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The Joint Arctic Weather Stations: Science and Sovereignty in the High Arctic, 1946-1972

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NOTES TO INTRODUCTION

1 Andrew Thomson, “The Growth of Meteorological Knowledge of the Canadian Arctic,” *Arctic* 1/1 (1948): 34.

2 Thomson, “Growth of Meteorological Knowledge,” 34.


7 *Hearings Before the Committee on Agriculture, House of Representatives, Seventy-Ninth Congress, Second Session on H.R. 4611 (S.765), 22 January 1946*, 6, National Archives and Records Administration (NARA), RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Miscellaneous.


11 Livingstone, “Towards a Historical Geography of Science,” 9, 11.


21 Grant, Sovereignty or Security?, 241, 243.


Doel et al., “Strategic Arctic Science,” 71.


“Traditional forms of social and political analysis, which are mostly structuralist in derivation, tend to analyze political power in terms of institutions rather than practices,” anthropologist Hugh Gusterson observed. It is therefore critical to move...


36 Geissler and Kelly, “Home for Science,” 798. Heggie describes a “field laboratory” as “a physical structure primarily intended for the indoor practice of science, while a ‘field station’ is a broader designation that may include domestic space, support structures and multiple individual laboratory spaces. ‘Field site’ is reserved to indicate the surroundings of the stations and laboratories, including the outdoor spaces in which scientific work is conducted.” Heggie, “Higher and Colder,” 810.


43 Heymann, “In Search of Control,” 76. See also Grant, Polar Imperative, 294–95.


45 Livingstone, Putting Science in its Place, 3, 11. See also Bruno Latour and Steve Woolgar, Laboratory Life: The Social Construction of Scientific Facts (Beverly Hills: Sage, 1979); and Traweek, Beamtimes and Lifetimes.


49 Geissler and Kelly, “Home for Science,” 800. Kuklick and Kohler observe that these “heterogeneous populations pursue their separate ends and often resent one another” and “interact with and affect one another in significant ways.” “Introduction,” 4.


NOTES TO CHAPTER 1


2 Alexander Forbes, Quest for a Northern Air Route (Cambridge: Harvard University Press, 1953), ix.

3 George W. Wenzel, “Canadian Inuit subsistence and ecological instability — if the climate changes, must the Inuit?” Polar Research 28/1 (2009): 89–99. See also R. Barry


5 Andrew Taylor, Geographical Discovery and Exploration in the Queen Elizabeth Islands (Ottawa: E. Cloutier, 1964), 9.


14 Meteorological Council, Contributions to our Knowledge of the Meteorology of the Arctic Regions, part III (London: Her Majesty’s Stationery Office, 1879), 257.

15 Parry, Journal of a Voyage for the Discovery of a North-West Passage, 145. Fisher also noted in his journal that “the degree of cold indicated by the thermometer and that
conveyed by our feelings are widely different, for whenever there is a breeze of wind
we find that it is much more disagreeable to walk about when the thermometer is at
20° above zero, than when it is at zero in a calm.” Quoted in Meteorological Council,
*Contributions to our Knowledge*, part III, 259.


17 At latitude 69°21'N, longitude 124°W, they sent up kites with self-registering
thermographs, discovering that the air was isothermal up to 400 feet with a temperature
of -24°F (-31°C). These were the last recorded upper-air ascents in the Canadian Arctic
until the second Polar Year, more than a century later. Andrew Thomson, “The Growth
of Meteorological Knowledge of the Canadian Arctic,” *Arctic* 1/1 (1948): 36–38.

18 Levere, *Science and the Canadian Arctic*, 142–43, 162–64.

19 William R. Morrison, “The North,” in *Canada, Confederation to Present: An Interactive
History of Canada* [CD-ROM], ed. Bob Hesketh and Christopher Hackett (Edmonton:
Chinook Multimedia, 2001). On the size and provisioning of Franklin’s “floating

20 Wallace, *The Navy, the Company*, 64.


22 Thomson, “Growth of Meteorological Knowledge,” 35. The Meteorological Council
of Great Britain published records of thirty-six expeditions between 1819 and 1888,
the majority of them relating to the Franklin expeditions. See *Contributions to our
Knowledge of the Meteorology of the Arctic Regions*, vol. I (London: H.M. Stationery


25 Hall later travelled by sledge to 83°05'N. See Chauncey C. Loomis, *Weird and Tragic

26 John L. DuBois, Robert P. Multhauf, and Charles A. Ziegler, *The Invention and
Development of the Radiosonde, with a Catalog of Upper-Atmospheric Telemetering
Probes in the National Museum of American History, Smithsonian Institution
(Washington: Smithsonian Studies in History and Technology no. 53, 2002), 1–13, 30,
67.


Transcontinental Nation* (Montreal & Kingston: McGill-Queen’s University Press,
2009), 168.

30 James Rodger Fleming, “Storms, strikes, and surveillance: The U.S. Army Signal Office,
315–32. Fleming notes that the far-flung information network also served to “gather
intelligence on all possible threats to domestic tranquillity,” from railway strikes
to developments in the Indian wars on the western frontier. In this sense, Fleming
argues, it was a precursor to the current Department of Homeland Security. Fleming,
“Telegraphing the Weather: Military Meteorology, Strategy, and ‘Homeland Security’
on the American Frontier in the 1870s,” in *Instrumental in War: Science, Research, and


37 Levere, Science and the Canadian Arctic, 307.

38 Kevin R. Wood and James E. Overland, “Climate Lessons from the First International Polar Year,” Bulletin of the American Meteorological Society (December 2006): 1687, 1689. Wood and Overland note that no one collated, analyzed, or synthesized the synchronous data during or after the First IPY.

39 See William Barr, The Expeditions of the First International Polar Year 1882–82 (Calgary: Arctic Institute of North America, 2008). Levere notes that the limited Canadian involvement in the High Arctic reflected the region’s distance from Ottawa, the absence of “notions of glory associated with Royal Navy expeditions,” and the HBC’s lack of interest in the North Pole or geophysics. Science and the Canadian Arctic, 323–24.

Expedition members died of starvation, hypothermia, drowning, and (in one case) execution for repeatedly stealing food rations. On the transfer of the weather bureau to civilian control, see Whitnah, *History of the United States Weather Bureau*, 43–60.

43 “The years around 1900 were those of Scandinavia’s arctic ascendancy,” Levere noted in *Science and the Canadian Arctic*, 362.


45 Orvig, “Century of Arctic Meteorology,” 133.


49 When the HBC equipped its posts with radio equipment, the company agreed to carry out twice-daily synoptic observations at its Arctic posts, notably Fort Ross, Walker Inlet (later Holman Island), and Arctic Bay. The HBC also provided meteorological training to their classes of new apprentices. By training staff early, they carried their skills with them when they transferred to new posts. Archibald, “Brief History.” See also Thomson, “Growth of Meteorological Knowledge,” 36–38. On the Royal Canadian Mounted Police, see William R. Morrison, *Showing the Flag: The Mounted Police and Canadian Sovereignty in the North, 1894–1925* (Vancouver: University of British Columbia Press, 1985).


52 Quoted in Margaret Morris, “Boundary Problems Relating to the Sovereignty of the Canadian Arctic,” in *Canada’s Changing North*, ed. William C. Wonders (Toronto: McClelland & Stewart, 1971), 327. Although Poirier’s comment that “from 141 to 60 degrees west we are on Canadian territory” could be interpreted to imply that Canada was entitled to everything within these boundaries (land, ice, and water), his frequent specification of “lands” and “land and islands” throughout the rest of his speech strongly suggests that his intent was only to include land areas. Most commentators have observed that Poirier made no specific mention of ice or waters, and they have appropriately concluded that he confined the sector theory to claiming all the lands that...
lie between the western and eastern extremities of a state’s sector boundaries and the Pole.


54 V. Kenneth Johnston, "Canada’s Title to the Arctic Islands," Canadian Historical Review 14/1 (1933): 33.


60 Krick, War and Weather.


63 French scientist Robert Bureau coined the term “radiosonde” to describe balloon-borne payloads that transmit atmospheric parameters (usually pressure, temperature, and humidity) to a ground receiver via radio. Other authors applied it to the balloon and payload as a system. In 1938 the US Weather Bureau officially adopted the term “radiosonde” in reference to “meteorological radiosonde,” replacing the earlier term “radio-meteorograph.” Dubois et al., Invention and Development of the Radiosonde, 2, 26, 33, 67. See also Sir Napier Shaw, Manual of Meteorology, Volume I: Meteorology in History (Cambridge: Cambridge University Press, 1926) and Meteorology in History (Cambridge: Cambridge University Press, 1942); and E. Stringer, Foundations of Climatology (San Francisco: H. Freeman and Co., 1976). On the early challenges of and adaptations in using these instruments in the US, see Whitnah, History of the United States Weather Bureau, 190–92.


65 Dubois et al., Invention and Development of the Radiosonde, 67.

66 Dubois et al., Invention and Development of the Radiosonde, iv.


70 Krick, War and Weather. Forecasts for ground forces, and particularly for the artillery, required observations of upper air densities and winds.


77 On the idea of legibility, see James C. Scott, Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed (New Haven: Yale University Press, 1998). On this mapping process, see R.C. McNeill, “Putting Canada on the Map,” Sentinel 6/3 (1970): 16–19, and B.W. Waugh, “Arctic Mapping,” Sentinel 6/3 (1970): 44. Ken Eyre observed that “the mapping of the North carried out by the Royal Canadian Air Force and the Royal Canadian Engineers between 1947 and 1967 provides a classic example of the military establishment in peacetime undertaking projects of national development that required skills relative to military operations. When the state of the art developed to the point where a civil branch of government could take over, and when future operations could be carried on as profitable, but still reasonably economic ventures, the military gave up the role and moved on to other fields.” Eyre, “The Military and Nation Building in the Arctic, 1945-1964,” in Canadian Arctic Sovereignty and Security: Historical Perspectives, ed. P. Whitney Lackenbauer (Calgary: Centre for Military and Strategic Studies, 2011), 218.

78 This fit with the RCAF’s functional role as the government’s “civil air company” between the wars, transporting officials into remote regions, blazing new air mail routes, and flying sick and injured trappers, traders, and Aboriginal people from remote outposts to southern hubs where they could get medical attention. Edward P. Wood, Per Ardua ad Arcticum: The Royal Canadian Air Force in the Arctic and Sub-Arctic, ed. P. Whitney Lackenbauer (Antigonish: Mulroney Institute of Government Arctic Operations Series, 2017).

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

80 Hughes, Century of Weather Service, 49.


In many situations, they had no one but themselves to police and, doubling as postmasters, they were often the only people around to send or receive mail. Their main activity was mounting long patrols around the islands of the High Arctic, showing the flag to demonstrate a Canadian presence. See Morrison, Showing the Flag. According to Gordon Smith, Ottawa officials “made a very big issue out of what had turned out to be a very small one, and then had mishandled it by overreacting to presumed threats posed by Stefansson, Danes, and Americans.” Smith, Historical and Legal Study, xvii.

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


Johnston, “Canada’s Title to the Arctic Islands,” 24–41.


Thomas, “Brief History Part 1.” Thomas notes that, in Canada, “many scientific improvements and technological innovations were put into use during the 1930’s. The telegraph companies replaced Morse code telegraphy with a new teletype system late in 1931, the same year that ventilated psychrometers were introduced. In support of aviation, pilot balloon observations (PIBALs) were begun at several stations in eastern Canada in 1930, but most of these observations had to be discontinued in 1932. Special aircraft flights, to obtain upper level temperatures and humidity data (apobs), were begun on a regular basis at Toronto in 1934, at Edmonton in 1937, and in the same year at Botwood, Newfoundland. Attention was being given to the development of the
radiosonde, but not until 1941 did use of this instrument supersede aircraft flights as a means of obtaining upper air data.” Thomas, “Brief History Part 2,” 40.

91 In addition to aerological observations, the program included auroral studies and the new field of ionospheric physics. Orvig, “Century of Arctic Meteorology,” 135.

92 Canada’s modest contribution to the Second International Polar Year (1932–33) involved establishing manned stations at Chesterfield Inlet and Coppermine in the NWT, Cape Hopes Advance in Quebec, and Meanook in Alberta. Notably, none of these stations were in the archipelago. The British took observations for that year at Fort Rae, the same site at which they and the Canadians had operated during the first Polar Year. Thomson, “Growth of Meteorological Knowledge,” 38.


95 Thomas, “Brief History Part 2.”

96 The Meteorological Branch of Air Services’ responsibilities included civil aviation services for the newly created Trans-Canada Airlines (the forerunner to Air Canada), which prompted a major expansion of the division. Thomas explains that the reorganization freed the branch “of those ancillary responsibilities which it had carried since 1871 and of others which it had developed during the intervening 65 years,” thus allowing it to focus on its weather service mandate. He notes that, on the eve of the Second World War, the total Canadian meteorological establishment consisted of fifty-one graduate M.A. meteorologists, twenty meteorological assistants, fifty-seven meteorological observers, twenty-six teletype operators, and fifty-nine administrative and clerical personnel. This establishment grew almost ten-fold during the conflict. Thomas, “Brief History Part 2.”

97 Hughes, Century of Weather Service, 34.


99 Thomas, “Brief History Part 2.”

100 In the winter of 1936–37, the Service cooperated with the United States Weather Bureau in special investigations on the properties of cold air masses, and 140 special aircraft flights were made at Fort Smith, NWT, to obtain upper air data. Thomas, “Brief History Part 2.”


102 Hughes, Century of Weather Service, 71.


104 See Morley Thomas, Metmen in Wartime: Meteorology in Canada 1939–1945 (Toronto: ECW Press, 2001), 29–43, 63–88, 185–247. During the war, the government prohibited broadcast or publication of weather reports and forecasts in central and eastern Canada for national security reasons — an obvious indication of the correlation between meteorology and defence.

105 Whitnah, History of the United States Weather Bureau, 195.


109 On their role, see Carlson, *Lifelines Through the Arctic*, 50–51.


112 Carlson, *Lifelines Through the Arctic*, 73.


119 The Air Corps maintained a weather detachment at Ladd Field, Fairbanks, beginning in 1940, followed by installations at Anchorage, Yakutat, and on Annette Island. By April 1942, it established stations at Nome, Northway, Naknek, Fort Randall, and on Unnuak Island. Following the Japanese attack on Dutch Harbor in June 1942, and with Japanese forces occupying Attu and Kiska, US forces occupied Adak and opened a weather station there in October. Early in 1943 the Air Corps pushed this line to Amchitka, and then to Attu and Kiska when US-Canadian forces pushed out the Japanese later that year. Jonasson, “AAF Weather Service,” 330.


121 Carlson, *Lifelines Through the Arctic*, 149.


124 See Morrison and Coates, *Working the North*.


128 According to the US army historian, the American officials found Foster agreeable and cooperative and they were pleased to have a Canadian counterpart with wide powers. C.P. Stacey, *Arms, Men and Governments: The War Policies of Canada, 1939-1945* (Ottawa: Queen’s Printer, 1970), 386–87; Dziuban, *Military Relations*, 137–41. For the
wartime debate over Canada’s sovereignty-security equilibrium, see Grant, *Sovereignty or Security?*, 70–156; and Lackenbauer, “Right and Honourable,” 154.
129 “Changing Canadian American Relations,” 5 March 1942, Situation Report no. 2 by the Office of Strategic Services for the British Empire Section of the State Department, 1, and R and A 738a, “Secret Survey of Canada,” 2 September 1942, for the Office of Strategic Services of the State Department, 1-2, NARA, State Department Records, RG 59, Microfiche file M1221, quoted in Grant, “Weather Stations, Airfields, and Research.”
131 Minutes of meeting of Canadian officials in Ottawa, 26 January 1944, LAC, RG 85, vol. 823, f. 7140.
133 Smith, “Weather stations in the Canadian North”; and Thomas, *Men at War in Wartime*.
134 Wright to Gibson, 9 February 1944, LAC, RG 85, vol. 823, f. 7140.
135 Quoted in Grant, *Sovereignty or Security?*, 275.
139 ARCTOPS Project Report, NARA, RG 27, entry 4, box 1, f. Arctops Project.
140 Peter Johnson, phone interview with Daniel Heidt, 26 May 2011.

**Notes to Chapter 2**

2 Research Board for National Security and the National Academy of Sciences, “ARCTOPS PROJECT,” c. 1945, National Archives and Records Administration (NARA), RG 27, entry 4, box 1, f. ARCTOPS Project.
4 Mrs. Harriet Bissell Hubbard to Mr. Davidson, 1952, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Correspondence of Mrs. Charles Hubbard.

“Qualification and Experience of the Writer,” 1944, NARA, RG 27, entry 4, box 1, f. Hubbard-Correspondence 1944–46.

Mrs. Bissell Hubbard to Davidson, 1952. See also “Hubbard Killed in Arctic Crash,” 108–09. The Commerce Department awarded Hubbard its Exceptional Service Award in February 1950 for his involvement with the ferry program during the Second World War. “U.S. Explorer and Meteorologist is Killed,” 19.


Hubbard, “Arctic Isn’t So Tough,” 12.


Hubbard, “Arctic Isn’t So Tough,” 13.

Hubbard, “Arctic Isn’t So Tough,” 13. In September 1944, Hubbard began lobbying Congressman Alfred L. Bulwinkle (D-North Carolina), a member of the House Committee on Interstate and Foreign Commerce, to support the establishment of Arctic “research stations.” Hubbard to Bulwinkle, 14 September 1944, NARA, RG 27, entry 4, box 1, f. Hubbard-Correspondence 1944–46.


Research Board for National Security and the National Academy of Sciences, “ARCTOPS PROJECT,” c. 1945, NARA, RG 27, entry 4, box 1, f. ARCTOPS Project; C.J. Hubbard to W.A. Burden, 3 May 1945, NARA, RG 27, entry 4, box 1, f. Hubbard-Correspondence 1944–46.


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20 *Hearings Before the Committee on Agriculture, House of Representatives*, Seventy-Ninth Congress, Second Session on H.R. 4611 (S.765), 22 January 1946, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Miscellaneous; “Arctic Weather Stations,” US Senate, 79th Cong. 1st session, 2. For Hubbard’s summary of his wartime experiences (which is conspicuously silent on who exactly directed him to complete the work), see “Qualification and Experience of the Writer,” NARA, RG 27, entry 4, box 1, f. Hubbard-Correspondence 1944–46.

21 Hubbard to Louis, 16 February 1945, NARA, RG 27, entry 4, box 1, f. RG 27, entry 4, box 1, f. Hubbard-Correspondence 1944–46. See also Heymann, “In Search of Control,” 83.


23 L.B. Pearson to N.A. Robertson, 6 March 1945, LAC, RG 85, vol. 823, f. 7140.

24 When Pearson and Reid reported on the meeting, they stressed that the stations represented a potential challenge to sovereignty. L.B. Pearson to Norman Robertson, Under-Secretary of State, 6 March 1945, LAC, RG 25, vol. 3347, f. 9061-A-40, pt. 1.


