changed the human geography of Ellesmere.<sup>15</sup> Given the isolation and arduous conditions, the site also required a staff with the right mix of personality, skills, and adaptability.

Canada and the US knew that they needed to have station staff ready for mid-April, so Thomson and Hubbard wasted little time securing appropriate individuals. The Canadian selected as officer in charge, Justin (Jud) Courtney, accepted his assignment on 1 March 1947. The twenty-seven-year-old native of St. John’s, Newfoundland, was married with one child and another on the way when he left his home in Toronto for the twelve-month posting in the far north. “It was a job, and I wasn’t particularly happy about being away from my family,” he recalled six decades later. “But it was one of those things I had to do.”<sup>16</sup> Unlike the American staff whom the USWB recruited specifically for the Arctic stations, the Canadian meteorological division simply assigned men from their regular weather service. At their headquarters at 315 Bloor Street West in Toronto,

the section chief and controller familiarized Courtney with the project before sending him to meet with the Arctic section of the USWB. “The Section staff were very courteous and helpful,” Courtney reported, “and did everything possible to present a complete and accurate picture of the work already accomplished and the work to be undertaken.”<sup>17</sup>

The main Canadian spearheading the project within the Meteorological Service was Andrew (Andy) Thomson. Born in Owen Sound, Ontario in 1893, he graduated with a physics degree from the University of Toronto in 1915 and completed his master’s degree the following year. For the next sixteen years, his interest in meteorology took him to work in Brazil, Germany, Washington, and the South Pacific. He maintained this international outlook even after he joined the Meteorological Service of Canada in 1932, recognizing that weather forecasting required professionalism and global engagement. Thomson planned Canada’s participation in the 1932–33 International Polar Year and played an instrumental role in establishing the first graduate program in meteorology at the University of Toronto. When the Meteorological Division moved to the Department of Transport (DoT) in 1936, he became its Assistant Controller and oversaw the planning and the administration of weather services to support continental and transatlantic civil aviation. During the Second World War, Thomson managed Canada’s expanding meteorological staff that served military aviation. Promoted to Controller of the Meteorological Division in 1946, he reorganized the department, oversaw its postwar expansion, and enjoyed his status amongst a small group of world experts who reconstructed international meteorology.<sup>18</sup> In this role, he also scrutinized Hubbard’s plans and took charge of the selection of Canadian personnel for the Joint Arctic Weather Stations.

At the February 1947 meeting, senior officials had decided that the US would supply a radio technician, a cook, and a weather observer, as well as four men for temporary duty during the construction phase. Three Americans at Thule immediately volunteered, including John Trinko, who noted that this left “no need for outside recruitment.”<sup>19</sup> Canada would provide two “met techs” (meteorological technicians, including Courtney) and a radio operator.<sup>20</sup> Given the short notice, the Canadians actually selected for the jobs had little time to get their personal affairs in order prior to leaving, and no time to get to know one another in advance. They



FIGURE 3-2. Andrew Thomson (undated photo). National Film Board.

had to form bonds as a group in the Arctic. On April 5, Courtney and the Canadian members of the advance station staff arrived in Thule, where they met with their American counterparts (including executive officer Per Stoen of Omaha, Nebraska). They quickly toured that facility, learning what they could from the air base staff about equipment and best practices. But there was little time to probe deeper. The aircrews were anxious to proceed with the Eureka airlift at a quicker pace than even J. Glenn Dyer, Hubbard's Weather Bureau assistant overseeing the operation, thought was sustainable, but he adjusted plans to meet their wishes.<sup>21</sup> They delivered.

The creation of Eureka would serve as a template for subsequent satellite stations, revealing both successes and shortcomings in executing an audacious and hastily organized operation. On Easter Sunday, April 7, a C-47 aircraft flew the 360 miles from Thule to Slidre Bay carrying a light load of emergency food and equipment as well as four passengers: the

air task force commander, Charles Hubbard, the advanced station commander, and the executive officer. After landing on the sea ice at 11:02 am, Hubbard, Courtney, and Stoen quickly agreed upon a site on the north shore, just east of a large stream flowing from the valley. The pilots and task force commander studied landing conditions, and everyone concurred that the ice adjacent to the site could accommodate fully-loaded aircraft. (To be sure, Courtney tasted the ice to confirm that it was fresh-water, indicating that it was multi-year ice and thus solid as concrete.) The landing party marked the site with a snow cairn and, within forty minutes, re-boarded the aircraft for Thule with their choice confirmed.<sup>22</sup>

The next day, US Strategic Air Command provided a Troop Carrier Command task force of three aircraft to deliver five members of the station crew and four loads of cargo to Slidre Bay. The temperature was -42°F (-41°C) and the wind was blowing when Courtney and his colleagues arrived and set up temporary shelter for a midday meal. No one was excited at the prospect of sleeping in small, inadequate tents, so Courtney's plan to build a prefabricated Jamesway hut with its insulated roof "met with instant and unanimous approval." By 7:30 pm, the staff had erected and heated the building, prepared hot meals, and set up the radio equipment. The next morning, they advised Thule to begin the air supply operations.<sup>23</sup>

So began an endless cycle of airlift operations that strained the small station staff over the following week. At Thule, air crews quickly loaded cargo onto aircraft — particularly the C-82 Packet, which made wheeled landings on the ice (eighty inches thick) twice daily. The staff hauled the supplies from the landing strip to the campsite using a tractor and sleds. "Airlifting operations went faster and better than could have been hoped," Courtney noted in his diary on April 15. Ideal weather, smooth ice, and excellent radio conditions explained the success. All told, the spring of 1947 airlift delivered 110 tons of food, fuel, and consumable stores — enough to sustain the station crew for more than a year.<sup>24</sup>

Unfortunately, the boxes of supplies and equipment arrived in a chaotic state. The simple task of locating all of the necessary instruments, instruction manuals, and equipment for surface and air observations required a herculean effort by two of the men who had to sort through mountains of unmarked boxes. In many cases, equipment that appeared on the supply lists never arrived. Given that construction plans for the



FIGURE 3-3. Personnel erecting the Jamesway hut on their first day at Eureka, 8 April 1947. John Trinko family collection. Published with permission of the Trinko family.

Canadian stations had hung in abeyance for many months, Thule staff had simply pilfered items for their own use during the winter rather than repairing or replacing their own equipment, never thinking to note their removal, requisition replacements, or maintain any inventory. As a result, the large chests supposedly containing all of the tools required to establish the station arrived “completely gutted” of everything useful. The radio transmitters arrived in unusable condition and without the usual tools to get them running, but the radio technician managed to get them

operating “in about a week of tedious and maddening work” thanks to his past experience, ingenuity, and “rather unorthodox and unusual test procedures.”<sup>25</sup>

This situation also inhibited the local weather program. For more than a week, personnel searched for essential equipment only to discover that much of it had not arrived. Equally frustrating, no one had sent instruction manuals or forms to record and plot the specified observations. Courtney found most of the necessary instruments for synoptic observations, and the crew set up this equipment temporarily. Without weather code manuals, however, they had to try to “recall from memory the synoptic code and the various tables for individual code elements.” Only Courtney and the radio operator had taken these observations before, and it was impractical to obtain the complete instructions and tables by radio from Thule. Courtney recalled as much as he could, asked Thule for help by radio when appropriate, and muddled through. The ensuing chaos deeply upset the American executive officer, who had gone to great lengths to arrange the loads in priority order only to have his plans scuttled before departure from Greenland. In the months ahead, searches to find material wasted hours and even days, compounded confusion, and delayed progress.<sup>26</sup>

The high tempo of work took its toll on the six permanent staff at the fledgling station. Courtney, as the officer in charge, had administrative and technical responsibility for construction activities at Eureka Sound. Although he had never suggested any length of workday, he noted in late April that since their arrival the personnel had worked fourteen-hour days, outdoors, and in cold temperatures. This reflected the initial excitement of setting up a new station in unique circumstances, but there were also signs of overwork and exhaustion in the form of petty irritations and even arguments over insignificant details. Observing that “enthusiasm was outrunning physical endurance and brought on a storm of protest,” Courtney decided to relax the work schedule to eight hours, choosing an indirect path by personally rising later and quitting work earlier each day. Everyone “thoroughly and universally criticized” his “delinquencies,” but within a few days the protests ceased and “human nature won out.” The staff adjusted to a more reasonable pace, and the OIC insisted that they take Sundays off during the early construction phase.<sup>27</sup>



FIGURE 3-4. Eureka's first crew. Back row, left to right: Per Stöen, Thom Sheret, Jud Courtney. Front row, left to right: Murray Dean, Bob Tyrer, John Trinko. April 1947. John Trinko family collection. Published with permission of the Trinko family.

