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Canadian Arctic Sovereignty and Security: Historical Perspectives

Edited by P. Whitney Lackenbauer

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Cover: The Mobile Striking Force, an airportable and airborne brigade group designed as a quick reaction force for northern operations, was an inexpensive solution to the question of how Canada could deal with an enemy lodgement in the Arctic. During training exercises, army personnel from southern Canada learned how to survive and operate in the north. In this image, taken during Exercise Bulldog II in 1954, Inuk Ranger TooToo from Churchill, Manitoba relays information to army personnel in a Penguin. DND photo PC-7066.

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The Military and Nation Building in the Arctic, 1945-1964

K.C. Eyre

The generation after the Second World War marked the high point of military presence and activity in the Canadian North. Yet in reality, little of this activity was directly related to a specific military threat. During the bomber era, infantry troops trained to snuff out "lodgements" and the radar stations of the Distant Early Warning Line kept their long polar watch. These two organizations, however, accounted for but a small portion of the military activity in the region. A host of other programs brought the soldiers, sailors and airmen of Canada and the United States to the North. It was generally recognized in all branches of the service that existing knowledge of the North was imperfect and that special techniques and equipment were required to operate there. In the absence of specific operational roles, many military elements set about learning how to live and work in the isolated northern environment against the day when a wider military threat might develop. As a corollary to these programs, steps were taken to establish necessary support facilities, to permit these activities to be carried out with greater efficiency and safety.

An important by-product of this activity was a major contribution by the military to general knowledge about the North and the establishment of many important components of social infrastructure. It would be a serious error to assume that all these military contributions to northern development were coincidental. There are three categories into which all military activity during the 1945-1964 period could be grouped. The first is that small class of activities that were undertaken for purely military purposes and the development spin-off was truly accidental. By far, the largest category is the second class wherein military projects were executed in a manner designed to optimize developmental aspects. The third group are those government designated activities undertaken purely to meet the needs of national development, and which promised no particular value to the military.

The Northwest Territories and Yukon Radio System

After the departure of the Yukon Field Force from Fort Selkirk and Dawson City in 1900, and the disbandment of the Dawson Rifles of Canada five years

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later, no soldiers appeared in the North until 1923, when communicators of the Royal Canadian Corps of Signals opened the first stations of the Northwest Territories and Yukon Radio System. The event is of interest for it marks the first occasion when a Canadian government turned to the military to support national development activities in the North. The radio system remained in operation throughout the Second World War, expanding and contracting in response to commercial and industrial development in the Yukon and the Mackenzie Valley and the needs of American- sponsored defence projects.

The outbreak of the Second World War disrupted the NWT & YRS, as it did most other Canadian institutions. In the autumn and winter of 1939, calls were made upon the system to support mobilization by providing men and materials. In the final analysis the system was a training facility for the RC Sigs and, in the crisis of war, the army did not hesitate to draw upon the distant posts to fill its needs. On the other hand, the RC Sigs had acquired a responsibility to the residents of the Northwest. People had come to depend upon the radio facilities over a period of sixteen years and the entire network could not be abandoned overnight. Those stations whose closure would not cause a breakdown in the whole system or whose services could be provided by alternate means were closed and their equipment and personnel were withdrawn to the South. At the remaining stations personnel cuts reduced the level of services that could be provided, meteorological services suffering particularly in this respect.[1]

The entry of the United States into the war and the defence projects undertaken by that nation in the Northwest provided an impetus that took the system out of its initial war time slump. To support the Canol project, the United States Corps of Signals established a communications network, but it soon became evident that the American equipment did not have the power or the reliability to handle the traffic on the net. The temporary expedient of patching into the nearest NWT & YRS station for onward transmission of messages was adopted, but in 1943 the two governments agreed that because the RC Sigs were already established at key locations in the Mackenzie Valley and had long experience in northern operations, the Canadian system would provide the main communication grid for Canol. Accordingly, the Corps installed a powerful station at Norman Wells capable of transmitting direct to Edmonton and later took over an American station that had been established at Fort Providence. By the end of the year the NWT & YRS was operating fourteen stations and the System was again in the process of expansion.[2]

The System's role in supporting flying operations was greatly expanded the following year. Flying activities relating to the Alaska Highway, Canol,

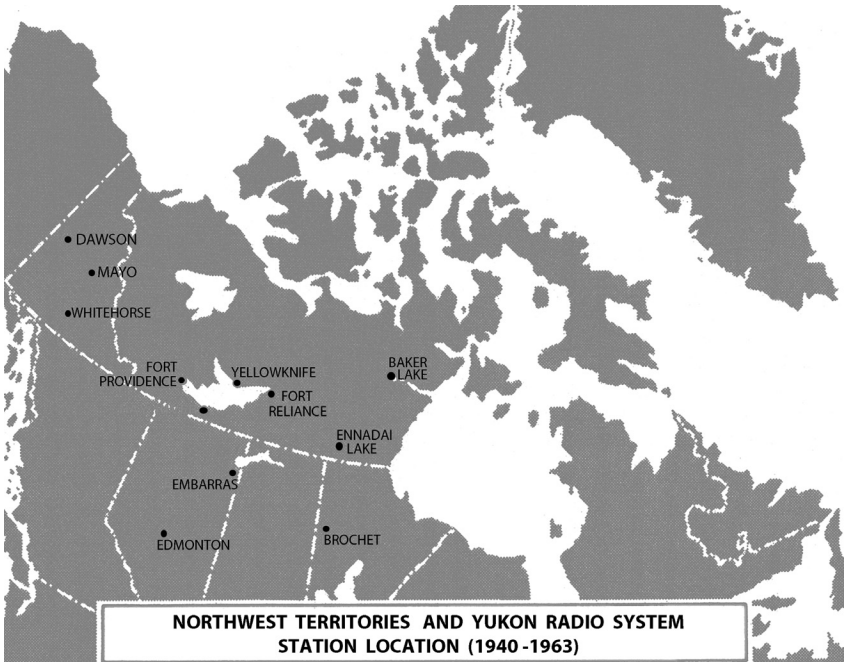
and the North West Staging Route continued unabated and civil aviation in the Mackenzie underwent resurgence. The increased level of air activity produced a demand for more and better weather forecasts and the RC Sigs was requested by the Meteorological Department to open stations at Fort Good Hope and Port Radium, and to increase the frequency of weather reports from all other existing stations. Manpower requirements in 1944 were not as critical as in 1939 in the sense that the requirements for a few dozen men to operate the NWT & YRS were insignificant to an army of over a half million men. The RC Sigs also took over small stations that had been established by the Americans at Wrigley, Hay River and Embarras. These developments brought the system back to its pre-war level of nineteen stations. The following year, the main stations at Edmonton, Fort Smith, Fort Simpson and Norman Wells received powerful new 10 KW low frequency transmitters, thus further increasing the System's capacity to support the anticipated northern boom that it was thought would follow the end of the war.

During the war years, the system continued, in the main, to follow its traditional pattern of supporting contemporary activity in the Canadian Northwest. The Canol project replaced the mining activities of pre-war years as the main user of facilities. The system also continued to provide its traditional weather forecasts and commercial facilities for the permanent residents of the North. Wartime programs provided Canada with a surfeit of trained signallers. During the war there was no suggestion made by the RC Sigs that the system's continued value lay in the training it provided to military communicators. The system had become a thing unto itself – a service to the Northwest, which, by tradition, was provided by the Royal Canadian Corps of Signals.

With the coming of peace, the NWT & YRS continued in its now well established pattern of serving the North. Any military, commercial or governmental group that required quick and efficient communications turned to the Royal Canadian Corps of Signals. One could graph the level of development activity in the Northwest simply by studying the various expansions and contractions that the northern signals system underwent over the years. While the post-war experiences of the System differed somewhat from prewar and wartime activity in the specific nature of services provided, on the whole, meteorological forecasting, air support, communications for other departments of government, and commercial traffic occupied the bulk of the signallers' time.