26 R.M. Macdonnell to L.B. Pearson, Canadian Ambassador to the US, 8 March 1945, LAC, RG 85, vol. 823, f. 7140.


28 L.B. Pearson to N.A. Robertson, 6 March 1945, LAC, RG 85, vol. 823, f. 7140.

29 Quoted in Heymann, “In Search of Control,” 83.

30 Hubbard to Senator Owen Brewster, 16 March 1945, NARA, RG 27, entry 4, box 1, f. Hubbard-Correspondence 1944–46; *Hearings Before the Committee on Agriculture, House of Representatives*, Seventy-Ninth Congress, Second Session on H.R. 4611 (S.765), 22 January 1946, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Miscellaneous.


34 L.B. Pearson to Charles Hubbard, 18 April 1945, LAC, RG 25, vol. 3347, f. 9061-A-40. Although Canadian officials were unprepared to back Hubbard’s initiative, other Arctic promoters offered their services. Veteran explorer and pundit Vilhjalmur Stefansson wrote to Brewster in September 1945 to compliment the weather stations initiative and recommend that the scale of the stations be increased to mimic the Soviet program and made into platforms for general Arctic studies. Stefansson to Brewster, 19 September 1945, in Senate Report No. 656, U.S Senate, 79th Congress, submitted by Senator Brewster to accompany Bill S. 765, 24 October and legislative day, 22 October 1945.


37 Dana Wilgress to the Secretary of State for External Affairs, 12 November 1945, reproduced in Denis Smith, Diplomacy of Fear: Canada and the Cold War 1941–1948 (Toronto: University of Toronto Press, 1988), 118.


40 Hearings Before the Committee on Agriculture, House of Representatives, Seventy-Ninth Congress, Second Session on H.R. 4611 (S.765), 22 January 1946, 1–13, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Miscellaneous.

41 Hearings Before the Committee on Agriculture, 22 January 1946. Reichelderfer’s testimony left room for the participation of Canadian personnel, but emphasized American resources and know-how accumulated from Arctic construction during the Second World War. For similar American views on the diverse civil as well as military utility of the stations’ meteorological observations, see also: Research Board for National Security and the National Academy of Sciences, “ARCTOPS PROJECT,” c. 1945, NARA, RG 27, entry 4, box 1, f. ARCTOPS Project.

42 Hearings Before the Committee on Agriculture, 22 January 1946, 22–28. The Secretary of the Navy suggested that S.765 was “primarily intended to aid in the development of civil and commercial air transportation and if enacted, would have no direct bearing upon the steps which may be taken by the military services in the interests of national defense.” Hearings Before the Committee on Agriculture, 26. On expectations for increasing demand for weather information, see NARA, RG 27, entry 126, box 3, f. Management Organization Administration.


45 Mrs. Bissell Hubbard to Davidson, 1952.

46 Mrs. Bissell Hubbard to Davidson, 1952.


48 Under-Secretary of State for External Affairs to Deputy Minister of Transport, 4 May 1946, in DCER Vol. 12 (1946), 1544.

49 Major General Guy V. Henry to General Andrew McNaughton, 30 April 1946, LAC, RG 25, vol. 3047, f. 113.

50 For copies of the ACC reports, see LAC, RG 25, vol. 3047, f. 113.
“Arctic Aviation Development Program for the United States Recommended by the Standing Subcommittee on the Arctic,” 6 November 1945, NARA, RG 330, entry 341A, box 451, folder 1, f. Geophysics and Geography.

Memorandum from Head, Third Political Division Legal Division, “Sovereignty in the Arctic,” 6 May 1946, in DCER Vol. 12 (1946), 1545–46. In her book Sovereignty or Security? Government Policy in the Canadian North, 1936-1950 (Vancouver: University of British Columbia Press, 1988), Shelagh Grant made much out of the full version of this report — which the Canadians did not have access to — in her efforts to depict an American conspiracy to take over the Canadian North. The Air Coordinating Committee report did not overly concern R.M. Macdonnell, however. In a letter to Charles Camsell, Macdonnell noted: “In presenting this request, the United States Embassy made it clear that there was no question of interfering in any way with Canadian sovereignty. I think that their approach to the problem should reassure your minister if he is troubled by any thought of Canadian sovereignty in the Arctic being called into question by the United States.” Macdonnell to Charles Camsell, 11 May 1946, LAC, RG 25, vol. 3347, f. 9061-A-40.

King acknowledged that further Canadian consent to these moves was likely “inevitable,” but he preferred to first consult the British and try to foster cooperation between the three countries. Mackenzie King Diaries, 9 May 1946, 407, http://www.bac-lac.gc.ca/eng/discover/politics-government/prime-ministers/william-lyon-mackenzie-king/Pages/item.aspx?IdNumber=29546.

The plan exaggerated the threat posed by the USSR and, according to historian Joseph Jockel, was “clearly inconsistent with the thrust of American, not to mention Canadian, thinking.” Yet the American Joint Chiefs of Staff approved the plan in August 1946 because, as Jockel continues, “they really were not paying much attention. The entire military establishment in Washington was in turmoil as it coped with demobilization and internecine struggle. … There was no overall air defence policy, much less one for the Canadian North.” Joseph T. Jockel, No Boundaries Upstairs: Canada, the United States, and the Origins of North American Air Defence, 1945–1958 (Vancouver: University of British Columbia Press, 1987), 17–21.


Memorandum presented to Canada by the US Embassy, 1 May 1946, in LAC, RG 22, vol. 732, f. SE-4-1-83.


Minutes, Weather Station Meeting, 18 May 1946, Department of National Defence, Directorate of History and Heritage (DHH), box 113, f. 2, pt. 1.

Minutes, Weather Station Meeting, 18 May 1946.

Diary Weather Bureau Arctic Program, NARA, RG 27, entry 4, box 1, f. Hubbard - Program Diary. He notes that the Senate Appropriation Committee approved $500,000 for the program on 24 May 1946.

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64 Department of National Defence to Cabinet Defence Committee, “Sovereignty in the Canadian Arctic in Relation to Joint Defence Undertakings,” [May 1946], and marginalia, in *DCER Vol. 12* (1946), 1555–58. Hume Wrong noted that Canada’s claim was stronger than Spry’s memorandum suggested. See Cabinet Defence Committee Minutes, 6 June 1946, LAC, RG 25, PJBD, f. 113.

65 “Sovereignty in the Canadian Arctic in Relation to Joint Defence Undertakings,” 1558–61; David Bercuson, “Continental Defense and Arctic Sovereignty, 1945–50: Solving the Canadian Dilemma,” in *The Cold War and Defense*, ed. Keith Neilson and Ronald G. Haycock (New York: Praeger, 1990), 157–58. Spry promoted a clear set of formal guidelines for all defence projects in the North, emphasizing that the Americans should be required to seek permission before starting any exercise or project on or over Canadian territory, that the majority of personnel involved at permanent installations be Canadian, that Canadians participate in all projects (even if only as observers), and that any publicity on the projects stress their joint nature.


67 Director to the Deputy Minister of National Resources, 20 May 1946, LAC, RG 22, vol. 732, f. SE-4-1-83. This was a popular idea amongst those in Canada who did not want to see the Americans at the stations. In June, Trevor Lloyd commented that “The Arctic Islands are still comparatively unexplored. Most of the mapping was done by non-Canadians and Canada has not policed the area effectively. The existence of weather stations operated by the United States will, in a few years, give that country greater knowledge of the far north of Canada than is at present possessed here.” Memorandum on Proposed United States Arctic Weather Stations, Dictated by Dr. Trevor Lloyd, 25 June 1946, LAC, RG 25, vol. 3347, f. 9061-A-40.

68 Marginalia, Gibson to Camsell, on meeting summary to Mr. Gibson, 18 May 1946, LAC, RG 85, vol. 823, f. 7140. See also J.G. Wright to R.M. Macdonnell, 20 May 1946, in *DCER Vol. 12* (1946), 1550.

69 Minutes, Weather Station Meeting, 18 May 1946, DHH, box 113, f. 2, pt. 1. To supply the necessary personnel to operate the proposed stations, Canada’s Meteorological Service assessed that it would have to close at least one, and possibly two, current stations. Andrew Thomson noted that Canada’s position on sovereignty seemed “unduly cautious,” and one of his colleagues suggested that Canada only needed to supply three of the ten staff members when the first stations were established. (In the future, this number could increase so that Canadians made up at least half of all weather station personnel.) In his sober appraisal, this personnel ratio would effectively protect Canada’s claims. Thomson to R.M. Macdonnell, 18 May 1946, LAC, RG 25, vol. 3347, f. 9061-A-40.

70 DEXAF Memorandum to Cabinet Defence Committee, Subject: United States proposals for an Arctic Weather Station Programme, 30 May 1946, in *DCER Vol. 12* (1946), 1561. The report outlined the benefits of the program, underlining that these stations would supply meteorological information needed for civil aviation, provide intelligence for future military exercises in the North, offer bases from which further study of the Arctic could be conducted, and create the occupation necessary to halt encroachment by foreign powers in the region. The weather stations program could, however, endanger Canadian sovereignty in the region if the United States was given too long of a leash.
71 DEXAF Memorandum for Cabinet Defence Committee, Subject: United States proposals for an Arctic Weather Station Programme, 30 May 1946. The head of the legal division, E.R. Hopkins, advised against Canada raising the sovereignty issue “in advance of necessity,” noting that it was unwise to suggest any doubts about it. E.R. Hopkins and R. Macdonnell, 8 May 1946, in DCER Vol. 12 (1946), 1547. By contrast, James Allison Glenn, the Minister of Mines and Resources, had advocated “a clear and definite understanding” of Canadian sovereignty over the Arctic islands. Minister of Mines and Resources to Louis St-Laurent, 25 May 1946, LAC, RG 25, vol. 3347, f. 9061-A-40.

72 Bercuson, “Continental Defense and Arctic Sovereignty,” 158. The CDC did consider the proposal and favoured delaying a decision until 1947, but it also recommended authorization (with conditions based upon the DEA memorandum of 30 May 1946) if the US government “pressed the matter.” A.D.P. Heeney to Air Marshall Leckie, 14 June 1946, in DCER Vol. 12 (1946), 1567–68.


75 Major General Guy Henry reminded General Andrew McNaughton that, while the stations were to be constructed by the US Weather Bureau for civil purposes, it was their potential military importance that made the plans urgent. In the long run, weather stations would be the first step if an effective air defence system was ever put in place in the North. The Americans had the funds now, so in Henry’s practical military mindset, they should be built now. Henry to McNaughton, 19 June 1946, LAC, RG 25, vol. 3047, f. 113.


84 Mrs. Bissell Hubbard to Davidson, 1952.

85 Memorandum for File, Weather Stations in Canadian Arctic, Division of British Commonwealth Affairs, 27 June 1946, NARA, RG 59, CDF 1945-49, box 6036, f. 842.9243 / 6-2746.
86 Memorandum for the Secretary from F.W. Reichelderfer, 28 June 1946, Request for Canadian Reconsideration of Weather Bureau Arctic Project, NARA, RG 59, CDF 1945-49, box 6036, f. 842.9243 / 6-2846.

87 J.P. Parsons, Division of British Commonwealth Affairs, 1 July 1946, NARA, RG 59, CDF 1945-49, box 6036, f. 842.9243 / 6-2746.

88 Memorandum for Acting Secretary, Request from the Secretary of Commerce for Canadian Reconsideration of Weather Bureau Arctic Project, 1 July 1946, NARA, RG 59, CDF 1945-49, box 6036, f. 842.9243 / 6-2746.

89 Although Hubbard and Reichelderfer persisted in their attempts to reopen the issue with the Canadians, under the suggestion of John Hickerson, the deputy director of the office for European affairs, the Americans decided to let some six weeks go by, and then raise the station question again, this time for 1947. Memorandum for File, J.G. Parsons, Division of British Commonwealth Affairs, 3 July 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243 / 6-2846.

90 On 29 June 1946, Kenneth R. Wilson’s Financial Post article appeared with the long and misleading title “Canada ‘Another Belgium’ In U.S. Air Bases Proposal? Hear Washington Insists Dominion’s Northern Frontier be Fortified - ‘Atomic Age Maginot Line’ is Feared.” Wilson asserted that the United States had issued Canada a “virtual ultimatum” to establish a massive air defence system in the North — an allegation that enraged King and his advisors, as well as the US Embassy. Macdonnell characterized Wilson’s article as “irresponsible and mischievous” and described the author’s assertion that the Americans gave Canada an ultimatum as “absurd.” R.M. Macdonnell, “Memorandum for the Prime Minister,” 27 June 1946, LAC, RG 25, acc. 84-85/226, vol. II, f. 9061-40. On King’s response, see Canada, House of Commons Debates, 28 June 1946, pp. 2987–88. The Americans were equally upset and the State Department indicated it would be willing to issue a joint denial in appreciation of Canadian concerns, but the Canadian government declined the offer. “Memorandum for the Prime Minister,” 27 June 1946, LAC, RG 25, acc. 1984-85/226, vol. 11, f. 9061-40. Lewis Clark speculated that Wilson’s report represented underhanded action by a Canadian official, feeding the reporter his information, to paint the Americans as overly aggressive and inhibit bilateral cooperation. Lewis Clark, Chargé d’Affaires, “Alleged American Ultimatum to Canada regarding Arctic Frontier Defence,” 9 July 1946, NARA, RG 319, entry (A1) 82, box 700, f. Canada, July 1946. See also Memorandum of Conversation between Kenneth Wilson and Mr. J.G. Parsons, 10 July 1946, NARA, RG 59, CDF 1945–49, box 6002, f. 842.20 / 7-1046, Defense. See also Grant, Sovereignty or Security?, 177; Jockel, No Boundaries Upstairs, 24; Bercuson, “Continental Defense and Arctic Sovereignty,” 158–59.

91 J.W.C. Barclay to Secretary, Canadian Section, PJBD, 19 June 1946, in DCER Vol. 12 (1946), 1568–69.

92 Heymann, “In Search of Control,” 79–80; Shelagh D. Grant, Polar Imperative: A History of Arctic Sovereignty in North America (Vancouver: Douglas & McIntyre, 2010), 297–98. See also NARA, RG 27, entry acc. 71-A-5971, box 8, f. January 2 1946 to July 31 1946; and NARA, RG 370, entry A-1-22, box 1, f. Hubbard Charles. As a USWB facility, the station fell outside of the 1941 agreement that authorized US military bases on the island. See Stetson Conn, Rose C. Engelman, and Byron Fairchild, United States Army in World War II: The Western Hemisphere, Guarding the United States and its Outposts (Washington: Office of the Chief of Military History, Department of the Army, 1964), 442–58. When the State Department approached Danish officials in April 1946, the Danes heard that the Americans were also asking the Canadians for permission to set up stations and they approached Ottawa. Canadian officials did not offer the Danes


96 "Record and Narrative: Operation Nanook," 28.

97 "Ships with 'Eyes' Conquer Arctic," Polar Times 23 (December 1946): 16; Hubbard, "1946 Summer Report"; and Grant, Polar Imperative, 297–98. During the fall and early winter of 1946, Danish personnel constructed their own living quarters and a magnetic observatory adjacent to the weather station site. They occupied one of the American buildings while their residence was under construction. The US Weather Bureau supplied all of the meteorological instruments. Edward Goodale, the US official in charge, had previously worked under Hubbard to establish the Padloping Island station during the war.


100 Hubbard, "1946 Summer Report."

101 Heymann, "In Search of Control," 89.

102 Hubbard, "1946 Summer Report." See also "Observations at Thule, Greenland," Weather Bureau Topics (September 1946): 84.

103 Canadian Ambassador Washington to SSEA, No. WA-3686, 16 October 1946, sending message for Macdonnell from Stone, LAC, RG 25, vol. 3347, f. 9061-B-40. For example, no press releases were issued without Canadian permission and the Marines landed on Devon Island.

104 W.E. Widdows, Lt. RCNR, RCN Air Arm Observer, to Captain R.E.S. Bidwell, Director of Naval Air Division, 11 October 1946, LAC, RG 24, vol. 8152, f. NSS 1660-12, pt. 1.

105 Lt. Dunn Lantier RCN to Captain H.N. Lay, Director of Naval Plans and Intelligence, 3 October 1946, LAC, RG 24, vol. 8152, f. NSS 1660-12, pt. 1.


109 Jockel, No Boundaries Upstairs, 25.

110 F.W. Reichelderfer to J.G. Parsons, 3 September 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243.

111 J.G. Parsons to R.M. Macdonnell, 18 September 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243.

112 F.W. Reichelderfer to J.G. Parsons, "Memorandum for the Department of State," 23 October 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243 / 10/2346; Secretary
of State to the Officer in Charge of the American Mission, Ottawa, September 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243.

113 Reichelderfer to J.G. Parsons, "Memorandum for the Department of State," 23 October 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243.

114 Reichelderfer to Parsons, "Memorandum for the Department of State," 23 October 1946; Hubbard, note on file, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243.


117 T.A. Stone, Chargé d’Affaires, Canadian Embassy, Washington D.C., to the Secretary of State for External Affairs, 22 October 1946, LAC, RG 25, vol. 3347, f. 9061-A-40. Although the US Secretary of State had stopped pressuring the Canadians on the issue, the Weather Bureau and Secretary of Commerce had been hounding the State Department to reopen the weather station issue with the Canadians. Charles Hubbard to the Secretary of State, 17 October 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243 / 10-1746; Secretary of Commerce to the Secretary of State, 17 October 1946, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243 / 10-1746.

118 By October, Acting Secretary of State Dean Acheson suggested to President Harry Truman that the Canadians might require a nudge before they agreed to closer collaboration. Memorandum by the Acting Secretary of State to President Truman, 1 October 1946, in United States, Department of State, Foreign Relations of the United States (FRUS) 1946, Vol. 5 (Washington: United States Government Printing Press, 1969), 55. Acheson urged the president to inform King that the civilian members of the US Administration, not just the military, wanted closer defence cooperation. Memorandum by the Acting Secretary of State to President Truman, 26 October 1946, FRUS 1946, Vol. 5, 57.


120 "Had Truman and King directly discussed continental defence," political scientist Joseph Jockel explained, "King might have discovered the lack of interest at the highest levels of American government in creating a vast and expensive air defence system." Jockel, No Boundaries Upstairs, 25–27. See also Bercuson, "Continental Defense and Arctic Sovereignty," 160.

121 Defence Cooperation Between the United States and Canada, Annex I: Copy of a telegram No. 1770 dated 19th December 1946 from Canada to the Dominions Office, Cabinet Defence Committee, 26 December 1946, UK National Archives, CAB 131/3 DO (46) 146. On Kennan’s participation, see Smith, Diplomacy of Fear, 175.

122 Memorandum from Under-Secretary of State for External Affairs to the Prime Minister: Defence Discussions with the United States, 23 December 1946, in DCER Vol. 12 (1946), 1721–25.

