Northern Defenders: Cold War Context of Ladd Air Force Base Fairbanks, Alaska 1947–1961

January 2001

CEMML TPS 01-2

Northern Defenders: Cold War Context of Ladd Air Force Base Fairbanks, Alaska 1947-1961

Kathy Price

Edited by:

Glenda R. Lesondak

Prepared by:

Center for Ecological Management of Military Lands
Colorado State University
Ft. Collins, CO 80523-1500

Russell H. Sackett
Natural Resources Branch
U.S. Army Alaska
Fort Richardson, AK 99505-6500

January 2001

CEMML TPS 01-2

TABLE OF CONTENTS

CHAPTERS

APPENDICES

LIST OF FIGURES

CHAPTER 1.0 Introduction

1.1 Purpose of Study

As part of the requirements of Section 110 of the National Historic Preservation Act (NHPA), federal agencies must evaluate their properties for historic significance in order to manage those resources in accordance with the law. They must identify properties under their jurisdiction that may be eligible for listing in the National Register of Historic Places (National Register). The National Register requires that properties and historic districts be evaluated within their historic contexts according to specific Criteria for Evaluation.[1] As one step in that NHPA compliance process, this study provides a historic context for Cold War properties at Fort Wainwright, the former Ladd Air Force Base, from 1947–1961.

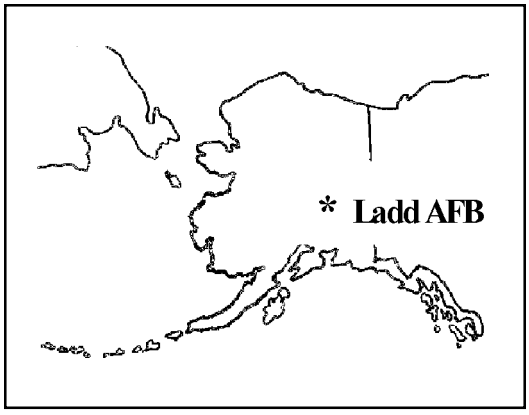


Figure 1. Location of Ladd AFB.

From approximately 1946 until 1991, the United States and the Soviet Union faced each other in the Cold War, a tense military and ideological competition with worldwide stakes. Alaska, as the closest American territory to the Soviet Union, became an important military arena. Between 1947 and 1961, the Air Force operated an air base just east of Fairbanks, Alaska, which was known at the time as Ladd Air Force Base.[2] This study covers those years under the theme of Air Force Alaskan Cold War operations. It is commonly known that the Air Force played a determining role during the Cold War in Alaska; the historical significance of the Air Force's Alaskan Cold War activity has also been established according to NHPA criteria in prior cultural resource surveys.

1.2 Previous Work

This previous work on Cold War property context and National Register eligibility has covered large portions of Alaska's Cold War military fabric.[3] The Alaska State Historic Preservation Officer (SHPO) prepared *The Coldest Front: Cold War Military Properties in Alaska*, a historical overview of Cold War activity and Cold War sites in Alaska. The Alaska District, Army Corps of Engineers has issued a *Cold War Resource Management Plan* including a statewide inventory of Cold War installations and property types. These documents illustrate the interdependency of Alaska's various military properties as parts of the region's integrated defense network.[4]

[1] U.S. Dept. of the Interior, National Park Service, National Register Bulletin, "How to Apply the National Register Criteria for Evaluation," rev. 1998, 7-8. See this bulletin for details on the specific criteria and their application.

[2] Prior to the establishment of a separate Air Force, the base was known as Ladd Field. After 1947 and until the Army took over the installation, it was Ladd Air Force Base.

[3] See bibliography for full citations. See below, Alaskan Air Defense System, for further discussion of Alaska's defense systems.

[4] Department of Defense Legacy Resource Management Program, in cooperation with Alaska State Historic Preservation Officer, *The Coldest Front: Cold War Military Properties in Alaska*, by William J. Siedler, draft report, (Anchorage, Alaska Department of Natural Resources, Feb. 1996), 33.