During 1946, all the wartime stations continued in operation and new sites were opened at Snare River, north of Yellowknife, and at Baker Lake.[3]

The Snare River station was short lived, but its establishment illustrated again the flexibility of the army to respond to reasonable requests. A major hydro-electric power project was to be carried out on the Snare to provide the energy-starved mining interests in the Yellowknife area with a source of cheap and reliable power. To facilitate the construction phase, a radio station was required and on 8 July 1946 the RC Sigs was on the air from the new site. The project was completed late 1948, but the signallers stayed on until mid-1949 at which time a conventional land line between the power plant and Yellowknife was completed.



Map 9. Graphic Arts Section, Mobile Command Headquarters.

During 1948 and 1949, the System was drawn further into the web of the Meteorological Service. The first year weather stations were stalled at Brochet in northern Manitoba, and at Fort Reliance at the eastern tip of Great Slave Lake. Both of these stations were transmitting weather data by freeze up, but their establishment was costly in both men and support equipment. The RCAF had to be called on to fly in construction crews, operators, and equipment, although a barge brought in most of the heavy plant to Fort Reliance. Both of these locations were noteworthy because of their isolation. At Brochet the population consisted of two traders, four missionaries, a game warden and a fluctuating group of up to fifty Cree and Chipewyan Indians

who came and went with the hunting and fishing seasons. At Fort Reliance, the entire population consisted of two members of the RCMP who used the post as the base of patrol operations at the east end of Great Slave. The following year, the NWT & YRS reached its nadir of isolation when it responded to a Meteorological Service request to establish a post at Ennadai Lake. At Ennadai, there was nobody except the four man signals detachment. This forlorn post was on the air with regular weather broadcasts by October 1949, but perhaps its most important function during the years the RC Sigs operated the station was the humanitarian role it played in support of the local natives.

The Kazen River Band of Caribou Eskimos[4] had traditionally hunted in the general region at Ennadai Lake, but during the winter of 1949-50, disaster struck when the route of the annual caribou migration changed and the herds by-passed the area. The 45 members of the band were facing starvation by April 1950 when their plight became known to the soldiers of Ennadai. The signallers radioed Churchill for assistance and later arranged for the air evacuation of the band to Neutlin Lake, a hundred miles to the southeast, where game and fish were plentiful. Before the natives could be moved, however, they had to be collected and concentrated at a central pick-up point. The soldiers ranged the area bringing in their starving charges who subsisted on army emergency rations until the aircraft arrived. Had the Ennadai Lake station not been established it is most likely that the whole band would have died of starvation.

By 1951 the Eskimos had drifted back to their traditional hunting ground. In the interval, the government had taken steps to provide them with rifles, ammunition and traps. Rather than relying upon the caribou for their entire subsistence, the natives were now able to bring furs into Ennadai where the signallers baled them up and shipped them to the RCMP at Churchill. There the police sold the furs, bought food, ammunition and supplies with the proceeds and shipped these to Ennadai where they were distributed. This change in the economic base of the Eskimo livelihood, from complete dependence upon the caribou to a barter economy based on fur trapping, was probably an undesirable side effect of the changed caribou migration patterns. The alternative: cultural purity – and starvation – was even less acceptable in the middle of the 20th century. Although many of the so called "benefits" of white society have ultimately proved to be culturally devastating to northern native peoples, there can be no question that the Ennadai station personnel were on more than one occasion instrumental to the survival of the Kazen Band. Medical services were provided to the best of the detachment's abil-

ity and in the spring of 1954, the detachment commander nursed the band through a devastating influenza epidemic. Weather conditions precluded a doctor's landing at the post. Instructions for treatment were radioed to the soldiers who brought their charges through the crisis without a single loss.

The outbreak of the Korean War in 1950, like the war in 1939, put severe demands upon the personnel of the System. By this date the original purpose of the System to provide otherwise unavailable training to army signallers had long since become meaningless. In reality the System was a drain on RC Sigs resources. Since the beginning of the Second World War, the Corps had been operating the necessary trades schools to support all their work. Before a man could be usefully employed in the North he had to be highly trained to operate an ever increasing array of complex equipment. It was also necessary to provide additional instruction in meteorological reporting, and in the operation of the diesel generating plants that provided the electricity at many of the more remote locations. Still, the RC Sigs clung onto the System. They had a job to do and were doing it well, but sometimes it was only possible to keep operating by curtailing services or by placing heavy long term demands on the operators.

The requirements for troops for Korea reduced the System to the point where it was operating with only 75 per cent of its authorized establishment. As the demands of an expanding regular, army would take up the recruit signaller output for the foreseeable future, authority was obtained to employ civilians to fill some of the vacancies. Qualified civilians who were willing to live in the North were hard to find. The NWT & YRS position was made even more difficult by the Department of Transport which was expanding its northern radio services and was authorized to pay much higher salaries. Faced with these manpower problems and a steadily increasing volume of radio traffic, the Department of National Defence decided to cut back on some of its stations. Agreement was reached with DOT whereby that Department took over operation of some of the more isolated stations whose sole function was weather reporting. Embarras Lake was turned over in mid 1952 and the others were slated for hand ever as soon as DOT could hire men to run them. Ennadai Lake went in 1954 and along with it the inevitable responsibility for the Kazen River Eskimos. Wrigley went the following year and Brochet followed in 1956.

In February 1955 construction began on the Distant Early Warning Line. A tremendous airlift was required to support the construction of the western portion of the project in Canada, from Cambridge Bay to the Alaska Border. As a result, weather messages, air movement messages, and construction

related messages increased dramatically. Three hundred thousand more signals were handled in 1955 than during the previous year, the vast majority of these attributable to the radar construction project. The communications tempo grew with construction activity the following year when a hundred per cent increase in all classes of message traffic was recorded, despite the fact that the western part of the construction phase was completed by the end of July. At the beginning of 1957, the DEW Line's own internal radio system came into operation and this relieved much of the remaining pressure from the NWT & YRS. Much to the disgust of many veterans of the RC Sigs, the civilian firm holding the DEW Line contract offered fabulous salaries by the standards of the times, and hired numerous civilian and military operators away from the NWT & YRS.

That another program would emerge to replace the DEW Line traffic was perhaps inevitable. In 1957, the project was the construction of a new town site for the village of Aklavik. Aklavik, sited in low lying ground in the Mackenzie Delta, was subject to regular floodings and was an unsuitable site for further urban growth which the Department of Northern Affairs and National Resources wished to foster in the area. Accordingly it was decided to relocate the community to higher ground 35 miles to the east. The new town was named Inuvik in 1958, but during 1957 it went by the more prosaic title of Aklavik East Three. The radio traffic associated with this major construction project was largely responsible for the System recording its all time high of messages passed in one year – 3,172,628.

The cost of operating a system that could handle this volume of traffic, however, was proving to be increasingly unacceptable to the Canadian Army. By 1957 this amounted to 1.5 million dollars annually. In 1957 commercial traffic had brought in revenue of 200,000 dollars, and had government messages been computed at the commercial rate, another five million dollars would have been realized. Unfortunately, from DND's point of view, all revenues went to the Receiver General of Canada and not to the Department of National Defence. A detailed traffic analysis carried out in 1956 revealed that DOT was the major user of the System, with over ninety per cent of all messages being concerned with that department's affairs. DND, on the other hand, accounted for only four per cent of the total message traffic and most of these related to the internal administration of the System. In an attempt to redress this financial anomaly, DND requested that it either be relieved of responsibility for running the network, or else that costs be shared by DOT. A cabinet decision taken in September, 1957 directed that the Army hand over the System to DOT.[5]

It would appear that those signallers who had been involved with the NWT & YRS for many years regretted the government's decision when it dawned upon them that they were to leave the North and give up control of the System that had been so important to northern life for over three decades. The actual handover was done on a station-for-station basis and took over two years to accomplish. In September, 1958 the detailed inventories and procedures for handover were complete and Fort McMurray, Alberta joined the DOT net. Before the year ended, Fort Chipewyon, Fort Smith, and Hay River were transferred. By the end of 1959, Dawson and Mayo, the two original stations, and Port-Radium and Fort Resolution remained. On 25 March, the last station, Resolution, changed hands and the Northwest Territories and Yukon Radio System quietly vanished from the northern scene.