123 Defence Cooperation Between the United States and Canada, 26 December 1946. In planning the meeting, ambassadors Pearson and Atherton "mutually agreed that the
proposed meetings were not the proper place to discuss the possible claims of other
countries to territories in the Canadian Arctic. Pearson appeared to admit that placing
that item on a draft agenda might have represented an effort by Canada to obtain
acceptance of the ‘Sector Principle.’” Joint Defence Discussions, 21 November 1946,
NARA, RG 59, entry 1177, PJBD Subject Files, 1940–59, box 2, f. Basic Papers. If any
Canadian officials still believed that the Americans might acquiesce and formally
recognize Canadian sovereignty in the Arctic based on the sector principle, their
hopes were dashed. Representatives from the two countries would have to devise other
measures to guarantee Canada’s sovereignty, and they proved effective in doing so.

125 “Working Papers for Use in Discussions with the United States: Civilian Operations in
Support of Defence Projects,” 6 December 1946, RG 59, entry 1177, PJBD Subject Files,
1940–59, box 2, f. Basic Papers.
126 Meeting participants agreed that “there might be advantages to carrying out certain
of the earlier parts of the projected [continental defence] program under civilian
auspices and that whenever this was practicable the U.S. would co-operate to that end.”
“Memorandum of Canadian–United States Conversations Held in Ottawa in Suite “E”
Chateau Laurier Hotel,” 16 and 17 December 1946, NARA, RG 59, entry 1177, PJBD
Subject Files, 1940–59, box 2, f. Basic Papers.
127 Defence Cooperation Between the United States and Canada, 26 December 1946.
128 Ron Purver, “The Arctic in Canadian Security Policy, 1945 to the Present,” in
Canada’s International Security Policy, 1945 to the Present,” in
Canada’s International Security Policy, ed. David B. Dewitt and David Leyton-Brown
(Scarborough, ON: Prentice Hall, 1995), 82–84; Eayrs, In Defence of Canada Vol. III,
129 Bercuson, “Continental Defense and Arctic Sovereignty,” 161; Memorandum for
130 J. Graham Parsons to Secretary of State, 24 January 1947, NARA, RG 59, PJBD, f. 36th
Recommendation: General Principles. Parsons also noted that Canadian approval for
the revised recommendation, “having regard for Canada’s historic ties with the United
Kingdom, is regarded by the Canadian Government as a momentous decision in that it
will increasingly orient Canada’s forces towards the United States.”
131 House of Commons Debates, 12 February 1947, 359–61; Bercuson, “Continental Defense
and Arctic Sovereignty,” 155. For the full text of the press release, see FRUS 1947, Vol.
1977), 104–05. On media responses, see for example “North American Security,” The
Times, 14 February 1947, LAC, RG 2, vol. 74, f. D-19-2; and the Montreal Star articles
Wait,” 14 February 1947; and “Canada-U.S. Defence: French Canadian Press Applauds
Arrangement,” 20 February 1947.
133 L.B. Pearson to Ray Atherton, 13 February 1947, NARA, RG 59, CDF 1945-49, box 6036,
f. 842.9243/2-1447.
135 The clearest example of this perception is Grant, Sovereignty or Security?
136 See, for example, Adam Lajeunesse, “The True North As Long As It’s Free: The
Canadian Policy Deficit, 1945–1985” (unpublished master’s thesis, University of
Calgary, 2007), 18, 24; Grant, Sovereignty or Security?, 174, 215–16, 238.
137 Quoted in Grant, “American Defence of the Arctic, 1939–1960,” part II.
138 Pearson thought that the program should be placed in the context of the existing Canadian weather facilities in the North. S.F. Rae to Pearson, 28 February 1947, LAC, RG 25, vol. 3347, f. 9061-A-40.


141 Mrs. Bissell Hubbard to Davidson, 1952.

NOTES TO CHAPTER 3

1 L.B. Pearson to Ray Atherton, 13 February 1947, National Archives and Records Administration (NARA), RG 59, CDF 1945-49, box 6036, f. 842.9243/2-1447.


3 For overviews of this landmark Canadian Army exercise in which forty-seven men in snowmobiles travelled north from Churchill to Victoria Island, then west to Coppermine, and south down the Mackenzie Valley to Edmonton, see Kevin Thrasher, “Exercise Musk Ox: Lost Opportunities” (unpublished master’s thesis, Carleton University, 1998), and John Lauder, Tracks North: The Story of Exercise Musk Ox, ed. and introduced by P. Whitney Lackenbauer and Peter Kikkert (Antigonish: Arctic Operational History Series, Mulroney Institute on Government, 2018).


5 Joint Meeting of United States and Canadian Technical Experts, 25–26 February 1947. Canada offered the following salaries in April 1947: officer in charge $4,500, meteorologists $3,300, senior technicians $2,580, and junior technicians $1,980. Canadians also received a $1,200 isolation allowance, free room and board, winter clothing, and equipment. Canada, House of Commons Debates, 24 April 1947, 2422. US information was not provided.

6 Joint Meeting of United States and Canadian Technical Experts, 25–26 February 1947. The Canadians also retained control of customs, radio communications, and publicity. Because it was a civilian program, everyone agreed that the US military should keep publicity about its role to a minimum.

7 This flexible and tentative approach also obviated the need to register an agreement with the United Nations, thus averting the “world-wide publicity” that Canada sought to avoid. H.L. Keenleyside to Under-Secretary of External Affairs, 1 May 1947, LAC, RG 22, vol. 732, f. SE-4-1-83.


9 D.M. Johnson to Mr. Dow, 11 March 1947, LAC, RG 25, vol. 3841, f. 9061-A-40, pt. 2. Game laws, in particular, were a clear indication of sovereignty. Before the Americans
could hunt in the Arctic, they had to secure the approval of External Affairs or the Department of Mines and Resources. In May 1947, for instance, the American military sought permission for men posted at the desolate weather stations to supplement their diets by hunting caribou. J.P Richard, the Deputy Commissioner of the Eastern Arctic, argued that “if each gets one caribou they will be doing much better than anyone else who will be living in that part of the country — or for that matter anywhere else in the northland. How many families in Canada these days get the amount of food that the army personnel will get in the north, and at that Canada is supposed to be one of the best fed countries in the world.” J.P. Richard to Wright, 12 May 1947, LAC, RG 85, vol. 2084, f. 1730. The Canadians rejected this request and the US accepted the decision — an implicit recognition of Canadian sovereignty which would have pleased the original creators of the Arctic Game Preserve. O.D. Skelton described in 1926 that “aside from its immediate purpose, this Preserve should prove of distinct value as an assertion of our sovereignty in the North.” Skelton to O.S. Finnie, 2 September 1926, LAC, RG 25, vol. 4252, f. 9057-40, pt. 2.

For example, three observers joined Operation Nanook, an American naval expedition to the waters of Davis Strait, Viscount Melville Sound, and Lancaster Sound, in the summer of 1946. Relations remained generally positive between the observers and American personnel on the cruise, which accomplished most of its objectives and adhered carefully to Canadian guidelines. Canadian Ambassador Washington to SSEA, No. WA-3686, 16 October 1946, sending message for Macdonnell from Stone, LAC, RG 25, vol. 3347, f. 9061-B-40. Nevertheless, the observers noted the unwillingness of low-ranking American military personnel to cooperate with the Canadians. See Widdows to Captain R.E.S. Bidwell, 11 October 1946, LAC, RG 24, vol. 8152, f. NSS 1660-12, pt. 1; and Lantier to Captain H.N. Lay, 3 October 1946, LAC, RG 24, vol. 8152, f. NSS 1660-12, pt. 1.


17 Courtney Report Eureka Sound 1947–1948, 1-2, NARA, RG 27, entry 7, box 1, f. Reports, Eureka. Courtney complained about the lateness of his assignment and the personal problems that this caused, on page 6 of this report.


19 John Trinko, “In the Arctic” (unpublished memoirs, 1989), 32.

20 Joint Meeting of United States and Canadian Technical Experts to Discuss the Establishment of Arctic Weather Stations, 25–26 February 1947, LAC, RG 22, vol. 732, f. SE-4-1-83. See also Jack Karr, “Six ‘Human Polar Bears’ in Arctic on Weather Job,” *Toronto Daily Star*, 5 April 1947. According to initial plans, two more men (a Canadian and an American) would be sent to Eureka that summer to round out the permanent station staff.


24 Courtney Report Eureka Sound, 15 April 1947; Report on the Inspection of Eureka Sound and Thule Weather Stations during April 1947, LAC, RG 93, acc. 1980–81/306, box 26, f. 11-10-11, pt. 2. The aircraft operated on wheels because the skis bounced on the hard snow surface while the wheels tended to cut down to the hard ice. Approximately 50% of the total tonnage was carried by a C-82, which proved especially well adapted because of the ease of loading and discharging cargo from it.


37 Chief of Naval Operations to Commander in Chief, US Atlantic Fleet, CNO conf. ser. 072P33, 7 May 1947, NARA, RG 27, entry 5, box 12, f. Report of Task Force 68, 1947. Secondary tasks included training personnel; testing ships and materiel in Arctic conditions; making observations of geographical, navigational, and aviation interest; and collecting detailed hydrographic, meteorological, and electro-magnetic propagation data, as well as conducting other scientific experiments in line with the “limited scope of this operation.” The USN also provided logistic support and lift to the US Army Engineers tasked with building an airstrip at Winter Harbour.


42 A.L. Rand to R.A. Gibson, 29 April 1947, LAC, RG 85, vol. 1013, f. 17742. He was sworn in as a game officer under the provisions of the *North West Game Act* on 11 June 1947. It is notable that Andrew Thomson, in his communications with other officials, explicitly “omitted any reference to Colonel” when describing Cleghorn “in view of the civilian nature of the operation of the Winter Harbour Station.” Thomson to R.A. Gibson, 6 September 1947, LAC, RG 85, vol. 1013, f. 17742.


46 DoIT-USWB, *Review of the Establishment and Operation*.

47 They marked items critical to the unloading operations and camp construction with red crosses and loaded these into the hold last to ensure that they were offloaded first. Stores were divided into twenty-seven classes of contents, each with its own identification number (e.g., 1-Food, 6-Buildings), preceded by the first letter of the island that was their planned destination (M-Melville, P-Prince Patrick, B-Bathurst). A box of medical
supplies consigned for Melville Island, for example, would be M/14. Taylor, Report on the Engineering Aspects.


50 Canadian Meteorological Service, Oral History Project, Patrick D. McTaggart-Cowan interview, 22.

51 Gerry Metcalf’s Logs, http://www.gerrymetcalf.org/gerry/logs.php [hereafter Metcalf logs]. A bathythermograph or BT is a small, torpedo-shaped device used to record pressure and temperature change when lowered into the water.


53 Cleghorn Report, 6. On dismal conditions below ship, see also Harry Hampton Aimé, Overalls, Red Serge, and Robes: Life and Adventure in the Great Canadian North (Red Deer: Hampton Press, 2004), 129.

54 TF 68 Report, annex 1(a), 2–4.


56 Cleghorn Report, appendix A (hereafter “Cleghorn Diary”), 28 July 1947, LAC, RG 93, box 26, f. 11-10-11, pt. 3. For Canadian approval, see Andrew B. Foster to Saul F. Rae, 11 June 1947, LAC, RG 22, vol. 732, f. SE-4-1-83.

57 Cleghorn Diary, 1–6 August 1947.


59 Courtney Report Eureka Sound 1947–1948, 30. Several of the ship’s crews also departed with old muskox skulls, which the staff had collected and nailed up in front of their office, as souvenirs. Aimé, Overalls, Red Serge, and Robes, 139.

60 TF 68 Report. By the end of September, all of the personnel had sufficient RAWIN training to operate the equipment themselves. On postal services, see also Aimé, Overalls, Red Serge, and Robes, 138.

61 During the operation, crews tested a J2F-6 amphibian aircraft, but its restricted performance and poor handling far outweighed its reconnaissance value. TF 68 Report, 5.

62 Cleghorn Report.


65 Hubbard, Report by U.S. Weather Station Observers, J-6-7; Hubbard diary, NARA, RG XPOLA, entry 17, box 4, f. Diary July–September 1947.

66 Cleghorn Diary, 25 August 1947; TF 68 Report, annex 1(a), 18. The only possible airstrip sites on the ground east and west of Freemans Cove on Bathurst Island were along the
ridges between shingle beaches and muddy flats, which bore a mixture of silty clay and gravel. The flat lands were wet and boggy. Taylor, *Report on the Engineering Aspects*, 25.

67 *TF 68 Report*, annex 1(a), 18–19; annex 2, 2, 41–42.

68 On 29 August, on the floor of a broad valley connecting Erebus and Radstock Bays, engineers located an excellent two-mile stretch of well-graded gravel that would make an excellent airstrip, but the site was surrounded by mountains, which made it somewhat less attractive. Cleghorn Report, appendix A.

69 Metcalf Log, 29 August 1947.


72 Metcalf Log, 31 August 1947.

73 Taylor, *Report on the Engineering Aspects*, 68. Major Taylor made much of the forty heavy cargo sleds, which were each stacked with up to ten tons of cargo and pulled from the LCMs to the dump area for stores by D-7 tractors. He also noted the sharp demarcation of responsibilities during the unloading operation, with the navy carrying the stores to the beach and the army taking over once it got there.

74 Cleghorn Report, 8.


76 Cleghorn Report.


80 Metcalf Log, 6 September 1947.


84 Aimé, *Overalls, Red Serge, and Robes*, 141.

85 Cleghorn Report, appendix A.

86 Cleghorn Report, 3.

87 R.W. Rae to Controller, Air Services, Meteorological Division, 6 October 1947, LAC, RG 93, box 26, f. 11-10-11, pt. 2.

88 Cleghorn Diary, 17 September 1947.

89 J.D. Cleghorn, Officer in Charge, to Andrew Thomson, 1 October 1947, LAC, RG 25, vol. 3841, f. 9061-A-40. On Rae’s activities, see also Rae to Controller, 1 October 1947.

90 J.D. Cleghorn to Controller, Air Services, Meteorological Division, 12 October 1947, LAC, RG 93, box 26, f. 11-10-11, pt. 2.


92 Cleghorn Report, 6.

93 Aimé, *Overalls, Red Serge, and Robes*, 146. Cleghorn held Aimé in high esteem, extolling that the RCMP constable “has been a great help to me. He is steady and gets on well with everybody.” J.D. Cleghorn to R.A. Gibson, 21 November 1947, LAC, RG 85, vol. 1013, f. 17742.

Cleghorn Report, 10. For other background on his supposed “warning” to station personnel, see Cleghorn to Gibson, 21 November 1947.

96 *Aimé, Overalls, Red Serge, and Robes*, 146.

97 *Aimé, Overalls, Red Serge, and Robes*, 147; Cleghorn Report, 10. For the official RCMP inquiry and report, see LAC, RG 85, vol. 1021, f. 18517.

98 Cleghorn to J.D. Cleghorn, 10 February 1948, and reply, 13 February 1948, LAC, RG 93, box 26, f. 11-10-11, pt. 3; *Aimé, Overalls, Red Serge, and Robes*, 147; Cleghorn Report, 147.


100 Cleghorn Report, 7.

101 Cleghorn Report, 11.

102 R.A. Gibson to J.G. Wright, 6 January 1948, and marginalia by Wright, LAC, RG 85, vol. 1013, f. 17742.

103 Canadian Meteorological Service, Oral History Project, Patrick D. McTaggart-Cowan interview, 22.

104 Cleghorn Diary, 22 December 1947.

105 “Weather Watching in the Arctic,” *Christian Science Monitor*, 7 May 1948. The personnel felt elated when a shipment of twenty packages of fifteen phonograph records arrived, promising evening entertainment of varied music. Their “eager expectation turned to keen disappointment” when they unpacked the boxes to find that each one contained the same fifteen records.


110 *TF 68 Report*, 5.

111 Mrs. Harriet Bissell Hubbard to Mr. Davidson, 1952, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Correspondence of Mrs. Charles Hubbard.


116 On the ACND, see P. Whitney Lackenbauer and Daniel Heidt, eds., *The Advisory Committee on Northern Development: Context and Meeting Minutes, 1948–66*, Documents on Canadian Arctic Sovereignty and Security (DCASS) No. 4 (Calgary and Waterloo: Centre for Military and Strategic Studies/Centre on Foreign Policy and Federalism, 2015).


118 While Bean agreed with Lloyd that the situation called for “closer liaison all around,” the RCAF officer argued that “the proper channel is probably through the Services not between Mines and Resources and the U.S. Service Departments, which I am sure is Trevor Lloyd’s objective.” W.W. Bean, Group Captain RCAF, to Albert Heeney, 31 January 1948, LAC, RG 2, vol. 57, f. A-25-5.


121 “Weather Watching in the Arctic.”


**NOTES TO CHAPTER 4**

1 D.M. Johnson to Canadian Ambassador – Washington, 24 May 1948, National Archives and Records Administration (NARA), RG 59, CDF 1945–49, box 6036, f. 842.924, and Library and Archives Canada (LAC), RG 93, acc. 80-81/306, box 26, f. 11-10-11, pt. 3.


10 The US Air Force prepared preliminary maps of Isachsen and Prince Patrick Islands to support the reconnaissance, which provided considerably more detail than those available to officials at the annual planning meeting in Ottawa. F.W. Reichelderfer to Andrew Thomson, 19 March 1948, LAC, RG 12, vol. 2797, f. 6754-1291, pt. 1.


13 Innes-Taylor to Thomson, 11 May 1948, LAC, RG 12, vol. 6754, f. 1291, pt. 1. Stefansson offered to send along his weather records, but later discovered that he had already deposited them at the National Archives in Ottawa. See also Marshall, "Obituary: Innes-Taylor," 86, on his approach to science.


19 Thomson, Memorandum on Isachsen Island Operation, 16 April 1948.

20 Innes-Taylor to Vilhjalmur Stefansson, 12 May 1948, Yukon Archives, Innes-Taylor fonds, MSS 432, acc. 95-32, f. 18.


29 Knutsen and Knutsen, Arctic Sun on My Path, 257–58.
30 Knutsen and Knutsen, Arctic Sun on My Path, 258–59. Knutsen has his dates confused in this account, which conflates the second reconnaissance on March 30 and the establishment of a temporary camp on April 11. We have adjusted his account using Hubbard and Dyer, “Report on Operations,” 7.
32 Knutsen and Knutsen, Arctic Sun on My Path, 259.
33 Knutsen, “Milestones in my Arctic Journeys.” On the personnel numbers, see DoT and USWB, “Five Year Report.” The permanent staff establishment was later raised to seven: four Canadians and three US personnel.
35 Knutsen, “Milestones in my Arctic Journeys.” Knutsen sent a doctor’s report to the station to quash rumours that he had faked his injury to get home. Knutsen and Knutsen, Arctic Sun on My Path, 262.
37 Portions of this section are based on P. Whitney Lackenbauer and Peter Kikkert, “Setting an Arctic Course: Task Force 80 and Canadian Control in the Arctic, 1948,” The Northern Mariner 21/4 (October 2011): 327–58 and are reproduced with permission.
40 Born in 1903 in Rockford, Illinois, Dufek joined the Reserve Officer Training Corps at his local high school and was appointed to the US Naval Academy in Annapolis, Maryland in 1921. He received his ensign's commission when he graduated four years later, served on the battleship USS Maryland, then entered the USN’s flight training school and graduated as a naval aviator in 1933. After being promoted to lieutenant in 1939, he requested and received an assignment serving as navigator of the USS Bear,
the flagship of Rear Admiral Richard E. Byrd's third expedition to Antarctica. He later received the Antarctic Expedition Medal for his exploratory flying during the expedition. During the Second World War, he commanded a flight training squadron, was senior naval aviator in Algeria during the invasion of North Africa, and helped plan the invasions of Sicily, Salerno, and southern France. After his promotion to captain, he assumed command of the USS Bogue, which sank the final German submarine during the war. George Dufek Papers, Special Collections Research Center, Syracuse University Library. Finding aid online at http://library.syr.edu/digital/guides/d/dufek_gj.htm. On Operation Highjump, which was officially titled “The United States Navy Antarctic Developments Program, 1946–1947,” see the US Navy’s official Report of Operation Highjump (1947) and Lisle Rose, Assault on Eternity: Richard E. Byrd and the Exploration of Antarctica, 1946–47 (Annapolis: Naval Institute Press, 1980).