Individual installations and systems have also been documented for National Register eligibility. These include Shemya, King Salmon, and Galena AFBs, and the Aircraft Control and Warning (AC&W) sites, documented by the Air Force's 611th Civil Engineering Squadron. Hanscom AFB in Massachusetts prepared a study of the Distant Early Warning (DEW) Line. The DEW Line was determined eligible for the National Register, and Hanscom AFB then prepared a Historic American Buildings Survey architectural recordation of one of the DEW sites. The Corps of Engineers studied the Nike Hercules system and sites as well as the historic structures of Eielson AFB. They also reported on the White Alice Communications System (WACS), which was determined eligible for the National Register. Charles Mobley and Associates performed a historic architecture inventory and evaluation for Fort Greely. The SHPO also prepared a public information interpretive pamphlet on Nike Site Summit near Anchorage, as well as a National Register nomination for the property. Nike Site Summit was listed on the National Register in 1996.

The Cold War context for Ladd AFB had not been studied in depth, although the base's earlier history is well documented. The installation has a World War II historic district designated as a National Historic Landmark in 1984. In 1998, Gene Stout & Associates prepared an inventory of selected Cold War resources at Ft. Wainwright (Ladd), Ft. Richardson, and Ft. Greely. That study was an overview which sought out properties that might be eligible for National Register status under the "exceptional importance" criterion for buildings less than fifty years old. Presently, with the fifty-year horizon now at hand for all early Cold War properties, managers need a specific historic context for this installation to use in evaluating the significance of remaining properties. This study develops that installation-wide context.

1.3 Methods and Results

The authors of a U.S. Army thematic study on Cold War properties pointed out that "[t]he time span and complexity of the context is enormous and unprecedented. The Cold War is the history of the world since 1945, sifting through it will take decades. Most other historic contexts [such as World War II]…are more manageable."[5] At an installation level, describing the Cold War historic context is not quite so daunting, but it can present a number of challenges.

Traditional military histories are not organized from an installation perspective. Instead, they record the developments within commands and units. At Ladd, as at most bases, there were substantial numbers of units rotating through the facility, and as they departed, their records often left the site with them. Frequently, units and even whole lines of command were redesignated or reorganized. Furthermore, many activities were considered classified or restricted at the time. Consequently, on a practical level it is not possible to reconstruct a detailed picture of the many organizations which were present at Ladd during the early Cold War, and it is not necessary for evaluating significance. More valuable is an overview of the types of

[5] U.S. Army Environmental Center, *Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties*, (Aberdeen, MD), 91.

missions which took place at this busy northern air base, and their relationship to the larger Cold War scene.

The major portions of this study were prepared in Fairbanks during the summer of 2000, using published histories, cultural resource reports, archival collections, personal interviews, contemporary newspaper and magazine articles, and what military records were available in the Fairbanks and Anchorage areas. Based on a thorough review of this material, a table of missions was developed. The report to date places Ladd AFB in the Cold War context and describes Air Force missions in the major areas of air defense, strategic reconnaissance, search and rescue, and scientific research. Additional material is available for further development in the areas of communications, tactical support, training, base operations and development, and civilian aircraft operations. The Army was also present at Ladd during this period, conducting antiaircraft and base defense and training. However, the buildings associated with Army missions during the time frame of this study have been demolished, with the exception of Hangar Five.

The missions at Ladd were significant to the Cold War at three different levels: national, state, and local. Serving as a sector command center for air defense and a logistical support center for all northern region Air Force activities, Ladd and its facilities had literally far-reaching effects and a significance beyond ordinary readiness and base operations. Missions including strategic reconnaissance, air defense, and scientific research had significance at the national level. Search and rescue operations had state-wide significance.[6] Ladd AFB also had intense local impacts on the Fairbanks area, but because the national significance of the site is so substantial, local effects will not be addressed in this context study.

[6] The term "state-wide" is used loosely. Alaska was a territory during most of the study period, not achieving statehood until January 1959.

CHAPTER 2.0 Cold War Background

2.1 Overview

When World War II concluded in 1945, it had left the U.S. and the U.S.S.R. as the world's dominant military powers. During the latter part of the war the two nations had been allied, but after the war the expedient nature of this alliance became apparent. Within a very short period, a multidimensional conflict ensued between the two superpowers. Known as the Cold War, this hostile confrontation began without any formal declaration of war but defined international politics and superpower military strategies for over four decades.