By all accounts, most northerners were sorry to see them go. At a ceremony held at Yellowknife in November 1959, northerners of all persuasions and backgrounds said their formal good-byes. Letters poured into System Headquarters from airlines, transport companies, mining firms, other departments of government and private individuals, all thanking the RC Sigs for the work of years and expressing regret that the soldiers were leaving. Their contribution to northern development, northern life, and northern society over the years was not insignificant.

On the whole, the signallers of the NWT & YRS entered fully into the spirit of northern life. They gave much more than basic communications services, which were extremely important in themselves. Signallers acted as postmasters and magistrates. They ran airfields and weather stations. Between 1949 until 1958 when the Canadian Broadcasting Corporation took over the job, signallers voluntarily ran a rebroadcast service of commercial radio programs in the larger communities. Signallers supported search and rescue operations and vice-regal visits to the North with mobile and efficient communications to the "outside." Upon occasions they acted as special police constables and, more mundanely as doctors, nurses and midwives. The Royal Canadian Corps of Signals gave much to the North. The full story of their accomplishments is yet to be chronicled.[6]

The Alaska Highway

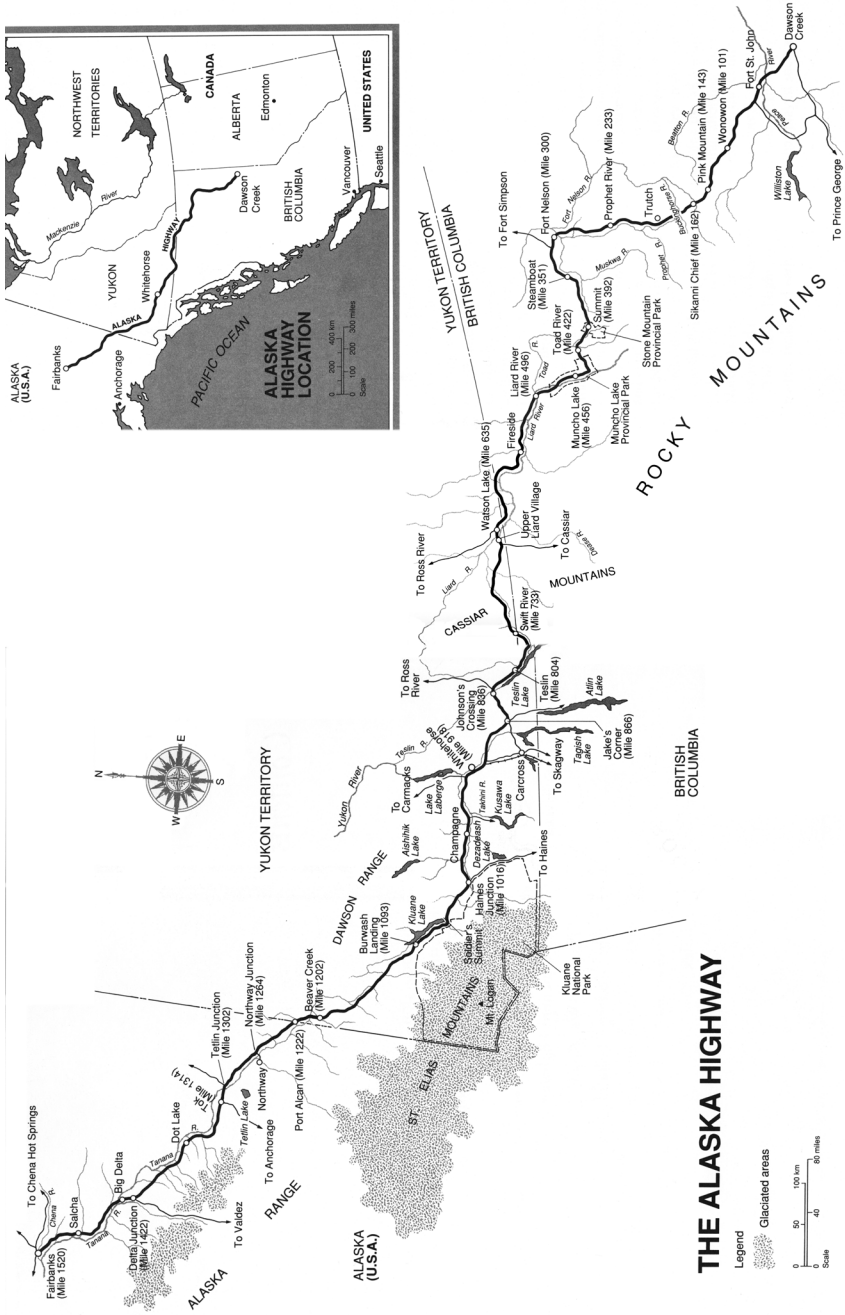
When peace came in the summer of 1945, the future of the great wartime highway to Alaska was by no means clear. By the terms of the original international agreement, the United States was committed to maintaining the road for six months after the war's end at which time it was to be transferred to Canadian control. Canada had the option of incorporating the highway into

the national road grid, but was not legally committed to do so. The Dominion had the choice of simply abandoning it on the grounds that it was a wartime measure that the return to peace had rendered superfluous. If Canada did opt to keep the road in operation it had been agreed that there would be no "discriminating conditions in relation to the use of the road as between Canadian and U.S. civilian traffic." [7]

The singling out of civilian traffic is important. In the original negotiations, the PJBD had recommended certain post-war rights for American military traffic to and from Alaska. The Canadian government had declined to commit itself to the post-war military situation, but stated that it was prepared to give due consideration to any future PJBD recommendation on the subject. The matter was dropped from the original agreement. The United States government raised the issue again in March I943, expressing "a desire to extend the interpretation of the original agreement in regard to post-war military use."[8] Canada again declined to do so. Towards the end of 1944, the American government began pressing Canada to agree to take over and maintain the highway, but in July 1945, Canada was still considering the proposition.[9]

In the interval the Canadian Army in the form of the Royal Canadian Engineers (RCE) entered the debate. The military case was that if and when the highway was taken over by Canada, it should become an army responsibility. The Royal Canadian Engineers, it was argued, could run the system efficiently and at the same time use it as a means of peacetime training for gaining experience "in connection with large scale engineering works."[10] Despite all the prophecies of post-war development that had accompanied the construction of the highway during 1942-43, it was still not clear in Canada that the advantages in keeping up the road would have merited the cost. The government's focus of interest remained the Northwest Staging Route, which, it was thought at the time, would develop into a major route of international air traffic in the post-war world. The importance of the highway in supporting airway operations had been clearly demonstrated during the war, thus providing an incentive to the government to keep it in operation.

The other side of the coin was American concern over the future security of Alaska. It was evident that the United States did not want to have to embark on another crash construction project if the changing international situation were to produce a new threat to the northern territory. A bill introduced in the United States House of Representatives in the summer of 1945 was interpreted in Ottawa as reflecting the official American position, when



Map 10. From Ken Coates, *North to Alaska* (Toronto: McClelland & Stewart, 1992).

it called for the creation of a board to be known as the Alaska International Highway Commission. Another American official spoke to the effect that:

> A properly controlled air route to Alaska is considered indispensable to the permanent defence of the continent … The only feasible way to properly provide these necessary items to a controlled airway (i.e, fuel supplies, auxiliary strips, weather stations, etc.) is a highway generally along the same route.[11]

It is evident that the United States was prepared to bring considerable pressure to bear on Canada to keep the route open, for the highway was seen in the United States as an important feature in the defence of Alaska. Inasmuch as it was possible to differentiate between national defence and continental defence, the road was not significant to Canada. However, the magnitude of American interest when compared to that of her northern neighbour was such that Canada, in all probability, had little choice but to go along with American wishes. From that point of logic, it was but a short step to give responsibility for the highway to the Canadian Army. Here there was also a strong precedent in the form of the NWT & YRS, for military involvement in the operation of basic northern services.

