# THE U.S. MILITARY AS GEOGRAPHICAL AGENT: THE CASE OF COLD WAR ALASKA*

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ABSTRACT. Alaska was strategically key to the U.S. defense plan during the cold war (1946–1989). As such, it was the scene of an enormous and sustained military investment, the effect of which was amplified by Alaska's undiversified economy, sparse development, small resident population, and marginalized political status at the beginning of the era. The strong military presence affected Alaskan demographics, economic development, and infrastructure and figured prominently in the admission of Alaska to the union in 1959. The high profile and long-term presence of the U.S. military had such a dramatic affect on the course of Alaska that the result was tantamount to a "militarized landscape." *Keywords: Alaska, cold war, historical development, militarized landscape.*

At the beginning of World War II, Alaska's mostly primary-sector economy shifted dramatically when the territory was catapulted to strategic importance in the Pacific theater as both an air-corridor connection to the Soviet Union, then a U.S. ally, and key terrain that needed to be kept out of Japanese hands. Defense expenditures in Alaska totaled more than $1 billion between 1941 and 1945 (USARAL 1969). At the end of the war, defense spending pushed Alaska into a period of uncertainty. Alaskans had little confidence that the main prewar extractive industries, especially mineral mining, would recover in time to prevent economic malaise and massive out-migration (Whitehead 1998). Forestry, fishing, and mining had been shut down during World War II, from the diversion of male labor, interruption of normal trade and manufacturing patterns, and, in the case of gold mining—a significant part of the mining industry at the time—the War Production Board order that closed down all gold-mining operations in the country.

But the enormous military undertakings in Alaska during the cold war ensured Alaska's future and set the stage for statehood, which otherwise would likely not have occurred until the discovery of oil on the North Slope in 1968. According to the Alaska historians Claus Naske and Herman Slotnick, "the Cold War rescued Alaska from economic depression and obscurity" (1987, 131). The buildup was conditioned by the quickly changing international security picture, the national strategies that addressed it, and rapid technological changes. It brought immediate and enormous transformation to Alaska in many tangible and intangible ways. In terms of construction and infrastructure expansion, the military investment peaked early in the cold war, during what one observer dubbed "the frantic fifties" (Woodman 1999, 109). This discussion focuses on the U.S. military's role as a powerful geographical agent between 1945 and 1959, the year of Alaska's entry into the union as

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the forty-ninth state. The degree of military influence remained very strong throughout the cold war period, and even in the post–cold war epoch the military continues to rank among Alaska's top employers and is the major conduit for federal spending in the state (Case 1999; Goldsmith 2000; Fried and Windisch-Cole 2002; Haycox 2002; Schell 2002).

## The Origins of the Cold War and Alaska's Emerging Role

At the close of World War II, the Soviet Union moved quickly to neutralize Germany and transform central Europe into a buffer zone against the West by establishing pro-Soviet regimes in Eastern Europe (Walker 1994). Although the cold war began as a confrontation of conventional military forces in Europe, it evolved into a global contest of strategic nuclear arms as the Soviet Union began rapid development of nuclear weapons, long-range bombers, and missiles in response to forward deployment of U.S. B-29 "atomic bombers" (Ambrose 1993; Hoffecker and Whorton 1995). The August 1949 detonation of the first Soviet nuclear bomb, followed by the Communist takeover of mainland China, created enormous domestic political pressure on the U.S. military to reassess earlier estimates that the Soviet Union would not be able to launch a successful attack with nuclear weapons and long-range bombers until 1955. The administration of President Harry Truman responded with National Security Council Resolution 68, calling for a peacetime military mobilization to meet the rapidly increasing international threat (Schaffel 1991). The invasion of South Korea by Communist forces in 1952 provided further incentive to step up military preparations. The United States embarked on a hasty and major expansion of conventional as well as strategic nuclear forces around the world (Ambrose 1993) and on development of new strategies for detection, interception, retaliation, standoff, and showdown against the "Red Menace." Alaska figured prominently in those defense plans.

With the Soviet Union defined as the primary enemy, Alaska gained strategic significance because of its location (Denfeld 1996). Central to early cold war thinking was the "polar concept," based on the simple geographical truth that the shortest distance between the United States and the Soviet Union—and vice versa—was a straight line across the polar region (Figure 1). Recognized in the 1930s by Gen. Billy Mitchell, one of the earliest and most vocal proponents of air power, as the key to future air wars (Pagano 1998), the polar concept garnered new attention as technological advances eventually rendered the continental United States a vulnerable target. The perceived danger of transpolar attack triggered planning for systems of advanced warning and interception across northern North America and made Alaska a strategic air center for basing and commanding the required forces.

Alaska's proximity to the Soviet Union was key for another reason as well: Close enough to register seismic anomalies through the ground and via airborne platforms, it allowed the United States to monitor the ambitious Soviet nuclear testing program. Alaska's strategic value also included its geological wealth: It possessed ten of the sixteen minerals crucial to the creation of cold war industrial and military

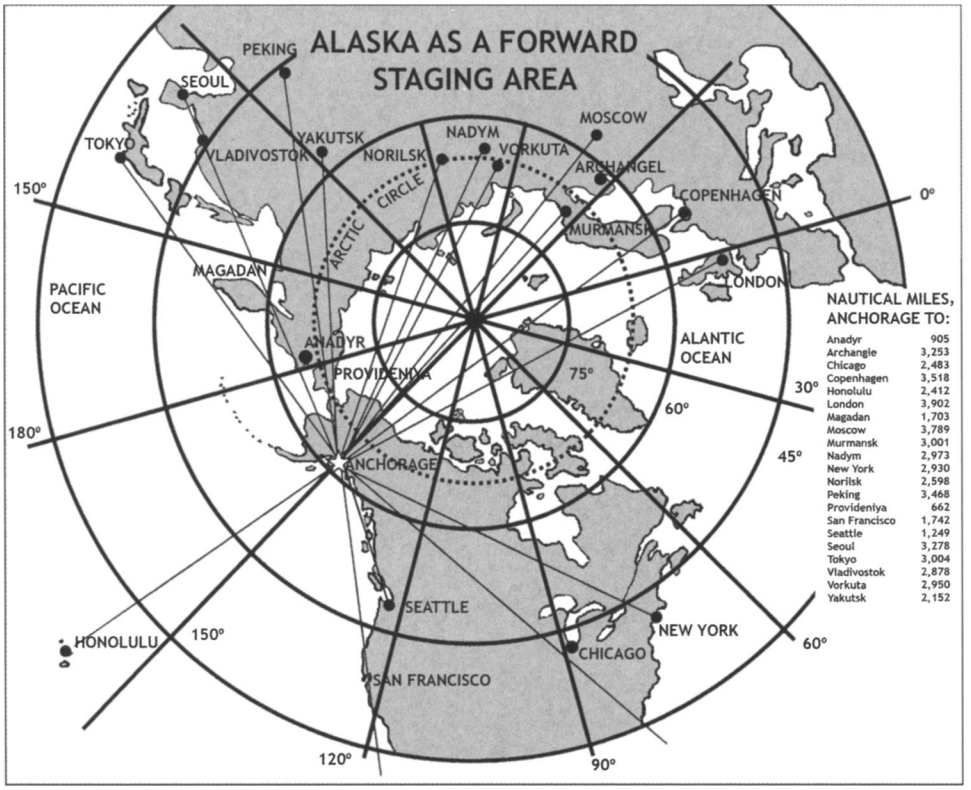


FIG. 1—An Alaskan view of cold war political geography. Maps like this showing Alaska's proximity to potential foes and allies bordering the polar route helped to justify the U.S. military investment in Alaska. *Source:* Adapted from Cloe 1984. (Cartography by Robert A. Getz, U.S. Military Academy)

products (Nielson 1988). This mineral supply, combined with Alaska's perceived "barrenness" and remoteness from the continental United States, attracted federal authorities who wanted to base nuclear and chemical activities of all sorts in the region, including nondefense detonations under the Atomic Energy Commission's Plowshare Program as well as declared military-related detonations, experimental nuclear power, and chemical-weapons testing.[1]