> *There [occurred] the most remarkable polarization of politics in modern history. It was as if a gigantic magnet had somehow come into existence, compelling most states, often even movements and individuals within states, to align themselves along fields of force thrown out from either Washington or Moscow.*
>
> - John L. Gaddis[7]

At the core of the Cold War was an ideological battle between the competing economic and political systems of democratic capitalism and totalitarian communism. Each side saw the other's system as a potentially mortal threat. The Cold War involved worldwide geopolitical strategies, as each side sought alliances in Europe and in the developing world. The initial tensions occurred in Europe, where the danger of escalation from standoff to full-scale superpower battle was very high. Over the years, limited proxy wars occurred outside that arena in Korea, Vietnam, and Afghanistan. The U.S. and the U.S.S.R. did not engage one another in a direct hot war, although military planners on both sides always prepared for that contingency. Part of that preparation involved creating and sustaining a large military-industrial complex. With the advent of nuclear weapons and the systems for delivering them, technology itself became a critical front in the Cold War.

The Cold War's dates are approximate. Winston Churchill's well-known 1946 Iron Curtain speech generally marks the Cold War's onset while the official dissolution of the U.S.S.R. in 1991 marks its close. Stretching over this forty-five year period, the conflict went through several phases.[8] The first, "onset and containment", roughly corresponds to the Truman administration in the years 1946–1952. By 1947, the Truman administration established a containment policy to limit growth of communist spheres of influence with implicit and explicit military threats, and paired this with economic development for at-risk nations. The Berlin airlift of 1948 was the first major military application of containment; the Korean War of 1950–53 was another.

[7] John L. Gaddis, *Now We Know: Rethinking Cold War History*, (Oxford: Clarendon Press 1997), 26. The summary in this section is adapted from material in Gaddis and in the following sources: Michael Kort, *The Columbia Guide to the Cold War*, (New York: Columbia University Press, 1998); Richard Alan Schwartz, *The Cold War Reference Guide* (Jefferson, NC: McFarland & Co., 1997).

[8] Historians break down the Cold War into different phases depending on the political, military, and cultural emphases of their inquiries. For the purposes of this study, breakdowns by presidential administration serve best.

The second period corresponds to the Eisenhower years between 1953 and 1960. Then, the major US strategic policy was known as "massive retaliation". The administration announced that Communist aggression against U.S. allies worldwide would be met with nuclear response directed at the U.S.S.R. itself. The U.S. focused its military resources in this direction, rather than into maintaining large, expensive ground forces.[9] At the same time, the technological landscape was changing. Scientists in the U.S.S.R. had unexpectedly exploded an atomic device in the fall of 1949, several years before the Americans had estimated they could do so. A technological arms race was underway. During 1952 and 1953, both the U.S. and the U.S.S.R. developed nuclear fusion devices, and both nations achieved intercontinental ballistic missile capability only five years later.

A third phase of the Cold War took place during the Kennedy and Johnson administrations from 1961 through 1968. Some military leaders had been advocating for "flexible response," believing that massive retaliation limited American options. Flexible response focused more resources on conventional capabilities and on options for limited warfare. In 1962, the Cuban Missile Crisis occurred when the U.S.S.R. placed intermediate-range ballistic missiles in Cuba, triggering a standoff with the Kennedy administration which nearly led to nuclear war. Following this crisis, the two superpowers avoided direct confrontation in each other's immediate spheres of influence, and the Cold War battleground moved primarily into the Third World. During this phase, American involvement in the Vietnam conflict escalated to its highest levels.

From 1969 until the late 1970s, the Cold War took another turn. Beginning with the first Nixon administration, the U.S. practiced policies of *détente*, or peaceful coexistence with the Soviet Union. Under the surface, the superpower relationship continued to be hostile, but the two sides began to address issues such as nuclear arms control. By 1979, *détente* had collapsed and a renewed Cold War emerged in the next decade. However, internal politics within the Soviet Union and the East bloc countries gradually led to the collapse of satellite communist governments and to the dissolution of the U.S.S.R. in 1991, marking the end of the Cold War.

The time period of this study, 1947–1961, encompasses the formative periods of the Cold War. This historic context of Ladd AFB spans the most of the Truman and Eisenhower administrations and illustrates the role a far northern U.S. air base played in the actual operation of early Cold War policies.