In October 1945, "the Canadian Army, was authorized to take over the maintenance responsibility of the Highway until such time as this responsibility might be assumed by a civilian department."[12] The official handover date was fixed for 1 April 1946. In the interval the Canadian Army began to come to terms with the burden it had so willingly taken on. In January and February, advance parties were dispatched to the North to familiarize themselves with the road and to study the American system of maintenance. In Ottawa, staff officers were deciding upon the size of the force that was required and the myriad of other, technical problems that had to be shelved prior to the actual change of control. By mid-February, the outline plan for the take-over was complete. The Alaska Highway became known to the Canadian Army as the Northwest Highway System (NWNS). Arrangements were made to take over American equipment, accommodation facilities, and stores. Contracts were made with civilian agencies to provide needed services. Land leases were re-negotiated. It was estimated that the capital cost of just the take-over would be in excess of 5.7 million dollars.[13] The American experience had indicated that it would be wise to permit the troops to bring their families with them to the North, and plans were made to build married quarters in a new suburb on the plateau above the town site of Whitehorse.[14]

Meanwhile, in the North, the engineer advance party was surveying with some dismay the job they were faced with. The senior officer of the group, Lieutenant Colonel J. R. B. Jones, wrote of his first impressions:

> We took over a strange unknown ribbon of road covered with snow. We knew the vehicles and equipment left to use were old and worn and needed immediate replacement (they aren't replaced yet). We had no married quarters and I, like most of the army up there, had been home only a few months after 5 or 6 years separation. It looked grim. We read the records of how the rivers rose suddenly in the spring and took out dozens of bridges, we were told of flash floods that spring from mountain slopes to wash out miles of highway. It looked grimmer. We took another look at the old and decrepit road machinery, the tremendous task of sorting out warehouses full of unlisted tools and spare parts, and the way our proposed establishment had been pared down. It looked hopeless.[15]

At the time of take-over, the Alaska Highway was still a military road. Civilians wishing to use the route had to show evidence that their trip was really necessary and also meet certain rigid standards of vehicle serviceability prior to being given a travel permit. In early 1946, the only hotel north of Fort Nelson was at Whitehorse – six hundred miles distant. There was a similar lack of garages and filling stations. The engineers' task was in reality much more complex than just maintaining the 1221.4 miles of highway that lay in Canada. Over 200 miles of access roads leading to the seven emergency landing strips spaced along the highway also had to be kept open, as did the airfields themselves. There was also a requirement to keep open during summer the 120 miles of secondary road from Haines, Alaska to the point where it joined the Alaska Highway at mile 1016. The NWHS troops were also responsible for providing support to RCAF units operating the North West Staging Route. This included supplying rations, hauling ground freight, and maintaining vehicles. At Whitehorse, the army provided a wide range of services and utilities for the use of RCAF and other departments of federal government.[16]

To do the job, the army was allocated about 670 personnel vacancies, of which 450 were to be filled on a permanent basis by civilian employees.[17] The NWHS Headquarters located at Whitehorse included an operational wing which dealt with bridge and road design and an administrative wing

which concerned itself with personnel and logistic services for the system as a whole. Under this headquarters came several units, the most important of which was the Highway Maintenance Establishment (HME). HME, with its headquarters also in Whitehorse was, as the name indicates, primarily concerned with the actual maintenance of the road. The highway was divided into three sectors, and in each sector there were static maintenance camps every sixty or seventy miles. The men working in these camps carried out road patrol, grading, and minor repairs. The sector superintendents and the staff of the maintenance camps were all civilian.

Major repairs and construction were initially the responsibility of the Road Maintenance Company, RCE. This military unit had a reconnaissance and survey section as well as a bridging platoon and a road construction platoon. All new construction as well as emergency work beyond the capability of HME fell to this unit. In addition to the operational units, NWHS included a full range of support service units such as ordinance, service corps, electrical and mechanical engineers, medical and dental units, and engineer works. The organization, in fact, closely resembled that of an independent brigade, with the combat arms being replaced by the units and detachments of the Highway Maintenance Establishment.

During the years that the army operated the NWHS there was an ongoing program of improvement of the road and a similar upgrading of support facilities and accommodation. There was a lot of work to do. The original survey in 1942 had been pushed through under the urgency of the moment. In many cases the road simply followed local trails which were admittedly not in the best location. The actual road turned over to Canada was, in fact, only an improved pioneer road, and was a far cry from the high quality road that the American civil authority had originally planned. Many sections had been built over unstable ground and would eventually have to be relocated to avoid sagging, frost boils, slides and icing areas. The majority of bridges were of temporary native timber and culverts were built of native unpeeled poles. All of the buildings were classified as "temporary construction" and were not suitable for long term use.[18]

The system improvement was a gradual process. There was never any question of deploying masses of workers or spending tens of millions of dollars in a crash program to revamp the system. One year some of the wooden trestle bridges might be replaced with concrete pilings; another year might see a ten mile stretch of road relocated to a more suitable location. Gradually, corrugated steel culverts were installed all along the highway. While the existence of the highway fostered a modest amount of economic development

and resource exploitation in northern British Columbia and the Yukon, there was no great boom of development as some optimists had forecast when the road was built. The two great northern barriers to development – climate and isolation – again combined to limit the profitability of most enterprises.

The most important result of the military's running the NWHS was social. In southern Canada, military communities are traditionally self-contained. It was realized that the situation in the Yukon was considerably different from that in the South, and the military shared its resources with the civilian community to a high degree. Military camps in southern Canada usually have their own schools for dependent children but because the school situation in the town of Whitehorse was so poor, DND funds were diverted to help build a public elementary and high school and a separate (Roman Catholic) school.

Children from the army and RCAF town sites were bussed daily into Whitehorse to the common schools. In addition, the Department of National Defence paid 250 dollars a year for each "military" school child. In the same vein, rather than constructing a military hospital on the base, the available monies were used to help construct a new hospital in Whitehorse. DND shared in the operating costs of the hospital as well as providing key personnel in the operating rooms, laboratories, and X-ray departments. In the area of recreation, military personnel and their dependants were encouraged to participate in and support such varied activities as sports teams, drama clubs, and Scouts.[19]

At the small maintenance camps scattered along the highway, the social impact of the "military way of doing things" was even more significant. Each camp included a foreman, a mechanic, and from three to five heavy equipment operators. These, all civilians, usually with their families, lived in modern quarters provided by the army. Each maintenance camp eventually provided the core of a small, balanced community. Private enterprises in the form of gas stations, motels, and restaurants sprang up at maintenance camp sites. These sites were attractive locations for an entrepreneur to locate himself and his family. The army had sited a recovery vehicle and ambulance at each camp and these were available to the general public in time of emergency. The Department of National Defence built a small school at each camp site if one did not already exist. The territorial government provided the teacher and the facility was used by all the children in the community. Each maintenance camp was provided with a curling rink, a recreation hall, and a schedule of weekly movies. These facilities, so important to combating the monotony of northern isolation, were open to anybody living in the community.[20]

The most important issue relating to the highway during the years the military operated in the North was the question of paving. The matter arose as early as 1948 and has periodically emerged for debate ever since. In 1948, a Department of Transport official observed that on a national scale the highway was only of "limited commercial usefulness" This factor, coupled with the very high cost of paving such a long road in isolated country indicated that paving was not practical at the time. The DOT spokesman further stated that it was "very improbable that the task would ever be undertaken except as a defence measure." The Department of National Defence maintained that paving was not necessary for defence purposes.[21] Canada, at the time, anticipated little security threat in the area and, indeed, the combat capability of the troops of the NWHS was minimal. The army was simply running what was rapidly becoming a commercial highway for the training value it provided to the engineer troops involved. In point of fact, the unpaved state of the Alaska Highway was not a major factor in limiting its commercial usefulness. The problem lay in the very poor quality of the "feeder roads" of Northern Alberta and British Columbia that restricted access to the main highway. It was argued that if the provincial roads could be improved, the commercial use of the Alaska Highway would increase whether or not it was paved.[22]