In addition, Alaska was the only place where U.S. forces could train domestically for ground and air combat in cold-weather conditions similar to those found in the Soviet Union. Despite military leaders' pronouncements that air-delivered nuclear weaponry was the future of warfare, no one truly believed that the mission of ground forces to keep and hold terrain was obsolete (USARAL 1972). Whether in preparation for a manned defense of Alaska or for an invasion of Soviet territory, American soldiers had to train to fight in extreme Arctic conditions. With an area more than twice the size of Texas, Alaska offered relatively unlimited space for bases, military airfields, bombing ranges, air and ground maneuvers, and experimentation in Arctic engineering: an enormous defense laboratory of largely "uninhabited"—except by Alaska Natives—and uncontested land. Alaska was set to become,

as the Alaskan historian Stephen Haycox (2001a) vividly described it, a "strategic free world defense redoubt."

## Characteristics of "Militarized" Alaska

The hustle that characterized the buildup of cold war Alaska was marked more by confusion and countermanding plans than by a single vision and focused effort. The national strategic plan and the investment it drove in Alaska changed several times and for a number of reasons, among them advancements in intelligence-gathering abilities, which in turn amended the degree and type of perceived threat, and the long duration of diplomatic hostilities on an ever-changing world stage of small "hot wars" shadowed by the constant specter of total war. The main reason for the changes was the rapid evolution of weapons technology. Early in the cold war, nuclear bombs and the evolution of long-range bombers and jet fighters brought about a "heartland" concept of Alaskan defense, with ground forces mostly relegated to the protection of bases and surface-to-air defense sites. This first defense plan, and the war machine it drove, was one of detection, interception, and first-line retaliation. As missiles became the largest perceived threat by the late 1950s, a ballistic-missile early-warning center was built, bringing with it $360 million in defense contracts (Nielson 1988). Missiles based in the continental United States replaced Alaska-based bombers and all the people and equipment supporting them. The territorial, then congressional, delegation knew the importance of keeping Alaska in the forefront of national strategy: When defense planners turned their attention away from Alaska, outcry and protest often ensued, and efforts were made to keep Alaska in Americans' and American decision makers' minds by promoting a perception of Alaska as the country's "Guardian of the North," "Gibraltar of the North," "Northern Bulwark," or, alternatively, "Coldest Front" (Lewis 1959; USARAL 1965; Sherwood 1967; Wise 1982; Cloe 1984; Naske and Slotnick 1987; Nielson 1988; Denfeld 1996; Seidler 1996).

The political lobbying, as well as other factors described above, kept interest in Alaska strong, but the ever-evolving national plan resulted in an almost constant state of turmoil as Alaska's defense infrastructure "was built and repeatedly rebuilt as military concepts changed" (Rogers 1962, 63). This rendered some installations obsolete before they were activated; in some extreme cases they were abandoned for the next project even before they were completed. The result was a cold war militarized landscape that existed in palimpsest form, itself having been laid in part onto a modified cultural landscape resulting from Alaska's strategic role in the Pacific theater of World War II.

## Population and Demographics

In terms of raw numbers, the expansion of Alaska's population was led by soldiers or civilians engaged in military construction and operations (Whitehead 1998). In the 1950s, the most active period of military buildup, active-duty military personnel averaged just under 21 percent of the total Alaskan population, ranging from a high

of almost 26 percent in 1952 to 15.4 percent in 1959 (Alaska Industry 1972; Mason 1974) (Table I). Later in the era, numbers of personnel assigned to Alaska fell, due to the "increasingly complex and sophisticated military hardware" that required less manpower (Naske and Slotnick 1987, 138), but the number never fell below the 20,000 mark. The early-era data enumerated military personnel but failed to reflect the

TABLE I—MILITARY PERSONNEL IN ALASKA, 1940–1989

| YEAR | NUMBER OF ACTIVE-DUTY MILITARY PERSONNEL IN ALASKA | TOTAL POPULATION OF ALASKA | PERCENTAGE OF ALASKA'S POPULATION ASSOCIATED WITH THE MILITARY |
|---|---|---|---|
| 1940 | 1,000 | 75,000 | 1.3 |
| 1941 | 8,000 | | |
| 1942 | 60,000 | | |
| 1943 | 152,000 | | |
| 1944 | 104,000 | | |
| 1945 | 60,000 | 139,000 | 43.1 |
| 1946 | 19,000 | 103,000 | 18.4 |
| 1947 | 25,000 | 117,000 | 21.4 |
| 1948 | 27,000 | 126,000 | 21.4 |
| 1949 | 30,000 | 132,000 | 22.7 |
| 1950 | 26,000 | 138,000 | 18.8 |
| 1951 | 38,000 | 164,000 | 23.1 |
| 1952 | 50,000 | 196,000 | 25.5 |
| 1953 | 50,000 | 212,000 | 23.5 |
| 1954 | 49,000 | 218,000 | 22.4 |
| 1955 | 50,000 | 221,000 | 22.6 |
| 1956 | 45,000 | 220,000 | 20.4 |
| 1957 | 48,000 | 228,000 | 21.0 |
| 1958 | 35,000 | 213,000 | 16.4 |
| 1959 | 34,000 | 220,000 | 15.4 |
| 1969[a] | 32,000 | 283,000 | 25.9 |
| 1979[a] | 23,910 | 404,500 | 18.0 |
| 1989[a] | 25,782 | 536,848 | 17.3 |

[a] In later years, as more data became available, the percentage included linked population segments; for example, military dependents and employees. See the text for further explanation.

*Sources:* DOD n.d.; Rogers and Cooley 1963, 7, 8; AAC DCS/C 1970; 1976, 10–11; 1977, 4; 1978, 4; 1979, 4; 1983, 4; 1984, 11, 13–14; 1985, 23; 1988, 9, 14; Bowen 1970, 5, 22, 25, 38; 1971, 3–4; Alaska Industry 1972; MASON 1974, 8; Crow 1975, table 1; AC DCS/C 1990, 10–12; Fried 1996.

much larger numbers of persons associated with the military. This linked population included immediate family members of active-duty personnel, Defense Department civil servants and their families, employees of the services' nonappropriated fund businesses (such as the base exchange and commissary), Alaska Army and Air National Guardsmen as well as military reservists and their families, and military retirees and their families. Based on partial data from a number of sources, the true