46 H.H. Wrong to Andrew Foster, 17 June 1948, LAC, RG 25, vol. 3841, f. 9061-H-40. In 1946 the Canadians were permitted to send three observers to watch over a task force of eight ships. In April 1948, the Chief of Naval Operations for the USN informed the Canadian Joint Staff that the Task Force could only accommodate five Canadians. Ottawa found this unacceptable and the Canadian ambassador in Washington, Hume Wrong, sought eighteen spots. He argued to the Americans that the observers’ work would benefit everyone and that he could not “overestimate” the Canadian government’s interest. Wrong also explained that the Department of Transport planned to bring two to three icebreakers into line over the next few years to assume a greater share of the supply responsibility. This demanded experience, making the department “most anxious to acquire the necessary navigation and construction picture through [Captain Albani Chouinard] who has had much icebreaker experience in waters to the south of those to be visited by the Sea Supply Mission.” Chouinard, one of the Department of Transport’s senior icebreaker captains, was told to keep track of ice conditions and ice reconnaissance, and how the ships handled in the ice and compare their experiences with operations in the St. Lawrence. Based on these observations, he was to report on the type of ship Canada required for Arctic operations: an icebreaker of moderate lines, which could be used to carry more cargo, or a very powerful icebreaker with fine lines built for icebreaking, but large enough to escort other cargo vessels. He was also to report on the value of helicopters to ships’ operations and the need for fuel
storage at strategic points. J.C. Lessard, Deputy Minister, Department of Transport to Captain Albani Chouinard, Master Saurel, 7 July 1948, LAC, RG 25, vol. 3842, f. 9061-J-40. Other notable observers included: a meteorologist from DoT; John P. Kelsall from the Department of Mines and Resources (who represented the NWT Administration and gathered geological and wildlife information); several naval officers including Lt. J.H. MacLean who had been in Washington planning the mission; several RCAF officers; two magneticians from the Dominion Observatory; and Dr. Roman Gadja and Thomas Weir from the Geographical Bureau of the DMR who observed terrain, ice conditions, and geography.

47 H. Keenleyside to C.P. Edwards, 27 October 1947, LAC, RG 93, box 26, f. 11-10-11, pt. 1.
49 SSEA to Canadian Ambassador, Washington, 28 June 1948.
50 USSEA to G.L. Magann, 15 September 1948, LAC, RG 25, vol. 3842, f. 9061-J-40, pt. 1. Eventually External Affairs had to step in and instruct the Americans that the RCMP had fully examined and cleared Lloyd and his men. "Our feeling in this Department," noted St-Laurent, "is that the explanation of Lloyd’s interest in joint defence matters is that his zeal as a geographer has carried him a bit too far in a Department which, of course, has always kept a cautious eye on U.S. activities in the Northwest Territories and especially in the Arctic Archipelago where our claims to sovereignty have not all been formally acknowledged by the United States." SSEA to Canadian Ambassador, Washington, 28 June 1948.
57 Report of Arctic Summer Operation, 1948, U.S. Navy Task Force Eighty. Edisto, forced to abandon its attempt to survey the approaches to Prince Patrick, also took this new route back to Boston.

Counsellor, Embassy United States to Assistant Chief, Commonwealth Affairs Division, 27 September 1948.


William P. Snow, file memorandum on Joint mission for resupply of American weather stations, 8 October 1948, NARA, RG 59, CDF 1945–49, box 6036, f. 842.9243. Snow described Lloyd as “an unprepossessing individual with whom Hubbard has locked horns on occasion and whom the latter believes is inclined toward, if not active in, communism.” Hubbard reported that the RCN was so convinced of Lloyd’s unreliability that they refused to share the original task force plans with him, even though Lloyd had requested them several times in his official capacity. For his part, Dufek insisted that he took Fury and Hecla Strait for purely operational reasons. See also correspondence in LAC, RG 25, vol. 3841, f. 9061-G-40, and Lackenbauer and Kikkert, “Setting an Arctic Course,” for a fuller discussion.

Fife Narrative, 15 July to 19 September 1948, 24 September 1948. The documents came from Captain Peary’s USN expedition of 1905 and from the voyage of British explorer G.S. Nares in 1876.

Fife Narrative. Several American officers intimated that the Canadians acted secretively and abrasively during the affair, and relations onboard chilled for a short time.

Hugh Keenleyside tried to calm the head of the Geographical Bureau in a letter on August 30, explaining that Captain Dufek simply followed the usual custom of commanders of exploratory expeditions by removing the original documents and replacing them with exact copies. Furthermore, Dufek had included the Canadian observers in the task. Both the Americans and Canadians had erred. Hugh Keenleyside to Trevor Lloyd, 30 August 1948, LAC, RG 85, vol. 302, f. 1009-5-1. While at Stidre Fiord, several Americans broke another Northwest Territories ordinance, though this time the Canadians responded more appropriately. During the resupply operation, two American servicemen went ashore and shot four hares in violation of the Canadian game laws for the Arctic Islands Preserve. John P. Kelsall, an observer from the Dominion Wildlife Service, informed an American officer that he had no choice but to tell Ottawa about the situation — even though he understood that there was not an attempt to undermine Canadian authority. “It was quite obvious from their actions, but extremely peculiar, that both men were in complete ignorance of the no hunting regulations,” Kelsall explained in his report. Nevertheless, the Americans took the offense seriously and publicly punished both men. Other than this case, Kelsall emphasized, “all game laws have been adhered to in the most gratifying manner and … there can be no doubt in the mind of anyone that Canadian Game laws will be respected at all times.” John P. Kelsall to Lewis, 31 August 1948, LAC, RG 85, vol. 302, f. 1009-5, pt. 1. See also Gordon W. Smith, “Weather Stations in the Canadian North and Sovereignty,” Journal of Military and Strategic Studies 11/3 (2009): 1–63. In other situations, the Canadian observers made careless errors. In an incredible lapse of judgement, Captain Chouinard informed his American hosts of his desire to name points in the Arctic — rarely visited by Canadians — after Captain Dufek and the other American officers on the expedition. While Ottawa officials managed to avoid an awkward situation by claiming Canada did not name places after living people, a wiser Canadian observer would never have created such a situation. Memorandum by Defence Liaison Division, 19 November 1948, LAC, RG 25, vol. 3346, f. 9061-40, pt. 1. Chouinard did not even realize his error when the Canadian government rejected his request, and he was upset by the stipulation that land
could only be named after a deceased person. Report of Captain A.C. Chouinard, DOT
Remarks and Recommendations of Observer: Recommendation for a Future Trip to the
Arctic, LAC, RG 85, vol. 828, f. 87-2-1, pt. 2.

Supply Mission, 1949. The Americans were also quick to deflect public attention away
from military operations in the North out of concern over how the Soviets would view
such activities. D.W. Middlemiss and J.J. Sokolsky, Canadian Defence: Decisions and
Determinants (Toronto: Harcourt Brace Jovanovich, 1989), 17; Elizabeth B. Elliot-
Meisel, “Arctic Focus: The Royal Canadian Navy in Arctic Waters, 1946–1949,” in
Canadian Arctic Sovereignty and Security: Historical Perspectives, ed. P. Whitney
Lackenbauer (Calgary: Centre for Military and Strategic Studies, 2011), 27.
70 Memorandum for SSEA, 23 September 1948, in DCER Vol. 14 (1948), 1538; and Draft
was a British naval officer who avidly explored the Arctic in the 1870s, including a
voyage in search of the North Pole on board the Alert.
71 Memorandum by Defence Liaison Division for Acting Head, Defence Liaison Division,
describing Hubbard’s discovery of the Peary cairn in detail and also described the task
force’s voyage through “strait[s] and channels believed never to have been navigated
September 1948, 1.
72 To their credit, most senior Americans understood the seriousness of the situation.
In his report, Dufek commented that “while CANADIAN reaction varied among the
various branches of government from taking a serious viewpoint of the inadvertent
breach of the agreement concerning publicity to regarding the whole affair as a tempest
in a teapot, never-the-less it is vital to harmonious Canadian–United States relations
in joint ventures that every effort be made to confine publicity to the agreed upon.” He
suggested that both governments strive to release an official story far more quickly for
the next Arctic resupply mission. Report of Arctic Summer Operation, 1948, U.S. Navy
Task Force Eighty.
73 William Snow actually sat Hubbard down and told him that the rules on publicity
prohibited him from making any statement without approval from both governments.
Quotes from Hubbard still appeared in the news, and a photo of him in his office,
looking every bit the part of the Arctic explorer with a roll of maps on his lap, appeared
3841, f. 9061-H-40. In late October, Hubbard requested permission to appear on the
radio program We the People to discuss the 1948 supply mission, but External Affairs
refused to consent. Magann to Snow, 21 October 1948; Daniel Heidt, “Clenched in
the JAWS of America? Canadian Sovereignty and the Joint Arctic Weather Stations,
1946–1972,” in Canadian Arctic Sovereignty and Security: Historical Perspectives,
Calgary Papers in Military and Strategic Studies, ed. P. Whitney Lackenbauer (Calgary: Centre for Military and Strategic Studies, 2011), 156.
74 Alan Innes-Taylor to OIC and Executive Officer, Isachsen Land Station, March 1949;
Andrew Thomson to Innes-Taylor, 4 May 1949, Innes-Taylor fonds, MSS 333, f. 5.
75 Alan Innes-Taylor to Vilhjalmur Stefansson, 23 November 1948, Innes-Taylor fonds,
MSS 432, acc. 95-32, f. 18.
Innes-Taylor to Stefansson, 23 November 1948.

Innes-Taylor to OIC and Executive Officer, Isachsen Land Station, March 1949, Innes-Taylor fonds, MSS 333, f. 5. Personnel had to build duckwalks between buildings (pallets and spare Quonset stringers with boards nailed across them) and ditches to carry off pools of water.

Innes-Taylor to Stefansson, 23 November 1948. On the ptarmigan, see Innes-Taylor diary, 31 August 1948.

Innes-Taylor diary, 10, 15, and 16 June 1948. See also the entries for 3 and 23 January 1949 on Jones's deteriorating condition.

Innes-Taylor diary, 10 January and 18 February 1949. The station crew particularly welcomed the arrival of books, clippings, letters, and even Valentine's Day cards from Margaret Oldenburg, the benefactor discussed in chapter 8. Innes-Taylor diary, 26 February 1949.

Innes-Taylor to OIC and Executive Officer, Isachsen Land Station, March 1949. See also Innes-Taylor diary, 22 June 1948, 21 August 1948, 3 January 1949.

See, for example, Innes-Taylor diary, 28 December 1948, 30 January 1949.


"Arctic Male.” Although prefaced with a note presenting it “to the Personnel of Isachsen Land Weather Station in the high hope that they will make it standard procedure that all Arctic Experts arriving at the Station read this book,” Innes-Taylor, it seems, simply took it with him when he left the station.


Chouinard, Remarks and Recommendations of Observer.

Minutes of a Canada-U.S. meeting to discuss plans for the Arctic Weather Station programme for 1949, 6 January 1949, LAC, RG 85, vol. 303, f. 1009-5, pt. 1B.

The type of aircraft is not recorded in the station’s journal. Eureka Station Journal, 23 December 1947, Eureka.


Eureka Station Journal, 1 and 2 January 1949, Eureka; DoT and USWB, “Five Year Report,” 20–21.

Innes-Taylor to OIC and Executive Officer, Isachsen Land Station, March 1949.
In November 1948, the Chief of the US Weather Bureau, F.W. Reichelderfer, and his Canadian counterpart Andrew Thomson, the controller of the Meteorological Division at DoT, deliberated potential names. Reichelderfer suggested two names: Alert, the name of Captain George Nares’s ship, and Belknap, the name of the naturalist surgeon on HMS Alert. The Board of Geographical Names in Ottawa adopted the name Alert in early 1949. Johnson, “Establishment of Alert,” 24.

The “Canadianization” efforts that ensued are described and analyzed in chapter 9.

Report on Operations during 1949 of Joint Canadian-U.S. Arctic Weather Stations, c. December 1949, LAC, RG 85, vol. 803, f. 100-9-5, pt. 1-B. Although ice reconnaissance aircraft indicated that the icebreaker could have reached Eureka, time precluded any attempt to do so.

J.W. Burton to J.G. Wright, 30 September 1949, LAC, RG 85, vol. 2083, f. 7140-C.

On this episode, see Heidt, “Clenched in the JAWS of America?” as well as Lackenbauer and Kikkert, “Setting an Arctic Course.”

J.W. Burton to J.G. Wright, 5 May 1950, LAC, RG 85, vol. 303, f. 1009-5, pt. 1a. In reply to Hubbard, Burton explained that “Canada had no intention of playing dog in the manger in connection with relics left behind in the Canadian Arctic, by Nationals of other countries, while engaged in early exploratory operations, and that, the ordinance referred to at the meeting had been made a law of Canada to protect such relics and to ensure that archaeological and historic sites were not destroyed and articles of value taken for private use by unqualified persons, through which action such would lose both their importance and historical value.”

Burton to Wright, 5 May 1950. See also C.W. Jackson to C.J. Hubbard, 27 May 1950, LAC, RG 85, vol. 1009-5, pt. 1a.

Dalrymple, “Canada ‘Digging In’ Atop the Pole.”

Can US meeting minutes, 9 December 1949, 26 January 1950, LAC, RG 85, vol. 303, f. 1009-5, pt. 1B.


Peter Johnson, phone interview with Daniel Heidt, 26 May 2011.

Johnson, “Establishment of Alert,” 25–26. Johnson based his study on his recollections and the Department of Transport records in Toronto. We have supplemented his observations with records from NARA and LAC.


Johnson, interview with Heidt, 26 May 2011. By contrast, Johnson noted in the interview that the American “ExO was more easygoing, and certainly didn’t want trouble, and generally let his subordinates make their own decisions.”


117 Johnson, “Establishment of Alert,” 28. They also sought the renewal of radio operator Stanley Whitteman’s radio licence. “The latter provided an example of Hubbard’s ability to cut red tape,” Johnson observed, “when he wired two days later that it had been done.”

118 Johnson, interview with Heidt, 26 May 2011. “Food was taken more or less continuously,” Johnson recalled in an earlier article. “There was a large supply of frozen meat, ‘c’ and ‘5-in-l’ and other military rations, and during the first couple of weeks many meals consisted of steak, canned fruit, canned fruit juice and coffee, each man preparing his own. A welcome treat was a chocolate cake sent up by a military cook at Thule when one of the Alert crew had a birthday.” Johnson, “Establishment of Alert,” 27.


124 In addition to Hubbard, eight Canadians were killed: ice observer Dr. D.W. Kirk; Wing Commander D.T. French, DFC; F/L L.M. MacLean; F/L J.F.L. Swinton; F/O T.D. Martin; F/O J.F.L. Dube; F/O J.E. McCutcheon; and LAC R.L. Sprance.


129 Dalrymple, “Canada ‘Digging In’ Atop the Pole.”


133 In 1948, the Canadians took over two northeastern stations, at Mecatina, Quebec and Clyde River, Baffin Island. By 1949, the Americans still operated the stations at Padloping, Cape Harrison, Indian House Lake, Mingan, Frobisher, and Chimo, although Canada promised to assume control of these sites by 1950. Memorandum to Advisory Committee on Northern Development, 2 March 1949, Re-Canadianization of Northern Canada, in Hector Mackenzie, ed., DCER Vol. 15 (1949) (Ottawa: Minister of Supply and Services, 1995), 1471–75. Unfortunately, personnel could not be found for the Padloping station until the RCN took it over in 1953. Extract from Minutes of Joint Planning Committee, 6 April 1954, LAC, RG 24, vol. 8148, f. NSS 1616-9, pt. 8.


NOTES TO CHAPTER 5

3 Dobie, “Why Husbands Go North.”


11 Don Shanks, phone interview with Daniel Heidt, 10 March 2011.

12 Don Ware, phone interview with Daniel Heidt, 24 October 2011.


15 American personnel did not receive overtime pay if they worked more than fifty-four hours a week because the USWB considered its bonuses “adequate compensation.” “Standard Conditions of Employment for United States Citizens in Foreign Arctic Weather Stations,” c. 1947, University of Manitoba Libraries, Andrew Taylor fonds, MSS 108, box 16, f. 15. For the continuation of this pay structure consult: Davis, “Information Concerning US Weather Bureau Arctic Service,” 5 December 1960, NARA, RG 27, entry 6, box 11, f. Training, Orientation, Development.

16 From the limited archival evidence available, it appears that Canadian personnel (except for met techs) initially paid some room and board. The Canadian government rescinded the met tech exemption during the early 1950s, only to reinstate it later. In 1960, the Canadian Treasury Board resumed charging each met tech $70/month for room and board. Hagglund to Thomson, 3 February 1953, NARA, RG 27, entry 7, box 2, f. Resolute Reports; Coulcher, “Temporary Duty at Resolute, N.W.T.,” 25 March 1962, NARA, RG 27, entry 6, box 12, f. Arctic Program 1 – Resolute (Narrative Report).

17 Bob Pearson, phone interview with Daniel Heidt, 28 December 2011.


21 A 1950 interdepartmental communication by Andrew Thomson, for example, promised that “personnel who have satisfactorily completed a tour of duty at an isolated station will be eligible for assignment to available preferred stations.” Another recruitment pamphlet from 1961 borrowed heavily from the 1946 publications. US Department of Commerce and USWB, “Assignment: Arctic.”

22 Howard Wessbecher interviewed by Brian Shoemaker, 20 April 2000, Polar Oral History Project, Ohio State University.


25 Bruce Weaver, phone interview with Daniel Heidt, 9 January 2012.

26 Lowell Demond, phone interview with Daniel Heidt, 26 October 2011.
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28 At the satellite stations, that Canadian was almost always a met tech. By the late 1950s, Resolute’s role as the program’s main transportation hub led DoT to generally assign meteorologists to this position. After a few years of following the same arrangement and flying in two meteorologists to work in shifts preparing meteorological and ice forecasts for airlift and sealift operations, one meteorologist was permanently assigned to the station as OIC sometime during the late 1950s. A second meteorologist joined the OIC to help with the shift work during the resupply period. “Notes on Agenda for eighth annual Joint Arctic Weather Station Planning Conference to be held in Ottawa on January 6, 1955,” NARA, RG 27, entry 5, box 5, f. Annual Ottawa Meeting, 1947–1952.