Because equipment shortages prevented the staff from beginning their full-scale weather observation program, they invested their energies in construction. For the first few months, the men lived in Jamesway huts — prefabricated units of 16' x 16' (which were expandable in 8' increments) consisting of insulated plywood floor panels that supported semicircular ribs covered with a heavily insulated, waterproof skin. The staff used one hut as their main living quarters, another as a kitchen, a third for storage, and a fourth for a latrine and storage. They also erected a Quonset hut (a precursor of the Jamesway with a metal roof that was not specifically designed for the Arctic) with six cubicles for personnel, a kitchen and dining room, and radio and meteorological offices. They initially planned to build it during the summer, when they would not have to overcome rock-hard,

frozen ground, but Courtney decided that there was no point idling. At this stage, “the novelty of pioneering in the set up of a new station” had worn off, so he decided to “tighten up on organization and supervise the various projects a little more stringently to avoid half measures” which would undoubtedly create problems later. “In all cases personnel showed good sense and a spirit of cooperation rarely encountered elsewhere,” Courtney applauded, indicating that his leadership style was effective and appropriate.<sup>28</sup>

A USWB official inspecting the Eureka site in April highlighted the positive relations between the American and Canadian personnel during the construction phase.<sup>29</sup> The OIC was responsible for overall station operations and Courtney exercised jurisdiction over the American personnel through the executive officer (ExO), who was appointed by the Weather Bureau to represent its interests, maintain cooperation with the Canadian personnel, as well as account for American supplies and equipment. To fulfill his responsibilities, the ExO could communicate with the USWB at any time, but to reaffirm the “jointness” of the program (and that the Canadian OIC was in charge), both officials signed off on all official letters and reports.<sup>30</sup> In practice, this command and control relationship ran smoothly at Eureka. The Canadian Department of Transport, which oversaw the meteorological service, recognized that there was no hope of replacing the Americans in the near future — and noted the advantages of their involvement at Eureka. After all, the US possessed the supplies and transportation that made the project possible — and their willingness to pay for it was obviously greater with American personnel serving directly at the stations.<sup>31</sup>

Human interactions with animals proved to be more worrisome. The crew encountered a pack of eleven wolves almost immediately after their arrival, which interrupted building routines and forced them to take safety precautions. When the wolves snatched at papers and packing materials within fifty yards of the campsite, Courtney ordered that the staff move their supplies as close to their building as possible. He wanted to avoid giving the animals “a first taste of dried food from the camp,” knowing from personal experience at Norman Wells that this would lead to continuous raids, slashed and torn clothing and tents, and the loss of valuable items (often inedible) that wolves tended to steal. Courtney also worried



FIGURE 3-5. Signs announcing the “Polar Construction” team’s work at Eureka during Task Force 68 in 1947. Notes include “Vets first choice and last resort,” “Wyandot Engineering Co.,” and “Oh my God! It don’t fit!” Taylor report on TF 68 in NARA, RG 27, entry 5, Box 12, File Report of Task Force 68.

that these wolves posed a danger to personnel: these pack animals were “large and powerful, nearly as big as a small, newfoundland dog,” and he warned the staff not to get within striking distance of them.<sup>32</sup> Three huskies arrived at the camp with the staff, but by late April wolves had already destroyed two that ran away.<sup>33</sup>

After the spring ice melted to a point where it could no longer support aircraft, resupply or emergency evacuation would depend upon a reliable land airstrip. To build one, C-54 aircraft delivered two small tractors, a roller, harrow, grader, and hydraulic pan to Eureka — a harrowing experience given that neither the plane nor the station had the unloading



FIGURE 3-6. The initial Eureka site in late 1947 or early 1948. The original Jamesway hut is on the far left, with a Canadian pre-fab building alongside. To the right is another Jamesway hut “leaning” on the Quonset Operations quarters; behind is the inflation shelter. John Trinko family collection. Published with permission of the Trinko family.

facilities to manage the job. Much to the chagrin of the air crew, the staff improvised a solution. They moved the heavy equipment to the back of the parked plane, then people walked towards the back until it became tail-heavy and fell to the ground, where a pile of mattresses and comforters had been stacked to break the fall. Once the plane’s tail rested on the ground, the crew blocked the nosewheel with a sled and boxes. They used the tractor to drag each piece of equipment down an improvised ramp, held up by fuel oil barrels, while station staff guided it with ropes and crowbars. These precarious improvisations endangered men, aircraft, and equipment. Fortunately, no mishaps or damage occurred.<sup>34</sup>

With this equipment, it took four men all thirty days of July to clear boulders and grade the dried silty soil on a level stretch of ground, about five miles from the station. The construction crew lived and worked at the site, while the two remaining staff carried on the radiosonde and communications program at the main station. By the fall, the men had levelled

a 4,000-foot-long winter airstrip and with “nearly unlimited” approaches from the south, they had room to expand as required.<sup>35</sup>

The Eureka station had to balance this construction work with its core function of gathering weather data. In late May, an aircraft delivered most of the missing radiosonde equipment and supplies for the upper air program. Accordingly, the station officially inaugurated synoptic weather observations on June 1 and one radiosonde flight each day. Initially, the Canadian staff members with previous training did the work and Courtney held training sessions for the US staff every evening after they finished that day’s construction tasks. He found it difficult to hold the Americans’ attention; the men were tired and “not at all kindly disposed toward this perversion of their few hours of leisure time each day.” Accordingly, the burden of regular weather and radio work remained with the trained Canadian personnel. When news came that the sea supply would arrive in early August (much earlier than Courtney had anticipated), everyone agreed to intensify their training efforts. The ice had gone out of Slidre Bay on July 10, and the impending arrival of visitors, additional equipment and buildings, fresh supplies, and two more staff added incentive for the station to present a professional face.<sup>36</sup>

## **Task Force 68 Ventures North**

On 7 May 1947, the American Chief of Naval Operations stood up Task Force 68 — or, as it was popularly known, Operation Nanook II. Its basic mission for that summer was to provide logistical support to the USWB in establishing a main station at Winter Harbour on Melville Island, installing an automatic weather reporting station along Lancaster Sound, and re-supplying the existing stations at Thule and Slidre Fiord (Eureka).<sup>37</sup> Actual planning began when high-ranking US Army officers, naval officers with previous Arctic and Antarctic experience during Operations Nanook and Highjump, and Weather Bureau officials convened in Washington about a week later.

Canadian Lieutenant-Colonel (ret’d) James Donald Cleghorn, whom Hubbard had requested to serve as the officer in charge for the main station to be built that summer,<sup>38</sup> also attended. Cleghorn, an ornithologist and associate curator at the Redpath Museum at McGill University in Montreal before the war, had been originally commissioned in the Black

Watch (Royal Highland Regiment) of Canada. He had wartime experience commanding Canadian and American troops in isolated conditions as the former base commander at Camp Churchill.<sup>39</sup> He had also been responsible for maintaining the moving force during Exercise Musk Ox in 1946, managing discipline, accommodation, and rations.<sup>40</sup> Based on this experience, Hubbard had tried to secure Cleghorn to lead the Canadians during his proposed Arctic mission the previous year (and Cleghorn was willing to do so), but the Canadian Army refused to release him despite the best efforts of the Canadian Meteorological Service.<sup>41</sup> In early 1947, however, Cleghorn managed his release from the military so that he could head up the station planned for Melville Island where, in addition to his other duties, he expected to study the local fauna and collect bird and mammal specimens for the National Museum of Canada.<sup>42</sup>

The general discussion at the Operation Nanook II planning meeting, Cleghorn recalled, assumed that the Navy task force would reach Winter Harbour “without the slightest doubt.” Beforehand, however, he had discussed the plans with the venerable Arctic explorer Sir Hubert Wilkins, who warned him “that our chances of reaching Winter Harbour in 1947 were slim indeed owing to the already known fact that the Western Arctic had just experienced one of the coldest winters on record and that ice conditions on Viscount Melville Sound and the adjacent seas would probably be severe.” When Cleghorn raised this at the meeting and advised the group to consider alternative sites, his concerns were dismissed. “So convinced were those present that nothing could stop the new and powerful icebreaker USS *Edisto* and her ability to lead the convoy through,” he noted, “that my suggestion was received in silence.”<sup>43</sup>

The planning team, however, was resolved to improve on the experience it had gained earlier in the year in setting up Eureka. The group sent to Ellesmere Island under Courtney’s leadership had been hastily assembled. Although the Canadian Meteorological Service still had to “scrounge” to find suitably trained personnel, Cleghorn’s team would be fully staffed and equipped.<sup>44</sup> Sixteen men would serve with him at the main station: seven other Canadians, eight Americans, and an RCMP constable.<sup>45</sup> They would bring ample equipment and supplies for the new station (as well as permanent buildings for Eureka), including tractors, heavy airstrip graders, power generators, prefabricated housing, fuel oil,

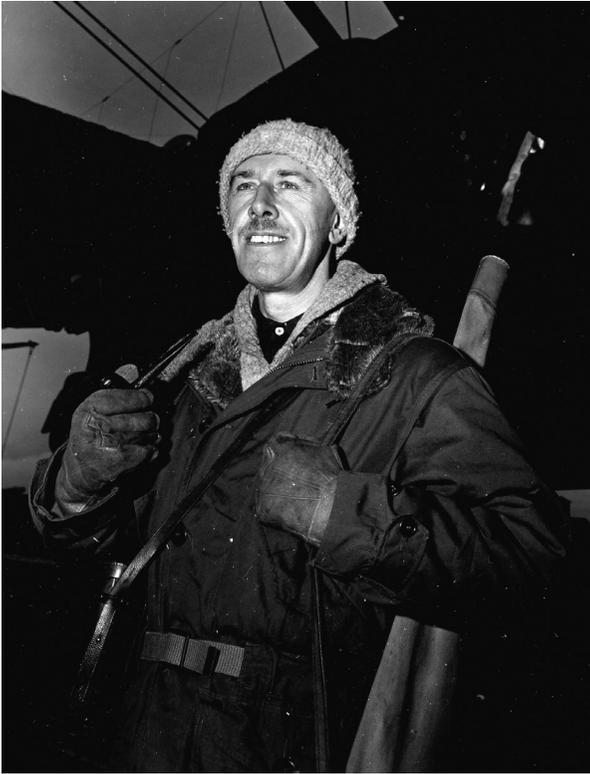


FIGURE 3-7. J.D. Cleghorn in 1946. University of Manitoba Archives, Andrew Taylor Collection, Photo No. 616001, 27 August 47. PC110, Box 3, Folder 14.