2.2 Cold War in the Arctic: The Polar Theater

The Cold War brought a new sense of ever-present, underlying threat. Since the early years of the republic, the U.S. had experienced the luxury of being separated from European conflicts by geography. The appearance of long-range offensive technology at the end of World War II brought that geographical safety to an end. Long-distance bombers and early rockets meant that military forces no longer had to be in close proximity to inflict ravaging damage; in fact, they no longer even had to be facing one another on the same continent. Furthermore, the shock of the 1941

[9] Eisenhower's intent was to keep the U.S. economy in strong condition. The plan also compensated for the numerical inferiority of Western forces' conventional weapons and troops compared with the East bloc's.

Pearl Harbor attack, which propelled America into World War II, was never far from the surface. Concerns about sudden attack, particularly nuclear attack, were part of military planning.

> *Today, as I look back over my diary of the war years, a casual event [in Norway] comes to my mind….' 3 May, 1945. Dinner Russian Hdq., Kirkenes.'….*
>
> *The little remark that lingers in my mind came just at the end of the dinner. Colonel Grigge, seated opposite me, was getting maudlin, and he lifted a glass of vodka and reached across the table.*
>
> *'Colonel American Balchen, we drink to you,' he said thickly. 'But one day in the Arctic we will be fighting you.' And he clinked his glass against mine.*
>
> — Bernt Balchen [10]

In the postwar age of long-range bombers, the shortest routes for such attacks were the air routes over the north polar region. Consequently, U.S. commanding generals began to respond to the "polar concept," the idea that the Arctic regions themselves would become a future theater of operations. In 1946, Army Air Forces General Carl Spaatz directed his commanders that "the development of the Arctic front is our primary operational objective."[11] Bases in the far north soon became outposts for air defense; some hosted offensive bombers. Alaska, with its location so close to Soviet territory, became a front line for land-based defenses as well.

The main strategic significance of the Arctic regions lay in its transpolar air routes and the region's proximity to the Soviet Union, but military preoccupation with the polar theater would grow to include many related factors.[12] The Department of Defense would sponsor wide-ranging scientific research and development to improve Arctic operating knowledge for its forces. In the Cold War, the Arctic would also serve as a forward deployment zone, a warning area, a listening post, a first line of defense, and a potential resource storehouse. Alaska became the western anchor for these Arctic and sub-arctic activities. Alaska would be what one journalist called "our northernmost sentry….[the] guardian of our continent."[13]

2.3 Alaska's Defense Structure

Throughout the military, the post–World War II years were a time of extensive reorganization. It took over a decade before the defense organization we now recognize was fully in place. Changes took place at the highest command levels. The 1947 National Security Act established the position of Secretary of Defense, while the 1948 Key West agreement between the armed services assigned postwar roles and missions. In 1953 and 1958, the Eisenhower administration continued to reorganize and centralize the Department of Defense.[14] These reorganizations added another dimension to the ordinary turnover in local commands, making the time period of this study one of unusual structural flux.

[10] Bernt Balchen, *Come North With Me,* (New York: E.P. Dutton, 1958), 296-7.

[11] Kenneth Schaffel, *The Emerging Shield: The Air Force and the Evolution of Continental Air Defense 1945-1960,* (Washington, DC: Office of Air Force History, USAF, 1990), 57-58.

[12] Lt. Col. Edward Hirsch, "United States Policy Regarding Arctic Security," G. & P. 206, American Foreign Relations, July 29, 1964. Copy at University of Alaska, Fairbanks, Rasmuson Library.

[13] John E. Metcalf, "Alaska – Its Strategic Role in Our Defense," *The Magazine of Wall Street* (3 January 1959): 345

[14] Allan R. Millett and Peter Maslowski, *For the Common Defense: A Military History of the United States of America*, (New York: The Free Press, 1984), 480, 512, 521, 522.

In 1947, as part of the National Security Act, the Air Force was formally separated from the Army as a branch of service; the division of responsibilities, personnel, and assets took two years to complete.[15] Within the Air Force, three major operating commands existed: the Strategic Air Command, which dominated the Air Force's budget, resources, and doctrine; the Tactical Air Command, which supported battlefield operations; and the Air Defense Command, which oversaw air defense installations. Between these major commands and their operating wings, numbered air forces served as intermediate commands. In Alaska's case, this was the 11th Air Force, assigned to Air Defense Command. Since late 1945, the 11th Air Force had been specially designated as the Alaskan Air Command, or AAC. After 1946, AAC located its headquarters at Elmendorf AFB in Anchorage. Northern Sector headquarters, covering the entire area north of the Alaska Range, were at Fairbanks' Ladd AFB.[16]

In 1947, the Pentagon established a unified inter-service command for Alaskan operations—the Alaskan Command, or ALCOM. Based on the unified commands of World War II, it encompassed virtually all Army, Navy, and Air Force units in Alaska under one commander-in-chief. ALCOM's headquarters was at Elmendorf AFB, and the commanding officer of the AAC also served as the commander-in-chief of ALCOM.