Periodically, the United States offered to share in the costs of paving. In July 1958, President Eisenhower and Prime Minister Diefenbaker discussed the possibility of some sort of joint arrangement but no decision was reached. A bill was introduced in the United States Senate the following year which called for the United States to share costs of paving with Canada and to open negotiations to make the necessary arrangement.[23] The extent of American economic involvement in Canadian development had already been criticized by numerous responsible Canadians. It would appear that any decision to permit the United States to pay for the Alaska Highway would have been most impolitic. In any case, the matter never came to the point of formal negotiation. In August 1959, the Minister of National Defence stated in an interview that "Canada has received no firm proposal from the United States on sharing the costs of paving the Canadian section."[24]

Over the years the NWHS came to take on a distinct raison d'etre of its own. It would appear that less and less attention was paid to the original reason for army involvement with the Highway. The Royal Canadian Engineers increasingly saw the job of maintaining the Highway in simple terms of a job that they had been given to do and which they took pride in doing well. One of the claims of HME was that the Alaska Highway was the finest road of its type in the world. The frequent articles that appeared in the *Canadian Army*

Journal by engineer officers on the subject of the NWHS reflected the job satisfaction that came with involvement with the route. In addition, Whitehorse, where the vast majority of military personnel of the NWHS were stationed, was an extremely popular posting for married soldiers and their families. With year round road, rail, and air communications, Whitehorse did not suffer from the isolation and monotony that characterize most other northern communities. The organized recreational opportunities, schools, hospitals, and shopping facilities of the community were good by national standards, and the higher cost of living was offset by a special northern allowance. For those families, that enjoyed hunting, fishing, camping, and hiking, the Yukon truly was the "sportsman's paradise" of the tourist brochures.

The Department of National Defence, on the other hand, was somewhat less enthused about the NWHS. The main reason for this attitude was the increasingly high cost of maintaining the road and all its elaborate supporting facilities. In 1946 it was thought that the military presence would only be required for a few years, but year after year the soldiers stayed. In 1954, the Minister, Brooke Claxton, announced in the House of Commons that the Department of National Defence and the Department of Public Works were discussing the advisability of the latter taking over the road. The Minister observed that the road was "more and more becoming essentially a civilian operation", and he admitted that it would be "more economical and practical for it to be taken over by the Department of Public Works."[25] In January the following year, when an opposition member inquired if any progress had been made on the transfer of the NWHS to some other department, the Prime Minister replied that "no such decision has been taken."[26]

If the Liberals were lukewarm to the continued involvement of the military with the Alaska Highway, the Progressive Conservatives were bitterly cold to the prospect. When the latter came to power in 1957, George Pearkes, the new Minister of National Defence, began to search for a means of shifting responsibility. He was not particularly successful. In 1959, he stated publicly that any other department could have it for the asking. He stated that DND was "anxious to be rid of the responsibility of maintaining the 200 mile Canadian section of the Alaska Highway." He reiterated the argument that the road, built as a defence measure during the Second World War, was not now significant from a defence standpoint. He went on to add that increased civilian use of the road had forced DND into spending large sums to maintain it.[27]

Getting the Department of Public Works (DPW) to take over the road, however, proved to be a major obstacle. Mr. Pearkes eventually changed his

views, for the following year, the Commander of the NWHS reported that the "Minister was kind enough to say that we would probably continue in the job as no other department could do it as well."[28] It was evident, however, that the Army's responsibility for the Alaska Highway would end sooner or later. To defence planners, the continued maintenance of the Alaska Highway in the interests of national development was seen as being a costly anomaly in DND programs. In October 1963, the Liberal government of Lester B. Pearson decided to withdraw the military from the Alaska Highway.

Mapping the North

In 1919, a Canadian government committee reported that to map the whole country would cost 180 thousand million dollars and take 3,600 years. The actual job was completed in the year of Canada's centennial at considerably less cost.[29] Aviation applied to mapping made the difference. A program to provide aeronautical charts on a scale of eight miles to the inch, and sixteen miles to the inch (1: 1,000,000) was initiated in 1944 and continued into the 1950s. This project was further modified in 1947 when the Cabinet Defence Committee assigned the Department of National Defence and the Department of Mines and Resources the project of mapping all of Canada on a four mile to the inch (1:250,000) scale. Again war-inspired technology was to play an important part in the peacetime development of the Canadian North. In addition to long range aircraft, wartime needs had nurtured the development of wide angle aerial photography, stereo modelling, and Shoran, a navigational aid for bombing that turned out to be an ideal means of fixing control points for mapping. The mapping of all of Canada and particularly the North became a major peacetime project for the Army and Air Force. The RCAF took about 75 per cent of all the aerial photographs required and provided air support to the Army Survey Establishment which surveyed the entire Western Arctic in the process of turning out one third of the required maps.[30]

The two traditional northern constraints, distance and climate, played their usual part in creating difficulties for the map makers. Only Whitehorse, Norman Wells, Yellowknife, Churchill and Frobisher Bay had landing strips that could accommodate the four-engined Lancaster aircraft of 408 (P) Squadron. Fuel for aircraft operating at the rate the squadron did during operations could only be pre-positioned economically if it were brought in by surface delivery. This necessitated planning months or years in advance. An emergency situation such as the search for a lost commercial pilot out of Whitehorse in 1951 used up 75,000 gallons of gasoline and disrupted the year's program.

Photo mapping operations could only be started when the snow cover had receded enough to permit the aircrews to identify geographical features. It was discovered that late May and June were the best times for operation – the period between the departure of the snow and the departure of the ice. With open water came clouds – cumulus over the mainland and stratus amongst the islands of the archipelago. The northern weather stations proved to be an invaluable aid in locating areas that were free of cloud, but it was not uncommon for an aircraft to range as far as seven hundred miles from its base to find an area suitable for photographic work. Once the aircraft arrived in the area, however, it was, faced with the usual problem of locating itself exactly, a task made doubly difficult by the myriads of lakes and rivers in the North, the lack of distinct land marks and inaccuracies in the preliminary survey charts. Year after year the mapping process continued. In addition to air photographs, it was necessary to install, maintain and extract work parties at each of the many Shoran sites that were required for control purposes. The usual procedure was for an amphibious aircraft to fly the party into the nearest suitable body of water from whence they would man pack their equipment onto the selected height of land where "they remained like bearded eagles for the summer."[31]

By the end of 1967 the task was completed. The entire project included a total of 925 map sheets. About one third of the country was also covered in the 1:50,000 scale, the standard scale of military tactical maps. At this point the responsibility to meet national map requirements was removed from the Department of National Defence and given exclusively to the Department of Energy, Mines and Resources. Civilian aviation companies on contract now provide aerial photograph for mapping purposes. The Canadian Armed Forces retained a Mapping and Charting Establishment, but their responsibilities were limited to providing maps for specific military requirements.

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. It is a almost axiomatic that if a nation wishes to claim a land, protect it, develop it, and conserve it, just where those lands are and what they consist of must be known. One of the first

steps in such a process is accurate mapping. The Canadian military establishment left their southern bases annually, came into the North, did the job and departed. That it took the better part of a century to even get around the task and twenty years to finish it emphasizes only further the vastness and remoteness of the Canadian North. There are undoubtedly still thousands of lakes, hills, and streams that show on the maps of the North that have never been physically visited by a human being. We only know that they are there because a few years ago, an RCAF aircraft flew over them and took a photograph which later became the basis of a map.

Military Aviation in the North

For the air force, the post-war North did not represent a potential aerial battleground. The Canadian decision not to develop nuclear weapons immediately eliminated the RCAF from the arena of strategic bombing. Those aviation writers who, in the mid 1940s, envisioned chains of interceptor bases strung across the high latitudes proved to be very wide off the mark as to what was necessary or what was even feasible. At the height of the Cold War and the threat of the manned bomber, the North provided useful tactical depth for the purposes of early warning and delineation of lines of attack. Since there were no strategic targets in the North that required point or area defence as provided by fighter aircraft, Canada was content to deploy her air defence forces south of the 55th parallel of latitude. (The United States, on the other hand, stationed substantial interceptor units in Alaska and at Thule, Greenland).

