This is the Most Important Part[*]
Commemorating the Industrial Heritage of the Cold War
BAR-1 Distant Early Warning (DEW) Line Auxilary Radar Station,
Komakuk Beach, Yukon Territory, Canada

David Neufeld
Yukon and western Arctic Historian, Parks Canada
#205 - 300 Main Street
Whitehorse, Yukon Y1A 2B5 CANADA June 7, 1995

Abstract
The DEW Line operated in arctic Canada for forty years from experimental beginnings in 1953 to a final shutdown in 1993. The DEW Line was an important technological achievement constructing and maintaining highly complex radio and radar equipment in a diffcult and challenging environment. As important as its role in the continental air defence fortress however, were the economic, political and cultural effects the DEW Line had in Canada. The development and implementation of a workable cultural heritage site management program for one of these stations in northwestern Canada required a balancing of these different aspects of historic values. The recent Parks Canada Cultural Resource Management Policy was a helpful framework for this process.

Introduction

Ivvavik National Park, in the far north western corner of Canada, includes a prominent and important, though isolated, Cold War heritage site. The large white radome and dark billboard antennae of the BAR-1 Auxiliary Radar Station of the Distant Early Warning (DEW) Line break the flat horizon of the Arctic north slope near Komakuk Beach in the Yukon Territory. Built in 1953 as one part of a massive continental air defence fortress BAR-1 continued operations until June, 1993.

The Yukon north slope[1] is a flat, tundra plain, about 15 kilometres wide, stretching from the rounded summits of the British Mountains to the stony beaches of the Beaufort Sea. Although windswept and covered in snow for nine months of the year, the land is neither barren nor lifeless. Grizzly and polar bears, muskox, and even moose are present. Seasonal visitors are the quarter million animals of the Porcupine caribou herd moving from the Alaska National Wilderness Reserve (ANWR) onto the coastal plain in early summer to calf. In the sea, arctic char, a trout variety up to 640 mm [over 25 inches] long, move between the Firth River and salt

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* During the field investigations of the site I often asked staff what they considered important enough for preservation. The always had valuable suggestions.

[1] Natural resource information is from Canadian Parks Service, Northern Yukon National Park, Resource Description & Analysis, RM Report 93-01/INP, Winnipeg, 1993, hereafter Parks, RD&A.

water, and seals and whales are also present. Under the land and sea large pockets of gas and oil have also been discovered. It is a rich land. Evidence of continuing human occupation here dates back some 10,000 years.

Interest in the development of the region's petroleum resources in the latter half of the twentieth century has threatened the environmental quality of this country and to disrupt the lives of the long-term aboriginal occupants here. The present Inuvialuit inhabitants, the descendents of this long occupation, noted these pressures and moved to retain control over their lives. Negotiations for a land claims settlement with the Canadian Government began in the 1970s. The Inuvialuit Final Agreement (IFA), roughly similar to the Alaska Native Settlement of 1979, was signed in 1984. The IFA focuses on the on the maintenance and self-direction of the Inuvialuit cultural and social identity. Ivvavik National Park, the first National Park in Canada to be created under a First Nation land claim settlement, preserves a land base for the maintenance of opportunities for the pursuit of Inuvialuit traditional lifeways and activities. The Park is in actuality an Inuvialuit cultural landscape.

In the Ivvavik National Park area Parks Canada has accepted the lead role in the management of all resources. Although the area includes a wide range of resources the most significant from a research perspective are those relating to the aboriginal cultures of the region. These sites offer valuable insights into the evolution of the arctic cultural traditions in North America.[2] In the broader area of cultural commemoration these aboriginal sites are also important contributors to a sense of Canadian identity. They are quite properly regarded as of great importance.

The management of non-aboriginal cultural heritage sites however, face special challenges. The fur trade, poaching, placer gold mining, oil exploration and even recent resource research activities by outsiders have all left their mark as camp sites, ditches and old cabins. However the largest and the most important non-aboriginal cultural resource is the BAR-1 DEW Line station. Linked to broad national themes of international relations, Canadian sovereignty, military history, northern science and engineering, and northern development the station poses especially difficult preservation, recording and interpretation problems. The site is isolated. Very few people travel to this remote corner of North America and access to and much information about the DEW Line remains restricted. Work carried out at the site is expensive. Access is by air only, a one way trip of some 300 kilometres northwest of Inuvik in Canada's Northwest Territories. Maintenance of the site, even in a derelict state, is an ongoing requirement. Buildings and other related structures at other abandoned military sites in the north have deteriorated from both weather and vandalism. The resulting widespread distribution of non or slow bio-degrading

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[2] Parks, RD&A, p. 10-38.

materials is a current clean-up problem. Only through continuing site monitering and maintenance can this be avoided. Further, significant and expensive environmental clean-up of persistent petroleum, PCB and other residues is required. Finally, many people do not yet consider the Cold War as history[3]. The DEW Line stations are soemtimes seen as modern intrusions to be removed rather than as cultural resources to be managed.

To shape and support the development of an appropriate management program for the site I relied upon the recently accepted Parks Canada Cultural Resource Management (CRM) Policy. The CRM policy provides a useful framework for the development of an appropriate program for the long-term preservation and appropriate presentation of all cultural heritage sites. By defining the principles guiding our understanding of the importance of cultural heritage the policy establishes the ground rules upon which other issues can then be addressed. The policy gains its value and strength from its evolution from past practices and by being built upon the field experience and input of Parks Canada and other cultural agencies staff across the country. The policy is "an integrated and holistic approach to the management of cultural resources."[4]

In preparing a cultural resource management program for the BAR-1 DEW Line site several stages were followed. First the nature and historical significance of the site had to be established. The site's history and character can be researched and reported by cultural resource professionals but it remains the perogative of identified agencies to attribute importance. In northern Yukon the agencies involved include Parks Canada[5], the Federal Historic Sites and Monuments Board of Canada, the Federal Heritage Building Review Office, the Heritage Branch of the Yukon Government's Department of Tourism, and the Inuvialuit Regional Corporation. The historical significance of the site becomes an important determinant of those elements for which the site is valued. It is also a crucial part of the subsequent preparation of commemoration options for the site.