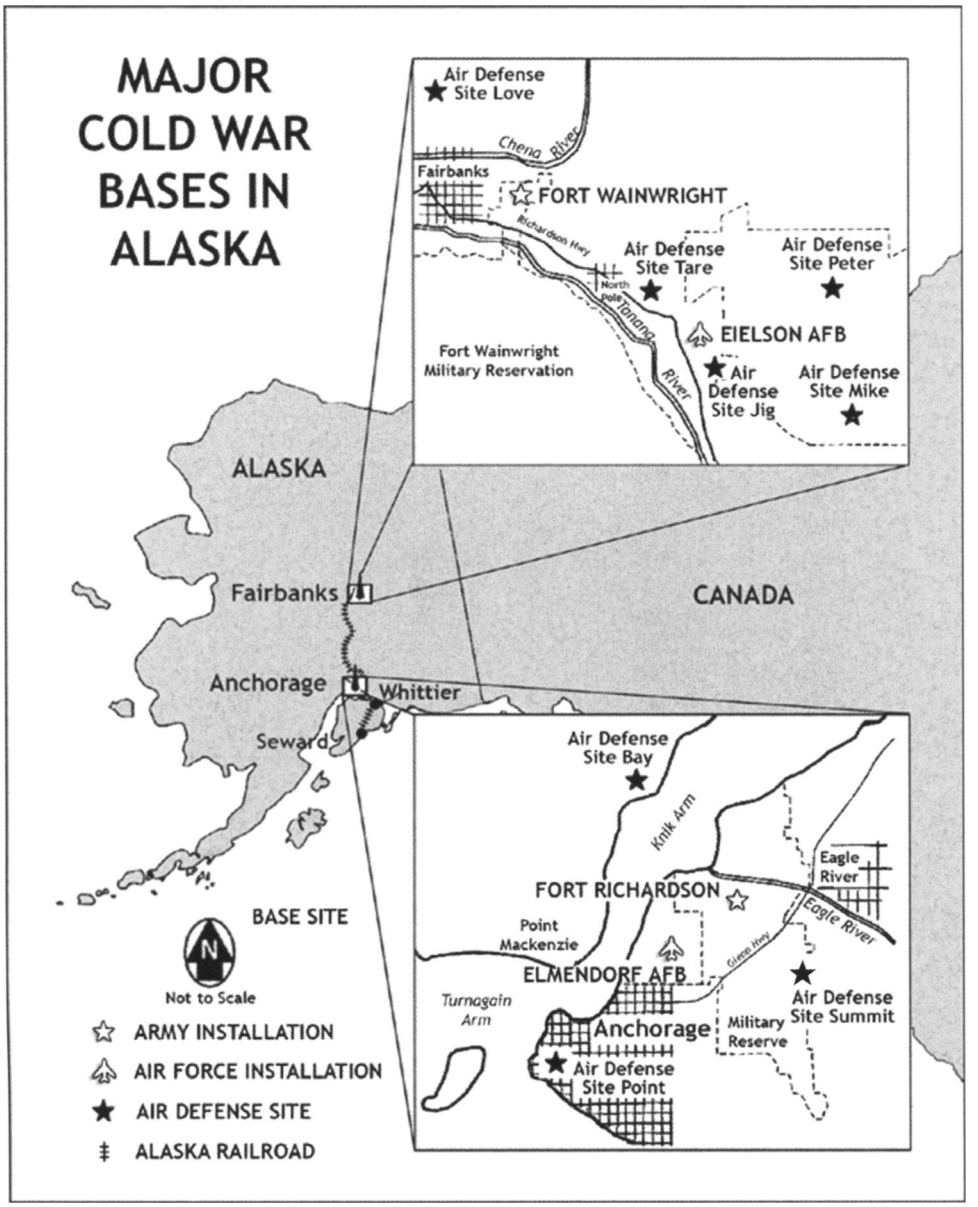


FIG. 2—Major cold war military bases in Alaska. Fort Richardson and Elmendorf Air Force Base, along with Fort Wainwright and Eielson Air Force Base (originally called "26 Mile Field"), contributed to the concentration of Alaska's growing population around the urban areas of Anchorage and Fairbanks. The map also shows the locations of eight air-defense artillery sites built to protect the major bases. *Source:* Adapted from OHA 1996. (Cartography by Robert A. Getz, U.S. Military Academy)

proportion of military-associated persons in Alaska during the 1950s has been estimated at between 40 and 45 percent (DOD n.d.; Rogers and Cooley 1963; AAC DCS/C 1970; Bowen 1970, 1971; Alaska Industry 1972; Mason 1974; Crow 1975; Fried 1996). This estimate is conservative, in that it does not include the considerable number of people who came to Alaska seeking the employment opportunities the defense industry promised.

The military effort changed the demographics of Alaska in several important ways. First, it affected the ethnic makeup. Prior to 1940, Alaska's population of 75,000 was divided about evenly between Alaskan Native Americans and Caucasians. By 1950, the proportion of Alaska Natives to total population had declined to one in four as the population climbed to 138,000. A decade later, with a total population of more than 220,000, Alaska Natives were only one-fifth of the resident population (Chance 1962; Whitehead 1998). In addition to greater numbers of Caucasians, the defense buildup brought the first significant numbers of Blacks, first in all-Black units during the World War II construction of the Alaska Highway and then in an increasingly multiracial military force. The preponderance of males relative to females also dropped from the time when Alaska's workforce overwhelmingly comprised fishermen and miners. This occurred not because defense and defense construction were not male dominated but because the postwar military had enacted new policies that encouraged families to accompany their military members. Most military people and their spouses were of childbearing age, so the military-associated population was increased by a multiplier of three to four. Concurrently, school enrollments in Anchorage and Fairbanks—location of the four largest cold war bases and home to approximately 80 percent of the military population—soared (AAC DCS/C 1970).

The military efforts also encouraged concentration of population within Alaska and increased urbanization, as military population and construction were focused on Anchorage and Fairbanks (Figure 2). Anchorage mushroomed from a population of about 30,000 to more than 82,000 between 1950 and 1960, an increase of almost 175 percent, fueled by the growth of Elmendorf Air Force Base, home of the Alaskan Air Command and the Alaskan (Joint Services) Command, and of Fort Richardson, headquarters of U.S. Army Alaska (Browne 1953; Atwood 1957; ACPC 1958; ACOC 1961; Rogers and Cooley 1963; U.S. Census Bureau 1995). Similarly, the population of Fairbanks and its immediate environs, which constitute Fairbanks North Star Borough, more than doubled during the same period, from a population of about 23,000 to more than 49,000. This growth was largely spurred by the presence of Ladd Air Field, which later became the Army's Fort Wainwright, and 26 Mile Field, which developed into Eielson Air Force Base (Cooley 1954; Sullivan 1971; FNSB 2005).

## STANDARD OF LIVING

The cold war military boom attracted Alaska-theater veterans eager to return to a place where they could get a fresh economic start, as well as men and their families brought by or enticed by defense construction. These new Alaskans were different


FIG. 3—Schmidt's Beer van–cum–military housing, 1949. Until Anchorage could expand to accommodate the influx of people drawn by the booming defense industry, it was plagued by highly inflated labor costs, a severe shortage of habitable dwellings, and overcrowded schools. The label affixed to the original photograph identifies this converted van as being occupied by "an enlisted man, his wife and child." (Reproduced courtesy of the Alaska State Archives)

from the "sourdoughs" and gold-rush miners of old.[2] They were generally searching less for the traditional Alaskan homesteading experience of living off the electrical grid than for the "lower-forty-eight" standard of amenities to which they were accustomed (Hilscher and Hilscher 1959; Rogers 1962; Denfeld 2001). Most of them were members of the "mid 20th century urban industrial society" (Naske and Slotnick 1987, 137) who expected contemporary standards of community living and service. These new, expectant residents provided impetus for increased services in two ways: They helped to create a critical mass, which assisted economies of scale and enabled the establishment of amenities; and they exponentially increased political pressure to provide those services (Hilscher and Hilscher 1959).

Ironically, the defense boom initially decreased, not increased, the standard of living. Military bases could not build family housing fast enough to accommodate the families pouring in, so they turned to the local economy in search of housing. The result in the early 1950s was a severe housing shortage in Anchorage and Fairbanks and resulting astronomical housing costs. Military families lived in shoddy conditions: Shanty towns of "wanigans"—military Quonset huts with Arctic entryways—and makeshift shacks sprang up overnight, housing excess military families as well as any newcomer who could not afford the exorbitant rents elsewhere, in the unlikely event that a vacancy even existed (Figure 3).