The Royal Canadian Air Force's "polar passion" manifested itself in a wide range of air support operations. In doing so, the RCAF, and later the various air elements of the unified Canadian Forces, played an important role in northern development. Flying activities were undertaken in support of other elements of the armed forces, for defence research projects and for other branches of government. Upon occasion, non-governmental activities were supported with military air resources when it was not possible to obtain commercial services. Of the three services, the air force during the post-war period developed the closest ties with the counterpart American service. Numerous missions were undertaken in support of USAF projects, or were attempted on a joint basis. In recent years, for nationalistic reasons, Canada has been more inclined to avoid these co-operative ventures than in the immediate postwar years. The main pattern that characterizes the extensive air force involvement in the North is that aircraft operate in northern regions for periods up to several months, but these detachments have all been tempor-

ary. Support personnel and equipment on the other hand, were stationed permanently in the North to facilitate ongoing operations.

In 1946, the specific future requirements for RCAF activity in the Arctic were unclear. As a result, the air force undertook a program to learn as much about the area as possible. Canada was not the only nation showing an intense interest in polar regions and the potentials of transpolar aviation. In addition to using RCAF aircraft, Canadian Air Force officers, flew as crew members and observers on several British and American exploratory flights. The general theme of most of the military aviation in the Arctic during this year was the establishment of the basis for future operations, whatever that might encompass.

The USAF was particularly concerned with the problems associated with aerial navigation in high latitudes and, with Canadian co-operation, conducted a series of long range flights throughout the Arctic in late winter and spring. Three B-29 bombers were modified for long range operations: all armaments were removed and auxiliary fuel tanks were fitted into the bomb bays. The majority of the flights were connected with experimental work relating to long range aid to navigation (LORAN) which had been installed in Canada to support Exercise *Musk-Ox*. Flying out of Edmonton and Fairbanks, the aircraft, some with RCAF crew members, made dozens of sorties over the Arctic Archipelago, and ventured as far north as, the pole itself. In addition to the data gathered in support of the LORAN program, "the navigators of the detachment began accumulating data that would assist future flying operations."[32]

It would appear that *An Aerial Reconnaissance of Arctic North America*, the aviators' handbook which was eventually produced from the detachment's efforts, was a self-generated project. The aircrews had quickly, realized that the problems of polar flying were much greater than had originally been anticipated. Inaccurate mapping, unreliable magnetic compasses, and fragmentary weather forecasts all combined to produce a navigator's nightmare in a hostile land. The *Arctic Pilot* produced by the Admiralty had been drawn up to aid surface navigators in the North; Greenaway and Colthorpe set out-to produce the aviator's equivalent. These American and British air expeditions are interesting because they showed the feasibility of long range aviation around the pole.[33] It must be remembered, however, that both types of aircraft were extensively modified, having ranges, in excess of 5,000 miles and the ability to stay aloft more than twenty hours.

Trans-polar operations were one thing; flights within the Arctic Archipelago were another. In 1946, the RCAF undertook an adventurous

flight program within the Western Arctic. Operation *Investigator* sent a Canso Amphibian and two single-engined Norsemen on floats, and a total crew of eleven men into the Arctic to locate, examine, and report on suitable air bases for float and ski based aircraft. *Investigator* marks the first occasion that the RCAF made a conscious effort to obtain some flying experience and an understanding of flying conditions in the area of Banks and Victoria Islands and the Boothia Peninsula. During the high summer months of July and August the three aircraft ranged far and wide over the western Arctic. They saw herds of caribou that they estimated to number in the millions, overflew and marvelled at pingos in the Mackenzie Delta, met Eskimos who had travelled with Stefansson, located mysterious and abandoned settlements and boats.[34] Reading their report, one gets the impression that they had a marvellous time.

In 1947, the RCAF began a program in co-operation with the Department of Mines and Resources to carry out a magnetic survey of the North in an attempt to locate precisely the magnetic pole.[35] The operation was a definite success. Both the pilot and the navigator of the Canso flying boat were decorated for the skills they displayed in flying about the pole. The program continued with RCAF support in subsequent years.

Aerial navigation in the Arctic was a precarious activity at the best of times. The hostile environment coupled with direction keeping problems associated with the proximity of the magnetic pole and the paucity of support facilities made northern flying a demanding profession. The scarcity of navigational aids was another negative factor. Thus, Operation *Beetle*, a joint Canadian-American plan to install a Loran (Long Range Aid to Navigation) low frequency beacon system in the Arctic was received with enthusiasm by the RCAF when it appeared in 1946.

Operation *Beetle*[36] is of interest for several reasons. First, it was typical of the joint Canadian-American projects being undertaken by the military in the North at the time. Second, it underlined the complexity of northern operations. Despite the experience of the Northwest and Northeast staging routes, the problems encountered, particularly in the construction phase, underlined that lessons of the past were not widely known, and that the full magnitude of the northern problem was not well understood. Third, there were many delays in the construction phase attributable not only to lack of basic data about the area of operations, but also to the absence of detailed planning and co-ordination between all agencies involved. Fourth, the available RCAF documents do not reveal any consideration being made of the utility of the system for the purpose of domestic civilian flying. On the other

hand, the potential to civilian aviation having the proper equipment to utilize the facility is obvious. In a wider sense, the role that the stations come to play in the northern infrastructure was significant.

The project required a total of four stations – one on the Alaskan coast and three in Canada. The first problem was to select the sites for the installation for the technical requirements of the Loran equipment had to be weighed against terrain and accessibility. The reconnaissance flight took over two weeks, held up by the seemingly inevitable weather delays and aircraft unserviceability. Eventually, Cambridge Bay on the south coast of Victoria Island was selected as the site of the master unit. A secondary, or slave unit, was to be built at Kittigazuit in the Mackenzie Delta. No suitable site on the Arctic coast could be found for the monitoring station which would keep the signals from the other stations in phase, so the reconnaissance party selected Sawmill Bay on the southeast corner of Great Bear Lake for the third site.

The construction of the stations in the Mackenzie presented no particular problem since the sites were on relatively well established northern inland water routes. Cambridge Bay, however, was well beyond the northern frontier and the tremendous problems that were encountered in its construction, despite the military's surprise at the difficulty, were typical. The first step was to transport the 1,500 tons of equipment to the site. All of the stores had to be moved by air for it was discovered that no commercial carrier was willing or able to undertake a sea transport contract during the brief summer shipping season.

Cambridge Bay, however, had no airfield. Before the construction could begin, before movement of material could begin, a light ski-equipped aircraft had to fly in and a ground party had to mark out suitable ice landing strip for a C47 Dakota to land. The Dakota flew in a small bulldozer to improve the ice strip to make it capable of accepting the heavy C54 aircraft of the USAAF assigned to move the equipment. Storms and a breakdown of the bulldozer lengthened this relatively minor task, which took most of April to complete.

The assembly of material had to be completed before break-up in mid-June rendered the airstrip unusable. The isolation of the site and the inexperience of the construction crew in working in the Arctic environment combined to stretch out the construction phase to almost the last minute. Several cases of snow blindness occurred. The troops did not know how to live comfortably in tents, so the main air flow had to be halted, while prefabricated barracks were flown in. When the RCAF flew in two heavier bulldozers to assist in airfield maintenance, the equipment remained idle until a

specialist able to assemble it was located in southern Canada and flown into the Arctic to do the job. It was not until October 1946 that the Beetle Loran system became operational.

The command and control arrangements in this international military venture are of interest. The functional and administrative commander of the system was the Canadian Air Officer Commanding, North West Air Command with headquarters at Edmonton, Alberta. On the sites, the situation was somewhat more complex. Command of the station was vested in an RCAF officer, but the technical control was held by the Senior United States Technical Officer. United States military and civilian personnel at the units were required to "conform to rules, regulations and instructions as issued by the commanding officer, but came under their appropriate service or civilian authority for purposes of discipline."