The development of a cultural resource management program for a site will be subject to a range of interests. At BAR-1 issues were raised by the United States Air Force, the Canadian Departments of National Defence and Northern Affairs, Parks Canada managers, regional

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[3] An interesting parallel example is the ongoing debate in the German community of Hoetensleben where a preservation group is struggling to preserve some 350 yards of the Wall to memoralize the divided Germany of the Cold War. R. Atkinson "Remnants of German Wall Split Townspeople", Washington Post reprinted in Manchester Guardian Weekly, May 28, 1995 p. 22.

[4] Parks Canada, Guiding Principles and Operational Policies, 1994, quote from p. 90.

[5] Ownership of the site by Parks Canada is assumed. Although there is currently some legal debate amongst Canadian Federal Government departments and the Inuvialuit Regional Corporation as to the actual process of land transfer of the DEW Line site into Ivvavik National Park, Parks Canada is the recognized final authority for the land. The process of land transfer does not materially affect Parks Canada's ultimate responsibility for the resources there.

wilderness and environmental groups, and the local population. These issues had to be identified and addressed in the development and consideration of commemoration options.

Once importance and site constraints, or opportunities, are known it is possible to evaluate the resource in the light of the CRM policy. This evaluation identifies the site's historic character, that is, it highlights the qualities for which the site is valued. With the historic character defined ongoing work must ensure that these values remain the focus of site planning.

SIDEBAR

The five principles of the cultural resource management (CRM) policy are:

*** Principles of Value**

Cultural resources are to be protected and presented for their historic value.

*** Principles of Public Benefit**

Cultural resources are held in trust so present and future generations may enjoy and benefit from them.

*** Principles of Understanding**

The care and presentation of cultural resources requires knowledge and understanding of the values they represent and public interest in those values.

*** Principles of Respect**

Cultural resources will be managed with continuous care and respect for their historic value.

*** Principles of Integrity**

Cultural resources shall be presented in ways reflecting the range and complexity of the human history commemorated or represented at the site.

Finally, it is possible to design and implement a CRM plan. This plan, in many cases these plans become a part of the Park Management Plan, should include three elements. It should identify those site elements to be protected in situ and establish a collection policy for the long-term preservation of artefacts and other materials related to the site. To ensure the full range of the human experience of the site is acknowledged a research plan to record removed, lost and non-material elements also needs to be implemented. Finally, it is important to program an appropriate interpretation plan to effectively present the site's significance to the public. The CRM plan and its implementation program must synthesize the identified heritage values with the range of issues surrounding the site in an approach reflecting the attributed importance of the site and its historic character.

Under the time constraints in this project several of these stages were compressed or

evolved during the process of actually doing the work. Neverthless, this project remains an interesting opportunity to develop a cultural resource management plan to preserve and present an aspect of the Cold War in Canada's north.

Personal highlights of the work included the opportunity to visit and work on the Yukon north slope - one of the most striking landscapes in the world, the chance to record a still-operating industrial site and interview participants, most of whom were still doing their job, and the chance to research the operation, interconnections, and effects of a United States defence establishment in northern Canada.

Continental Air Defence, the DEW Line and BAR-1 - An Historical Context

For a brief period after the Second World War North Americans were content to turn their backs on world politics. However the perceived Soviet threat in the late 1940s led to the formation of a determined military posture in the western world. This posture included two main parts: the creation of an American nuclear armed aerial bombardment force, Strategic Air Command (SAC), to deter aggression and the organization of western nations into a defensive alliance, the North Atlantic Treaty Organization (NATO), to effectively mobilize forces to combat a ground assault in Europe.[6]

The possibility of an air attack on North America was considered. However, the American monopoly of the atomic bomb and the tactical nature of the Soviet air force seemed to put this threat into the distant future. However, the introduction of Soviet long-range bombers in 1948 and their successful test of an atomic bomb the following year changed this. For the next decade the development of a continental air defence system preoccupied the American, and later, the Canadian, defence establishments. The resulting aerial and electronic fortress eventually cost some $20 billion. The bulk of this investment went towards the design, development, and construction of the DEW Line across Canada's arctic.[7]

Two integrated components made up the continental air defence system built in the 1950s:

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[6] General background on the evolution of post-war North American military policy from a Canadian perspective is available in J. Eayrs' two books In Defence of Canada - Peacemaking and Deterrence (Toronto, 1972) and In Defence of Canada - Growing up Allied (Toronto, 1980) and K.C. Eyre, ""Custos Borealis" - The Military in the Canadian North (PhD., Univ. of London-King's College, 1981).

[7] Sources on continental air defence used in this account include J.T. Jockel, "The United States and Canadian Efforts at Continental Air Defence 1945-1957" (PhD., John Hopkins Univ., 1978) and his revised and updated book, No Boundaries Upstairs - Canada, the United States and the Origins of North American Air Defence, 1945-1958 (Vancouver, 1987), C.L. Grant, "The Development of Continental Air Defence to 1 September, 1954" (USAF Historical Research Studies Institute, n.d. [1957?]) and Dept. of National Defence, Directorate of History 79/649 Vol. 3 "For Possible Inclusion in classified history of RCAF Air Defence Command, Feb. 28/58". A popular account is B. Bruce-Briggs, The Shield of Faith - The Hidden Struggle for Strategic Defense (New York, 1988).