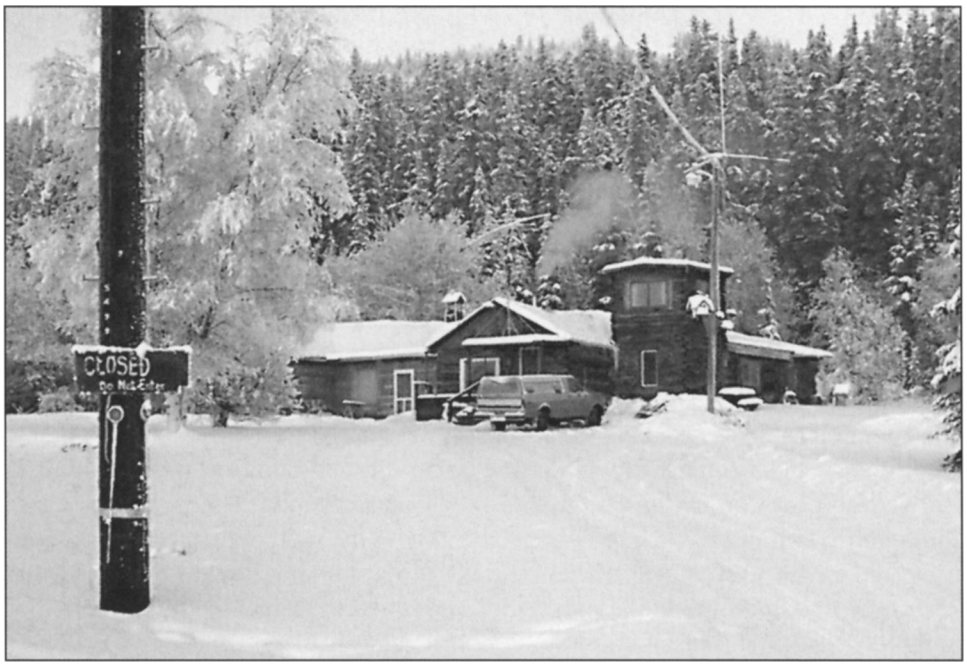


FIG. 4—This home on the road system near Glennallen, Alaska was once owned by a member of the cold war–era Ground Observation Corps, who added the two-story cupola to afford better—and certainly warmer—air observation. Although observers in Alaska tended to take their task seriously in view of the widely held belief that they were part of the country's "Northern Bulwark," such material modifications were rare. (Photograph by the author, November 2001)

Defense construction also resulted in the explosive growth of labor unrest, which eventually led to the rise of organized labor in Alaska. Defense spending substantially increased labor costs in an already high-cost area (Haycox 1989; Seidler 1996), artificially stimulating the demand for labor and pricing out some locally owned businesses. Federal paychecks attracted workers from mining, forestry, and fisheries, retarding the reestablishment of the natural resource–based industries that had largely shut down during World War II (Rogers 1962; Spence 1995; Seidler 1996). But demand increased for the products of local agriculture to supply the greatly expanded populations of Fairbanks and Anchorage, especially given the exceedingly long shipping times for fresh produce and the new consumers' demands. In general, the rapid influx of people and demands of a very compressed construction cycle initially overwhelmed the rudimentary infrastructure. Alaska "strained to accommodate the realities of militarization and crash development" (Nielson 1988, 181).

## RESIDENTS' PARTICIPATION

Alaska's civilian population was incorporated into the defense effort in a personal way, as members of the Ground Observer Corps. Although the Ground Observer Corps was not unique to Alaska, the degree of participation was—one of every 220

residents (Allen 1993). Alaskans felt the immediacy of the global confrontation and a sense of purpose in a land only 50 air miles from the Soviet Union. Formed in 1953 as a stopgap measure, the corps comprised volunteers who spent shifts looking into the skies for enemy aircraft. Because telephone service throughout the territory was sparse and long-distance service practically nonexistent, many observers belonged to an amateur radio network, and some designed an elaborate communications plan using searchlights and Morse code (ADN 1955). As an example of the dedication of these volunteers, one participant in the village of Glennallen built an observation cupola onto his home (Denfeld 1996) (Figure 4).

Unique to the Alaskan cold war experience was the incorporation of the Alaska Native population into the defense machinery as soldiers of the Alaska Army National Guard, 207th Infantry Group. As with the Ground Observer Corps, Alaskans' participation as citizen-soldiers was similar to what was occurring in the lower forty-eight states. The distinctive aspect was the recruitment, organization, and training of Native-only units, or "Eskimo Scouts," as they were dubbed.[3] These Native American units were based in fifty-one of Alaska's "bush" (off the road network) villages, concentrated in the west and northwest (Alaskan 1959; USARAL 1972; Woodman 1999). "Standing mukluk to mukluk" with their Soviet enemy (Bedard 1987) and described by U.S. Sen. Ted Stevens as Alaska's "eyes and ears on the ground" (Bedard 1987), these Alaska National Guard units had the singular mission of constant reconnaissance of their home areas for possible Soviet activity. This mission made specific use of their intimate knowledge of the environment and local people, for many were subsistence hunters and whalers and virtually all were lifelong Alaskans (Fay 1955; Alaskan 1959; Robertson 1989).


FIG. 5—A cold war–era recruiting poster targeted at Alaska Natives. In the Alaska Territorial Guard, these troops provided ground reconnaissance of the western and northwestern periphery of Alaska, as well as assistance in rescue operations and cold-weather training of regular non-Native troops. Additional training took place at the headquarters in Nome, Bethel, and Anchorage. Free trips to these larger cities and access to their amenities were also recruiting tools. (Reproduced courtesy of the Alaska Army National Guard, Public Affairs)

Although the Eskimo Scouts' "peacetime" role was reconnaissance, in case of invasion their assignment would escalate into a high-stakes game of cat and mouse, with the mission of reporting covert intelligence while evading capture (Figure 5). Their military training was accomplished through interpreters, because many Alaska Natives had only limited knowledge of English (USARAL 1972). The relationship between the Alaska Natives in the guard military service and the U.S.

Army was seen by the army as a mutually beneficial one. Knowing the terrain and how to navigate and survive in the Arctic, the Eskimo Scouts provided valuable training to active-duty army units in Alaska and performed ground-level reconnaissance in a territory too vast and formidable for regular troops.

Native Alaskans participating in the guard and the economic and cultural life of the bush villages that were home to guard armories were undoubtedly changed by their experiences. Some of the National Guard armory outpost buildings became interwoven with community life as gathering and social centers (Williams 2000; Coy 2002). Eskimo Scouts received a small but regular income, which potentially altered the subsistence- and barter-based portions of the local economy that were significant at the time. Most Eskimo Scout meetings, training, and reports utilized the English language, which up to that time had been used only to a limited degree in the smaller bush settlements. In addition, the hierarchical and unique military culture was overlaid onto preestablished Alaska Native social structures. Opinions about the nature of the effects of this cultural interface vary within the Native and non-Native communities: "Westernizing" has been not only decried as invasive and damaging but also touted as a valuable teacher of (Western-style) "responsibility" (Kawagley 1995; Williams 2000). To be sure, the existence of Eskimo Scout units brought about a greater degree of interface between two cultures that, until then, had had limited contact—the Westernized military and traditional Native Alaskan ways (Williams 2000; Hummel 2002).