clothing, food and emergency rations, as well as meteorological and other scientific equipment — enough materiel for the station to operate for at least two years without further resupply.<sup>46</sup> Logistic planners invested tremendous effort in marking the shipments in various colours and numbers to show their destination and classification.<sup>47</sup> The well-oiled American gears were turning, and there was little room for Canadian officials to interject once the plans had been set. On June 13, Cleghorn informed J.G. Wright, the superintendent for the eastern Arctic and the secretary of the NWT Council, “that he gained the impression from the general attitude of certain high-ranking U.S Service personnel (not civilian) that the establishment of these weather stations was largely a U.S matter and that Canadians were being taken along largely as matter of courtesy.”<sup>248</sup>

The naval flotilla would head north under American flags. On 1 July 1947, Captain Robert S. Quackenbush, Jr., who had been the executive

officer of the Navy's Antarctic operation Highjump the previous winter, took command of Task Force 68 and its three ships. USS *Edisto* (AG-89), a Wind-class icebreaker, was loaded at Boston Navy Yard. Onboard were two aircraft: a Grumman amphibian J2F-6 aircraft and a Bell HTL-1 helicopter. USS *Wyandot* (AKA-92), a 10,000-ton cargo ship, was loaded at Sea Warren, New Jersey, before heading to Boston. USS *Whitewood* (AG-129), a small, 2,000-ton wooden cargo vessel with limited icebreaking capability (used mainly for survey work), sailed out from Norfolk.<sup>49</sup> On July 10, Captain Quackenbush hoisted his broad command pennant in *Edisto* signalling the start of the mission. The ships' departures were staggered based on their relative speeds. *Whitewood*, the slowest of the ships, left from Boston on July 15 and *Edisto* followed two days later. From the onset, Cleghorn was determined to ensure that the Canadians were not overlooked. "As soon as he embarked on the American icebreaker ... he wanted to raise the Union Jack," Patrick McTaggart-Cowan of the Canadian weather service recalled. The Americans were not impressed.<sup>50</sup>

One of the men recruited to participate in Task Force 68 was twenty-nine-year-old William Gerrish (Gerry) Metcalf, whose personal logs (penned to his wife Elizabeth) provide an intimate glance at the operation. Metcalf joined the Woods Hole Oceanographic Institution (a private institute in Massachusetts) as a physical oceanographer after demobilizing from the navy at the end of the Pacific War. After serving for four months in Antarctica as oceanographer and staff scientific liaison officer during Highjump, he returned to the institute uncertain about his job security and thus agreed to participate in the Arctic expedition as an ice and bathythermograph (BT) observer.<sup>51</sup> Onboard *Edisto*, conditions were cramped — a reflection of the tremendous interest in the Arctic voyage. In contrast to Metcalf's Antarctic operations, where he had shared a two-man cabin, there was:

a whole gang of us down in a bunk room just below the Ward Room. There are about 8 or 10 triple decker bunks with narrow clothing lockers nearby and a "head" with 5 toilets, 5 wash basins and 2 showers in an adjoining compartment. There is an odd collection of characters living in this hole — oceanographers, Fish and Wildlife personnel, a Naval Intelligence

Officer, some Canadian observers (Air Force, Navy and Department of Transportation) and even a couple of ship's officers for whom there isn't enough space in regular cabins. About the nicest thing that can be said for the set-up is that it is just about amidsips so the pitching in rough weather is somewhat subdued.<sup>52</sup>

Cleghorn echoed similar concerns about the quartering and handling of civilian personnel, who were "treated as enlisted men or naval ratings and quartered in the most crowded and unpleasant section" of the naval ship.<sup>53</sup>

*Edisto* dropped anchor at Thule on July 23. Captain Quackenbush and his entourage visited the weather station and the Danish settlement, and were joined by Charles Hubbard when he arrived by aircraft that evening. There they plotted the next steps. They knew little about ice conditions in the Canadian archipelago, and poor weather inhibited reconnaissance flights until the following day. Poor weather also prevented contact with *Wyandot*, whose departure from Boston had been delayed by a fire in one of its diesel generators. Once it arrived, *Wyandot* and US army engineers completed the resupply of the Thule weather station in only seventeen hours (not the anticipated three to five days), allowing the task force to proceed to the next phase of its operations.<sup>54</sup>

The next stop was Devon Island. *Edisto* and *Wyandot* had a difficult crossing: rough seas, poor visibility, and 30–40 knot winds from the south-east. By radar, they made landfall on Cape Warrender on the morning of July 27. *Edisto* proceeded into Dundas Harbour and laid anchor, while *Wyandot* remained outside to await better weather. Captain Quackenbush, Hubbard, and three other officials went ashore to confer with the two RCMP constables stationed at what was, at that point, Canada's northernmost detachment. Based on the Mounties' advice, Hubbard decided to set up an automatic weather station near the RCMP post, where the police could service it periodically, rather than his planned location on Beechey Island (where it would be inaccessible during the winter).<sup>55</sup> The next morning, a US Marine Corps detachment landed on Canadian soil with "their amphibious and fully tracked tank-like vehicles for experimental work on the Devon ice-cap," Cleghorn observed. Working in continuous daylight, he and the other civilian personnel bound for Winter Harbour helped the



FIGURE 3-8. *Edisto* after its transfer to the US Coast Guard in 1965. US Coast Guard.

Marines set up the automated station before venturing further into the archipelago to set up their own manned station.<sup>56</sup>

Their weather station colleagues at Eureka anxiously awaited the arrival of the naval mission, having cleaned up their camp, cleared the beaches, and built an icebox to accommodate their much-anticipated supply of meat. The voyage there proved more onerous than anyone expected. On July 31, *Edisto* made its first attempt to get through the ice at Viscount Melville Sound. It pushed to near Byam Martin Island before heavy ice stymied its advance. Then tragedy struck when one of the helicopter crew walked into a tail rotor. Plagued by fog and poor visibility, *Edisto* rendezvoused with the other two ships at Dundas Harbour and sent the injured airman to *Wyandot*. When he died on August 3, the crew onboard the ship had to clear out the starboard deck refrigerator to receive his body. While *Wyandot* lay at anchor for two days, Cleghorn escorted civilian personnel ashore to visit the glacier and local peaks on Devon Island, get some exercise, and marvel at the views across Lancaster Sound to Bylot and Baffin

Islands. The ship then returned to Thule, waiting for ice conditions to improve so they could push towards Winter Harbour.<sup>57</sup>

In the meantime, Captain Quackenbush ordered *Edisto* to escort *Whitewood* to Slidre Bay to resupply the Eureka weather station. The latest reconnaissance reported slack ice (broken ice floating on quiet water) through Jones Sound and Norwegian Bay to Eureka Sound, but heavy pack ice blocked the route just west of Graham Island. This experiment proved the difficulties and perils of trying to tow or escort a cargo ship in High Arctic conditions. On August 7, the pack ice seriously damaged *Whitewood's* steering engine, propeller, and bow sheathing, forcing her to retreat to the open water in Jones Sound, transfer eighty-four tons of supplies for Slidre Fiord to *Edisto*, and head back to Boston for repairs. Without *Whitewood* holding it back, the icebreaker successfully crossed eastern Norwegian Bay the following day and found Eureka Sound nearly ice free. It became the first ship to transit these waters.<sup>58</sup>

The Eureka weather station, cut off from outside contact for months, jubilantly greeted the ship's arrival when it came into view early on August 9. Station OIC Justin Courtney hoped that his staff would be freed of all but essential duties while *Edisto* was at anchor. The lieutenant in charge of the beach party obliged, telling Courtney that his shore party would handle the offloading and the station staff would only be in the way. The USWB representative on the ground protested that this would look bad. Courtney promptly went over his head and convinced Hubbard that a mere "show of working" served no one's interests. After all, "the excitement of the boat's arrival, the opportunity to obtain personal supplies, forward mail, see a movie, take showers and talk to ship's personnel and passengers ... rendered station personnel virtually useless for any work." Accordingly, the Eureka staff observed "holiday routine" until the ship left (meaning no duties except weather and radio work), which their OIC considered wise given the circumstances. "The station personnel have been occupied full time since April on arduous duty, with little time for recreation and no opportunity to enjoy the amenities the ship provided," Courtney explained. The commodore of the task force and the ship's crew extended full privileges to station personnel, who took full advantage of the recreational facilities and canteen. The unloading operation took two days in total — a hectic time for the Army and Navy work parties, but a

short holiday for the Eureka staff that “did inestimable good for the morale of the station generally.”<sup>59</sup>

The resupply improved the local situation. Two additional men arrived, as did a rawinsonde apparatus with shelter, a balloon inflation shed, helium, and a prefabricated wooden accommodation building. As a result, Courtney offered nightly training until September 18, when the staff began rawinsonde ascents. At Hubbard’s request, *Edisto* handed its amphibious M-29 Cargo Carrier tractor (“weasel”) over to the station — a particularly useful asset that allowed staff to travel to the airstrip to prepare it for incoming aircraft in the months ahead. Finally, while the icebreaker was at station, RCMP Constable Harry Hampton Aimé swore in Courtney as postmaster. The Eureka post office began operating as the northernmost post office in Canada on 10 August 1947, reaffirming that the site was Canadian through postage stamps and postmarks — even if the mail was irregular and carried by American ships and aircraft.<sup>60</sup>