Such a dual system could not have worked had there not been a real spirit of co-operation between Canadian and American forces. What difficulties there were tended to be minor and easily smoothed over. Canadian commanders complained that the USAF specialist tradesmen were initially extremely reluctant to undertake routine housekeeping chores about the station. In the absence of general duties personnel to fuel stoves, chop ice, and carry out garbage, it was inevitable that all personnel would have to participate. It was reported that the USAF tradesmen quickly saw the logic of the housekeeping needs.

The on-site situation catered to Canadian sensibilities on the issue of sovereignty. In this joint undertaking, bases located in Canada were to be commanded by Canadians. The Canadian command element was more symbolic than a military necessity. During the two years that the system was jointly operated Canadian station commanders often complained of a tendency on the part of visiting American senior officers to ignore the Canadian station commander and to go directly to the American technical chief. This phenomenon may be partially attributable to the fact that visiting officers were usually on a technical inspection and hence their interest would primarily lie with the Loran operation itself. On the other hand, the blithe assumption by individual American servicemen in the late 1940s and 1950s that the Canadian Arctic was really the American Arctic was a common occurrence in the North.

The Beetle system was not destined to have a long life. Canada, as planned, took over full operation of the system in October 1948. Two months later the usefulness of the entire network was seriously questioned. An extensive test program that continued until the spring of 1949 revealed that

due to errors in the siting of stations and the low power of the equipment, "the operational usefulness of Beetle was deemed as nil." Most of the staff and technical equipment was removed immediately. A few people were left at each station as "housekeepers" awaiting a final decision on the future of the stations. On February 1950, the decision was made to close out all the stations completely. Kittigazuit and Saw Mill Bay were abandoned outright, the local RCMP agreeing to drop in occasionally to check on the security of the remaining buildings and stores. The Cambridge Bay facility was turned over to the Department of Transport for use as a weather station.

Although nothing was made of it at the time, an examination of unit historical reports and war diaries reveals that, during the brief three years of operations, the stations did much more than simply send out or monitor a Loran signal. The facilities were used by other elements of the armed forces for staging purposes, by other departments of the federal government, by private companies and individuals and, to a certain degree, by local natives. The very fact of the existence of a support facility often made other unrelated development-oriented activities possible. The Cambridge Bay site was co-located with an RCMP detachment and a Hudson's Bay Company store served the needs of the semi nomadic natives of the Queen Maud Gulf. While Kittigazuit was isolated, it was only a relatively short distance from the Beaufort Sea Eskimo community of Tuktoyaktuk. Sawmill Bay existed in solitary splendour.

Native Training Programs

The subject of northern education is vast, complex and contentious. By the late 1950s, the government had replaced the church as the agency with prime responsibility for northern education, and the Education Division of the Department of Indian Affairs and Northern Development (DIAND) developed a comprehensive program of elementary, secondary and vocational training. In some instances, however, there was a requirement for special training that was not available through the regular school system. In many such cases, DIAND turned to the Department of National Defence for assistance.

When a government program of building community airstrips and roads was begun in the Eastern Arctic, the Royal Canadian School of Military Engineering was contracted to run a special heavy equipment operators course for thirty Eskimos who later returned to their own communities for wage employment. When diesel electric generators began to be installed in northern communities, DIAND reasoned that the operation, servicing, and

maintenance of these plants could well be turned over to local residents, rather than having to import a technician from the South. Accordingly, the Royal Canadian Electrical and Mechanical Engineer School undertook to provide the necessary training. Over a period of three years, ninety Eskimos attended the special four month long courses the Army ran. The growing bureaucracy of the North created a demand for qualified clerical workers. The Army again responded and ran a three month course at the Royal Canadian Army Service Corps School for ten Eskimo men. All candidates, it was reported, found employment in offices when they returned to the North.

The Army was not the only service involved with training native northerners in modern skills. The Royal Canadian Navy ran a series of special courses on both coasts in response to DIAND requests. A half dozen Eskimos were trained as marine engineers at HMC Dockyard at Halifax in preparation for employment on ships of the Canadian Coastguard. On the west coast, fourteen Eskimos in the process of purchasing modern fishing boats were given training in the maintenance and repair of their vessels. A further two dozen received a course in boat building and repair from the RCN prior to establishing their own boat building business at Inuvik.[37]

There are indications that running these courses were not particularly simple tasks for the military. The standard military course had to be modified to meet the specific needs and background of the Eskimo candidates. Demonstrations of techniques had to be letter perfect or else, it was discovered, the students tended to copy errors of procedure. Instructors at the Electrical and Mechanical Engineering School teaching generator maintenance were somewhat dismayed when they discovered the Eskimo cultural characteristic of youth yielding to the authority of age. On the first course that the school ran, it was discovered that only a few of the candidates had what the military would term the acceptable minimum technical background for the course they were to follow. Two of the students were illiterate and most of the others had only previously worked as manual labourers.[38] Still, the military and their students persisted and the DND training program, on the whole, was a success. DIAND only used the military facilities for a relatively short period. By the late 1960s trades training schools had been fully developed in and for the North and there was no longer any need to call on the military. The Eskimo training program represents another example of the military contributing to the national development of the region beyond the frontier. In the early days the military did the work. When adequate civil facilities were developed at a later date, the Department of National Defence withdrew from the project.

Northern "Garrison Towns"

The general withdrawal of the military from the North in the early 1960s had an inevitable impact upon those communities where sizable military bases had been established to support various northern programs. The two main "garrison towns" of the North – Whitehorse and Churchill – were the hardest hit in the withdrawal process although a host of smaller RCAF stations, ceased operation in the same time frame. Frobisher Bay was operated by the RCAF between 1950 and 1956 when it was turned over to the Department of Transport. During the 1959-1963 period of Strategic Air Command operations there was a small RCAF detachment at the settlement, but this too closed when the Americans left. Resolute Bay was manned by an RCAF detachment starting in 1951, providing flying support for RCAF for northern operations. It too was turned over to DOT in 1964. Churchill was probably the hardest hit by the military re-posturing of the 1960s. In 1946, a Combined Experimental and Training Station had been established by the Department of National Defence near the site of the World War II Crimson airbase. All three Canadian services, the Defence Research Board, and the United States Army eventually established detachments at Churchill to support Arctic training, equipment trials, and research. The military population in the area further increased during the 1961-63 period when the Strategic Air Command tankers operated from the base. Fort Churchill, as the military base was designated to distinguish it from the town site some four miles distant, had been selected as Canada's main northern base in 1946 for a number of reasons. The most important of these recognized the vital necessity of accessibility in the North. Churchill offered year round rail access, an airstrip, and a deep water port during the summer shipping season. In addition, from a military training point of view, it offered both bush land and barren ground terrain in which to train.

The Canadian Army ran the base and provided support for the other military branches located there. Operationally, Churchill was the northern center of army sponsored environmental studies, operational research development, and combat and survival training. The RCAF ran the airfield facility with the exception of the meteorological facilities and the radio range which were handled by DOT. Air force northern experimental projects and operational training were carried out from the base which also had an air search and rescue role. The Royal Canadian Navy's activities were limited to a radio facility which did communications research.[39] The Defence Research Board (DRB) ran a Northern Laboratory within the base complex and undertook numerous small projects, all contributing to the major role of the lab-

oratory: "To solve… problems which are encountered by the forces whilst fighting and surviving in the north." DRB was concerned with the effects of the Arctic environment on the performance of personnel and materials in the field.[40] The small United States Army detachment carried out engineering tests of all types of material and equipment under Arctic conditions. The section functioned as a lodger unit at Fort Churchill and drew support services from the Canadian Army on a cost recoverable basis.