Alaska Natives were affected by cold war military activities in more ways than just their participation as Eskimo Scouts. Environmental damage to Native lands and people has been well documented (Nielson 1977; Armstrong 1978; Simon and others 2001). The two most widely known instances are the underground nuclear explosions conducted between 1965 and 1971 by the Department of Defense and the Atomic Energy Commission on Amchitka Island and the experiments in preparation for the anticipated nuclear detonations that were to constitute the Alaskan portion of the Plowshare Program, code-named "Project Chariot" (Rock 1962; Point Hope 1992; Vandegraft 1993). In addition, Alaska Natives were shown little respect during the planning and conduct of several early cold war–era military projects. A most notable example was the planning phase of Project Chariot, when Iñupiat neighbors in the nearby village of Point Hope were not briefed by Atomic Energy Commission officials until two years after the project had begun, and then only in incomplete and dangerously misleading ways (Chance 2002; O'Neill 1994). Another controversial project was the Arctic Aeromedical Laboratory's study of thyroid function and its relation to cold-weather acclimatization, in which Alaska Natives were used as human medical subjects without properly derived, informed consent (NRC 1996; BHBC 1997).

## WORKFORCE AND ECONOMY

The total economic effect of military activities during the cold war was staggering. The Department of Defense's expenditures in Alaska were just under $450 million in 1950 and by 1953 had grown to $512 million (Baliles 1974; Whitehead 1998). Mili-

tary and civilian workers for the Department of Defense accounted for more than half of the Alaskan workforce in 1952. In 1951 defense-related construction alone provided 15 percent of private-sector income in Alaska, more than twice the national proportion (Bowen 1970). A 1961 guide to Alaska put it simply: "Almost everything the state has today it owes to military spending" (Kursh 1961, 212). The same year, the Anchorage-based joint services command, Alaskan Command, surpassed $3 billion in total investment in Alaska (Crow 1975). The defense industry was the biggest employer and biggest spender from 1940 to 1970 (Haycox 2001b), overtaken by the oil industry when the North Slope fields started producing in 1977 (Seidler 1996). The trans-Alaska pipeline was the first major nonmilitary construction project ever in the state.

Military construction peaked in 1954, most of the housing needs having been met and major bases well on the way to completion; expenditures for military and civilian construction from 1949 to 1954 had averaged $250 million per year (Naske and Slotnick 1987). Defense-dominated contract construction continued as the largest source of private income through 1959, accounting for one-fifth to one-third of all private income that year (Bowen 1970; Fried and Huff 1984).

Although direct defense expenditures and employment shares in Alaska's total revenue are straightforward, the multiplier effect of total contribution to the state's private sector economy is not. The wages and salaries, profits, and other income shares of private businesses selling to the military are normally included in the business or nongovernmental sector of the state's economy (Rogers 1962), making these effects difficult to gauge. Harry Kursh (1961, 213) estimated that two-thirds or more of Alaska's private business income was generated directly or indirectly by defense and, further, that about one hundred jobs were created in Alaska for every million dollars of construction contracting. Whether one is conservative and takes into account only direct federal expenditures or invokes a multiplier, the result is indisputable: The consequences of cold war defense investment for Alaska's economy were substantial and long lasting.

## STATEHOOD

There is ample evidence that Alaska's strategic value to the United States and role as "Guardian of the North" was a major factor in its admission to the union in 1959 (Gruening 1967; Haycox 2001a). Foremost, and ironically, the national defense industry gave the territory the population base and economy that convinced many lawmakers that Alaska was capable of sustaining itself in the future without federal "life-support" subsidies (Bowkett 1989). The cold war brought a different demographic group to Alaska, people who "protested being demoted to second class status" (Hilscher and Hilscher 1959, 105) and agitated for self-government. Active-duty military people lobbied their congressional delegations at home for Alaskan statehood (U.S. Congress 1953; Bowkett 1989) and voted affirmatively in overwhelming numbers in a 1958 congressionally mandated plebiscite (Gruening 1967) (Figure 6). Military necessity and Alaska's strategic role in the cold war were a key justification


FIG. 6—Members of a B-47 crew from Eielson Air Force Base, near Fairbanks, hold copies of a local newspaper proclaiming Alaska's admission as the forty-ninth state. Military investment and influence were major factors in Alaska's 1959 statehood in many ways. The 35,000 servicemen and women stationed in Alaska were allowed to vote in a 1958 plebiscite, and they overwhelmingly affirmed admission. (Reproduced courtesy of the Eleventh Air Force History Office)

for statehood and were advanced in the strongest terms to Congress by military leaders such as Douglas MacArthur, Henry Arnold, and Chester Nimitz (U.S. Congress 1953; Rogers 1962).

Given the linkage of federal military needs to Alaska's statehood, the perspective of some state founders as expressed at the fortieth-anniversary meeting of the constitutional convention seems a bit unusual. The historian John Whitehead (1998) reported that former delegates were asked whether the cold war military buildup was a consideration during the drafting of the constitution. Oddly, the first response was in the negative; however, further reflection included comments that the military buildup "freed the population" from its former dependence on the mining and fishing industries, which in the past had involved themselves in territorial politics and engaged in self-serving and intense lobbying (Whitehead 1998, 198). One could argue that, as the number-one industry and employer in Alaska, the military had little need for lower-level lobbying; it had a strong grip on the state, and with statehood came an unprecedented method of continued defense control. President Dwight Eisenhower's misgivings that some of Alaska's federal military installations

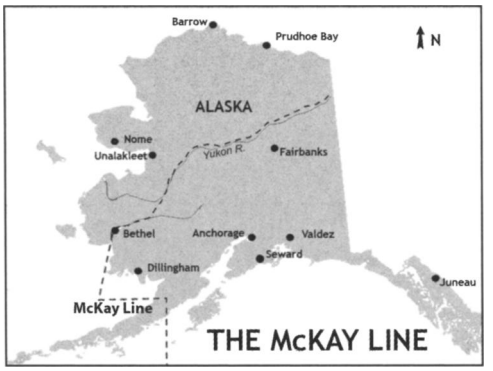


FIG. 7—Concern that Alaska's federal military installations might be compromised by state sovereignty was such that it took the McKay Line to win President Eisenhower's support. The line delimited that part of Alaska which could be withdrawn from the state to federal jurisdiction for national defense. Everything north of the Yukon River and west of a point on the Alaska Peninsula was marked for potential federal control. Thus, Alaska's movement to statehood was conditional upon deference to defense interests. (Cartography by Chad J. Parker and Robert A. Getz, U.S. Military Academy)

could somehow be compromised by state sovereignty prompted a caveat in the final statehood bill. The McKay Line was drawn, demarcating a huge area north of the Yukon River and west of a point on the Alaska Peninsula that could be withdrawn as needed from state to federal jurisdiction for the purpose of national defense (Bowkett 1989; Whitehead 1998) (Figure 7).

## INFRASTRUCTURE

Despite the $2 billion of construction spending by the federal government during World War II (Naske 1986), Alaska's infrastructure remained too sparse to support the frenetic defense effort of the cold war (Naske and Slotnick 1987). The hundreds of millions of dollars per year for defense construction mostly supported facilities designated for use by the military (Bowen 1970). Two petroleum pipeline systems were constructed exclusively for military use (USARAL 1968). Perhaps equally important was the spinoff construction funded in the private sector, as demand led to the establishment of civilian housing, businesses, and utilities to support the influx of civilians, civil servants, and military housed off base who constituted approximately 75 percent of Alaska's nearly 200,000 residents in the early cold war years (AT 1955a, 1955b). Infrastructure improvements as a result of the military presence changed how Alaskans were able to live, work, communicate, and travel.