30 Bruce Weaver of St. Catharines, Ontario recalls that in 1965, at age twenty-three, he was “one of the older ones” in a class filled with students aged eighteen to twenty. Weaver, interview with Heidt, 9 January 2012.


33 Monte Poindexter, phone interview with Daniel Heidt, 3 March 2011.

34 Weaver, interview with Heidt, 9 January 2012.


36 See suggestion that the ExO visit each station in Roberts, “JAWS Trip Report, May–June 1964,” 9 July 1964, NARA, RG 27, entry 6, box 24, f. Arctic Program - Joint Arctic Stations Program.


38 Bill Davidson, “Arctic Outpost - Alert at ‘Alert,’” Collier’s Magazine, 28 June 1952, 63. Although the USWB technically paid no additional wages for assuming these extra responsibilities, the ExOs’ seniority within the USWB ensured that they earned a higher salary than their American peers. In the early 1960s, for example, the average ExO earned $1,100 to $1,400 more than USWB electronics technicians or met techs. US Department of Commerce and USWB, “Assignment: Arctic,” 3–4.

39 Wessbecher interview.

40 Wessbecher interview.

41 John Gilbert, phone interview with Daniel Heidt, 29 March 2011; John Gilbert to Daniel Heidt, 5 July 2012, email; and DoT and USWB, “Five Year Report,” 140–45.


43 “Minutes of Meeting of MSC and USWB Representatives at Toronto,” 4 December 1952, LAC, RG 12, vol. 2798, f. 6754-19, pt. 3.


Paul Reid, phone interview with Daniel Heidt, 12 December 2014.

“Minutes of Meeting of MSC and USWB Representatives at Toronto,” 4 December 1952, LAC, RG 12, vol. 2798, f. 6754-19, pt. 3.


For the early years, see for example Eureka Station Diaries, 15–16 April 1948, 16–18 October 1952, October 1960. For the 1960s, we are grateful to Don Shanks for sharing his research on JAWS personnel from this period.

Carlin to Chief, Training Section, PMD, “Personnel Planning for the Era of Increased Automation,” 4 November 1960, NARA, RG 27, entry 126, box 3, f. Management Organization Administration. The authors are indebted to John Gilbert and Don Shanks for compiling roll calls for each of the stations, which allowed us to estimate the number of mechanics who worked at the stations during different periods.

To qualify for a First Class certificate, radio operators with a Second Class Certificate had to have operational experience on a larger ship or Coast Guard station as a radio operator. John Gilbert to Heidt, 14 and 30 August 2012 and 22 May 2013, emails.

The reason for the Marine training is that some operators would serve at Transport Canada Marine Stations. Bill Stadnyk to Heidt, 17 July 2021, email.

Gilbert, interview with Heidt, 29 March 2011.

DoT and USWB, “Five Year Report,” 38; Pearson, interview with Heidt, 28 December 2011.

Students were paid while attending both courses. “Meteorological Technician,” DoT Archives Toronto; Stadnyk to Heidt, 30 August 2012, email.

Dave Tidbury, phone interview with Daniel Heidt, 12 October 2011; Demond, interview with Heidt, 26 October 2011; P.H. Greenwood to Heidt, 12 August 2012, email.

Louis Schwalm to Daniel Heidt, 17 February 2018, email.


Ken Moulton to Daniel Heidt, 16 and 18 August 2012, emails.

US Department of Commerce and USWB, “Assignment: Arctic,” 2.
Wood to Decker, 13 January 1961, NARA, RG 27, entry 6, box 11, f. Training, Orientation, Development.


Shanks, interview with Heidt, 10 March 2011.

Bob Plaseski, phone interview with Daniel Heidt, 2 November 2011; Weaver, interview with Heidt, 9 January 2012.

Shanks, interview with Heidt, 10 March 2011.

William Nemeth, phone interview with Heidt, 12 May 2011.


John Melvin, phone interview with Daniel Heidt, 23 November 2011.

Shanks, interview with Heidt, 10 March 2011.

Thomson, “Deputy Minister’s Memorandum of August 23 1956.”

Thomson, “Deputy Minister’s Memorandum of August 23 1956.”


Peter Inglis, “Nearer to Russia Than Any City,” Ottawa Citizen, 28 May 1952.

Michael Barkway, “And We Learn More about the Arctic,” Financial Post, 31 July 1954.


Thomson, “Deputy Minister’s Memorandum of August 23 1956.”


Goree to Chief, Arctic Operations Project, “Narrative, Personnel,” 9 September 1952, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.


91 Taylor, *Antarctic Psychology*, 11. Sir Ernest Shackleton, who led various British maritime and continental Antarctic expeditions prior to the First World War, held brief interviews with expedition candidates and posed eccentric questions like “why are you wearing glasses” or “can you sing”? According to cultural anthropologist Jack Stuster, “a humorous, witty, or thoughtful response caused Shackleton to favour an applicant; defensiveness usually resulted in immediate disqualification.” By such means, Shackleton determined with remarkable success whether the interviewee could get along with others in stressful situations. Stuster, *Bold Endeavors*, 251.

92 Mrs. Harriet Bissell Hubbard to Mr. Davidson, 1952, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Correspondence of Mrs. Charles Hubbard.


95 Gilbert, interview with Heidt, 29 March 2011. After the Second World War, the Hudson’s Bay Company also relied heavily on this kind of interview that included direct questions designed to prompt unrehearsed answers from individuals who applied to work at their remote trading stations. J.S. Willis, “Mental Health in the North,” *Medical Services Journal, Canada*, 16 (1960): 706.


99 Doug Munson, phone interview with Daniel Heidt, 20 August 2012.

100 Willis, “Mental Health in the North,” 705–06.

101 Willis, “Mental Health in the North,” 704–05.

102 During the early 1960s, for example, the Advisory Committee on Northern Development’s Scientific Research Sub-Committee noted this work. The Defence Research Board also received a memorandum by Willis recommending that research papers from this field “be made available to Civil Service Health [sic] psychiatrists and to senior personnel officers of departments concerned with recruiting to the Canadian North.” DoT, like the USWB, does not appear to have followed the Antarctic example in the years immediately following Willis’s lobbying by sponsoring systematic research or by adopting more rigorous screening and training regiments. John S. Willis, “Report of the Canadian Delegation to the World Health Organization Conference of Medicine and Public Health in the Arctic and Antarctic, Geneva, 28 August to 1 September 1962,” c. November 1962, and V.F. Valentine, “Memorandum for the Scientific Research...
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2 Hearings Before the Committee on Agriculture, House of Representatives, Seventy-Ninth Congress, Second Session on H.R. 4611 (S.765), 22 January 1946, NARA, RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Miscellaneous.


4 Innes-Taylor departed Isachsen for the US on 1 April 1949 and did not continue with the US Weather Bureau. The US Air Force recalled him in 1950 to teach survival techniques to air crews heading to the Korean War, and he became lead researcher at the Environmental Protection Section of the USAF Arctic Aeromedical Lab in Fairbanks in 1953. After 1956, he served as a consultant to international airline companies using the transpolar air route and developed special survival gear. A continuous proponent of an integrated science policy, he eventually moved back to Dawson and Whitehorse, running Yukon River float trips for the public to teach conservation and ecology. Despite his strident anti-Canadianism in the early postwar period, Innes-Taylor received the Order of Canada in 1977 and the Yukon Commissioner’s Medal in 1982. Philip S. Marshall, “Obituary: Charles Alan Kenneth Innes-Taylor, 1900–1983,” Arctic 37/1 (1984): 86.


11 See, for example, Powell, "Rigours of an Arctic Experiment," and Bocking, “A Disciplined Geography.”


19 Canada, *MANOBS* (1949), 7–9; and Brian Brown to Daniel Heidt, 21 May 2013, email.


21 Brown to Heidt, 21 May 2013; and DoT and USWB, “Five Year Report,” 43.


24 DoT and USWB, “Five Year Report,” 44.

25 DoT and USWB, “Five Year Report,” 42–43. In the mid-1950s the stations received motor psychrometers that were designed to operate in the extreme cold. John Gilbert,
27 DoT and USWB, “Five Year Report,” 43–44.
28 Canada, MANOBS (1949), 43–44; and Canada, DoT, Meteorological Branch, MANOBS, 5th ed. (1961), Amendment 2 - 3.6.4 to 3.7.2.
29 Blair and Fite, Weather Elements, 80; and Canada, MANOBS (1949), 42.
30 DoT and USWB, “Five Year Report,” 47.
31 Middleton and Spilhaus, Meteorological Instruments, 190–94, 243.
33 DoT and USWB, “Five Year Report,” 47.
34 During the interim, observers had to track the radiosonde the same way they tracked pibal. “Supporting Documentation for the 9th Joint Arctic Weather Stations Planning Conference – Ottawa,” 9 February 1956, LAC, RG 93, box 14, f. 11-10-11, pt. 12.
35 Louis Schwalm to Heidt, 18 February 2018, email.
38 DoT and USWB, “Five Year Report,” 46; Schwalm to Heidt, 18 February 2018.
41 George Fisher to Heidt, 28 August 2012, email.
42 Rockney to Thomson, 30 October 1957, LAC, RG 93, acc. 80-81/306, box 25, f. 6754-19, pt. 11.
44 George Fisher to Daniel Heidt, 26 and 27 May 2013, email; Thickstun, "Procedures in Rawinsonde Program," 15 March 1946, NARA, RG 27, entry Office Files of Reichelderfer, box 3, f. MAL Jan 1946 thru July 1946.
45 Lowell Demond to Daniel Heidt, 2 January 2013, email.
46 Middleton and Spilhaus, Meteorological Instruments, 191.
48 P.H. Greenwood to Daniel Heidt, 6 July 2012, email.
49 Rockney to Thomson, 30 October 1957, LAC, RG 93, acc. 80-81/306, box 25, f. 6754-19, pt. 11.
50 Don Shanks to Daniel Heidt, 27 May 2013, email.
George Foster to Daniel Heidt, 19 February 2012, email. Foster recounted how “someone once said that there were 7000 possible errors in evaluation of a Radiosonde flight. I never checked this out but it seemed reasonable. This whole process has been replaced by a computer in the last 20 years so the only requirement now is to be able to prepare the instrument and fill and release a balloon.” See also Gilbert, “Joint Arctic Weather Stations: Completing the First Decade,” 25–26.


Due to a lack of rawinsonde equipment, Mould Bay and Isachsen launched their pibals at the same time (0300 and 1500 GMT) as their radiosondes. DoT and USWB, “Five Year Report,” 46. On 1 June 1957, international requirements changed, and the pibals were instead launched at 0515 and 1715 GMT. Canada, *MANOBS* (1961), 3-D-1; Fisher to Heidt, 20 February 2012; Kistler et al., “The NCEP–NCAR 50-Year Reanalysis,” 248–49.

Lowell Demond to Heidt, 21 March 2015, email.


Don Ware, phone interview with Daniel Heidt, 24 October 2011.


Don Ware to Heidt, 21 May 2013, email.

Demond to Heidt, 23 May 2013.


Young to Controller (CMD) and Chief (USWB), “Meteorological & Scientific Nattative [sic] For November 1952,” 1 December 1952, LAC, RG 93, box 17, f. 6754-1291.

Ware, interview with Heidt, 24 October 2011.

William Nemeth, phone interview with Daniel Heidt, 12 May 2011; Ware, interview with Heidt, 24 October 2011.


69 DoT and USWB, “Five Year Report,” 62–63. The ice observations taken in 1950–51 revealed that the bay ice accretion at Alert, the most northerly of the Joint Arctic Stations, was considerably less than at Resolute. Scientists could not explain this phenomenon at the time.

70 Isachsen Station Journal, 1 May 1951, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.


72 Young to Controller (CMD) and Chief (USWB), “Ice Measurements,” 16 April 1953, LAC, RG 93, box 17, f. 6754-1291.

73 The kit included several extension rods to lengthen the auger to any required length, as well as a chisel that observers could use to retrieve the auger assembly if it disconnected from its extension rods inside the hole. Most observers, however, soon learned to avoid this problem by pulling the auger out every few inches to clear the ice chips. Schwalm to Heidt, 18 February 2018.

74 Reichelderfer to Thomson, 29 December 1951, LAC, RG 93, acc. 80-81/306, box 24, f. 6754-19, pt. 1.


77 Gilbert, “Joint Arctic Weather Stations: Completing the First Decade,” 34.

78 Survey courses were set up as ten sites spaced 100 feet apart in a level area with minimal drift-inducing obstructions (a large flat area). The kit included a hollow aluminum sample collection tube with a steel cutting edge at one end and slots up the sides. The tube was screwed into the snowpack until the cutter hit the ground. The tube was then carefully pulled out with its sample inside. The cutter end was examined to see that the sample was dirty at that end, indicating that the entire sample was extracted. Any few pebbles that might be attached were removed and the length of the snow column was measured as seen through the slots in the sides of the tube. The tube and its snow sample were weighed to determine the water equivalent of the snow. The snow was then discarded by pushing it out using the slots in the tube before moving on to the next survey sight. After all ten samples were taken, the results were averaged and reported in a message to the climate centre. Schwalm to Heidt, 18 February 2018.


80 DoT and USWB, “Five Year Report,” 90. At Resolute, the seismology and ionospheric station had separate sleeping quarters for the geophysicist. “Five Year Report,” 91.

81 Weston, interview with Heidt, 22 March 2011.

82 DoT and USWB, “Five Year Report,” 90.
87 DoT and USWB, “Five Year Report,” 89–90; Lloydé Cape, These Are My Stories (self-published), 123–24.
90 Tener quoted in Gilbert, “Joint Arctic Weather Stations: Completing the First Decade,” 38.
91 Eureka Station Journal, 18 and 22 July 1951, NARA, RG 27, entry 7, box 1, f. Reports, Eureka.
92 Dyer to Logan, 27 May 1959, NARA, RG 27, entry 6, box 2, f. Los Angeles County Museum.
96 Wonders, “Joint Arctic Weather Stations” 407–08. McGill’s footprint at Eureka continued to be minimal during the ensuing decade. See for example: Department of

With rare exception, each country funded its own scientific programs which were then tied into the IGY program. For instance, on “World Days,” which occurred three to four times a month, each country engaged in intensive data collection. Belanger, Deep Freeze, 29–46.


Weston to Heidt, 29 August 2012.


Jean Lesage, Memorandum to the Cabinet: Canadian Operation of the Joint Arctic Weather Stations, Directorate of History and Heritage (DHH) 2002-117, f. Meeting 562; Thirteenth Meeting of the Advisory Committee on Northern Development, 23 November 1953, Raymont Collection, DHH 73/1223/1801, box 89.

Robert McDonald, phone interview with Daniel Heidt, 3 May 2011; Bob Plaseski, phone interview with Daniel Heidt, 2 November 2011.


For an example of loaning equipment see Greathouse, “Summer Activities at Alert,” 16 September 1959, NARA, RG 27, entry 7, box 1, f. Reports, Alert.


Howard Wessbecher, interview by Brian Shoemaker, 20 April 2000, Polar Oral History Project, Ohio State University.


For the most recent study on the PCSP, see Richard C. Powell, Studying Arctic Fields: Cultures, Practices, and Environmental Sciences (Montreal & Kingston: McGill-Queen’s University Press, 2017). Powell devotes little attention to JAWS support to the PCSP in its early years, making only a passing reference on pages 129–30.


On these developments, see Adam Lajeunesse, Lock, Stock, and Icebergs: A History of Canada’s Arctic Maritime Sovereignty (Vancouver: University of British Columbia Press, 2016).

Foster and Marino, Polar Shelf, 15.


The PCSP divided the continental shelf into a series of 320 km by 400 or 480 km research blocks and sent its scientists to intensely study each block before moving to the next.

E.F. Roots, “The Polar Continental Shelf Project,” in Canada’s Changing North, ed. William C. Wonders (Montreal & Kingston: McGill-Queen’s University Press, 2003), 411–12. For example, in 1962 the PCSP requested that intermittent accommodations be available for up to eight men at Mould Bay between May and June, that these personnel have access to the station’s bulldozer to clear snow from PCSP stores and move heavy items around the camp, and that their camp could use up to 2 kilowatts of power from the JAWS generators. The PCSP also requested that Alert maintain accommodations for up to three visitors to stay for up to eight days between July and August, and that the station provide communications support between the field teams and Isachsen. The PCSP also increasingly used Resolute as a rallying point, but these activities drew almost entirely on RCAF resources. “Annex 4, Visiting Scientists and Scientific Projects,” February 1962, LAC, RG 93, box 14, f. 11-10-11, pt. 15.


126 Thomson to Director General, Air Services, “Assumption of Responsibility for Airstrip etc. by Civav at Joint Arctic Weather Stations,” 20 August 1959, LAC, RG 93, acc. 80-81/306, box 14, f. 11-10-11, pt. 14.

127 MacAulay and Greco to Director (CMD) and Chief (USWB), “Semiannual Activities Report,” 14 September 1960, NARA, RG 27, entry 6, box 1, f. Arctic 1 (Isachsen).


129 Gregory and Harper to Director (CMD) and Chief (USWB), “Semiannual Activities Report,” 1 January 1962, NARA, RG 27, entry 6, box 12, f. Arctic Program - Isachsen (Narrative Report).


133 Race to Director, Meteorological Branch, 22 January 1968, LAC, RG 93, acc. 81-82-084, box 15, f. 1200-19, pt. 4.


136 Doug Munson, phone interview with Daniel Heidt, 20 August 2012.

137 David Oldridge, phone interview with Daniel Heidt, 18 January 2012.

138 Bruce Weaver, phone interview with Daniel Heidt, 9 January 2012.

139 Wessbecher interview.

140 During his 1957 tour of the stations, Vaughn Rockney explained to JAWS personnel “the importance of observations from the Arctic stations to meteorology in Europe.” Rockney to Thomson, 30 October 1957, LAC, RG 93, acc. 80-81/306, box 25, f. 6754-19, pt. 11. When Goodale and Dyer visited the stations in the early 1960s, they were very “emphatic … that there was a real necessity to be accurate in your observations and that everything be done to the very best that you could.” Lowell Demond, phone interview with Daniel Heidt, 26 October 2011.

141 Demond, interview with Heidt, 26 October 2011.

142 Weaver, interview with Heidt, 9 January 2012.

143 Rick Risbey, phone interview with Daniel Heidt, 26 November 2011.

144 Wessbecher interview.

145 Wessbecher interview.


148 Weaver, interview with Heidt, 9 January 2012.
149 Ware to Heidt, 21 May 2013.

150 The hard copies of station records required additional work, such as circling the termination altitudes. Although these additional steps were not transmitted south in the twice-daily transmissions, the monthly error count included them. McFarlane, 6 September 1967, NARA, RG 370, entry 6, box 1, Arctic Station Reports, f. Resolute.