A detection and battle direction system (radar stations and communications network) and an interception and destruction force (jet fighters and guided missiles). Canadian contributions to the interception force consisted of several squadrons of the CF-100 Canuck all-weather fighter, the research and development of a long-range bomber interceptor, the cancelled CF-105 Arrow, and the placement of two squadrons of Bomarc surface to air missiles in eastern Canada.[8] Far more important for northern Canada in the long-term, however, was the construction and operation of the detection/communication system. Almost wholly-built in Canadian territory the various radar defence lines had major socio-cultural impacts with related economic and technological spinoffs.

The evolution of the continental detection and battle direction system was shaped by an inter-dependent group of factors. These included changing perceptions of the military threat to North America, technological innovations in radar, and the dynamics of the Canadian government's foreign and domestic policies. The first plan for continental air defence, SUPREMACY, was put together by the United States military in 1946-47. Based upon the early warning and tracking systems developed in Europe during the Second World War it included over 400 radar stations and some 40,000 personnel supplemented by a still larger civilian observer corps covering the entire continent. The plan had several flaws. At a cost estimated at a half a billion dollars Congress considered it too expensive. Further the attempt to organize a ground observer force flopped, and, perhaps most important, the limited range of the radar provided only a warning - no effective battle direction was possible. In the late 1940s it just wasn't technically possible to defend a continent.

The most likely targets of a Soviet attack, perceived to be by bomber aircraft from over either the north Pacific or Atlantic oceans, were the population and industrialized regions of the American northeast and west coasts. Under the Modified Plan (a down-sizing of SUPREMACY), actually constructed between 1948 and 1953, the approaches to these areas were scanned by radars to provide a brief civil defence warning and direction to defending fighters and guns. In 1951 this system expanded into Canada as the Pine Tree Line. Over 30 new radar stations were built in central Canada and in British Columbia. Canadian fighter bases were integrated into this air defence system. Although the Pine Tree stations provided coverage to the Canadian population centres their primary function was to provide a deeper battle zone for attacking bombers to cross and to extend the warning time for US targets. This aspect of the line was recognized in the cost-share agreement where the US paid about two-thirds of the estimated $450 million for the Pine Tree Line.

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[8] Additional information on the aircraft is available from K.M. Molson and H.A. Taylor, Canadian Aircraft Since 1909 (Stittsville, 1982) pp. 85-98. Failed technologies obtain very little press, few mentions of the Bomarc in Canadian service appear to be available.

In the early 1950s the heightened threat of Soviet attack dramatically changed the American air defence program. The Soviet introduction of their first inter-continental range jet bomber and the successful testing of a hydrogen bomb in this period appeared to give them a creditable first strike capacity. Public concern in North America over these highly publicised achievements demanded a political response. The SAC bases in the American mid-west, the primary weapon of the West in the balance of power, also appeared vulnerable to trans-polar attack for the first time. At the same time technological improvements in radar such as longer range, better definition of signal and auto-warning combined to enhance detection system capabilities and reduce the staff complement needed to run radar stations. A continental warning and tracking system began to be possible. A United States armed forces study group in 1952 recommended the construction of a northern radar and fighter direction system to "plug the gap" in continental defence. In response to this combination of public concern and improved military capabilities President Truman made continental air defence a national military priority in late 1952.

In Canada, the Federal Government was in a difficult position. It was under political pressure to reduce military expenditures, which continued to rise sharply in the early 1950s.[9] The additional financial burden of an expensive northern defence line added to Canadian commitments to NATO ground forces in Europe and to the United Nations in Korea was too much. However, the growing American military presence in Canada led to politically embarrassing questions about Canadian sovereignty. Consequently the Federal Government developed and supported the Mid-Canada Line, the Canadian compromise solution.

Utilizing a simple but effective doppler radar named the McGill Fence, after the Montreal based University lab where it was developed, the Mid-Canada Line was speedily approved by the Canadian Parliament in June, 1954. Effectively filling the radar gap between the eastern and western sectors of the Pine Tree network, the Mid-Canada Line extended fighter control into the Canadian mid-North. Politically, however it fulfilled several purposes. Built as an exclusively Canadian project, the Mid-Canada Line utilized Canadian developed and manufactured radars, was built by Canadian contractors and suppliers, and manned by Canadian military personnel. Most important, it acted as Canada's contribution to continental air defence. This allowed an honourable refusal to assist in the far more expensive, and at that time still unproven, high arctic radar defence line.[10]

The Americans however remained committed to the need for this defence line if indeed, it

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[9] Eayrs, Growing Up, p. 192 shows a five fold increase in defence expenditures between 1949-50 and 1952-53.

[10] Major F.H. Thorne, "The Mid-Canada Line", High Flight, Vol. 2 #4, 1982, pp. 144 apparently unaware of the political background of the Line notes with some surprise how quickly this parliamentary approval and subsequent construction took place and Eayrs, Peacemaking, p. 368-370.

were possible to build one. Through the winter of 1952-53 a pair of experimental stations, POW-3 at Bullen Point in Alaska, and BAR-1 in Canada, were built and successfully tested. In 1955 a bi-lateral agreement between Canada and United States allowed for the erection of some 43 radar stations across the 70th parallel.[11] A massive construction project immediately invaded the Canadian north. Designed to provide six hours of warning in case of attack this arctic Distant Early Warning (DEW) Line was the outermost bastion of the North American air defence fortress to be erected. Although much of this fortress was dismantled or allowed to lapse through the 1960s portions of the original DEW Line continued operations into the early 1990s. Its substantial impacts in the Canadian north continue to be felt today.