The increased defense presence led to the 1948 authorization of a road network to interconnect the major bases. This six-year-long road-building and road-maintenance program cost more than $125 million, more than three times the total amount allotted over the previous forty-three years (Naske 1986). Most of the existing road system had been built in response to World War II defense needs—the Alaska–Canada Military Highway, constructed literally by the hands of soldiers. Because the Alaska Road Commission had severely curtailed maintenance and improvements to the system of sled roads and trails due to increased air travel, in 1947 only 2,785 miles of paved and unpaved roads existed, 1,720 miles of which were unconnected local systems (Rogers 1962; Naske 1986). Within ten years, more than 5,100 miles of mostly paved roads connected the military's major bases and logistical centers in south-central Alaska (Rogers 1962). Until the oil boom and construction of the trans-Alaska pipeline in the mid-1970s, building and financing the road system had been "accomplished by, influenced by, or carried out in support of, the needs of military

forces" (USARAL 1972, 78). Even the justification for Alaska's state ferry system, the Alaska Marine Highway, and its connection of southeastern Alaska to the military headquarters in south-central Alaska was based on national defense (Naske 1986). The selection in 1948 of a colonel "on loan" from the army as commissioner of roads for Alaska (Naske 1986) demonstrates the influence of the military in the development of Alaska's road grid.

The Alaska Railroad, running between Seward and Fairbanks and Alaska's chief source of inland freight hauling, had an average daily capacity of 1,500 tons—insufficient even for normal (nondefense) requirements (DOI 1956; Naske and Slotnick 1987). Consisting of obsolete rolling stock and unsafe tracks, it was referred to by the commander of U.S. Army Alaska as a "470-mile streak of rusting junk" (Worden 1947, 28). Rehabilitation, extensions, and improvements began in 1949, including a link to 26 Mile Field (later Eielson Air Force Base), near Fairbanks, which at the time had no road access at all. Although the military initiated and almost single-handedly drove railroad-system enhancement, it did not receive everything it desired, including a railroad link to the lower forty-eight states (Woodman 1999).

At the start of the cold war, Alaska's ports were not remotely capable of handling the influx of military construction materials and supplies, which came mostly by sea from Seattle. The choices were the ports of Seward, Whittier, Anchorage, or Valdez—each one insufficient in its own way. The port of Anchorage suffers from icing problems in the winter and from 36-foot tides—second on the continent only to the Bay of Fundy. Seward was 74 "crow miles" from the new headquarters in Anchorage, considerably more by the one poor road or the antiquated railroad. Woodworms had caused severe damage to Seward's docks, which required frequent replacements (Naske and Slotnick 1987). Valdez was ice free year-round, but hauling supplies up and over the Chugach Mountains and through the Wrangell Range was a daunting prospect. Whittier was only about 50 miles from Anchorage and ice free year-round, with port facilities built during the war by the army, but it had been closed since the end of World War II and was famously plagued by high winds and almost continuous precipitation.

The army centered its efforts and funds on all of the ports except Anchorage, possibly in the hope that the civilian economy would be strong enough to support facility improvements there. The ports of Seward and Valdez were rebuilt, and the road and railroad lines connecting them were vastly improved; they soon accommodated all sizes, types, and quantities of military and civilian freight (Kennedy 1982). The port facilities at Whittier were reopened in 1948 on an emergency basis and improved over the next twelve years with railroad yards, two new docks, warehouses, a power plant, an engine terminal, petroleum storage facilities, and utilities (Denfeld 1994; Taylor 2000; USACE AD 2002) (Figure 8). The army discontinued use of the facilities shortly after completing construction in 1960 because the road system (improved by the army) had been upgraded to the point that Whittier's port and its tenuous link with the rest of Alaska—a single railroad line through a moun-

tain tunnel—was superseded by highways. Whittier was offered almost in totality for lease to the civilian business community (Woodman 1999).

International airports at Anchorage and Fairbanks were built with federal funds starting in 1949, explicitly because military leaders decided that, for security reasons, commercial aviation should no longer use air force bases or army airfields (AAC 1958). The Civil Aeronautics Authority considered it inadvisable to enlarge existing airfields in the cities due to their proximity to military bases (Woodman 1999), so new facilities were built from scratch. Additionally, rural airfields were built or lengthened and upgraded in support of the large number of military installations being established across vast areas unreachable by the road system. Sixteen of the rural airfields were made all-weather, day-and-night navigable by the late 1950s with the addition of military Tactical Air Navigation equipment (HQ 1804th n.d.; AAC 1958). Although the Civil Aeronautics Authority's analogous VHR Omni-Directional Range / Tactical Air Navigation program eventually made it to many other rural airfields, allowing instrument-landing approaches in bad weather, the military's navigational aid program significantly enhanced opportunities for civilian residents and businesses, who were allowed to use the sixteen state-of-the-art airfields (AAC 1958; HQ USAF 1958; Memorandum . . . 1958).

Communications infrastructure in Alaska began with the military's establishment of the Washington–Alaska Military Cable and Telegraph System in the early 1900s. The military allowed commercial and nonmilitary traffic on that system, thus establishing a long history of civilian use of Alaskan military communications. Renamed the "Alaska Communications System" (ACS) and upgraded to wireless technology, its use by residents continued except during World War II (Alascom 1992). The ACS, run by the air force, had responsibility on the civilian side for the long-line system "serving the civilian populace" and for commercial operation of the Alaska Railroad's communication facilities (Alaska Railroad n.d.; AFCS 1967, 2; Woodman 1999). During the early years of the cold war, the ACS inaugurated a unique service for people in remote areas—at bush homesteads, in isolated mining and fishing camps, and on the Gulf of Alaska. With its "bush-phone service," the ACS operated fourteen stations equipped with two-way radio communications. A daily schedule was maintained with each subscriber, and if he or she failed to respond to a call, search-and-rescue crews would investigate (USARAL 1972). A second strategic communications system, "White Alice," provided reliable multichannel circuits to remote military installations and to Alaskan villages beyond the reach and capability of the ACS. Congress decided that the military should divest itself of the overtaxed and outdated ACS system, and in 1969 it passed the Alaska Communications Disposal Act to authorize privatization of the entire network (Salley n.d.; Reynolds 1988; Woodman 1999). Forty-seven sites, 715 miles of long line, the microwave system on the Aleutian Chain and southeastern Alaska, ocean cables, and an ocean cable ship were all put up for sale (Woodman 1999). Not until the ACS was sold to the Radio Corporation of America in 1971 did Alaska possess a civilian-owned, civilian-operated communications system—and even then it was military in origin.