This wide range of activities led to the build up of a garrison at Fort Churchill of over 600 military personnel, many of whom were married and had their families with them. Over one hundred Americans of the SAC squadron added their numbers to the group during 1959-1963. The total population of the military base was approximately 3,000, including dependants and 450 civilian employees. It was reported that the base was a close knit community and was virtually self contained having its own churches, schools, social groups, athletic facilities, banks, and all the commercial shops one might expect to find in a community of that size.[41] No studies have been undertaken to determine the economic, cultural, and social impact of the Fort Churchill facility upon the civilian community. It would appear that to a large extent, contacts between the two communities were limited, although there undoubtedly would have been a certain economic multiplier effect falling to the town site from the military's presence.

In 1964, the Canadian Army and the Royal Canadian Air Force ceased to operate the Fort Churchill facility. Housekeeping responsibilities for the base itself were transferred to the Department of Public Works, while the Department of Transport took over the entire airfield works. This change of responsibilities did not go unnoticed in the House of Commons. In October of the previous year when rumours began to circulate that the base might be closed, Robert Simpson, the MP for Churchill, had asked the Minister for information, his primary concern being for the jobs of the civilian employees.[42] In December, the Minister officially announced the closing, a decision that drew sharp criticism from the Conservative opposition. Simpson continued to focus on the importance of the garrison to the total life of the community, stating that Manitoba had been shocked by the decision and asked for reconsideration on the grounds that sufficient allowance had not been made for the economic, cultural, social, and medical impact of the closing on the local community. Douglas Harkness, a former defence minister, dealt more with the purely military aspects of the change, claiming that the move might well herald the end of cold weather training and research. Lucien Cardin, the Associate Minister countered by saying that only the administrative gar-

rison was being withdrawn and that both the army and the air force would continue to use Churchill as an advanced staging base for operations and exercises in defence of the Eastern Arctic, drawing the necessary support from the departments that were taking over the base.[43]

At almost the same time as it was announced that the Churchill base would be closed, the decision was finally made to transfer responsibility for the Alaska Highway to the Department of Public Works. Eric Nielson, the Member for Yukon, reacted in much the same manner as his Churchill colleague. He expressed concern over the effect of the withdrawal on the civilian employees. On the whole, however, there was little Conservative opposition to the move; indeed they had considered it themselves when they were in office. Harkness heralded the army's withdrawal as being "long overdue." Nielson, while not arguing against the logic of the transfer of responsibilities, expressed regret at the impending loss of the military community because of its traditional social, economic, and personal contribution to the Yukon.[44] Not everybody was sorry to see the army go. To many north western businessmen, the paving of the highway had been a long standing development objective. It was generally accepted that, as long as the Department of National Defence continued to run the system, this would not be done. The mayor of Dawson Creek claimed that the transfer was "an important step towards paving the route."[45]

The withdrawal of several hundred troops and their families from Whitehorse did not have the same effect on the community as did the departure of a similar sized group from Churchill. The maintenance of the Alaska Highway was an ongoing commitment of the Canadian government, no matter which department actually administered the facility. The civilian maintenance workers' jobs remained secure, and many new administrative appointments, formerly held by soldiers, were thrown open to civilians. In addition to the phased withdrawal of the garrison, the economic boom of mineral development that the Yukon was enjoying in the mid-1960s did much to soften the economic blow to Whitehorse.

After 1964, with the exception of the small detachments at each of the four DEW Line main sites, the only continuing military presence in the North was in the form of five supplementary radio stations at Churchill, Whitehorse, Frobisher, Inuvik and Alert. These stations had been established in the 1950s for the stated purpose of carrying out communications research in the North.[46] During 1967-68 it was decided to close out the first three of these stations. Unlike the transfer of responsibility for the NWHS or the NWT and YRS to another branch of government, the closing of these stations

marked the end of a program and the absolute loss of population to the communities affected.

The closing out of the Churchill radio station saw a hundred servicemen and their families, a total of 250 people, leave for the South. In the process Churchill lost its only dentist in the person of the base dental officer.[47] In 1967-68, the RCAF followed the army in its exodus from Whitehorse. The Whitehorse airfield had been run by the Department of Transport since 1964; those RCAF members who had remained in Whitehorse had been employed at a communications research facility similar to the RCN's establishment at Churchill. The station accounted for a total of about a thousand people. There were 225 service personnel who, with their families numbered about 800. In addition the station had permanently employed approximately seventy civilians, most of whom were married. To the community of Whitehorse, the closing of the station was a serious blow. The Yukon Research and Development Institute commented that "the air force departure will be felt in sports activities, social events, and will limit the number of woman workers and part time help available here."[48]

This statement underlines effectively the impact of the loss of a major industry in any small town. The pure financial loss of jobs and local purchases represents only the tip of the iceberg. The economic multiplier effect of a reduced population, the loss of military dependants from the work force, the weakening of local cultural, social and recreational organizations all combined to create a severe stress on the community. In the isolation of the North, this effect may be even more acute than it is in the more developed regions of the country. Certainly the subject merits further study.

Activities in the North undertaken by the military for the specific purpose of national development are probably things of the past. The civilian infrastructure now exists to build and operate the type of facilities originally pioneered by the military. National development "spinoffs" from defence-related activities will continue to occur. To the degree that development, as equated to the "southern" way of life, is seen as a positive force, the North will continue to benefit from these enterprises. The negative aspect of these spinoffs is the counterproductive impacts they may have on traditional lifestyles and the ecology of the area.

Notes

1 John S. Moir, *History of the Royal Canadian Corps of Signals 1903-1961* (Ottawa: RC Sigs Corps Committee, 1962), 282.

2 *A History of the Northwest Territories and Yukon Radio System,* p. 19-20.

3 *Ibid.* Unless otherwise noted all data in this section is taken from this source, p. 24-58.

4 The term Eskimo was non-pejorative and in common usage during the period covered by this chapter and is used here rather than the contemporary term "Inuit."

5 Moir, *History of the Royal Canadian Corps of Signals*, 284.

6 The Royal Canadian Corps of Signals Museum at Vimy Barracks, Kingston, Ontario, holds most of the original documentation produced by the NWT & YRS. In the monthly diaries kept by all station commanders, and other documents, there lies the raw material of a major social history of the Canadian Northwest.

7 D Hist, 348.013 (D1), *U.S. Defence in Canada,* "United States Defence Projects in Northeast Canada," General Staff Memorandum 11 July 1945 (henceforth "U.S. Defence Projects").

8 Stanley W. Dziuban, *Military Relations Between the United States and Canada 1939-1945* (Washington: Office of the Chief of Military History, Department of the Army, 1959), 221.

9 "U.S. Defence Projects."

10 *Ibid.*

11 Cited in "U.S. Defence Projects."

12 *DND Report,* 1946, 25.

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36 Documents on Operation Beetle are fragmentary. In the main they consist of a jigsaw puzzle-like collection of

messages, operation orders, administrative instructions and memoranda, collected in two file folders held in D Hist, *North West Air Command-Operation "Beetle,"* 181-009 (D6561 and D6556). A minor supplementary source exists in the form of the *Operations Record Book* of the three stations: 214 RCAF (LF) Loran (Monitoring) Unit Sawmill Bay, NWT, 5 RCAF (LF) Loran (Slave) Unit, Cambridge Bay, NWT and 4 RCAF (LF) Loran (Master) Unit, Kittigazuit, NWT. All subsequent references to Operation Beetle are from one or more of the above mentioned sources.

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45 *Edmonton Journal,* 26 October 1963. The transfer of responsibility for the road, in the final analysis, had little impact on the basic economic factors relating to highway paving. Paving was finally completed in 1992 – 50 years after the Highway was officially opened.

46 Discussion of the roles of these stations is not covered in this chapter.

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ABSTRACT: Climate change is transforming the Arctic. Questions abound about what this will mean for the Canadian Forces, for Canada's sovereignty position, for northern peoples, and for stability and security in the circumpolar world. Fortunately, Canadians have encountered and debated similar issues in the past. This volume, featuring chapters by established and emerging scholars, offers essential historical analysis on Canadian Arctic security and sovereignty policies and practices since the Second World War. The "lessons learned" lay a solid foundation for future research and historiographical debate in this dynamic field, and should inform Canadian thinking on what is necessary to protect national interests in the twenty-first-century Arctic.

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