With the Eureka resupply complete, the task force resumed its mission to transport men and materials to Winter Harbour. Ice conditions continued to pose serious problems, despite the support of modern aircraft. Specially adapted B-17 bombers based in Thule flew long-range ice reconnaissance patrols to help the task force commander, but by the time Quackenbush received their information on the ice pack, conditions had often changed. The helicopter on *Edisto* proved invaluable, scouting to identify leads as the ships gingerly picked their way through the ice.<sup>61</sup> Cleghorn, observing progress onboard *Wyandot*, acknowledged the difficult conditions but criticized his ship commander’s timidity. Unlike Quackenbush on *Edisto*, Commander E.C. Folger, Jr.’s previous experience had been with destroyers in temperate climates. He had never ventured into northern waters, and neither he nor any of his crew knew enough about ice conditions to navigate “moments of indecision or danger.” While *Edisto*’s company had Antarctic experience, it was not always in a position to help the cargo ship. Cleghorn observed that, onboard *Wyandot*, “it soon became apparent that this understandable tension and lack of confidence was spreading to the ship’s company while the civilian personnel, whose morale was anything but good owing to their cramped quarters and their treatment as service personnel, were further affected by this undercurrent of feeling.”<sup>62</sup>

In this frustrating context, Hubbard began to explore his options. When aerial reconnaissance revealed that the route to Melville Island remained choked with impassable ice, he decided to lead a scientific party to survey conditions at Resolute Bay. *Edisto* arrived off the bay at 7:00 am on August 16, but could not launch any aircraft or boats because of heavy fog and drifting ice. When helicopters finally managed to take Cleghorn and Hubbard to identify potential sites for a weather station and airstrip, they decided that the conditions were favourable “except that the country appeared uncomfortably barren.” So the ship headed off to gauge the conditions in Melville Sound, grinding through ice pack continuously choked with ice fragments in heavy fog. On August 17, the engine room reported “striking a stump of ice,” followed by “excessive vibration of the port shaft at full speed.” In a polynya (an area of open water surrounded by sea ice), a dive crew noted that two-thirds of a blade of the port propeller had broken off, reducing the ship’s icebreaking power by fifty percent. With reduced manoeuvrability, and amidst worry that the ship would not have the power to return to open water again, the captain decided to retreat to Resolute. A twisted propeller shaft on one side and broken blade on the other left *Edisto* in no shape to operate in heavy pack ice.<sup>63</sup> Planners had not considered the ships failing to reach Melville Island, but after two unsuccessful attempts Hubbard accepted that he needed to contemplate an alternate plan.<sup>64</sup>

On August 22, the task force commander called a meeting to discuss options. Time was running out if they hoped to establish a weather station that season. Major Wayne McAlpine, the commanding officer of the 809<sup>th</sup> Engineer Aviation Battalion who was responsible for airstrip construction, reported that the site at Resolute Bay was the best he had yet seen. Yet the US Weather Bureau remained hesitant. They wanted the station as far west as possible and did not want to settle on Cornwallis Island until they had exhausted all other options. Hubbard agreed to abandon his hopes to establish the main station at Winter Harbour only if the next reconnaissance flight, scheduled for August 25, “showed 100% possibility” that they could not get there through open water. Otherwise, he would decide on an alternate site by August 28.<sup>65</sup>

Hopes were repeatedly raised and then dashed. *Edisto* sailed to Freemans Cove on Bathurst Island and, after extensive helicopter reces,

Hubbard and Cleghorn became enamoured with a potential site. “We were all delighted with the sheer beauty of the place in contrast with the rocky barrens of Resolute Bay,” the Canadian noted. Major McAlpine was the spoiler, however, insisting that the soft ground and lack of gravel would not support an airstrip.<sup>66</sup> Then a long-range reconnaissance flight indicated nearly ice-free waters through to Winter Harbour. Quackenbush had high hopes as the icebreaker headed westward into Melville Sound on August 25, but the task force commander’s optimism soon faded. Near midnight, the crippled icebreaker “ran into broken pack ice along with an old enemy — fog.” Unable to skirt the ice by heading north, and stymied by poor visibility, heavy snow, and strong winds, *Edisto* anchored off Bathurst Island. The ship made a fourth and final attempt to reach Winter Harbour late on August 27, hoping that strong winds had cleared a path through the ice. By 04:15 the next morning, a band of heavy pack ice approximately ten miles wide prevented *Edisto* from breaking westward into Melville Sound. Without full power, the ship proved helpless in the face of the heavy floes and could not safely escort and deliver the *Wyandot* and its precious cargo to the intended destination.<sup>67</sup>

Despite persistent efforts to reach Winter Harbour, ice conditions had defeated the task force. Hubbard was reconciled to the choice of Resolute Bay by this point, recognizing that he would have to satisfice if he wanted a station built that year. The Canadian government remained unconvinced, however, passing a message through the US Weather Bureau instructing the task force to survey sites on Beechey Island and the southwest coast of Devon Island. Hubbard reported back that Resolute was the most feasible.<sup>68</sup> Although the USWB officials would have preferred a main station further west, they reconciled themselves to Cornwallis Island. “A B-17 [reconnaissance] plane flew to Winter Harbour and reported that we could get through ‘in a rowboat,’” Metcalf noted on August 29. “But the Commodore and the Weather Bureau people have decided that Resolute Bay is the place, and it is time to get started on the task of building the base, so we will start unloading tomorrow. If we had only come to that conclusion when we first looked at this place, we would be on our way home by now, but I suppose they had to give Winter Harbour a fair trial.”<sup>69</sup> The senior officials’ hesitancy in selecting Resolute, however, seriously delayed the engineers. Major Andrew Taylor of the Royal Canadian Engineers (whose

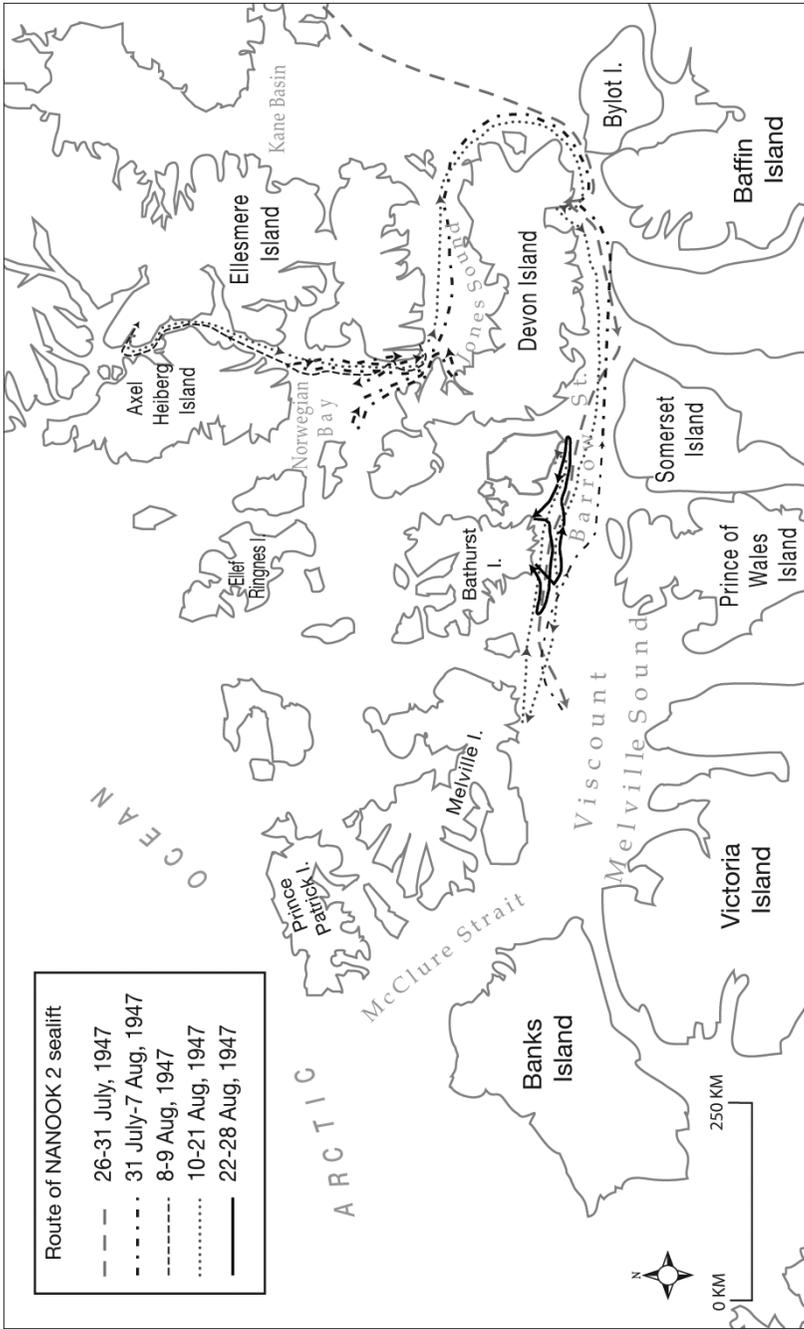


FIGURE 3-9. Track of USS *Edisto* (AG/89) during Task Force 68, 26 July–28 August 1947. Jennifer Arthur-Lackenbauer