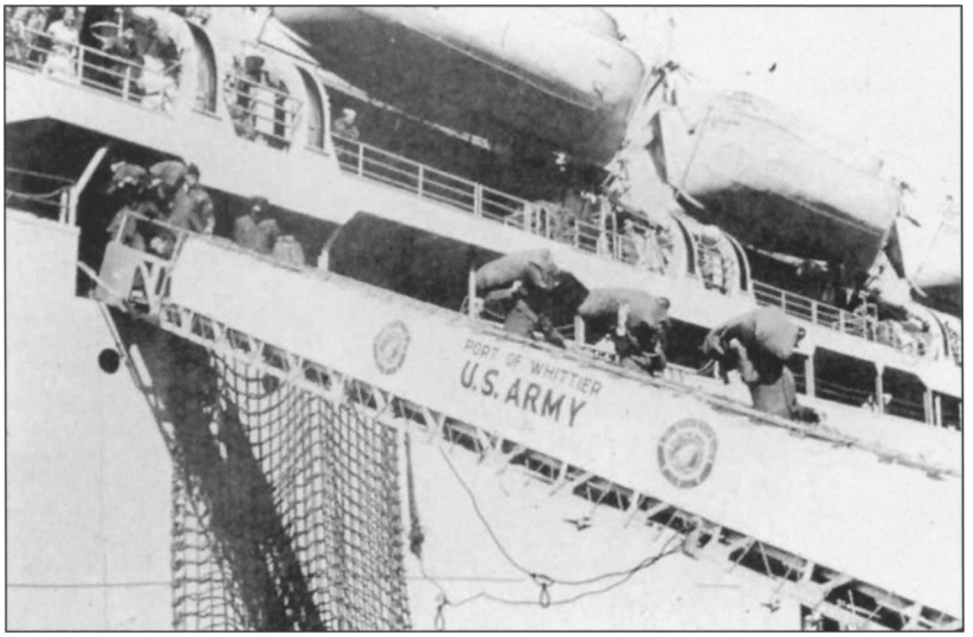


FIG. 8—Soldiers unloading at the Port of Whittier for duty in Alaska, circa 1950s. An ambitious upgrade of Whittier's facilities, which had been developed during World War II, was undertaken after 1948. The port was the entry point of large numbers of military personnel and supplies until the improved road system provided more reliable connectivity than Whittier's famously bad weather and single railroad line allowed. (Reproduced courtesy of U.S. Army Alaska)

## SCIENTIFIC RESEARCH AND THE MILITARY

Alaska was greatly affected by the establishment of a research infrastructure supporting science, engineering, medicine, and warfare. The new and more lethal technologies of the cold war, combined with the perceived likelihood that the polar great circle was a potential weapons-delivery route, focused attention on the Arctic theater of operations. Scientists within the defense establishment saw the Earth as a laboratory in which to design and test new weapons systems, improve communications, and support ground troops (Leslie 1993). That Arctic environments had received scant attention in the past lent an increased sense of urgency to a scientific quest for knowledge about building, operating, and fighting in cold environments. Interest focused on Alaska, among other Arctic and Antarctic places, and militarized it further. In 1948 the Office of Naval Research established the Naval Arctic Research Laboratory (NARL) in Barrow, Alaska, the northernmost settlement in North America. The NARL's mission of "research in all appropriate scientific fields related to the Arctic environment" (Britton 1964, 44) meant primarily those fields that directly benefited the cold war military effort. However, all government-sponsored research was welcome, as was that undertaken by any of the academic institutions that held the contract for operating the NARL over the years: Swarthmore College, Johns Hopkins University, and the University of Alaska (Britton 1964; Reed


FIG. 9—The Naval Arctic Research Laboratory, together with Alaskan Air Command, militarized the pack ice of the Arctic Ocean as well as Alaska. Working from Alaska, the military established at least seven research stations on floating ice islands. T-3, also known as "Drift Station Bravo," pictured here, was established around 1958 and was transferred in 1962 to become the U.S. Navy Underwater Sound Laboratory. (Reproduced courtesy of the Eleventh Air Force History Office)

and Ronhovde 1971). Barrow, a mostly Alaska Native village of about 400 inhabitants, saw its population increase by 25 percent during the summer season, when the NARL brimmed with researchers undertaking studies in marine invertebrate zoology, vascular plant taxonomy, ecology, underwater acoustics, and other subjects. The NARL's presence was not limited to Barrow; research was conducted at many outposts north of the Brooks Range and on at least seven drifting research stations, built and maintained on huge ice floes in the Arctic Ocean (Britton 1964; AT 1970; Wise 1978) (Figure 9).

Another military research institution was the Arctic Aeromedical Laboratory, based from 1947 to 1967 at Ladd Air Force Base (now Fort Wainwright), just outside Fairbanks. Its mission was to carry out research in the medical and related sciences in order to increase the combat efficiency and preserve the health of military personnel in Arctic climates (Air University n.d.). A "human factors laboratory," most of its research subjects were military men testing various diets, clothing, and gear for the five internal departments of environmental medicine, physiology, biochemistry, protective equipment, and psychology (AAC 1961). However, the laboratory exposed Alaska Natives to Western science in a very personal way. From a field station based out in a World War II–vintage "Jamesway hut" in the Native village of Anaktuvuk Pass, the laboratory conducted long-term studies of adaptation to Arc-

tic cold by Alaska Native.[4] Specifically, the research was designed to study the role of the thyroid gland in acclimatization to cold. The study used iodine-131, a radioactive medical tracer, to measure thyroid activity in 102 Alaska Native subjects (NRC 1996; Reuter 1997). Accusations of unethical practices were made against the air force, including that Native subjects were strong-armed into participating without their informed consent. The laboratory's unscrupulous testing practices constitute one of the bases for continued criticism of the Defense Department's cold war policies and actions toward Alaska's Natives and Native lands (Armstrong 1978; Simon and others 2001).

Alaska was the site of the first field-built nuclear reactor in the world. A field-assembled prototype Stationary Medium Power Reactor, the SM-1A was experimental on two fronts: Not only was it the first reactor built on-site, it was also a feat of engineering that proved a nuclear power plant could be built and operated in a subarctic environment (B. Johnson 1996). The reactor supplied nuclear power for the army's Fort Greely, about 90 miles southeast of Fairbanks and near the town of Delta Junction, for exactly ten years, at which time it became the first nuclear plant ever decommissioned (Fasnacht and others 1992).

Doubts have been raised as to the safety of the surrounding people, animals, and environment due to several possible radioactive exposures during the reactor's decade of operation (W. R. Johnson 1993; ATSDR 1999; Buske, Miller, and Eckstein 2000). Claims that radiation was released focus on six possible sources, including improper solid and liquid waste disposal, use of radioactive steam for heating, and several accidents associated with defective control rods. One citizens' advocacy group has accused the army of concealing the primary mission of the SM-1A as a producer of nuclear materials for use in small-scale tactical nuclear weapons (Buske, Miller, and Eckstein 2000). Despite assertions that health problems resulted from the SM-1A program, the Department of Defense has long denied the presence of unacceptable levels of hazardous materials and has hailed the experiment as a landmark scientific success (USARAL 1972; B. Johnson 1996; Mighetto and Homstad 1997; Woodman 1999).

The SM-1A was not the only new technology tested at Fort Greely. The army conducted, denied, then admitted a series of secret open-air tests of chemical and biological warfare agents at its Gerstle River test site and the nearby Delta River watershed on the Fort Greely grounds between 1963 and 1967 (Fineberg 1972; Simon and others 2001; Kelley 2002; Ruskin 2002). Specifically, GB (sarin) and VX nerve agent cold-weather dissemination testing was conducted, as well as the release of tularemia, a bacterial agent (DOA 1976). Thus, Fort Greely holds the distinction of being the only place in the United States, other than Utah's Dugway Proving Ground, where germ-warfare agents are acknowledged to have been tested in the open atmosphere (Fineberg 1972).

Cold war military scientific work helped to develop the Fairbanks campus of the University of Alaska. The university's Geophysical Institute, which was originally envisaged as a program of American-Soviet-Canadian cooperation in Arctic science, developed into a research facility to meet the military's requirement for geophysical

research. Not only were defense needs in part responsible for the creation of the institute; according to the historian of science Ronald Doel (1997), the institute became a leader in interdisciplinary cooperation because of those needs, as questions posed by the cold war defense establishment demanded work that spanned traditional disciplinary boundaries. Evidence indicates that the defense industry's requirements drove the University of Alaska to create Alaska's first doctoral program and to establish other scientific programs in permafrost studies, oceanography, botany, zoology, Arctic biology, and geology (Davis 1992; USACE CRREL 2002).