The DEW Line in the Canadian North - An Analysis of Heritage Character

The DEW Line, as represented at BAR-1 in northern Yukon, fulfilled operational tasks and introduced a range of changes to Canadian society that must be acknowledged in the identification of the site's heritage character. In the establishment of the heritage character of BAR-1 its importance to Canada can be divided into three broad areas - Technology and Operations, Socio-economic and Political Effects in Canada, and Inuvialuit Contacts. Within the confines of the attributed level of heritage significance it is these elements of importance combined with the interests and issues of the various stakeholders that are the central elements in the preparation of an appropriate cultural resource management plan.

Technology and Operations[12] - Built as part of a continental electronic fortress the DEW Line was a series of individual, but tightly integrated and mutually supporting, radar stations. Three types of station made up the original line. Main and Auxiliary stations provided radar coverage while smaller Intermediate stations, or I-Sites, provided notice of aircraft approach. At roughly 80 kilometre (50 mile) intervals the stations provided a continuous 200 kilometre (130 mile) thick band of northward radar coverage across the arctic.[13]

BAR-1, the first Auxiliary station built in Canada, was completed in 1953. To achieve its primary function, early warning for continental air defence, the station performed four inter-

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[11] Canada, Treaty Series 1955 No. 8 DEFENCE - Establishment of a distant early warning system, 5 May, 1955.

[12] Much of the following material is based upon the author's regular field research trips to BAR-1 between 1987 and 1993 and reviews of station files. ITT, Felec Services, Inc., "DEW Line REAL PROPERTY FACILITY - BAR-1, CONDITION AND SURVEY (FO5604-82-c-0055, March, 1990 was especially helpful.

[13] IT&T, "Manning the DEW Line", pamphlet, n.d. c. 1960, and personal communication, Chris Jorgensen, console operator, June, 1993.

related functions:

1. continuous detection of air activity and communication of findings.
2. station management.
3. operational support for detection and communications.
4. staff support.

These functions and the designers' perception of the arctic environment are reflected in the design, construction, and operation of the station and makeup the character of the site. The station's continuous surveillance operation required multiple redundancies of systems to limit the effect of equipment failures. Its isolated location and the possibility of interrupted supplies from the south demanded extraordinary fire precautions, a large on-site warehousing capacity and a regular lateral supply service to ensure operations were not interrupted by shortages or failures. Trained staff were required to maintain and run the detection equipment and to service the physical needs of the crew. Interestingly, the designers' focus on known operational requirements and their general lack of knowledge of northern environmental conditions led to problems at BAR-1 with envelope heat loss and snow drifting. Subsequent stations on the DEW Line followed a significantly different design.

Socio-economic and Political Effects in Canada - The DEW Line as a whole had important social and economic spinoffs for Canada. These are represented at BAR-1. The construction of the line was part of the economic boom accompanying Cold War expenditures in the early 1950s. Opportunities to develop and install both sophisticated electronic equipment and modern wooden pre-fab units in an arctic environment provided a wealth of new knowledge about the north to Canadian companies.[14] The huge amounts of money earned by independent air transport services supporting the DEW Line project radically changed the form of the Canadian commercial air transport industry. These new companies eventually challenged the Trans-Canada Air Lines monopoly on national and international routes and the money eased the Canadian industry's transition to modern jet aircraft.[15]

The issue of arctic soveriegnty was also highlighted by the American military presence in

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[14] "A Review of the DEW Line", The Engineering Journal, Nov., 1957 p. 1666.

[15] D. Neufeld, "Plate 53 - The Growth of Road and Air Transport" in D.Kerr, D. Holdsworth ed., Historical Atlas of Canada, Vol. III (Toronto, 1990) and J.R.K. Main, Voyageurs of the Air - a history of civil aviation in Canada 1858-1967 (Ottawa, 1967) pp. 228-230.

the Canadian north.[16] Although rankling to Canadians a political decision to focus the government's limited military spending on conventional commitments to the multi-national NATO forces in Europe constrained politicians' ability to deal with their friendly American neighbour in the north. The DEW line situation reflects the Canadian government's dependence and reliance upon the United States for overall direction of external affairs and military policy.

The DEW Line was an important lever opening the arctic to southern-based economic development. Weather reporting, airfields, navigation aids and the knowledge of the Line's operational success broke down psychological and geographic barriers to northern development and changed the southern perspective on the arctic.[17] However this change also had important consequences for the people already living in the north.

Inuvialuit Contacts - Western arctic Inuit had experienced extensive European contact since the visits of the whalers in the late nineteenth century.[18] Fur trade and even gold mining activity had followed through the 20th century. In all of these activities the Inuvialuit had been participants. What surprised Inuvilauit about the DEW Line was the suddeness and scale of the new intrusion. What troubled them was their complete isolation from the developments. Wage labour jobs were eventually opened to local Inuit but only with Canadian Government strings attached.[19] The other important change in this area was the introduction of modern health care and the later extension of social services. DEW Line stations provided emergency medical aid when required, but they also acted as conduits for requests for better health care services. Both the wage labour jobs and the health care issue drew the Canadian Federal Government further into the north and expanded the generally accepted limits of their responsibilities. While subsequent development of other arctic resources has enlarged these changes for the Inuit, in many areas it was the DEW Line that initiated them.

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[16] Ralph Allen, "Will Dewline cost Canada its northland?", Maclean's Magazine, 26 May, 1955. One DEW Line informant told me a story of a USAF source who upon being questioned why Canadians needed American permission to visit a station on Canadian soil was told "Your Prime Minister couldn't get in here without our permission." Site visit, February, 1993.