FIGURE 3-10.  
Resolute  
Bay under  
construction  
following the  
season's first  
snowfall, 10  
September 1947.  
United  
States Navy  
Department.



polar experience included commanding the British wartime Operation Tabarin in Antarctica) noted that, if they had started a week earlier, they would have made significant progress before the frost set in.<sup>70</sup>

### **Resolute, Cornwallis Island, 74°70'N., 94°54'W.**

The Resolute Bay site was an attractive alternative to Winter Harbour for several reasons. First, it boasted a longer stretch of ground with excellent approaches upon which to build an airfield. The stable terrain offered abundant gravel for construction, and the station site lay a quarter mile from the beach and 1,500 feet east of a freshwater lake. Furthermore, cargo ships could expect access to the protected harbour even in difficult ice years. Good sloping, gravel landing beaches added to its appeal. “In being forced to accept this alternate site,” the official report noted, “it is not felt that the Weather Bureau’s program ... has suffered, but rather

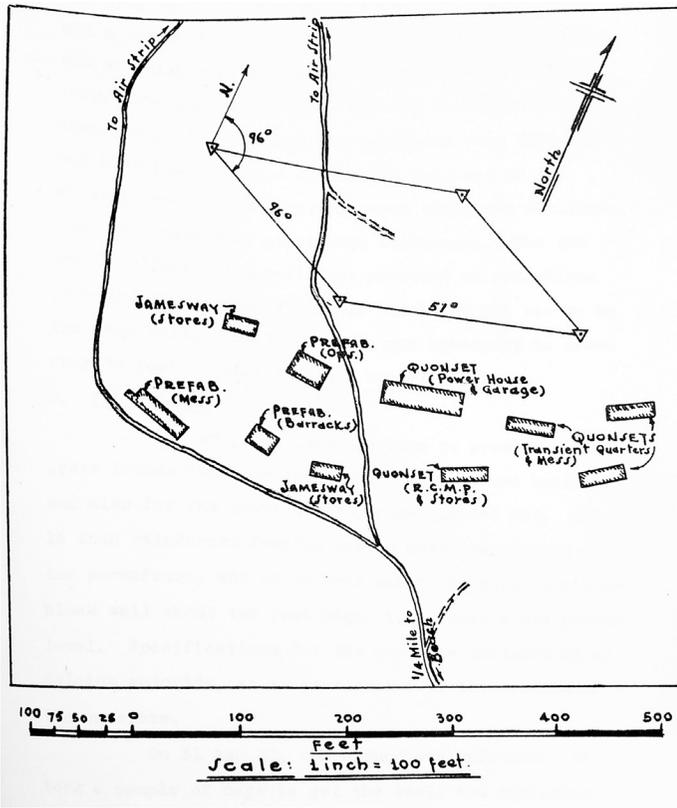


FIGURE 3-11.  
Resolute site map, 1947.  
NARA, RG 27, Entry 5, Box 8, File Navy Reports - Confidential.

it has been furthered by the acquisition of a strategic and valuable base station.”<sup>71</sup>

The weather services formally approved the new location on August 29. Two days later, crews began hastily unloading the ships and pounding stakes into the ground. With winter looming and ice threatening to force out the ships, eight LCMs (fifty-foot landing barges) shuttled cargo from *Wyandot*, anchored about a mile offshore, to the beach around the clock. “It is late enough in the season so that the sun now sets around 10 at night and rises around 5 in the morning, so it gets fairly dark at night, but they have large portable generators and floodlights which keep things as bright as day ashore,” Metcalf observed. “Wonderful people, these Americans. When they set out to do something of this sort, they do it on a grand

scale!”<sup>72</sup> Two crews working twelve-hour shifts discharged 3,500 tons of cargo, including 200,000 gallons of gasoline, in less than a week.<sup>73</sup>

Although logisticians had carefully classified the cargo in Boston before the ships headed north, the disorganized state of the offloaded crates at Resolute mirrored the problems encountered at Eureka earlier in the year. “I am sure it will sound absurd,” Cleghorn recalled, “but we worked throughout the entire period of cargo discharge without a manifest showing exactly what was loaded, and therefore, what we could expect to find at the discharge and supply points.” On the ground, the station personnel discovered that many of the boxes did not contain the items they were supposed to, while some contained no markings at all. Fresh fruit and vegetables came ashore before heated warehouse space was built, and 90% of this food was destroyed by frost.<sup>74</sup>

The state of the war surplus equipment that arrived also bred frustrations, forcing work crews to compete for limited resources to complete beaching operations, station construction, and airstrip preparations. As soon as heavy equipment arrived onshore, crews quickly uncrated and fitted it together — and detected problems. “The mechanical difficulties encountered at Resolute Bay were not attributable to either the latitude or weather conditions,” Major Taylor observed. The American engineers were convinced that the Army had sloughed off old equipment on the JAWS project because it was being written off. Except for the graders, shovels, scrapers, and “rooter,” all of the equipment sent northward was used — and well worn. Much of it was in poor condition and pieces had to be cannibalized for machines to operate. One tractor arrived with a broken track, another with bolts of the flywheel sheared off, and another with a plugged radiator that was caked in old, frozen grease. Mechanics worked until September 13 to get all of the tractors into serviceable condition, while the four cargo trucks shipped north, in continuous demand, broke down repeatedly.<sup>75</sup> Cleghorn cited this as a prime example of planners’ inattention to detail. Rather than building the camp, the majority of the US Army engineers worked to assemble construction machinery that was supposed to have been shipped ready for immediate service. Consequently, unskilled naval ratings from the two ships were conscripted to set up the prefabricated buildings “at the very last minute, and under severe handicaps.” As a result, the structures

were “not too well done”<sup>76</sup> — with unfortunate implications for the personnel that winter.

While mechanics made the best of a frustrating situation, weather station staff and military personnel erected station buildings and began work on an airstrip. Given the limited knowledge of installing foundations for permanently heated buildings in the Canadian Arctic — a problem given the active layer of earth which thaws in summer and re-freezes in winter — the staff had to improvise. Permafrost forced them to dispense with plans to pour cement foundations, so they successfully experimented with “floating” gravel pads that would act as insulators to prevent the thawing of permafrost and provide easy bedding for foundation sills. As temperatures dropped below freezing and snow began to fall, however, progress slowed. Nevertheless, the crews managed to erect the outer shells of three prefabricated wooden houses, five Quonsets, and several Jamesway huts by September 12.<sup>77</sup> Concurrently, eighty-four engineers with the USAAF’s 809<sup>th</sup> Aviation Battalion worked around the clock on a 10,000-foot airstrip about five kilometres north of the main station. There was little vegetation, and earth movers had little difficulty crumbling the brittle, yellow limestone plates covering the surface. The direr problem was frost, which immediately penetrated the ground on September 1 and continued to reach deeper each day. By September 10 the ground was completely frozen to the permafrost 18–24 inches below the surface. The engineers struggled with this reality. “Carryall scrapers would ride, wheels turning freely, on the cutting blade,” Major Taylor reported. The rooter was used to break the frozen ground into 1- to 2-foot wide clods before the scrapers would handle it. The engineers realized that they could not complete the grading before winter set in, and had to content themselves with smoothing out the existing shingle surface.<sup>78</sup> After the task force departed, forty officers and men with the army engineers continued this work, remaining in Resolute until October 26.<sup>79</sup>

The rest of the army and navy personnel had rushed their jobs to completion, anxious to return south. After weeks of uncertainty (and nearly two months after leaving Boston), rumours abounded about when the ships would depart. “This fool ship is becoming the center of 101 little intrigues,” Metcalf noted in his personal log on September 6. “The long wait and the uncertainty as to what will happen next seems to be effecting

everyone. The Staff and the Ship's Officers are at sword's points over the most childish things. The Exec and Lt. Russell have descended to writing each other hostile memoranda on every subject from Communications to table manners!" They would not even sit together for meals. The ship crews were disappointed with the lack of mail service "and dozens of other picayune things."<sup>80</sup> For his part, Cleghorn had created tensions with naval officers when he overstepped his authority as game warden and threatened to report two American scientists to the game commissioner for taking wildlife specimens. RCMP Constable Harry Aimé tried to soothe matters, but he found that the American officers were cooler to Canadian requests for information after Cleghorn had irritated their hosts on the ship. Aimé preferred to avoid making an issue out of matters unless he deemed them serious, while Cleghorn had no qualms about persistently complaining despite the highly-charged atmosphere.<sup>81</sup>

Speculation of when the ships should depart soon ended. None of the ships were set up to overwinter in the Arctic, and their tasking ordered them to return south when weather or ice conditions rendered further operations "unprofitable."<sup>82</sup> A calm, cold night produced a film of slush over the entire bay by the morning of September 11. "Winter is at our throats," Metcalf noted. Although less than an inch thick, the slush got into the raw water strainers of the landing craft and threatened to block them. Warmer daytime temperatures and a slight breeze melted the ice for daytime operations, but "a really calm night and a sharp cold snap could put the small boats out of commission in a hurry."<sup>83</sup> Operating at the edge of winter, the navy was desperate to get away before being blocked by ice floes. Two days later, the Canadian and American weather station personnel moved ashore to occupy their newly built quarters. That afternoon, Hubbard, Quackenbush, and Cleghorn presided over a flag-raising ceremony with speeches and tributes to the achievements, and the naval task force steamed out of Resolute Bay just after midnight. (They were prepared to leave on Friday the 13<sup>th</sup>, but they did not leave until early the next morning because of "naval superstition.")<sup>84</sup> Cleghorn recorded that "at 1845 hours the two ships ... passed from view behind Cape Hotham, leaving behind seventeen civilians of the weather station staff and forty officers and men of US Army Engineers." He promptly changed the station over to Central Standard Time and put the latrines into commission.<sup>85</sup>