153 For other archival coverage of the error problem see D.A.G. Shanks, “Further to my ECHO 205 on David Paterson,” 23 June 1964, NARA, RG 27, entry 6, box 24, f. Arctic Program 1 – Eureka; Dyer to Thornton, “Radiosonde Errors,” 8 April 1965, NARA, RG 93, box 33, f. 6754-1388, pt. 14; and McFarlane, 6 September 1967, NARA, RG 370, entry 6, box 1, Arctic Station Reports, f. Resolute.


156 Rockney to Thomson, 30 October 1957, LAC, RG 93, acc. 80-81/306, box 25, f. 6754-19, pt. 11.


160 Personnel who served at the JAWS stations in the late 1960s or early 1970s do not recall ever launching pilot balloons as part of a synoptic program. Oldridge to Daniel Heidt, 28 August 2012; Rick Risbey to Heidt, 28 August 2012; and Ron Huibers to Heidt, 29 August 2012, email.

161 Thomson to Reichelderfer, “Arctic Section,” 29 May 1953, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 11.


163 Grauman, “Eureka Station Narrative,” 2 November 1960, NARA, RG 27, entry 6, box 1, f. Arctic 1 (Eureka).

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7 “Isachsen Daily Log,” 19 February 1952, National Archives and Records Administration (NARA), RG 27, entry 7, box 1, f. Isachsen Station Reports.
8 “Isachsen Daily Log,” 13 March 1952, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
9 “Isachsen Daily Log,” March 1952, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
10 Ice conditions varied from year to year, and early breakup sometimes prevented the use of this surface by aircraft for the full season. See for example: “Minutes of a Canada–United States meeting to discuss plans for the Joint Arctic Weather Station programme for 1951,” 11 January 1951, NARA, RG 27, entry 5, box 5, f. Annual Ottawa Meeting, 1947–1952; and Eureka Station Journal, 22, 23, 29 May and 17 June 1948, NARA, RG 27, entry 7, box 1, f. Reports, Eureka.
15 Dunbar and Greenaway, *Arctic Canada from the Air*, 476–77; “Isachsen Daily Log,” April 1951, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
17 “Minutes of a Canada–United States Meeting to Discuss Plans for the Joint Arctic Weather Station Programme,” 10 January 1952, Library and Archives Canada (LAC), RG 2, B-2, vol. 224, f. M-50-1A.


21 David Weston, phone interview with Daniel Heidt, 22 March 2011.

22 John Gilbert, phone interview with Daniel Heidt, 29 March 2011; John Gilbert to Daniel Heidt, 5 July 2012, email.

23 George Rabbitt, “Report on Fall Airlift of Alert and Eureka via Thule,” 4 November 1953, LAC, RG 93, box 2, f. 6754-19, pt. 5. Since most new personnel arrived in the spring rather than the autumn airlift, they only had to adjust to the dark period for a few weeks after arriving in the High Arctic.


26 David Oldridge, phone interview with Daniel Heidt, 18 January 2012.

27 Bill Stadnyk, phone interview with Daniel Heidt, 16 January 2012; Stadnyk to Heidt, 17 July 2021, email. See also Howard Wessbecher, interview by Brian Shoemaker, 20 April 2000, Polar Oral History Project, Ohio State University.

28 Don Shanks, phone interview with Daniel Heidt, 10 March 2011; John Melvin, phone interview with Daniel Heidt, 23 November 2011.

29 Shurie et al., to Oldenburg, 20 February 1958, Dartmouth College Library, Stefansson Collection, MSS-150. The authors appreciate Don Ware’s assistance consulting these materials from the Stefansson fonds.

30 Magnus Gunther, “The 1953 Relocation of the Inukjuak Inuit to the High Arctic: A Documentary Analysis and Evaluation,” 2nd ed. (report submitted to Department of Indian Affairs and Northern Development, 1993), reprinted in Human Flagpoles or Humanitarian Action? Discerning Government Motives behind the Inuit Relocations to the High Arctic, 1953–1960, ed. P. Whitney Lackenbauer, DCASS No. 16 (Calgary: Arctic Institute of North America, 2020). While Shelagh Grant has insisted that this was done in the interest of sovereignty, Magnus Gunther, after an extensive study, could find no link. For the debate between these scholars, see Shelagh D. Grant, “Errors Exposed”: Inuit Relocations to the High Arctic, 1953–1960, DCASS No. 8 (Calgary: Arctic Institute of North America, 2016); and Lackenbauer, ed., Human Flagpoles or Humanitarian Action?

502 Notes to Chapter 7


Robert McDonald, phone interview with Daniel Heidt, 3 May 2011; Louis Schwalm to Daniel Heidt, 22 May 2013, email; H.J. McCabe, "Final Report of the Officer-In-Charge Resolute Bay, N.W.T.,” NARA, RG 370, entry 6, box 1, Arctic Station Reports.


For the 1950s, consult "Minutes of a Canada–United States Meeting to Discuss Plans for the Joint Arctic Weather Station Programme," 10 January 1952, LAC, RG 2 B-2, vol. 224, f. M-50-1A; Eureka Station Journal, 16–18 October 1952, Eureka. The conclusion for the program’s later decade is based on JAWS roll calls compiled by Don Shanks.


On RCMP special constables, see Prince of Wales Northern Heritage Centre, “We took care of Them: RCMP Special Constables in the NWT,” https://www.nwtexhibits.ca/specials/.


50 Demond, interview with Heidt, 26 October 2011. The Inuit girl was named Zipporah. In 1952 or 1953, her father, whose name is not recorded in the archival record, briefly worked at the station and brought his family along. Gilbert, “Joint Arctic Weather Stations: Completing the First Decade,” 52.
51 Gilbert, “Joint Arctic Weather Stations: Completing the First Decade,” 52.
52 “Minutes 1959 Canada/United States Joint Arctic Weather Stations Planning Conference,” 12 February 1959, LAC, RG 93, acc. 80–81/306, box 14, f. 11-10-11, pt. 14. Airstrip construction at the satellite stations continued throughout the JAWS program. By 1967, strip mechanics had extended the runways at Alert, Eureka, and Mould Bay to meet or exceed a new minimum of 5,000 x 200 feet. By the same year, work to fill a gully that would allow the crews to extend the runway to 5,000 feet was roughly two-thirds complete, but it was not “practicable” to widen the runway beyond 150 feet. “Minutes: 20th Annual Canada/United States Joint Arctic Weather Stations Planning Conference,” 16 February 1967, LAC, RG 93, acc. 81-82-084, box 15, f. 1200-19, pt. 4. On challenges at Isachsen, see also “Minutes: 18th Annual Canada/United States Arctic Weather Stations Planning Conference,” 25 February 1965, LAC, RG 45, vol. 340, f. 3-1-5, pt. 1.1.
54 Dick, Muskox Land, 45.
55 Dunbar and Greenaway, Arctic Canada from the Air, 451, 478.
57 Dunbar and Greenaway, Arctic Canada from the Air, 451, 478.
58 Alan Faller, “The Rope,” Alan Faller collection.
60 Faller, “The Rope.”
63 Roy Shields, “They’re Born to Blush Unseen,” Weekend, Miro Kostiuk collection. See also Shurie et al., to Oldenburg, 20 February 1958, Dartmouth College Library, Stefansson Collection, MSS-150.
64 Demond, interview with Heidt, 26 October 2011.
71 Goodbrand, “Airstrip construction – Eureka, N.W.T.,” 28 March 1962, NARA, RG 27, entry 6, box 12, f. Airfields 1 – Eureka. For an exception to this cooperative atmosphere, see Brambley, “Eureka Station Narrative: Station Affairs, Spring-Fall 1959,” when strip mechanics at Eureka, c. October 1959, ignored “frequent requests” to clean up their quarters, forcing the station’s regular personnel to do the work.
72 Andrew Thomson explained in a 1956 memorandum that the frantic pace of the spring airlift, for example, led JAWS personnel to focus on safely storing the supplies and to delay clearing packing crates and garbage. Thomson to Director General, Air Services, DoT, “Deputy Minister’s Memorandum of August 23 1956,” 23 November 1956, LAC, RG 93, box 14, f. 11-10-11, pt. 12.
73 Eureka Station Journal, 20 April 1953, Eureka.
74 See for example: Eureka Station Journal, 15, 18 May, 2, 4, 5, 9 June, 5, 6, 11, 15, 18, 23, 24 July, 12, 29 August 1953, Eureka. The design and construction of “reefers,” which were utilized well into the 1970s, was remarkably simple. Several personnel dug out part of a hillside, constructed a small room in the hole, and then covered it back up so that the following winter’s permafrost kept everything frozen throughout much of the year without drawing on any of the station’s limited power generating capabilities.
75 Arctic Operations Project (USWB), “Plans and Instructions for Arctic Resupply Operations: Nanook 53,” June 1953, NARA, RG 27, entry A1-136, box 1, f. Plans and Instructions for Arctic Resupply Operations - Nanook 53. This practice was
discontinued after the development of large synthetic “bladders” that could be installed within aircraft cargo holds during the early 1960s. For more information, see Heidt and Goette, “This is No ‘Milk Run.’” Personnel at the satellite stations also used drums for other purposes, including receptacles for solid human waste, or as fill when building berms or retaining walls. OIC Isachsen to Chief, Arctic Operations Project, “General operations narrative August 1950,” 2 October 1950, LAC, RG 93, box 8, f. 6754-1294, pt. 6; Frank, “Station activity for the Month,” 27 July 1963, LAC, RG 93, box 32, f. 6754-1292, pt. 13; Kitzinger, “Airstrip Report 1954,” 12 September 1954, NARA, RG 27, entry 7, box 2, f. Mould Bay, Reports.

76 Thomson to Director General, Air Services, DoT, “Deputy Minister’s Memorandum of August 23 1956,” 23 November 1956, LAC, RG 93, box 14, f. 11-10-11, pt. 12. There were limited attempts to clean some drums at Isachsen in the early 1950s, but these efforts made little difference. Dyer to Thomson, “Arctic Section,” 1 June 1954, LAC, RG 85, vol. 2800, f. 6754-19, pt. 6; OIC to Controller (CMD) and Chief (USWB), “Covering letter and General Operations for month of July 1955,” 3 August 1955, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.

77 Ron Huibers, phone interview with Daniel Heidt, 22 November 2011; David Tidbury, phone interview with Daniel Heidt, 12 October 2011.

78 Eureka Station Journal, 21 to 23 August 1951, 29 June 1953, Eureka.


82 Eureka Station Diaries, 20 August 1953, Eureka.


88 Melvin, interview with Heidt, 23 November 2011.

89 Eureka Station Journal, 24 August 1950, 23 August 1951, Eureka.

90 Archie Asbridge likened the “meat reefer” at each satellite station to “the ‘freezer section’ of the modern day refrigerator. Essentially, the meat reefer was an underground cavity built into the permafrost accessed by a set of sloping steps, similar to the method used by the early pioneers to preserve vegetables over the winter, except that the pioneers wanted to protect their produce from frost. In this case, the reefers were
stocked with frozen meats airlifted from Resolute the previous September.” Asbridge, “Archie in the Arctic.”

91 Eureka Station Journal, 24–26 August 1951, Eureka.
92 Asbridge, “Archie in the Arctic.”
93 Paul Reid, phone interview with Daniel Heidt, 12 December 2014.
94 Reid, interview with Heidt, 12 December 2014; Shanks, interview with Heidt, 10 March 2011.
95 William Nemeth, phone interview with Daniel Heidt, 12 May 2011.
96 Dunbar and Greenaway, Arctic Canada from the Air, 451, 468, 478–79.
97 Rae, “Arctic Weather Stations,” 5.
98 Nemeth to Controller (CMD) and Chief (USWB), “Covering Letter and Station Affairs,” 1 October 1953, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
100 Eureka Station Journal, 26–30 August, 3–4, 13–14 September 1953, Eureka.
101 “Eureka Station Narrative,” Spring-Fall 1959, Eureka.
106 Asbridge, “Archie in the Arctic.”
108 In 1951, Alert, for example, required a dozen landings for its resupply. U.S. Arctic Operations Project, “Report on Arctic Operations and Resupply Summer & Fall 1951 and Spring 1952 to Joint Canadian-United States Weather Stations,” September 1952, NARA, RG 27, entry A1-136, box 1, f. Report on Arctic Operations and Resupply Summer and Fall 1951 and Spring 1952, 49–64. See also: Heidt and Goette, “‘This is No Milk Run.’”
110 Peter Johnson, phone interview with Daniel Heidt, 26 May 2011.
111 “Isachsen Daily Log,” November to February 1952, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
112 Dunbar and Greenaway, Arctic Canada from the Air, 451, 476–77.
On extremely rare occasions, station personnel did see the aurora borealis. Heidt, conversation with John Gilbert, 29 February 2016.


Wessbecher interview.

“Minutes of a Canada–United States Meeting to Discuss Plans for the Arctic Weather Station Programme,” 26 January 1950, LAC, RG 24, vol. 8148, f. NSS 1616-9, pt. 4. The following year, the RCAF questioned the need for any winter flights, suggesting that drops were “extremely hazardous because of [the] darkness and high ground.” Nevertheless, Dyer insisted on a Christmas airdrop at each station to maintain station morale “and also because critical spare parts were urgently required and certain supplies could not be stored for more than two or three months under local conditions.” “Minutes of a Canada–United States Meeting to Discuss Plans for the Joint Arctic Weather Station Programme,” 11 January 1951, LAC, RG 24, vol. 8148, f. NSS 1616-9, pt. 4. Thomson and Sykes corroborated Dyer’s contention and winter airdrops to the satellite stations continued.


Eureka Station Journal, 18 December 1951, NARA, RG 27, entry 7, box 1, f. Reports, Eureka.


Weaver, interview with Heidt, 9 January 2012; Jelinek, 3 May 1962, NARA, RG 27, entry 7, box 1, f. Eureka, Station Reports.


“Meeting to Discuss Plans for the Joint Arctic Weather Program,” 1952, LAC, RG 93, box 20, f. 11-10-11, pt. 9.


“Isachsen Daily Log,” 7 November 1951, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 9. Steve Kalin (OIC Isachsen 1951–52), for example, built a drawer unit from scrap he found around the station.

“Resolute Bay Standing Orders Issued by the Commanding Officer RCAF Station Lachine,” 1961, LAC Winnipeg, RG 93, box 28, vol. 1A – Resolute.
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131 Lloyd Cope, *These Are My Stories* (self-published), 127, Cope collection.
135 Lowell Demond to Heidt, email, 22 February 2012.
137 OIC and ExO to Director, Toronto, and Chief Polar Operations Project, “Mould Bay’s Semi-Annual Activities Report,” 1 April 1960, NARA, RG 27, entry 6, box 1, f. Arctic 1 (Mould Bay).
141 Vlad Jelinek, 3 May 1962, NARA, RG 27, entry 7, box 2, f. Resolute Reports. The ExO at Resolute similarly believed that these flights “proved the feasibility of having nearly year-around air operations” at the satellite stations. Paxton to Chief, USWB, “Christmas Airlift Activity – Resolute and Satellites,” 26 December 1961, NARA, RG 27, entry 6, box 11, f. Resupply 4, Fall – Arctic.
142 In February 1962, the annual joint planning conference still organized Christmas airdrops for all of the satellite stations, and an RCAF meeting that June stated that the mode of supply delivery would only be determined “at the time of the operation.” “Minutes: 1962 Annual Joint Arctic Weather Stations Planning Conference,” 20 February 1962, LAC, RG 93, box 14, f. 11-10-11, pt. 15; “Minutes of a Meeting Held at Air Transport Command Headquarters - 1000 HRS – 20 June 62 to Discuss Boxtop VII and Resupply to the JAWS,” 22 June 1962, LAC, RG 24, acc. 83-84-215, vol. 292, f. 2001-584-A28, pt. 9 - Organization and Administration - Alert Wireless Station NWT 1962. The following February, Resolute’s OIC explicitly noted that “Christmas airdrops (rather than airdrops) were carried out to all satellites, to the joy of the inhabitants. It is hoped that circumstances permit the continuing of those lifts, in preference to chasing parachutes about in the Arctic night.” Strang, “Final Report of the Officer-In Charge, Department of Transport, Resolute Bay,” 24 February 1963, NARA, RG 27, entry 6, box 18, f. Arctic Program 1 (Resolute) (Narrative Report).
143 During the last few years of the JAWS program, the introduction of commercial passenger jet service out of Montreal and Edmonton to Resolute on a weekly basis — and during the busy summer oil exploration seasons, at least twice weekly — made travel to Resolute much more comfortable. Louis Schwalm to Daniel Heidt, 19 February 2018, email. Nevertheless, a joint committee meeting in 1965 continued to plan Christmas landings at the satellite stations. “Minutes: Annual Canada/United States Joint Arctic Weather Stations Planning Conference,” 25 February 1965, LAC, RG 45, vol. 340, f. 3-1-5, pt. 1.1.

“Isachsen Daily Log,” 9 and 24 February 1952, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.

Weston, interview with Heidt, 22 March 2011.


Demond, interview with Heidt, 26 October 2011.


Rae, “Arctic Weather Stations,” 52.

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2 Monte Poindexter, phone interview with Daniel Heidt, 3 March 2011.


5 Howard Wessbecher, interview by Brian Shoemaker, 20 April 2000, Polar Oral History Project, Ohio State University.


7 Poindexter, interview with Heidt, 3 March 2011. See also Ken Moulton, phone interview with Daniel Heidt, 1 November 2011.


9 This ineligibility was particularly true for American personnel, whose generous base pay made them ineligible for additional financial compensation. William Nemeth, phone interview with Daniel Heidt, 12 May 2011.

10 In the early years, there were some exceptions when Canadian personnel were reluctant to undertake extra work if they were not receiving overtime wages. E.A. Wood, “Notes on November 19, 1953 Meeting with Mr. D.C. Archibald, Canada, Met. Serv., DOT,”
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National Archives and Records Administration (NARA), RG 27, entry 5, box 5, f. Annual Ottawa Meeting, 1953–54.


12 Fundenburg to Chief, POP, “Report,” 1960, NARA, RG 27, entry 6, box 1, f. Arctic 1 (Mould Bay); Bruce Weaver, phone interview with Daniel Heidt, 9 January 2012.


18 Davidson, “Arctic Outpost - Alert at 'Alert,”’ 64.


20 Davidson, “Arctic Outpost - Alert at 'Alert,”’ 64. The station personnel were very appreciative of Oldenburg’s donation and wrote to thank her for her generosity. Horgan to Oldenburg, 5 December 1956; Shurie et al., to Oldenburg, 20 February 1958, Dartmouth College Library, Stefansson Collection, MSS-150.

21 OIC to Chief, Arctic Operations Project, “Recreation and Trail,” 4 November 1951, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.


24 Robert McDonald, phone interview with Daniel Heidt, 3 May 2011.


27 Bob Plaseski, phone interview with Daniel Heidt, 2 November 2011.


31 Surber form letter, Lowell Demand collection; Davidson, “Arctic Outpost - Alert at 'Alert,”’ 64–65; John Gilbert to Daniel Heidt, 11 June 2013, email.