[17] Eyre, "Custos Borealis", pp. 142-143, Eayrs, Peacemaking, p. 294, and Main, Voyageurs, p. 230.

[18] Parks, RD&A, "Chapter 10. Cultural Resources of Northern Yukon National Park" by D. Neufeld and G. Adams provides general historical background and sources on this period while Murielle Ida Nagy, Yukon North Slope Inuvialuit Oral History (Whitehorse, 1994) provides an Inuvialuit perspective on the history of the Yukon's Arctic Ocean coast.

[19] These are described in M. Zaslow, The Northward Expansion of Canada 1914-1967 (Toronto, 1988) pp. 326-330 and R.Q. Duffy, The Road to Nunavut (Montreal, 1988) p. 200.

All commemoration plans are shaped by the principles of the Cultural Resource Management Policy. The themes stemming from the research highlight those site resources and values of importance to Canadian identity and subject to the Policy. The themes become the central element shaping the subsequent preservation, recording and interpretation plans for the site or resource. The scale and depth of implementation of these plans can be affected by official attributions of significance and they can be modified in light of specific interests and issues, but the general direction and focus of site commemoration is determined by the themes.

Issues and Interests at BAR-1 affecting Cultural Resource Management

The closure and clean-up of a major military installation like BAR-1, especially if it is within a National Park, raises a number of issues to be considered in a cultural resource management plan. At BAR-1 a number of stakeholders expressed considerable interest in the site and its future. Proposed options for the site included reusing it as a correctional facility or as an isolated hotel for eco-tours, but the most often recommended was the demolition of the station, complete clean-up and removal of waste materials and the rehabilitation of the site to its "natural" (pre-DEW Line) state. There has been a distinct reluctance among government agencies to consider the complete preservation of the site for several reasons. The preparation of the site cultural resource management plan faced several challenges.

At this time Parks Canada has no direct responsibility for the site of the BAR-1 station. However the park creation agreement with the Inuvialuit states the station enclave would become a part of Ivvavik National Park at some time. Consequently research on the site began in 1987. This was a rare opportunity to record a working site with the knowledge that it would be possible to acquire the site in a practically uncompromised condition when it shut down if this was deemed appropriate.

The Parks Canada mandate includes a responsibility to preserve and interpret the natural and cultural resources within a national park. However the program level of effort is determined by attributed significance. For cultural resources this attribution can come from heritage boards or agencies of the different levels of government, including Parks Canada. During the Ivvavik National Park management planning process the BAR-1 DEW Line station was referred to the Federal government's review body, the Historic Sites and Monuments Board of Canada, for consideration as a national historic site. At the May,1992 meeting the Board reviewed the submission on the site. They felt insufficient information on the DEW Line and Cold War history prevented an immediate decision on the significance of the BAR-1 site. Nevertheless they encouraged Parks Canada to commemorate the DEW Line through the preservation of key remnants of the site and to undertake modest in-situ interpretation of the DEW Line's regional

impact.[20]

For the managers of Ivvavik National Park a number of site and operational constraints shaped the management possibilities for this site. Park staff felt the isolated and remote location meant few people would ever be likely to visit the site. Further, Park resources for the maintenance and preservation of such a complex facility are limited. Work in this area is expensive, the only practical access is by charter aircraft or helicopter. Finally, concerns about the possibility of serious and significant pollution problems on the site meant that the site might be a continuing and expensive headache if retained in an untouched state. There was considerable encouragement for a thorough review of the site's significance and for the consideration of alternative methods of commemorating the BAR-1 station.

The Canadian Department of National Defence, which re-accepted the station site for Canada upon the completion of the United States Air Force mission there, is also responsible for the construction and operation of the new North Warning radar at the BAR-1 site. To retain reasonable access to the site, National Defence wished to maintain the site's existing air strip and roadway network. However they had no practical requirement for other DEW Line facilities. In early 1993, the 40th aniversary of the site's construction, the structures became subject to the Federal Heritage Building Review Policy (FHBRO). This policy is designed to protect the heritage character of structures owned by the Federal Government. The FHBRO review of the BAR-1 site has not yet been initiated.[21]

The Inuvialuit interest in the history of the site focused upon the DEW Line's effect upon their lives. Much of the physical evidence of their presence at BAR-1, especially the "Eskimo House" purpose-built for Inuvialuit employees in the 1960s, has long since been cleaned up and removed. Nevertheless, the BAR-1 station buildings were seen as a potential anchor for other economic developments in the region.[22] However none of these ideas were seriously pressed by Inuvialuit proponents.

Perhaps the most vociferious opinions on the site came from the environmental groups participating in the public meetings on the Ivvavik National Park management plan. The

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[20] HSMBC Minutes, May, 1992, p. 41.

[21] Already saddled with the responsibility for the clean-up of abandoned military sites across the arctic, the Department of National Defence is wary of any additional requirements complicating and increasing the expense of an already difficult situation. At present National Defence is attempting to obtain American financial and technical aid for the clean-up of these sites as promised in a secret addenda to the DEW Line Treaty of 1955. Personal communication, Major Steve Ponton, DND FHBRO Co-ordinator, Ottawa, NDHQ. Draft terms of the secret addenda are present in the DIAND files, NAC, RG 24 Acc. 83-84/049, Vol. 548 f. 096-100-80/9 pt.3.

[22] A similar example nearby, sold to an Inuvialuit, was the high altitude research station at Sachs Harbour on Banks Island. Known locally as the "Icicle Inn" it has operated periodically for several years.