The hasty departure left problems in its wake. Insufficient time and warehouse space prevented the crews from storing all the supplies indoors. Blizzards soon covered the outdoor caches with deep, hard snowdrifts which concealed their location and their contents. Furthermore, faulty packaging failed to protect some food and supplies from sea water, rain, and snow. The station consequently faced shortages of many items during its first winter of operation. Trying to take an inventory of the satellite stores that fall proved “an unhappy experience as well as a waste of time,” given that the staff had no list of what the supply dumps contained. “We decided that it would be unwise to open the boxes to see what they held,” Cleghorn explained, “for fear that the drifting snow would leak in and spoil the contents.”<sup>86</sup>

Amidst ongoing construction, station staff tried to establish a routine. On September 5, Canadian meteorologist R.W. Rae had set up USWB maximum and minimum thermometers in an improvised thermoscreen and kept a daily record of temperature extremes, as well as brief daily weather notes later compiled into a monthly report.<sup>87</sup> The RCMP post was set up on September 16, and the next day Cleghorn drafted and discussed local station rules and regulations with a full meeting of the station staff. Camp fatigue parties washed dishes, disposed of garbage, drew water, and filled latrines and oil stoves. An army truck drove away the first inquisitive polar bear that approached the station. When it returned a few days later and broke into food boxes, Cleghorn was forced to shoot it. With the freshwater ice now nine inches thick, the entire station staff cut and stacked 3,000 blocks at the station to carry them through the winter.<sup>88</sup>

On October 1, Cleghorn offered a positive appraisal of the local situation. The airstrip was 6,400 feet long, full electrical power had been turned on in all of the buildings, and Rae had set up the meteorological equipment and planned to start taking regular synoptic observations about October 10 and pilot balloon observations a few days later. “We have no personnel problems,” he told Andrew Thomson, the controller in Toronto. “Everybody is pulling his own weight and relations between the Americans and ourselves are on a very cordial basis. There have been minor misunderstandings and some differences of opinion on both sides, but these are to be expected in any normal operation of this kind. I blame

the prolonged strain and overwork, rather than any personal animosity for any small outburst of temperament in the past.”<sup>89</sup>

Less than two weeks later, Cleghorn reported the first signs of trouble. Although the staff made steady progress “in all branches of our work,” Cleghorn reported that the station personnel, both American and Canadian, did not “like to be tied down by a set of rules and regulations.” The American executive officer and chief mechanic objected strongly to the “no smoking” rule in the powerhouse and garage, insisting that a man had a right to smoke at his place of work. Cleghorn rescinded his order for “the sake of peace,” but he was concerned about this violation of the fire prevention plan — even though the men insisted that they would be careful. When the OIC drew up a set of rules and presented them at a staff meeting, “they were accepted in silence, although they were simple and pretty local in character, dealing with such matters as mealtimes, conservation of fresh water, use of vehicles and warnings to personnel about such things as crossing unsafe ice, or undertaking lone hikes into the surrounding country.” Cleghorn removed them from the station notice board when he heard whispers that this constituted undue strictness and “regimentation.” The former army officer remained conscious of his military background, and “tried very hard to live that part of his past down” given that the station represented a very different “time and place” than his previous postings. He tried to dismiss the “touchiness” as a carryover of the difficult voyage and the “unhappy confusion” before the ships departed, and reassured his superiors that “we have shaped up a new course, and everyone is trying very hard to readjust and put up a good showing.”<sup>90</sup>

A few months later, Cleghorn painted a more pessimistic picture. Even before they had set sail from Boston, the former military officer had been skeptical about the group’s lack of experience and the lack of instruction they had received on duties and conditions of Arctic service. His fears were confirmed on the ground:

From the start it was painfully evident that the majority were more interested in the higher salaries offered than in any other prospect. With one, or perhaps two, exceptions, no one was the least bit inspired by the prospect of going north to do important work. There wasn’t the slightest trace of the

“expedition spirit” evident in anyone, and the most difficult aspect that had to be faced was their unwillingness to do any work other than that which the individual had been hired to do, and the uncooperative and even hostile attitude shown when I had to round them up to do essential work connected with the handling of supplies, or camp and household duties, and a similar attitude when I asked for strict adherence to station rules and regulations.

Loose organization, inadequate equipment and supplies, and long work-days heightened confusion, frustration, and ultimately resentment. Unhappiness reigned, Cleghorn concluded, because the personnel recruited for the station “had not realized, and were quite unprepared, to face the isolation from the rest of humanity, from customary relations and usual scenes that life at an Arctic post involves.”<sup>91</sup>

By this point, Cleghorn’s perspective on the US contingent had shifted profoundly. He had considerable background experience dealing with American civilian and service personnel, and suggested that he had “always been able to get along with them at all times.” This group was “entirely different” from any he had previously encountered:

In my opinion they resented being placed under Canadian command, and having to abide by a set of uncompromising station rules, regulations and the laws and ordinances of the Territories. I remember hearing one of them say that they were afraid of losing their identity, and no amount of reasoning on my part of the international aspect and co-operative effort of the project seemed to make the slightest difference to this manner of thinking. I showed no discrimination whatsoever in my dealings with them, and international relationship remained on a high level, but it was this sort of thing that kept me at a high nervous pitch and convinced me that my task would have been far happier and less complicated had the expedition been entirely Canadian from beginning to end.<sup>92</sup>

Cleghorn recognized that “American participation, material aid, and good will” was essential to the program. He also believed that the Americans were arrogant, suffered from a host of administrative and technical problems that plagued planning and execution, and rejected Canadian authority. The confusing lines of command and control — with Navy, Army, and Weather Bureau supervisors all controlling specific aspects of the project, and often failing to solicit a Canadian opinion — made the situation impossible in the former military officer’s eyes.

RCMP Constable Harry Aimé, a detached observer, concluded that Cleghorn embodied the real problem. He did not fit in with the station team, openly criticized those around him, and was a “busy-body” who injected himself in others’ affairs. “A dreamer, he was likely to be found reading about polar exploration, including Scott’s trek to the South Pole,” Aimé recounted in his memoirs. Cleghorn “fantasized that if Resolute Bay had to be abandoned, we would all trek to Dundas Harbour,” more than 370 km away. Given the lack of RCMP facilities at Dundas, the constable noted, this was “a most unrealistic idea.” But Cleghorn seemed aloof from the realities of life at a small, civilian station. “Almost every day there were tensions and, if none arose, Cleghorn would create some. He just wasn’t suited for northern isolation.”<sup>93</sup>

Tragic incidents compounded morale problems at Resolute that fall. First, a polar bear severely mauled Edwin (Ted) Gibbon, a Canadian radio operator, within the camp area in the blustery, grey morning of October 24. He had gone outside to notify Cleghorn, who was sleeping in the dormitory on the other side of the mess hall, of an incoming flight. “As I walked towards the mess hall, ... out of the corner of my eye, I saw the bear charging toward me on all fours,” Gibbon later recounted. He tried to dart behind a sled, but the bear cut him off with a blow to the head. In a semi-conscious state, Gibbon recalled looking up at the bear’s face. “He had his paws around the back of my neck and seemed to be trying to break it.” As they wrestled, Gibbon shoved his arm into the bear’s mouth to prevent it from biting him. The cook heard his screams and rallied Cleghorn out of bed, who promptly grabbed the station rifle and shot the bear. “Lucky for me the American army doctor was still at the camp,” Gibbon explained. “He sewed me up. He said he didn’t bother counting the stitches, there were so many. He found that there were teeth and claw



FIGURE 3-12. Gibbon being attacked by a polar bear. The painter may have been US Executive Officer William A. Robinson, and the painting was apparently based on a sketch drawn by an eyewitness shortly after the attack (24 October 1947). The original painting still hangs at Resolute Bay. Whitney Lackenbauer Collection.

marks all over my head and neck and arms.” Two days later, the victim was evacuated out on a flight with the departing army engineers and recuperated in a hospital in Montreal before returning to his hometown of Port Arthur, Ontario.<sup>94</sup> Cleghorn concluded that this situation “showed how totally unprepared [the station personnel] were to receive the full impact of wilderness living.” Although he had warned everyone about polar bears wandering near camp, no one had believed an attack possible.<sup>95</sup> The cook, traumatized by the event and haunted by “visions of how a big bear would sink its teeth into his long thin neck,” took a handful of sleeping pills and slipped into a four-hour “coma” before two of the boys managed to shake him out of it. It was several days before he resumed cooking for the crew.<sup>96</sup>