32 See correspondence in American Heritage Centre, Floyd Wilson Collection #8927, f. Personal: Early Arctic Years – Letters to Irene, 1951–52, and f. Personal Letters and Radiograms to Irene (Mrs. Wilson) from Weather Stations 1951–57. Most personnel made a phone patch once every month or two. Don Ware, phone interview with Daniel Heidt, 24 October 2011; Bill Stadnyk, phone interview with Heidt, 16 January 2012.
33. John Melvin, phone interview with Daniel Heidt, 23 November 2011; Stuster, Bold Endeavors, 208.
35. Dyer to all Joint Arctic Weather Stations, 5 February 1959, John Gilbert collection.
36. “W9NZZ Wins Edison Award.”
37. Melvin, interview with Heidt, 23 November 2011.
38. Eureka Station Journal, 11 and 25 February 1951, NARA, RG 27, entry 7, box 1, f. Reports, Eureka; and Isachsen Station Journal, 5 June 1951, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
41. Norman A. McFarlane, October 1967, NARA, RG 370, entry 6, box 1, Arctic Station Reports, f. Resolute.
43. Original all uppercase. Bill Nemeth diary, 31 May 1953; Bill Nemeth to Heidt, 4 July 2012, email.
45. Isachsen Station Journal, 18 September 1951, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 8.
46. Isachsen Station Journal, 13 November 1951, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 9.
47. Stuster, Bold Endeavors, 155.
52. Steve Kalin to Chief, AOP, and Controller, Met Services, “Recreation and Trail,” 4 November 1951, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.
54. Eureka Station Journal, 14 February 1954, NARA, RG 27, entry 7, box 1, f. Eureka, Station Reports.

Young to Thomson, 20 July 1953, LAC, RG 12, vol. 2805, f. 6754-12, pt. 4.

Original message all uppercase. As quoted in Attn Mr. C.K. LeCapelain, Acting Director, DNANR, 22 March 1954, John Gilbert collection.

Thomson to LeCapelain, 22 March 1954, LAC, RG 85, vol. 2800, f. 6754-19, pt. 6. There is evidence that the station huskies preyed on wildlife around the stations. During the dark period at Eureka in 1964, all of the station's dogs left for “almost exactly a month.” When they returned, Don Shanks recalled that personnel were “glad to see them, but the experience made us wonder what they had been doing. They might have lost some small amount of weight but not much. There were no signs of any injuries or wounds on them. One can assume they weren’t eating Kibble during their time away from ‘home’.” Don Shanks to John Gilbert, 19 April 2003, email.


John Trinko interview, c. 1948, John Gilbert collection.

Weaver, interview with Heidt, 9 January 2012.


Isachsen Station Journal, 4 September 1951, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 8.

Isachsen Station Journal, 10 September 1951, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 8.

Isachsen Station Journal, 4 December 1951, LAC, RG 93, acc. 81-82-084, box 18, f. 6754-1291, pt. 9.

Davidson, “Arctic Outpost - Alert at ‘Alert,’” 65. It was not until 1961, when three Mould Bay personnel had to be evacuated to Winnipeg due to bites from a rabid husky pup, which had been infected by a fox, that JAWS personnel treated Arctic foxes with more caution. Dyer to Beall, "Emergency Incident in the Arctic," 2 June 1961; Archibald to Assistant Deputy Minister, DoT, "Rabies incident – Mould Bay," 5 June 1961; Hildes, "Report on Rabies Mould Bay, N.W.T.,” 26 May 1961, NARA, RG 27, entry 6, box 7, f. Arctic 1 (Mould Bay).


Anonymous interview.

Calder, Men Against the Frozen North, 233–34.


Eureka Station Journal, 11 December 1953, 27 January 1954, NARA, RG 27, entry 7, box 1, f. Eureka, Station Reports. See also Eureka Station Journal, 8 April 1947, Eureka.

"Justification,” 9 December 1959, John Gilbert collection.

Bill Nemeth diary, 19 August 1953, Nemeth collection.

Lowell Demond, phone interview with Daniel Heidt, 26 October 2011.


Plaseski, interview with Heidt, 2 November 2011.

David Oldridge, phone interview with Daniel Heidt, 18 January 2012.


Stuster, *Bold Endeavors*, 145.


Nemeth, interview with Heidt, 12 May 2011.

Paul Reid, phone interview with Daniel Heidt, 12 December 2014.


Reid, interview with Heidt, 12 December 2014.

Greco to Director, GMD, and Chief, POP, “Mould Bay’s Semi-Annual Activities Report,” 1 April 1960, NARA, RG 27, entry 6, box 1, f. Arctic 1 (Mould Bay).

Don Shanks, phone interview with Daniel Heidt, 10 March 2011.

Boyle, 19 September 1954, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports. See also Gilbert, “Joint Arctic Weather Stations: Completing the First Decade”; Fisher to Heidt, 19 February 2012, email.

See for example the timesheets kept by Floyd Wilson: American Heritage Centre, Floyd Wilson Collection #8927, box 2, Correspondence Weather Stations, 1950–84 Folder 1.

McDonald, interview with Heidt, 3 May 2011.


Stadnyk, interview with Heidt, 16 January 2012; Shanks, interview with Heidt, 10 March 2011.

Poindexter, interview with Heidt, 3 March 2011.

Oldridge, interview with Heidt, 18 January 2012.

Stadnyk, interview with Heidt, 16 January 2012; Shanks, interview with Heidt, 10 March 2011. Resolute continued to receive confiscated booze into the late 1960s. Plaseski, interview with Heidt, 2 November 2011.

Young to Controller (CMD) and Chief (USWB), “Station Affairs,” 14 April 1953, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.

Oldridge, interview with Heidt, 18 January 2012.

Poindexter, interview with Heidt, 3 March 2011. On Isachsen OIC Merlin MacAulay’s beer brewing, see Asbridge, “Archie in the Arctic.”

Stadnyk, interview with Heidt, 16 January 2012.
A mechanic at Eureka in the early 1950s, for example, was reportedly an alcoholic, but aside from occasional confrontations, his performance remained satisfactory. Moulton, interview with Heidt, 1 November 2011.

Poindexter, interview with Heidt, 3 March 2011.

Glen Dyer to Eureka, c. May 1959, John Gilbert collection.


Glen Dyer to Eureka, c. May 1959, John Gilbert collection.

Calder, *Men Against the Frozen North*, 212.

Stadnyk, interview with Heidt, 16 January 2012. This practice continued beyond the JAWS program. See, for example, Gilda Sekler, “Eureka! Life in a Weather Station,” *Nunatsiaq News*, 17 November 1976.

Sue Curtis to Eureka, “Eureka! Sue’s On Top the World,” 3 December 1969; Wendy Madley, 23 September 1969; Sandy Hunnex to Eureka, n.d.; Helen Parkinson to Eureka, 14 April 1970. These letters are still kept on file at Eureka.


Demond, interview with Heidt, 26 October 2011.


Dobson, “Cup, Cigaret Butt Recall Visit.” The shrine was still at the station four years later. Gilbert, “Joint Arctic Weather Stations: Completing the First Decade,” 60.


Stuster, *Bold Endeavours*, 9; Guly, “Psychology During the Expeditions,” 196.

Plaseski, interview with Heidt, 2 November 2011.

Demond, interview with Heidt, 26 October 2011.

John Gilbert to Daniel Heidt, 7 August 2012, email.

Archie Asbridge to Daniel Heidt, 24 November 2012, email.

“Narrative-Personnel, period October to April,” 12 April 1953, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.

Weaver, interview with Heidt, 9 January 2012.

Weaver, interview with Heidt, 9 January 2012.

Shanks, interview with Heidt, 10 March 2011.

“Station Inspection Reports, Joint Arctic Weather Stations, Fall Airlift 1959,” 30 November 1959, John Gilbert collection.


Nemeth, interview with Heidt, 12 May 2011.


See chapter 3.

Plaseski, interview with Heidt, 2 November 2011.

Weaver, interview with Heidt, 9 January 2012.

Nemeth, interview with Heidt, 12 May 2011.

Shanks, interview with Heidt, 10 March 2011.

Moulton, interview with Heidt, 1 November 2011.


Wessbecher interview.


“Station Affairs,” 14 April 1953, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.

“Narrative-Personnel, period October to April,” 12 April 1953, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports.

John Gilbert, phone interview with Daniel Heidt, 29 March 2011.

Weaver, interview with Heidt, 9 January 2012.


David Weston, phone interview with Daniel Heidt, 22 March 2011.

The only significant point of tension along national lines was wages. As chapter 5 describes in more detail, American personnel received up to twice as much pay for the same work as their Canadian counterparts. Better pay was available if Canadian personnel were willing to leave their salaried position at DoT and work on contract,
but these individuals lost their seniority within the Canadian civil service. Thomson, “Deputy Minister’s Memorandum of 23 August 1956,” 23 November 1956, LAC, RG 93, box 14, f. 11-10-11, pt. 12. This dynamic persisted throughout the JAWS program because, while Canadian wages rose over time, they never reached American levels. During the 1950s, most Canadian JAWS personnel were career DoT employees who received the same base salary regardless of where they worked. Canada’s Northern allowance could have been raised, but the change would have increased wages at other northern Canadian weather stations like Sachs Harbour. Since the wage discontent was limited to JAWS sites, and since the existing pay scales attracted sufficient personnel to fill Canada’s JAWS personnel quota without creating serious morale problems, there was little incentive to match American wages.

152 “Station Inspection Reports, Joint Arctic Weather Stations, Fall Airlift 1959,” 30 November 1959, John Gilbert collection.

153 Chapil to Director, 21 September 1961, NARA, RG 27, entry 6, box 7, f. Arctic 1 (Eureka).


155 Jack Falkenhoft, phone interview with Daniel Heidt, 23 January 2012.


159 Nemeth to Controller (CMD) and Chief (USWB), "Personnel," 1 July 1953, NARA, RG 27, entry 7, box 1, f. Isachsen Station Reports; Murray and Johnson to Controller (CMD) and Chief (USWB), 3 August 1955, LAC, RG 12, vol. 2805, f. 6754-1291, pt. 13; MacAulay and Greco to Director (CMD) and Chief (USWB), “Semiannual Activities Report,” 14 September 1960, NARA, RG 27, entry 6, box 1, f. Arctic 1 (Isachsen); Jelinek, 3 May 1962, NARA, RG 27, entry 7, box 1, f. Eureka, Station Reports; Nemeth, interview with Heidt, 12 May 2011; Shanks, interview with Heidt, 10 March 2011; McDonald, interview with Heidt, 3 May 2011.

160 Moulton, interview with Heidt, 1 November 2011.


162 Ware, interview with Heidt, 24 October 2011. There were exceptions. Bob Plaseski volunteered for Arctic service to contribute to either “science or contribute to sovereignty. And everyone [at his stations] had that sense of both when you were up there. Nothing much else to think about other than those two things.” Plaseski also recognized that these sentiments were not common with all Canadian JAWS personnel. Plaseski, interview with Heidt, 2 November 2011.

163 Bob Pearson, phone interview with Daniel Heidt, 28 December 2011.

164 Shanks, interview with Heidt, 10 March 2011.

165 Plaseski, interview with Heidt, 2 November 2011.

166 R.M. Rae, Weather Eye on the Arctic (Ottawa: Meteorological Division, c. 1958), 2.


169 We are grateful to an anonymous reviewer for highlighting this distinction.

170 Palinkas and Suedfeld, “Psychological Effects of Polar Expeditions,” 158.

171 B.M. Aikins to B.D. Goldenburg, 8 July 1963, NARA, RG 27, entry 6, box 18, f. Arctic Program 1 (Resolute) (Narrative Report).


173 See, for example, Dyer to Scholten, “General,” 27 October 1960, NARA, RG 27, entry 5, box 4, f. Eureka.


NOTES TO CHAPTER 9

1 Thomson to Director General, Air Services, DoT, “Canadian Sovereignty Over Arctic Areas,” 27 January 1959, Library and Archives Canada (LAC), RG 93, acc. 80-81/306, box 14, f. 11-10-11, pt. 14.

2 C.D. Howe, Canada, House of Commons Debates, 4 March 1947, 990.

3 Keenleyside to Under-Secretary for External Affairs, 1 May 1947, LAC, RG 22, vol. 732, f. SE-4-1-83.


5 G. McIlraith, House of Commons Debates, 11 June 1947. DoT was well aware of its limited ability to Canadianize sites operated exclusively by American personnel. During 1948, the Canadians took over two northeastern stations, at Mecatina, Quebec and Clyde River, Baffin Island. By 1949, however, the Americans still operated the stations at Padloping, Cape Harrison, Indian House Lake, Mingan, Frobisher, and Chimo, although Canada promised to assume control of these sites by 1950. Memorandum to Advisory Committee on Northern Development, Re-Canadianization of Northern Canada, 2 March 1949, in Hector Mackenzie, ed., *Documents on Canadian External Relations (DCER) Vol. 15 (1949)* (Ottawa: Supply and Services Canada, 1995), 1471–75. Even this promise proved to be difficult to fulfill. Personnel could not be found for the Padloping station until the RCN took it over in 1953. Extract from Minutes of Joint Planning Committee, 6 April 1954, LAC, RG 24, vol. 8148, f. NSS 1616-9, pt. 8.


8 Memorandum of a Conversation with Lieutenant J.H MacLean, 1 October 1948, LAC, RG 85, vol. 2083, f. 7140-3. MacLean suggested the RCAF fly over and around the task force to provide evidence of a Canadian presence.


10 Heeney quoted in Grant, *Sovereignty or Security?*, 227.

11 Advisory Committee on Northern Development (ACND) meeting minutes, 10 March 1949, in P. Whitney Lackenbauer and Daniel Heidt, eds., *The Advisory Committee on Northern Development: Context and Meeting Minutes, 1948–66*, Documents on Canadian Arctic Sovereignty and Security (DCASS) No. 4 (Calgary: Arctic Institute of North America, 2015), 117.


14 G.L. Magann to William Snow, 14 March 1949, National Archives and Records Administration (NARA), RG 59, entry 1177, PJBD Subject Files, 1940-59, box 5, f. PJBD-General, 1948–56.


25 ACND minutes, 11 May 1953, in Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 160.


29 On the concept of defence against help in this context, see P. Whitney Lackenbauer, “‘Defence Against Help’: Revisiting a Primary Justification for Canadian Participation in Continental Defence with the United States” (Waterloo: Defence Strategic Foresight Group Occasional Paper, 2020).


33 Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 193.


35 Jean Lesage, Memorandum to the Cabinet: Canadian Operation of the Joint Arctic Weather Stations, Directorate of History and Heritage (DHH) 2002-117, f. Meeting 562; Thirteenth Meeting of the Advisory Committee on Northern Development, 23 November 1953, Raymont Collection, DHH 73/1223/1801, box 89. Lesage concluded that the assumption of complete Canadian control over all Arctic activities was “particularly desirable … in view of the major U.S. military activities which have been indicated as probable there in the future, and the possibility of important oil discoveries.” Phillips argued that if a complete Canadian takeover was not possible, Canadians had to take on more of the essential jobs at the stations, such as the observations and radio jobs, which would “leave little but the cooking to the Americans.” The key was to “emphasize the U.S. role of tenant rather than joint proprietor.” For Canada to accomplish this, R.A.J. Phillips calculated that it would need only seventeen more men. Phillips, “Arctic Operations,” 9 May 1952, LAC, RG 25, vol. 3351, f. 9061-H-40, pt. 3.

36 Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 193.


39 Minutes of the ACND meeting, 23 November 1953, in Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 198.

40 Minutes of the ACND meeting, 23 November 1953, in Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 199.


“Meeting regarding continuation of the joint U.S.-Canadian Arctic Weather Station Program,” 18 November 1953, NARA, RG 59, CDF 1950-54, box 3066, f. 701.022, Arctic.

“Meeting regarding continuation,” 18 November 1953.

This exchange was not the first time that Reichelderfer conflated military and civil agendas to serve his department’s goals. Historian Kristine Harper notes that Reichelderfer “recognized the potential of computer-assisted weather prediction, along with his organization’s inability to fund it” during the late 1940s and early 1950s. To resolve this funding shortfall and fulfill the USWB’s congressionally assigned civil mandate, the retired naval officer convinced the US Navy that his proposed forecasting research could be used to facilitate military operations and perhaps even lead to breakthroughs that would allow the country’s forces to control the weather for offensive or defensive purposes. Harper, *Weather by the Numbers: The Genesis of Modern Meteorology* (Cambridge: Massachusetts Institute of Technology Press, 2012), 99, 237.


Each journalist invited to observe airlifts was expected to submit drafts of their articles to Ottawa and Washington for vetting. Ottawa examined each article closely. For example, the RCAF’s Director of Public Relations, R.V. Dodds, requested that William Griffis remove content from his article suggesting that the stations were secret because it was “a fairly flagrant inaccuracy” that was “about six or seven years behind the times.” Dodds to Wershof, 23 February 1953, LAC, RG 25, vol. 3351, f. 9061-H-40, pt. 3. By contrast, officials approved Rae’s articles that emphasized the multifaceted impact the stations were having in the Arctic. The Meteorological Division at DoT still feared “misleading” statements in the press, however, and in 1953 cautioned against newspaper representation on airlifts “unless the copy prepared by the reporter is submitted to the Meteorological Division for editing prior to its release.” “Joint Arctic Weather Station Programme,” 8 January 1953, LAC, RG 93, box 20, f. 11-10-11, pt. 10.

Ralph Allen, “We haven’t done right by our North,” *Maclean’s*, 15 November 1954. In a similar vein, Blair Fraser’s article, which followed a visit to the JAWS stations, Fort Churchill, and the US airbase at Thule in Greenland, asserted that “the Canadian Arctic has no defenses whatever.” Fraser, “The Truth about our Arctic Defence,” *Maclean’s*, 15 November 1954. See also Woitkowitz, “Making Sense,” 257.


On perceived shortcomings to this arrangement, see R.A.J. Phillips, memorandum to Clerk of Privy Council, 29 December 1952, in *DCER Vol. 18 (1952)*, 1198–99.


Minutes of the ACND, 19 October 1953, in Lackenbauer and Heidt, eds., *Advisory Committee on Northern Development*, 191. In 1952 and 1953, Canadian ships


The USN continued to run Alert’s sea resupply until 1956, when the RCAF assumed responsibility for the station’s resupply.

Statement by the Hon. Lionel Chevrier, Minister of Transport, in the House of Commons, 9 February 1954, LAC, MG 32, vol. 75, f. 62-1. The 1954 plan for a US task force to conduct the sea supply of Alert was disrupted when bad ice conditions blocked the route. Instead, the USAF resupplied Alert by airlift. Smith, “Weather Stations,” 51.

Howard Wessbecher, interview by Brian Shoemaker, 20 April 2000, Polar Oral History Project, Ohio State University.

Minutes of the ACND meeting, 22 March 1954, in Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 247.

Minutes of the ACND meeting, 20 February 1961, in Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 701.