"wilderness" nature of the park was their primary concern and many individuals expressed a desire to have the site completely dismantled and the physical record of its existence erased. The station was regarded as an intrusive anomoly in an otherwise pristine natural landscape.

Each of these interests provided considered thoughts about the site's future. While the historical research identified the heritage character of the station, these contributions were important elements in identifying constraints and opportunities for developing appropriate means for the implementation of the cultural resource management plan. The challenge was to address these concerns, recognize what was likeliest to happen and begin planning for the commemoration of the historic values of the site.

SIDEBAR - An Application of CRM Principles to the Situation at BAR-1

*** Principles of Value**

Although no official attribution of historic value has yet been assigned to BAR-1 this principle requires Parks Canada to undertake thoughtful consideration of site values before avoidable and irreversible changes to the site are made.

*** Principles of Public Benefit**

Despite a lack of historic value attribution Parks Canada has a responsibility to care for all cultural resources in National Parks and National Historic Sites for future benefit and enjoyment. At BAR-1 this responsibility has been limited by legal questions of ownership and responsibility to low-cost or partnered programs and activities.

*** Principles of Understanding**

This principle supports the preparation of a complete and thorough record of the BAR-1 site's history and existence to ensure its values are understood and communicated.

*** Principles of Respect**

Items selected for preservation from BAR-1, whether on site or moved to off-site locations, will be managed for their values.

*** Principles of Integrity**

Presentation of the BAR-1 resources will reflect the complete range of human history represented at the site within the limits of the Parks Canada program.

The Cultural Resource Management Plan for BAR-1

The DEW Line is disappearing. In the summer of 1993 the last of the original stations in northern Canada was shut down. Plans are being made to clean up the now abandoned sites. The site of BAR-1 will eventually be incorporated into Ivvavik National Park. In 1987 Parks Canada began research on the site to prepare for this transfer.

In June, 1993 the USAF shutdown operations at BAR-1. Their moveable property, including equipment and supplies, was either sold or removed. ITT - FELEC, the contractor responsible for site operation, pulled out their staff and the regular maintenance of the site stopped at the same time. Discussions on the clean-up of the site and plans for its long-term appearance were initiated even before shutdown occured. Although the assessment and attribution of the site's cultural significance has not yet been completed, work on a cultural resource management plan was needed to ensure Parks Canada's responsibilities could be met.

The cultural resource management plan developed was based upon the three historic themes identifying the heritage character of the site. These commemorative themes and their primary messages are:

1. Technology and Operations - the development and refinement of a complex technology that could function in an arctic environment and its role in an international defence agreement.
2. Socio-economic and Political Effects in Canada - the economic catalyst of Cold War activities, the political balance of national sovereignty with international relations, and the effect on Canadian northern development.
3. Inuvialuit Contacts - Inuvialuit reactions to southern intrusions and the extension of national programs into the north.

The activities falling out of this plan were all shaped by reference back to the five principles of the CRM Policy. With these basic ground rules established it became possible to build-in the various interests and issues surrounding the site offering both opportunities and limitations. It is important to note these specific issues did not affect the overall purpose or direction of the plan. The plan evolved into a three part strategy for preservation, recording, and interpretation..

Preservation Strategy: In considering the preservation of site features critical to the commemoration of the historic themes it is helpful to analyse the site values by their physical or symbolic character. Of the three themes it is only the first theme on technology and operations that has a reliance upon the physical features of the site. For the social, political and eonomic themes it is the symbolic value of the DEW Line that is most important. This differentiation is of critical importance in assessing the challenging question of allocating resources to the preservation of the site.

The complete preservation of the station, even in a derelict state, is a serious obligation. The annual heating bill for the station in 1992 was well over a million dollars. Of the station's operational complement over half the staff were dedicated to basic maintenance and repair of the structure and its systems. These are major expenses and a complete preservation would skew the Park's budget handicapping the development and implementation of a balanced approach to the full range of Ivvavik National Park commemorative responsibilities.

In considering station preservation a review of other initiatives connected me with a similar program for the cultural resource management of Cold War sites in Alaska. The DEW Line was listed on the United States National Register of Historic Places in 1987.[23] Since that time the Alaska State Historical Preservation Office (SHPO) in Anchorage, has worked with United States Air Force and US Army offices, on a comprehensive program for the appropriate commemoration of significant Cold War military sites in that state.[24] The DEW Line remains an important part of this work. One DEW Line station, POW-3 at Bullen Point, Alaska, built to the same plans as BAR-1, has been selected for permanent preservation as typical of the DEW Line in Alaska. Abandoned in 1972, the station remains largely complete as a landscape feature. However, upon closure it was stripped and all site records and equipment has been either destroyed or lost. Subsequent vandalism of the station has further reduced the detailed information available on its operation. Nevertheless the main components of the station survive, have been recorded, and are now being prepared for preservation.

The opportunity to work in partnership with both local and international partners in the development of the cultural resource management plan for BAR-1 was critically important in dealing with such a challenging site. The SHPO's work to preserve the physical plant of the DEW Line station at POW-3 allowed Parks Canada to focus on the strengths and address its weaknesses at BAR-1. The BAR-1 plan developed addressed two aspects of preservation. The selection and preservation of selected elements of the station as on-site landscape features was complemented by Parks Canada's unique opportunity on the DEW Line to collect site-related artefacts and files to preserve the operational story of the site and its operations.