The second major accident occurred on December 7 when Lorne Manion, a young Canadian met tech from Saskatchewan, was electrocuted in his room. Climbing into a double bunk bed late one evening after

his work shift, Constable Aimé recounted how Manion “gripped the steel frame and at the same time rubbed his moist back against an open ceiling furnace duct.” The bed was in contact with an open electrical outlet, causing the duct to short from the opposite side of the building, sending an electrical shock of 220 volts through Manion and killing him instantly. Aimé held a coroner’s inquest, which confirmed that inadequate electrical supplies and careless installation of wiring and fixtures had caused Manion’s death. “No one could be blamed for the tragedy — the staff were not electricians — nor were they aware of the dangers,” he noted. Morale sank and distrust grew amongst station staff, who believed that the entire program was built on similar, dangerous foundations. Cleghorn did little to reassure them, his credibility now eroded beyond repair. “Cleghorn began his evidence [before the coroner’s inquest] by relating the books he was reading at the time,” Aimé recalled. “I instructed him that only the facts were required, not his opinions or assumptions. The staff was ecstatic. For once, Cleghorn was not in the driver’s seat.”<sup>97</sup>

By this point, Cleghorn had failed as a leader. “I had hoped that once the ships sailed for the United States and we were left on our own resources we would become one united group, but such was not to be,” he confessed. “Small cliques were forming, there were hurt feelings and misunderstandings all around until I could see there was nothing more I could do to restore their confidence, since the leadership I offered was not acceptable to them in any form, and was even resented.” Despite his previous experience in managing a remote base, Cleghorn had enough of *Resolute*. He spoke with Constable Aimé, who strongly advised him to resign. On December 12, he radioed a message from the Arctic station to Andrew Thomson, his supervisor in Toronto. “Imperative that I report to you in person regarding entire situation here,” Cleghorn communicated. “Urgency demands travelling aircraft due here twentieth and total weight seven hundred pounds.” Thomson was “shocked” to receive the message, which gave no clear reason why Cleghorn felt it “imperative” to abandon his post. Cleghorn’s forwarding letter simply stated that he had to head south “to clear up some of the misunderstandings, improve our methods and aid in the welfare of those serving in the north.” The reference to 700 lbs., however, implied that the officer in charge had taken all of his personal belongings with him and did not intend to return to *Resolute*.

Cleghorn's lengthier reply, which documented his experiences that fall, insisted that he faced a "very threatening" situation at the station. "I am sure that had I remained for another month, violence, in some form or another, would have broken out, since I had absorbed all the nonsense and abuse that I was prepared to take under the circumstances and I decided that it was going to stop then and there," he explained. "Having made this decision, I had two courses left open to me, and I chose the rational one."<sup>98</sup>

Cleghorn boarded a B-17 aircraft for Goose Bay on December 23. It was a near fatal choice. The following day, the plane got lost, ran out of fuel, and crashed on Dyke Lake 270 miles northwest of Goose Bay. Cleghorn's Arctic experience proved valuable in establishing a campsite, building a lean-to, and preparing austere meals from emergency kits while the survivors waited for search teams to find them. Two days later, Cleghorn and the other men were evacuated to Goose Bay and hospitalized. Work of salvaging mail, supplies, records, and Manion's body took twelve days.<sup>99</sup>

Safely ensconced in the comforts of Southern Canada by mid-January 1948, Cleghorn authored a dizzying array of recommendations to improve the weather station program. He criticized everything from the .30-06 hard point ammunition supplied to the station, which would not have stopped a polar bear unless cleanly shot through the heart, to the overly lavish American procurement system. He did not think that pillow cases, electric grills, and fresh turkey were essential to the well-being of station staff. "It is true that a little luxury now and then is a morale builder," Cleghorn conceded, "but for a long pull under northern conditions, adequate bedding and good wholesome fare and lots of it is more to the point." Creature comforts became expectations, leading individuals to complain "when the bed sheets provided are unbleached cotton instead of linen."<sup>100</sup> Cleghorn also called on Canadian and American officials to more carefully select and screen applicants serving at isolated Arctic stations:

Applicants should be volunteers and single men between the ages of 25-35 years. Youthfulness, physical strength, and the desire for adventure are important attributes, but some of them may have to be sacrificed somewhat unless a leavening of good common sense and a willingness to accept responsibility is present in full measure as well. He must be mentally

and physically fit, and his medical examination report should reveal a close scrutiny to detail in both spheres before he is considered. The Arctic is no place to nurse an old wound or to forget the consequence of an act of bad judgment. He should be self-sufficient, but of the extroverted type of personality. An applicant must be told exactly what is expected of him — his mandatory duties and otherwise. He should be made fully aware of all the phases of Arctic life, its isolation, climatic conditions, its joys as well as its dangers. He should be told there are, theoretically speaking, two Arctics — the high Arctic of the weather stations, and the one which he has heard and read, ... the Arctic of the trading posts, the natives and their hunting camps. The two are quite different[:] one already has its community life, interest, and colour[:] the other is what you make it.<sup>101</sup>

Although Cleghorn likely considered himself to be the “experienced Canadian” well-suited to assume liaison responsibilities with the US Weather Bureau and ensure that the program followed a more cooperative and efficient course, he had retreated from a difficult situation at Resolute.

Cleghorn’s superiors, undoubtedly disappointed with his performance, did not avail themselves of his offer. The Deputy Commissioner of the NWT, R.A. Gibson, met with the RCMP commissioner on 6 January 1948 and learned that “he had been advised confidentially by his representative at Cornwallis Island that Colonel Cleghorn ... was unable to measure up to his responsibilities [as senior officer], whereas the Americans sent an outstanding officer who is a natural leader. Colonel Cleghorn consulted the policeman to see what he should do and the policeman advised him to seek a recall.” When Cleghorn passed through Ottawa a few days later, he paid a visit to J.G. Wright in the NWT office and offered his perspective. “He said the weather station staff had been under strict naval supervision on the way north & were ‘fed up,’” Wright recounted. When they learned that “an ex-military man” would be in charge of the station, “they immediately resented him. There was a lot of insubordination against his camp rules,” and after Manion was accidentally electrocuted, “all blamed [Cleghorn] for not seeing to it that the wiring of the U.S. Army engineers

had been properly done!” Perceiving his position to be “impossible,” Cleghorn asked to be recalled.<sup>102</sup> Senior officials obliged. “He turned out to be a disaster,” Patrick McTaggart-Cowan reminisced. Cleghorn had to be replaced or “he would have endangered the project.”<sup>103</sup>

The weather station at Resolute survived Cleghorn’s abrupt departure. R.W. (Bill) Rae, the resident meteorologist and senior Canadian, assumed the OIC role at the station for the next two years.<sup>104</sup> Where Cleghorn had failed, Rae succeeded. His account of living conditions at Resolute, reprinted in the *Christian Science Monitor* in early May 1948, indicated a vastly improved situation. The station staff kept busy and interpersonal relations were generally free of friction. “There is always plenty of work to be done and the amount of spare time left over for hobbies or recreation is relatively small,” Rae noted. Given space limitations, table tennis proved an ideal form of indoor recreation. “The entire set is homemade except for the Ping-Pong balls, which I begged from the United States-Danish weather station at Thule,” Rae described. “We are presently in the midst of a hectic handicap tournament for the table tennis championship of Cornwallis Island. The winner not only receives five chocolate bars, but what is more important, is excused from helping with the dishes for two days.”<sup>105</sup>

The improved situation at Resolute in the winter of 1948 mirrored the working culture environment prevailing at Thule and showed the importance of solid leadership. When *Los Angeles Times* reporter Magruder Dobie visited the Greenlandic hub, he marvelled at the daily routine — and the importance of having an intelligent and experienced leader who understood the nature of his assignment. Dobie held up Ed Goodale — a “ruddy-faced, easy-going” polar veteran whom Hubbard had hand-picked as the station chief to get things going at Thule — as a prime example. “Bossing a group of heterogeneous civilians, many of whom are not temperamentally suited for this life, is a difficult challenge,” the reporter observed. “If this were a military station, Ed would be commanding officer and his orders would be backed by the long, strong arm of military law. But, as a civil servant, he has no ready-made authority.” Although he sat at the head of the dinner table, enjoyed a single room, and did not have to do “K. P.” (“kitchen patrol,” the slang for kitchen clean-up duties), Goodale did not wear insignia boasting his rank, “and no one would dream of

calling him 'sir.'" If a staff member suffered from depression, Goodale avoided "strong-arm remedies." Instead, his recourse was "kindness and consideration." After all, cold and darkness brought mental stress. "The Danes call it 'morkepip' and even the Eskimos are susceptible," Goodale explained. "But you can fight it off if you're tough-minded." Everyone at the station succumbed to bouts of depression — the solution lay in learning "to squeeze the maximum enjoyment from the simplest pleasures."<sup>106</sup> Creating the right conditions for ordinary, predictable routines proved a key recipe for success at an isolated outpost.

The Eureka station also enjoyed a harmonious environment in late 1947 and early 1948. The staff settled into the new wooden prefabricated accommodation building, which represented a vast improvement over the original, temporary huts. With the station on a full operational basis by early October, Courtney had turned his attention to preparations for the dark period. He kept everyone busy between regular scheduled weather and radio operations so that days would pass quickly. He assembled his staff to remind them to stay alert — animals could surprise them in the dark. The crew installed lighting in all buildings as the daylight waned, completed an inventory of all supplies, and caught up on narrative reports of weather observations. During the dark period, personnel also had to travel across Eureka Sound when there was a full moon each month to gather the winter and spring water supply.<sup>107</sup>

Courtney valued the physical exercise required to complete these tasks because they disrupted the lethargy that set in during the long dark period. Planners had put little thought into the station's recreational facilities. Most activities at the stations (particularly photography) were for outdoor use in daylight. By the time the weather bureau began to ship books by aircraft in December, the staff had already exhausted the technical library. The station's amateur radio equipment was inadequate, and "the social value of cards and other games in gathering a group together... is lost." Courtney reported that the station's personnel wanted access to "interesting and instructive pastimes, ones that add to physical or mental stature." He recommended a large library, a good radio receiver and parts for amateurs, and a darkroom kit.<sup>108</sup>

These recommendations marked the shift from *creating* the stations to actually *inhabiting* them on a permanent basis. The pioneering crews

had established the footprint and proven that the stations could be operated successfully. Courtney and others, in suggesting a litany of improved buildings, scientific equipment, supplies, and clothing, were laying the groundwork for a persistent presence that would transform the stations into permanent hubs fit to facilitate continuous scientific observations.