Cold war defense research and practical experience led to advances in Arctic engineering. Research conducted by military agencies and academic partnerships with the nascent University of Alaska, Fairbanks and the Atomic Energy Commission, combined with the practicum of planning, building, and maintaining a huge network of installations of varying size and functions along with the logistics facilities and infrastructure to support them, led to significant advances in Arctic engineering. It is doubtful that Alaska's next boom industry, North Slope oil production, would have occurred as quickly as it did without the scientific, research, and engineering legacy of the cold war military.

## Town–Uniform Relations and the Road Ahead

As the defense establishment moved into Alaska at a rapid pace and became involved with local and territorial/state leaders, the military became a significant force in the community. The interaction between the military and civilian worlds was definable, but it affected Alaskans in ways that are difficult to measure. The military presence was ubiquitous in the largest cities, Anchorage and Fairbanks; men in uniform bought and rented housing, shopped in stores, ate in restaurants, drank in bars, and supported a red-light district that had officially closed years before (Atwood 1957; Naske and Slotnick 1987). School enrollments increased markedly, as did student turnover rates from families who were transfered every year or two (Naske and Slotnick 1987). Military units volunteered in local organizations and held benefits for local civilian charities (USARAL 1976).

Although the military actively supported community projects, its very presence generated unease in many quarters. Some Anchorage residents resented living during the age of McCarthyism in what looked like, if it did not uniformly feel like, a police state (AT 1954a). Other citizens lamented a boomtown out of control, complete with housing shortages, steep price increases, and the various forms of vice that traditionally accompanied young men on liberty (AT 1954b).

Across rural Alaska the military took an active role in firefighting, search-and-rescue operations, earthquake assistance, and victim extraction. This involvement extended to annual airborne delivery by "Santa" of holiday gifts to children in the most remote villages (USARAL 1969; AAC MAD 1976; Woodman 1999). The Armed Forces Radio Network, provided for the soldiers and sailors at remote stations, became a communications hub for many communities (Kursh 1961). Soldier-hobbyists began raising silver salmon on base, which were then "airmobiled" in 450-gallon

buckets under army helicopters for stocking in lakes; this fish-smolting facility was given to the Alaska Department of Fish and Game in 1976 (Woodman 1999). In one year the Alaskan Air Command, quartered mostly in Anchorage and Fairbanks, provided $2 million for state and local activities, from emergency medical aid to the Scout-O-Rama, from police-dog demonstrations to supplying the village of Fort Yukon with clean water when the village well was dry (AAC MAD 1976). These activities undoubtedly were motivated in part by a desire for positive public relations. But they also reflect a genuine concern on the part of military personnel to deal positively with observable needs in the local community. And the good will engendered in the civilian population by charitable and service activities clearly was beneficial to the military. Off-base engagement with community life was just one facet, but an important one, that helps elucidate the military's extensive role in the culture of cold war–era Alaska.

Alaska's geographical position, climate, and training environment gave it the highest priority for enormous military investment during the cold war. Cold war military investment, after previous military investment during World War II, laid the foundation for Alaskan economic development. Road and railroad networks, ports and airfields, pipelines, the ferry system, facilities and objectives for science, engineering, and military research, and the long-line communication system were direct results of cold war military interests. The physical presence of the cold war military has become less distinct over time. It has been supplanted by a large U.S. military force restructured to fight the war on terrorism. The cold war cultural landscape, at one time marked by 548 military installations across Alaska—ranging in size from individual, isolated structures to self-contained cities—has become less visible because many installations from that era have been closed or cleared away. Although the military's investment is now less literally embodied in the cultural landscape, through other means—economic development, politics, demographics, social construct—the cold war military profoundly influenced contemporary Alaska. The military's investment in Alaska during the cold war is an example of the potential of the military to act as an agent of geographical change.

Today, the military continues to make its presence felt in a number of measurable ways, which deserve closer study by geographers and others: the economy, political geography and possible related changes brought about by military voters, the complicated relationship between the military and Alaska Natives, and the increasing numbers of military retirees who are returning to settle where they served during the cold war. Although the end of the cold war saw a reduction in military investment commensurate with "peace dividend" downsizing and reductions in force, the current force restructuring and augmentation caused by the war on terrorism and the invasion of Iraq have once again increased the number of military troops and defense expenditures. As of 2003 Alaska ranks number one among U.S. states in per capita federal spending—fully one-third of the state's economy is driven by it—with defense spending the largest single component, contributing 25 percent of all federal funds (Goldsmith and Larson 2003). The federal government remains

number one among Alaska's employers (Goldsmith 2000; Fried and Windisch-Cole 2002; Goldsmith and Larson 2003). Half (about 16,600) of those federal jobs are active-duty military, and they are augmented by twice as many civilians in support positions (Case 1999; Hollander 2002a, 2002b). Although the 2005 Base Realignment and Closure Commission recommended a streamlining of Eielson Air Force Base, which would mean a loss of military and civilian jobs, the army has increased its personnel needs in Alaska with the establishment of one new brigade and the augmentation of another. Interior Alaska's Fort Greely is now home to a testing range for long-range interceptor missiles within the nascent and controversial national missile defense system (Hollander 2002a, 2002b).

All signs—the national missile-defense test bed, new troop alignments and combat structures, increased infrastructure to support cross-Pacific military air movements, and sustained defense ties with technical research programs at the University of Alaska—indicate that the military is finding new, post–cold war ways to continue its presence in Alaska, at the behest of powerful Alaska Sen. Ted Stevens and with the support of a largely dependent business community. Investigators in all disciplines would do well to initiate research, add to the literature, and offer their own contextualizations of Alaska's ongoing military legacy.

## Notes

1. The Plowshare Program was the U.S. Atomic Energy Commission's plan to develop peaceful uses for nuclear explosives in the late 1950s. Plowshare was ostensibly a program in which physicists acted as engineers to enhance and correct a "slightly flawed planet" (O'Neill 1994, 25), not to facilitate the nuclear-weapons program. In reality, the program was born in part due to broadening opposition to the hazards of aboveground nuclear-weapons testing and was administered by the commission's Division of Military Applications. Dan O'Neill addresses Alaska's intended role in the Plowshare Program in *The Firecracker Boys* (1994).

2. "Sourdough" is a term used by Alaskans to describe long-term residents, "real" Alaskans as opposed to newcomers, who are known tongue-in-cheek as "Cheechakos."

3. "Eskimo Scouts" is a term of indeterminate origin used to describe rural-based units made up exclusively of Alaska Native men and women. The use of the term "Eskimo" was most likely initiated by a non-Native member of the Alaska Army National Guard, for it incorrectly lumped together Natives of Iñupiat, Koyukon, Gwichin, Central Yupik, Siberian Yupik, and Ingalik heritage. "Eskimo" is a word from the Algonquin people of eastern Canada, but it was adopted by whites and routinely used by Alaskans, including Alaska Natives. Though an imprecise descriptor of many Native National Guard members—because Eskimo are normally considered to inhabit only the seacoasts of the Arctic and subarctic regions—the "Eskimo Scouts" moniker stuck. Most of the same units are in existence today and are usually referred to simply as "Scouts."

4. A Jamesway hut is a long and rather narrow structure, typically with a canvas skin over metal or wooden supporting arches. The supports create a rounded ceiling that extends in one arch from the ground up. Seen from the front, the hut thus describes a semicircle. Jamesway huts were created for temporary use but were often found to be quite hardy.

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