In light of the SHPO's DEW Line preservation work and the largely symbolic value of the BAR-1 site in Canadian history the site preservation plan has focused upon the existence of the site, rther than the character of it. The cultural resource maangement plan includes the preservation of only low maintenance and low profile items on the site. The extensive gravel pad of the airstrip, road network and building platform will remain. Further the "footprint" of the station will be preserved by retaining all foundation posts, berms, concrete pads, piles and sleepers from the buildings, oil tanks, cable runs and aerials. Terms of reference for the clean-up contract are currently being prepared with significant input from the cultural resource

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[23] USNPS, National Register Nomination "DEW Line-Alaska Segment", Dec., 1986.

[24] This work has produced a range of useful tools. These include Colt Denfeld's The Cold War in Alaska: A Management Plan for Cultural Resources (US Army Corps of Engineers, Aug., 1994), a draft document enumerating the Cold War sites in Alaska and suggesting suitable approaches for their commemoration, Kenneth Schaffel's The Emerging Shield: the Air force and the Evolution of Contintental Air Defense 1945 - 1960 (USAF, 1991) a contextual history of the overall system and the more specific "Short History - Air Defense Radar Systems in Alaska" prepared by the USAF, 11th Air Force, Office of History in the fall of 1990.

management interests. Co-operative work between Parks Canada and the SHPO will ensure a minimium of overlapping work in the structural preservation area.

The great strength of the BAR-1 site is its set of records and equipment. Through the co-operation of the USAF and ITT Parks Canada was able to select an extensive array of material at BAR-1 for retention. Collection criteria were based upon the historic themes. These criteria were built upon the themes and included:

Operations - To elaborate upon the purpose of the DEW Line, its integration as a line and with other elements of the Continental Air Defence system. The communication and detection roles.

Support Services - To describe the various other elements required at DEW Line stations to support the air defence function. This includes station management, site mechanical and electrical services, and social services. Integration with support services in the broader sense is also included.

Social Life - To provide insights into the life of the individual employees working at DEW Line Stations.

Northern Entry - To review the challenges faced by the developers and workers on the DEW Line in a northern environment and appreciate the social, economic, and demographic impacts upon northern indigenous populations.

Some 1150 kilograms (2500 pounds) of artefacts, files and station drawings were carefully packed and shipped to Yukon-based institutions for catalogueing and permanent retention.[25] The opportunity to select artefacts from a working environment provided a chance to include the workers in the selection of their preserved heritage. Console screens from the radar units,[26] cafeteria dishes, decorations from the social club, and windchill charts all provide insights into the details of daily life at BAR-1. The files cover topics ranging from daily orders to the operation of the Station bar. They provide insights into site labour relations, the organization of the DEW Line contractor's work force and the vast array of equipment maintenance and supply catalogues that created the rigourous routine that held the station together as a working unit. Some 400 drawings provide detailed information on the appearance and construction of the site. Co-operative actions with other museums and heritage agencies will integrate the DEW Line

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[25] Parks Canada funding and a USAF LEGACY grant are supporting the work being carried forward by the MacBride Museum, Yukon Archives, and Parks Canada staff. Details are available in D. Neufeld, "BAR-1 DEW Line Project - Objectives and Work Plan", Nov. 10, 1994 and subsequent project reports.

[26] A full set of the radar equipment, collected from the DEW Line training unit in Winnipeg, Manitoba is being preserved by the Canadian Dept. of National Defence Communications Museum in Edmonton, Alberta.

collections to ensure a minimum of redundancies.[27]

The information colelcted is being shared with the SHPO to ensure a complete record of the DEW Line is created and maintained.

Recording - As the total preservation of the BAR-1 station is unlikely there has been a major effort made to record the site and its activities. The BAR-1 record created focuses upon the stations's physical character, its operations and the overall context of the DEW Line. This record includes written, iconographic and oral components.

Historical research on the DEW Line has focused on the three themes. The political and military background to the DEW Line is already well addressed by available literature. Parks Canada research in both the written and community oral sources has thus tended to focus more on the direct impact of the DEW Line in Canada's western arctic and the subsequent development of Federal Government policies regarding such topic as Inuvialuit housing, social services and health care programs. In addition to work in the traditional historical research sources such as archives and museums, interviews with DEW Line staff were important. These interviews provided a wealth of material on the way the station worked. While the artefact and written records highlight the physical world of the site the interviews focused on relationships and processes defining the life of the station. Their contributions were critical elements in gaining an appreciation of how a DEW Line station operated and what it was like to live and work there. Parks Canada also worked with other northern heritage agencies on a major oral history project with the Inuvialuit people of the Yukon north slope.[28] Although the project covered a wide range of topics the Inuit described their surprise and profound shock at the construction and operation of the DEW Line. This oral history work was an important contribution to widening the discussion on the history of the north in the Cold War period.

A comprehensive visual and structural record of the site was also completed. Over 400 as-built architectural, mechanical and electrical drawings were collected at the site. These drawing provide complete documentation of the various structures on the site and of land-use patterns. Over 500 record photos of buildings, materials, and operations were also taken as part of the artefact selection and site recording process. An excellent collection of both vertical and oblique

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[27] The Provincial Archives of Manitoba holds the Records of the International Brotherhood of Electrical Workers (IBEW) Local 1541 - DEW Line, the union representing the workers on the DEW Line from the mid 1960s. A preliminary finding aid of the files has been prepared.

[28] The Inuvialuit Social Development Program, the cultural branch of the Western Arctic Inuvialuit government, ran a five year oral history project finishing in 1993 on the Yukon North Slope with support from a number of heritage agencies including Parks Canada. The final report, Murielle Nagy's, Yukon North Slope Inuvialuit Oral History, is a helpful introduction to this project.

aerial photos of the site dating from 1952 through 1970 was also found in the National Air Photo Collection. Taken at regular intervals during the station's existence they provide a land-use record of great value in considering clean-up locations and requirements.[29]

In addition to this prosaic record an artist was contracted to create a photographic gallery of the site.[30] Her work focuses on technological relationships. The photos, taken while the station was still operating, are a unique record of the station as a landscape feature and a study of the relationship between the station personnel and their workplace. Her shoot added some 600 imaginative images of the site to the historic record.