The United States had not just assisted with the establishment of the weather stations, as official Canadian statements insisted — it had clearly led the construction phase. The early planning and construction bore the unmistakable imprint of Charles Hubbard, the director of the Arctic Operations Project of the USWB. The US Navy, Army, and Army Air Forces, playing pivotal roles in transporting men and materiel to the remote locations, had established the weather stations. Although some commentators later depicted the JAWS program as yet another case of the United States simply imposing its will on a junior partner, the leading role that the Americans played in the physical construction and supply of the first stations instead reflected Canadian limitations in personnel and in maritime and air logistics at that time. “The founding of the Joint Arctic Weather Stations was unique and is still unique in the world’s history of the development of meteorology,” Patrick McTaggart-Cowan of the Canadian Meteorological Service later explained. “When it started, we in Canada really had no Arctic ice-breaking capabilities at all. The Americans did. We both wanted the stations in the Arctic for sound, scientific reasons.” Both countries benefitted from working together, with Canadians centrally involved in the final selection and actual operation of the stations, with a Canadian in charge of each and an American as deputy.<sup>109</sup>

Actually implementing the designs for the JAWS program proved the need to adapt to High Arctic realities, while testing assumptions that plans conceived in the south could simply be imposed on the North. The task force that travelled north in August 1947 carried a general plan to build a main weather station in the centre of the Canadian Arctic Archipelago. Initial reconnaissance conducted the year before had led planners to select and draw up complete plans for a station at Winter Harbour on Melville Island. In this case, however, the marvels of modern planning and technology could not overcome local conditions. Ice conditions prevented the task force from reaching Melville Island, forcing substantive readjustments.

This experience taught US officials about the limitations that environmental conditions still posed on ships and aircraft operating in the Arctic. “Pack ice for many years has been a menace to surface ships and continues to cause great damage,” the commander of Task Force 68 observed. “This operation, despite its modern equipment and trained personnel, suffered ship damage ... similar to that experienced during Operation Highjump [in Antarctica].”<sup>110</sup> The challenging operational environment in Canada’s Arctic demanded acceptance that, even when armed with modern ships and planes, planners could not assume they would be able to “conquer” the Arctic and simply impose their will through blunt force.

The early experiences of station crews also yielded important lessons, highlighting the importance of careful planning to supply isolated stations that could not be visited easily — and the need to improvise locally when equipment did not arrive or was in poor condition. Station personnel quickly identified the physical and psychological stresses of adapting to often unpredictable Arctic conditions. Environmental realities directly influenced the form and pace of development. Although station staff living in permanent buildings did not face the same physical challenges as explorers travelling long distances on the land and living in ships, tents, or snowhouses, hazards remained: from polar bears to hastily constructed buildings to extreme weather. Furthermore, isolation from the rest of the world remained a stark reality, however much modern communication and transportation provided unprecedented connections to the south.

The human dimensions of leadership — from personality to style, to accepting the unique physical environment in which the stations were situated — proved instrumental to creating and sustaining functional stations. Jud Courtney demonstrated how a leader with appropriate traits and temperament could overcome adversity and achieve success. Conscientious, agreeable, and sensitive to the needs of his men, he proved well-suited for adaptive functioning in an isolated and confined environment. He ensured that the personnel at Eureka did not succumb to boredom and found ways to motivate them without resorting to his “command” authority. This modelled Hubbard’s philosophy (as his wife described it):

The reasons Charlie had for wishing always to keep the stations on a civilian basis were that his experience with the Crystal bases led him to believe that only small, hand-picked groups could operate with maximum efficiency in the arctic. Though this has been practically speaking a great difficulty, Charlie's stations are a whole lot better than the large, cumbersome groups the armed forces are likely to have operating in the arctic.<sup>111</sup>

The military provided vital construction and logistical support to JAWS, but USWB and Canadian Department of Transport staffs affirmed the network's civil character. The involvement of these civil organizations was not a case of "civilian cover" for the militarization of the Arctic, as several historians allege.<sup>112</sup> Psychologists note that "personnel in polar work group settings ... need to be socially skilled, and traits that might be adaptive in one situation and with a particular group might not be adaptive in other groups or situations."<sup>113</sup> The case of Lieutenant-Colonel (ret'd) J.D. Cleghorn, whom Hubbard had specifically recruited to oversee the establishment of the main weather station based on his wartime background working at a joint facility, proved that an autocratic military mindset did not suit the JAWS environment. His failures demonstrated the necessity of flexible leadership at remote outposts. Although Andrew Thomson later suggested that Cleghorn "didn't have the northern qualifications" that the meteorological service believed he had,<sup>114</sup> a more appropriate assessment might be that he did not have the *right* qualifications or traits to successfully lead a *civilian* weather station. Cleghorn failed to command the respect of his civilian colleagues during the beginning stages of establishing the station, to serve as a role model sensitive to the needs of his team members, and to communicate his goals effectively. His subordinates resented his authority and refused to accept his personality characteristics, leading to interpersonal conflict, tension, and an erosion of group cohesion. With the station personnel feeling increasingly insecure in the wake of a polar bear mauling and an electrocution at the station, Cleghorn lost all credibility by late fall and abandoned his post. By contrast, Rae, his successor, proved more adept at managing interpersonal relations and social

dynamics, and worked with the station staff to produce a positive work and living environment.

After retreating to southern Canada, Cleghorn raised concerns about American behaviour at the stations, suggesting that bilateral friction had permeated relationships on the ground. Concerns about American belligerence also persisted in some official circles in Ottawa. Trevor Lloyd, the chief of the newly-formed Geographical Bureau at Mines and Resources, had actively lobbied the government to take more effective control of northern defence projects during the Second World War. After the war ended, he assumed the mantle of muckraking Arctic explorer-pundit Vilhjalmur Stefansson and British High Commissioner Malcolm MacDonald in decrying foreign activities that could undermine Canadian sovereignty in the region.<sup>115</sup> On 22 December 1947, Lloyd submitted a scathing report to the new Canadian Advisory Committee on Northern Development (ACND)<sup>116</sup> insisting that the United States repeatedly violated Canada's authority in the Arctic. He insinuated that, in the case of the weather stations, the US Weather Bureau attempted to make all of the important decisions independently. He criticized the Americans for disregarding the rules about publicizing Arctic activities and for building airfields without permission. Furthermore, he accused American forces of ignoring Canadian wishes and refusing to accept its control and authority. In turn, Lloyd chastised the Canadian government for not doing enough to regulate particular American activities in the region.<sup>117</sup> He offered a dismal, even conspiratorial, view of American activities in the North.

Most senior Canadian officials recognized that Lloyd's report was excessively biased and only partially true. RCAF Group Captain W.W. Bean dismissed the memorandum as a simple attempt "to show that the US is, in some clandestine fashion, attempting to carry out a lot of projects in Canadian territory without obtaining proper authority." Bean effectively countered most of Lloyd's accusations, demonstrating how the report exaggerated the US role in picking sites for the weather stations and the number of personnel it posted to these stations. The US military wanted to establish more airfields in the Arctic, but these sites fell under the original JAWS agreement and did not represent an attempt by the Americans to "put one over" on the Canadians.<sup>118</sup> At the first meeting of the ACND in Ottawa on 2 February 1948, both Arnold Heeneey and Lester Pearson

commented that they did not discern any underlying American design to carry out activities in the Arctic without Canadian government approval.<sup>119</sup> According to these civil servants, problems arose from poor coordination and communication in Ottawa and Washington, not a grand American conspiracy, and senior US officials always fixed their mistakes.<sup>120</sup> The high-level Canadian debate on Arctic sovereignty was far from settled, however, and anxieties would persist in some corridors throughout the life of the JAWS program.

At the stations themselves, however, the bilateral relationship proved overwhelmingly cordial. “Since [the Resolute] station is staffed jointly by Canadians and Americans, it represents an interesting example of a practical application of the good-neighbour policy,” a reporter touted in May 1948. “Both groups had to adapt themselves somewhat to the other’s point of view, for the procedures in the various phases of the station operating program are a combination of both Canadian and American practices.” All told, Canadian R.W. Rae reassured the program directors down south that “the degree of cooperation between the two groups has been excellent.”<sup>121</sup> The senior weather bureau officials in Washington and Ottawa got the message. McTaggart-Cowan explained in a 1983 interview that “between Dr. Reichelderfer ... and John Patterson and then Andrew Thomson and then myself, we kept on top of the little bits of friction” like the “trials and tribulations” surrounding Cleghorn. “It was a marvelous example of good partnership in international cooperation.”<sup>122</sup>

With the hub of Resolute in place, it was now time to expand the number of spokes. Accordingly, reconnaissance flights set out in March 1948 to select sites for two more “satellite” weather stations.