J.W. Burton to J.G. Wright, 13 October, 1950; and reply, 21 October 1950, LAC, RG 85, vol. 2085, f. 20996/3; also quoted in Grant, “Errors Exposed,” 53 (with a different interpretation).
72 John Melvin, phone interview with Daniel Heidt, 23 November 2011.
75 Ken Moulton, phone interview with Daniel Heidt, 1 November 2011; David Weston, phone interview with Daniel Heidt, 22 March 2011.
76 Colin MacDonald to Dyer, 28 November 1965, 5–6, LAC, RG 93, box 821, f. 6754-1291, pt. 19.
77 The Craig Harbour relocatees would eventually form the community of Grise Fiord. Most studies on the relocations were written to encourage the federal government to apologize to and compensate the relocated Inuit. See, for example, Alan R. Marcus, Out in the Cold: The Legacy of Canada’s Inuit Relocation Experiment in the High Arctic (Copenhagen: International Work Group for Indigenous Affairs, 1992); Tester and Kulchyski, Tammarniit; René Dussault and George Erasmus, The High Arctic Relocation: A Report on the 1953–55 Relocation (Ottawa: Royal Commission on Aboriginal Peoples, 1994); Alan Rudolph Marcus, Relocating Eden: The Image and Politics of Inuit Exile in the Canadian Arctic (Hanover, NH: University Press of New England, 1995); and Grant, “Errors Exposed.”
79 Farley Mowat’s People of the Deer (Boston: Little Brown, 1952), which strongly denounced government neglect and inaction with respect to famine and epidemics plaguing the Ihalmiut in the Keeewatin (now Kivalliq) region, raised this as an unavoidable political question.
80 For a recent literature review, see Lackenbauer, ed., Human Flagpoles or Humanitarian Action?
82 See, for example, Grant, “Errors Exposed”; Lackenbauer, ed., Human Flagpoles or Humanitarian Action?; and Janice Cavell, “‘Consolidation and Control of All Eskimo Income’: The Motive for the 1953 High Arctic Relocation,” Journal of Canadian Studies 55/1 (2021): 118–51.
84 See, for example, minutes of ACND meeting to discuss the transfer of certain Eskimo families from North Quebec to Cornwallis and Ellesmere Islands, 10 August 1953, reprinted in Lackenbauer, ed., Human Flagpoles or Humanitarian Action?, 77–78.


86 See F. Ross Gibson, “No reason to apologize to the natives,” Arctic Circle (September/October 1991): 8; Doug Wilkinson, “The paradox of the Inuit relocates,” Arctic Circle (Summer 1993): 32–33; Magnus Gunther, “The 1953 Relocations of the Inukjuak Inuit to the High Arctic: A Documentary Analysis and Evaluation” (report for the Department of Indian Affairs and Northern Development, 1993) reproduced in Lackenbauer, ed., Human Flagpoles or Humanitarian Action?; Gerard Kenney, Arctic Smoke & Mirrors (Prescott, ON: Voyageur Publishing, 1994); and Gordon W. Smith, “The Relocation of Inuit from Hudson Bay and Baffin Island to the High Arctic in 1953, and Subsequent Events, including Disputed Sovereignty Issues,” in Lackenbauer, ed., Human Flagpoles or Humanitarian Action? In its report on the High Arctic relocations, the Royal Commission on Aboriginal Peoples (RCAP) explained rather cryptically that “this is not to say that sovereignty was necessarily of equal rank with the economic concerns that drove the relocation. It is to say, however, that sovereignty was a factor that, in the minds of some people who played key roles in the project, reinforced and supported the relocation and contributed to the attractiveness in their minds of a relocation to uninhabited islands in the High Arctic.” Dussault and Erasmus, High Arctic Relocation, 115.


Notes to Chapter 9


94 Robertson to Drury, 18 February 1954; see also B.G. Sivertz, “Conditions Amongst Eskimos – Resolute Bay, re: RCAF Christmas Airlift,” 28 December 1954, LAC, RG 18, vol. 55, f. TA500-8-1-14. Deputy Minister Gordon Robertson felt that it was reasonable to allow Inuit to “engage in whatever casual employment that might be available at the base, or any related establishments, from time to time,” and asked the military to train them on machinery so that they could play a more useful role in unloading supplies during the annual sealift. Robertson to Drury, 18 January 1955, LAC, RG 22, A-1-a, vol. 298, f. 40-8-1, pt. 5.

95 Bolger, “Relocation of Eskimo Groups.”

96 Ritchie Calder, Men Against the Frozen North (London: George Allen and Unwin, 1957), 212.

97 At the base dump, Inuit set traps for fox that fed off discarded food, but they were strictly forbidden from taking clothing or food from the dump for human use. They were allowed to collect scrap wood and other materials to build their homes, which often featured discarded RCAF furniture and even linoleum flooring. At times base personnel helped with the construction or improvements to the Inuit houses, which were considered “well beyond the usual type of Eskimo dwelling constructed from scrap.” T.C. Jenkins to O.C., re Conditions Amongst Eskimos, 4 January 1960, and Gordon to O.C., re: Conditions Amongst the Eskimos, 5 January 1961, LAC, RG 18, vol. 55, f. TA 500-8-1-14.

98 See “Conditions Amongst the Eskimos – Resolute Bay for the year ending December 31”, 1962.” The community continued to experience problems with alcohol after 1961, with people home-brewing or importing it.


100 Lackenbauer and Shackleton, “Inuit-Air Force Relations”; Qikiqtani Truth Commission (QTC), Community Histories 1950–1975: Resolute Bay (Iqaluit: QTC, 2014), 33, https://qtcommission.ca/sites/default/files/community/community_histories_resolute_bay.pdf. The RCAF base at Resolute provided Inuit with the opportunity to earn money to buy equipment, such as rifles and bullets, to participate in “modern” hunting.


102 Only one family of six people was sent to Grise Fiord, perhaps indicating the government’s evolving preference for Resolute because of its mixed economy.


104 NWT Archives, N92-023, Stevenson Papers, Report to the Director, 15 November 1960, quoted in Grant, "Errors Exposed", 62–63. Although sent to the director under the signature of the Arctic Administrator, C.M. Bolger, the draft copies identify Alex Stevenson as the author.
In addition to the ongoing employment of Inuit during the shipping season, the RCAF also hired several Inuit to help with the northern survival school that had been transferred to Resolute from Cambridge Bay in 1958. Inuit instructors taught RCAF and Northern Affairs personnel survival techniques in case they were forced to make an emergency landing in the Arctic environment. Don Bissett, Resolute: An Area Economic Survey (Ottawa: Industrial Division, Department of Indian Affairs and Northern Development, 1968), 89.


QTC, Community Histories: Resolute Bay; Weissling, “Inuit Redistribution and Development.”

Bruce Weaver, phone interview with Daniel Heidt, 9 January 2012.

These comments are confined to JAWS, and a more general study of the RCAF station and government footprint in Resolute is needed to determine their applicability more broadly. The QTC notes that “Qausuitturmiut received medical care at the base even though the government never intended for medics to serve local populations. Qausuitturmiut also took advantage of excess construction materials for building houses and workshops in the settlement and several people eventually worked at the base.” The RCAF station also “facilitated consumption of southern goods, including alcohol, and the RCMP likely felt more pressure under the eyes of southern employees to enforce rules.”


Damas, Arctic Migrants/Arctic Villagers.

Hamilton, Arctic Revolution.


On Diefenbaker’s wariness of the civil service, see Peter C. Newman, Renegade in Power: The Diefenbaker Years (Toronto: McClelland & Stewart, 1963); and Denis Smith, Rogue Tory: The Life and Legend of John G. Diefenbaker (Toronto: Macfarlane Walter & Ross, 1995).

Alvin Hamilton to George Hees, 26 January 1959, LAC, RG 93, box 14, f. 11-10-11, pt. 13.

Hamilton to Hees, 17 March 1959, LAC, RG 93, box 14, f. 11-10-11, pt. 13.

Hamilton to Hees, 14 April 1959, LAC, RG 93, box 14, f. 11-10-11, pt. 13.

Hees to Hamilton, 12 February 1959, LAC, RG 93, box 14, f. 11-10-11, pt. 13.

Hees to Hamilton, 22 June 1959, LAC, RG 93, acc. 80-81/306, box 14, f. 11-10-11, pt. 14. Hees’s replies made no mention of recruitment problems — one of DoT’s typical
arguments against Canadianization. The department was set to train a record number of met techs in 1960, but recruitment would ebb and flow annually over the following decade, and the department never achieved the capacity to Canadianize JAWS without diverting resources from its weather stations in other parts of the country. DoT met tech recruitment estimates are based on class graduation photos available at Canadian Meteorological and Oceanographic Society Archives, “Table Five - Civilian Meteorological Technician Courses and Conferences,” http://cmosarchives.ca/Metphotos/T5/photoindex.html.

123 Hees to Hamilton, 3 April 1959, LAC, RG 93, acc. 80-81/306, box 14, f. 11-10-11, pt. 13.
126 Minutes ACND meeting, 20 February 1961, in Lackenbauer and Heidt, eds., Advisory Committee on Northern Development, 701.
128 See Lackenbauer and Heidt, eds., Advisory Committee on Northern Development.
129 Dyer to McLachlan, 8 January 1963, Dan McLachlan fonds, box 1, f. D.
133 Rockney, “Draft Briefing Note for President,” c. fall 1970, LAC, RG 93, acc. 81-82-084, box 15, f. 1200-19, pt. 5; Scott, “U.S. Withdrawal from U.S.-Canadian Joint Arctic

134 Boughner, “Internal Met. HQ/ESSA USWB Meeting,” 18 February 1870, LAC, RG 93, acc. 81-82-084, box 15, f. 1200-19, pt. 5.


138 See, for example, “Canada to Run 5 Arctic Posts Without US,” Globe and Mail, 31 December 1970. In personal interviews, several former JAWS personnel expressed the same assumptions about a linkage between the Manhattan voyage and the “Canadianization” of the JAWS program.


140 Rockney, “Draft Briefing Note for President,” 8 September 1970, NARA, RG 93, acc. 81-82-084, box 15, f. 1200-19, pt. 5.


143 “Joint Arctic Weather Stations: 25 Years,” LAC, MG 31 G-34, f. 188.


145 Labelle, “Flag Lowering Ceremony.”

146 The DoT arranged a seven-course banquet for about thirty people, including all DoT and JAWS staff, following the ceremony. Once again, the departing Americans were in the spotlight. Goodbrand reviewed some of the highlights of establishing and operating the stations before offering a toast to the “spirit of U.S.-Canadian cooperation which had characterized the entire program.” Dyer followed, paying tribute to all JAWS personnel and retelling anecdotes from the program’s early years. The station’s cook, Reno Castellarin, capped off the festivities with a three-foot-square cake sporting icing replicas of the US and Canadian flags in the upper corners and “1947–1972” below. Dyer had the honour of cutting the cake. Labelle, “Flag Lowering Ceremony.”
NOTES TO CONCLUSIONS


6 Tina Loo, Moved by the State: Forced Relocation and Making a Good Life in Postwar Canada (Vancouver: University of British Columbia Press, 2019), 6.


14 John Woitkowitz similarly concludes in a recent study that “statements by individual officials and lower-level studies did not reflect the policy of the U.S. Department of State or the White House. Authoritative guidance by Secretary of State Dean Acheson and the comments by President Harry Truman to the Canadian Prime Minister not only” revealed no intention to question Canada’s legal position, “they displayed a keen awareness of Ottawa’s sensitivity … [and] a nuanced appreciation of the political repercussions and the detrimental international legal rulings likely to result from an aggressive American policy.” Woitkowitz, “Making Sense of the Arctic: U.S.-Canadian Foreign and Defense Relations and the Establishment of JAWS and the DEW Line, 1944–1957” (unpublished PhD diss., University of Calgary, 2018), 163.


21 Heymann, “In Search of Control,” 75–98.


25 Smith, “Weather Stations,” 52. Smith also cites examples of construction projects in the 1950s.
26 Collis and Stevens, “Cold Colonies,” 249.
28 Heymann, “In Search of Control,” 85.
29 Hearings Before the Committee on Agriculture, House of Representatives, Seventy-Ninth Congress, Second Session on H.R. 4611 (S.765), 22 January 1946, National Archives and Records Administration (NARA), RG XPOLA, entry 17, Charles Hubbard Papers, box 1, f. Miscellaneous.
30 Doel et al., “Strategic Arctic Science,” 60.
31 Doel et al., “Strategic Arctic Science,” 71.
32 Calder, Men Against the Frozen North, 215.
33 Bocking, “Science and Spaces,” 123.
37 Doel et al., “Strategic Arctic Science,” 78.
39 We are grateful to an anonymous reviewer for emphasizing this point.
40 See, for example, Bocking, “Disciplined Geography,” and Powell, “Rigours of an Arctic Experiment.”
43 Powell, Studying Arctic Fields.
45 Collis and Stevens, “Cold Colonies,” 235.
48 Peter Johnson, phone interview with Daniel Heidt, 26 May 2011.
49 John Melvin, phone interview with Daniel Heidt, 23 November 2011; Bob Pearson, phone interview with Daniel Heidt, 28 December 2011.
50 Lowell Demond, phone interview with Daniel Heidt, 26 October 2011.
52 Griffiths, Slicing the Silence, 182–83.
53 See Matthew Farish, The Contours of America's Cold War (Minneapolis: University of Minnesota Press, 2010).
56 Calder, Men Against the Frozen North, 231.
59 On this critique, see Powell, “Rigours of an Arctic Experiment,” 1807.
61 Sarris and Kirby, “Behavioral Norms,” 719. See this study for important gender differences that are not comparable to the JAWS case, given that these stations were staffed entirely by men until Canada ran them as the High Arctic Weather Stations in the 1970s.
62 Stuster, Bold Endeavors, 102.
63 Bob Plaseski, phone interview with Daniel Heidt, 2 November 2011.

We are grateful to an anonymous reviewer for highlighting this distinction. For a reflection on these ideas, see Rudy Wiebe, *Playing Dead: A Contemplation Concerning the Arctic* (Edmonton: NeWest, 1989).


William Nemeth, phone interview with Daniel Heidt, 12 May 2011.

Robert McDonald, phone interview with Daniel Heidt, 3 May 2011.

David Oldridge, phone interview with Daniel Heidt, 18 January 2012.

Plaseski, interview with Heidt, 2 November 2011. See also Bruce Weaver, phone interview with Daniel Heidt, 9 January 2012.

John Gilbert, phone interview with Daniel Heidt, 29 March 2011.

Thomson to Director General, Air Services, DoT, “Deputy Minister’s Memorandum of August 23 1956,” 23 November 1956, LAC, RG 93, box 14, f. 11–10 –11, pt. 12; McDonald, interview with Heidt, 3 May 2011.

Demond, interview with Heidt, 26 October 2011.

DoT and USWB, “Five Year Report,” 21. Even when Alert had a septic tank, human waste was not treated before it was pumped onto the rocks near the shore of the bay. Plaseski, interview with Heidt, 2 November 2011.

Don Shanks, phone interview with Daniel Heidt, 10 March 2011.


Ron Huibers, phone interview with Daniel Heidt, 22 November 2011.

Rick Risbey, phone interview with Daniel Heidt, 26 November 2011.


Doug Munson, phone interview with Daniel Heidt, 20 August 2012.

Risbey, interview with Heidt, 26 November 2011.

Dave Tidbury, phone interview with Daniel Heidt, 12 October 2011.

Risbey, interview with Heidt, 26 November 2011. The archival record is almost entirely silent on this incident. In February 1976, Stossel did send job descriptions for all personnel to assist Mould Bay’s OIC with informing his staff of their duties, “complete probationary reports, narrative performance evaluations, and annual appraisals.”


Heather Blain, phone interview with Daniel Heidt, 26 June 2012. Christine Wynowich, who served at Eureka a few years later, expressed similar sentiments — although she told the *Globe and Mail* that she would not have accepted the posting if she had not been accompanied by a second woman. Fisher, “Weathering the Nation’s Cold Spot.”


David Oldridge to Heidt, 29 August 2012, email.


Labelle, “Project Hurricane.”


Risbey, interview with Heidt, 26 November 2011.

Parrott, “What is Life in Eureka Like Now?”

In 1974, it reduced HAWS tours to nine months, and by the early 1980s to six months. Huibers, interview with Heidt, 22 November 2011. Personnel had always received the option of taking three weeks paid leave at the end of their first year, and this was doubled to twice a year in 1974. Bob McInnes to Heidt, 24 August 2012, email; Ron Huibers to Heidt, 24 August 2012, email; Tidbury to Heidt, 24 August 2012, email. Although these shorter terms and brief respites facilitated recruitment, they also led to high rotation rates. “If I had a toll booth I’d be rich,” OIC John Mravnik joked from Mould Bay in 1984. Mravnik, “Monthly Station Operations Report, Mould Bay NWT,” 31 August 1984, LAC Winnipeg, RG 93, box 20, vol. 7 - Mould Bay.

Risbey, interview with Heidt, 26 November 2011.

Bob McInnes, phone interview with Daniel Heidt, 3 July 2012.


Tidbury, interview with Heidt, 12 October 2011.


On this theme, see Collis and Stevens, “Cold Colonies,” 235.

Notes to Conclusions


111 Risbey, interview with Heidt, 26 November 2011.

112 Risbey to CAED Winnipeg, 8 March 1978.

113 Risbey, interview with Heidt, 26 November 2011.

114 Mike Balshaw, phone interview with Daniel Heidt, 2 February 2012.


120 Morrison, "High Arctic Weather Stations: Their Future, Appendix 1,” 31 August 1983, LAC, RG 12, box 102, f. AA 5230.

121 Ken Fluto, phone interview with Daniel Heidt, 25 January 2012.

122 Balshaw, interview with Heidt, 2 February 2012. It cost more than $1 million to transport diesel fuel from Resolute to Mould Bay every two years.


124 Fluto, interview with Heidt, 25 January 2012.

125 Balshaw, interview with Heidt, 2 February 2012.

126 Fluto, interview with Heidt, 25 January 2012.

127 Plaseski, interview with Heidt, 2 November 2011.


129 Research resulting from Eureka data includes G. Lesins, T.J. Duck, and J.R. Drummond, “Climate Trends at Eureka in the Canadian High Arctic,” Atmosphere-Ocean 48/2
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This is the first systematic account of the Joint Arctic Weather Stations (JAWS), a collaborative science program between Canada and the United States that created a distinctive state presence in the Canadian Arctic Archipelago from 1946-1972. These five meteorological stations, constructed at Eureka, Resolute, Isachsen, Mould Bay, and Alert, became remote hubs for science and sovereignty, revealing the possibilities and limits of modernity in the High Arctic.

Drawing on extensive archival evidence, unpublished personal memoirs, and interviews with former JAWS personnel, this book systematically analyzes the diplomatic, scientific, social, environmental, and civil-military dimensions of this binational program. From the corridors of power in Washington and Ottawa to everyday life at the small outposts, *The Joint Arctic Weather Stations* explores delicate statecraft, changing scientific practices, as well as the distinctive station cultures that emerged as humans coped with isolation in polar environments.

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