The material collected to date, while by no means providing a complete history of the DEW Line, is a comprehensive record of the station and its operation. While the long-term responsibility to maintain a record of the site has been completed it is also important to acknowledge the important contribution the collection has in identifying clean-up problems and focusing future environmental assessments on possible "hot spots".

Presentation - At this time no firm plans for the interpretation of BAR-1 are in place. Anticipated site visitation is very low and on-site interpretation will be limited to a simple sign providing site identification only. Ivvavik National Park staff plan an interpretive brochure. This will include information on the DEW Line station. However the main presentation effort will be focused on the collections held by the cultural agencies working with the collected artefacts and images and those archival institutions holding records. The material collected will support future research on the DEW Line. Interpretation of this monumental defence effort and its far reaching effects will be built upon solid foundations.

Presentation of the site to the public serves two purposes. The primary message explains the significance of the site to Canadian history and identity. The historic themes outlined above will shape this primary message. In addition to this mandated task the presentation implicitely includes an opportunity to develop a public constituency for the cultural resource management work undertaken by Parks Canada and other public heritage agencies. It is important to recognize both of these responsibilities.

In spite of the early stages of the process there have been opportunities to present some of the rich collection of DEW Line material to the public. A show of 30 enlargements from the Joanne Jackson Johnson collection was exhibited in the Art Gallery of the Yukon Arts Centre for

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[29]The Department of National Defence Directorate of History provided the initial leads for these previously restricted restricted aerial photos and the National Air Photo Library was able to find the original negatives for reproduction.

[30] Joanne Jackson Johnson, a noted visual interpretor of both the north and technology, was contracted to undertake this work.

three months in early 1994.[31] Several public lectures and media releases have also outlined both the significance of the site and the character and value of the work underway to preserve and present the station to the public.

To support a more ambitious travelling exhibit in the future a complete catalogue of the various project features has also been prepared. Providing a contextual history of the DEW Line and the BAR-1 station and a listing of the preserved landscape features, artefact, file, drawing and photo collections the catalogue is the foundation for developing a solid contribution to a future exhibit on the Cold War in Canada.

Conclusions

The project is proving to be a fascinating industrial archaeology study. The remote location of the site, the challenges of determining appropriate clean-up activities and objectives, the important cross-cultural component of its history and the opportunity to study the site while still in operation all made work at BAR-1 a stimulating experience. Nevertheless the project follows standard cultural resource management procedures. Hopefully the project offers a model for the approporiate and sensitive shutdown of northern military and industrial facilities in the future.

The isolated location of the site affected the site research program. Site visits were infrequent but a stay of several days or a week once or twice a year allowed for an immersion in the station and its operations. However, this same isolation from southern heritage infrastructure and the consequent high cost of doing work severely limits the range of options available for preservation and presentation on site.

Site preservation or clean-up remains a contentious and difficult topic. The extraordinary difficulty and expense of carrying out work in the north slope area effectively limits the time envelope for decision making. This is especially true as the responsibility for site care is currently divided between several government departments. While theoretically free of economic influences the cultural resource management program at BAR-1 had to take into a account the "one-time only" character of site clean-up funds. Commitments to preservation at BAR-1 had to be carefully balanced against the full range of cultural commemoration obligations of Ivvavik National Park and the Parks Canada system as a whole.

There were many different stories about the station. Especially interesting were those stories about meeting another culture. DEW Line staff were often perplexed by the complicated rules and regulations governing their contacts with the Inuit. And the Inuvialuit, for their part, initially

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[31] The show drew considerable local attention and several reviews by local media. An informal catalogue for the show was also produced.

perceived the DEW Line and its inhabitatants as "invaders". In studying the implications and consequences of the introduction of new technologies in a cross-cultural environment researchers of the DEW Line have rich resources to work with.

Research for the project was a wonderful exploration of a wide spectrum of activity. Field trips to the site, research in archives and museums and working with people with personal experience of the station provided solid background for the identification of heritage values. The opportunity to develop and implement an artefact and documentary collection program from an operating facility was especially rewarding. Less relaxing but of vital importance was the identification, assessment and balancing of the disparate interests and issues affecting the site for the cultural resource management plan. The exploration of site interpretation possibilities with a range of heritage partners and the importance of constituency building for Parks Canada activities is still underway.

Visiting and working on the Yukon north slope, one of the most striking wilderness landscapes in the world, made the work at BAR-1 a pleasure. Working with, and gaining direction from, the enthusiastic co-operation of DEW Line staff, local community members and Parks Canada professionals was an intensely satisfying experience. From a research perspective the project gave a rare opportunity to work with a complete range of cultural resources: the place, the people and their memories, photos, drawings, files, artefacts, and the immaterial advantages of visiting and working at a site still serving its original functions. These contributions combined to create a well rounded record of a northern military site and its importance to Canadians.

Also associated with this gratifying range of resources was the opportunity to work with the host of individuals and institutions who share a responsibility for the management of this site. This includes the operational managers of Parks Canada who strive to preserve and present unique protected spaces for all Canadians, the international body of cultural resource management workers at historic preservation offices, museums and archives working on the past, the military officers of both countries fulfilling their duty to defend the continent, the congenial Inuvialuit of the Yukon north slope concerned about their lifeways in their own country and the many Canadians who share an interest and concern about how we manage our cultural and natural resources for the future.

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