2.4 Ladd's Role

Ladd AFB, situated on the Chena River just outside of Fairbanks, was a relatively new installation. Developed just prior to the outbreak of World War II as a cold-weather testing and training site, it saw a major role in the war as the transfer point for lend-lease aircraft to the Soviet Union.[17] However, that did not guarantee it prominence or even continued existence as the war ended. Ladd's original mission as a cold weather test site for aircraft would soon be eclipsed.[18] Throughout the nation, temporary World War II installations were being closed and sold through the War Assets Administration, mothballed for future Army mobilization, or in some cases, seeing new life as permanent bases.[19]

In Alaska, ALCOM disposed of installations and assets from the Aleutian campaign on a massive scale. Proceeding with a heartland defense concept, ALCOM centralized its resources into the base complexes near Fairbanks and Anchorage. The heartland concept was intended to provide a combat advantage by allowing a concentrated force to deploy against attacks using protected interior lines. Since

[15] Lyman Woodman, *Duty Station Northwest: The U.S. Army in Alaska and Western Canada, 1867-1987*, vol. 3, 1945-1987, (Anchorage: Alaska Historical Society, 1999), 50.

[16] Bernard C. Nalty, ed., *Winged Shield, Winged Sword: A History of the United States Air Force*, Vol I, 1907-1950, (Washington, DC: Air Force History and Museums Program, USAF, 1997), 376. Truman R. Strobridge, *Strength in the North: A History of the Alaskan Command, 1947-1967*, (Elmendorf AFB 1966) 25. John Haile Cloe and Michael Monaghan, *Top Cover for America, the Air Force in Alaska 1920-1983*. (Missoula: Anchorage Chapter-Air Force Association with Pictorial Histories Publishing Co., 1984), 157.

[17] Land for Ladd Field had been withdrawn by executive order in March 1937; officers selected the exact site for construction in 1939. Delegate Dimond had won appropriations for the field in 1939, after four years of effort. In 1940, construction began, and Ladd Field was dedicated on September 4, 1940. Cloe, 21-23. The ALSIB Lend-Lease program is documented in numerous histories including Cloe, 149-156, Naske & Slotnick, and the Ladd Field National Historic Landmark nomination. Claus-M. Naske and Herman E. Slotnick, *Alaska: A History of the 49th State*, (Norman, OK: University of Oklahoma Press, 1987), 127. Erwin N. Thompson, *National Register of Historic Places Nomination for Ladd Field Historic Landmark, Alaska*, (Denver: Denver Service Center, National Park Service, 1984).

[18] A new cold weather test hangar at Eglin AFB, Florida, came online in 1947. See cold weather section for more information. History, Air Proving Ground Command, 1 Jan – 30 June 1952; at Elmendorf AFB History Office, Ladd AFB History & Misc.

[19] U.S. Army Environmental Center, *Army Cold War Historic Properties*, 20.

Alaska's transportation infrastructure at the time was so limited and the problem of military supply so acute, it also made sense to concentrate the bases along existing supply lines near Anchorage and Fairbanks.[20] Ladd's location near Fairbanks, the Richardson Highway and the Alaska Railroad, its access to fuel from the CANOL pipeline, and its position at the time as one of the United States' northernmost developed air bases were important factors in securing its early Cold War prominence.[21]

From the late 1940s into the 1950s, Ladd AFB served as the northern hub for Air Force activities in Alaska. As headquarters first of the Northern Sector of the AAC and later of the 11th Air Division, Ladd was centrally involved in the Cold War missions of the Alaskan Command and in the transient missions of other military units, including the Strategic Air Command (SAC). Ladd was not exclusively an Air Force site. The Army was also present to provide antiaircraft (AAA) support and base defense. At Ladd, Cold War activities fell mainly into three time periods: an early phase from 1946–1950; a buildup and support hub phase from 1950–1957; and a transfer phase from 1958–1961, when the installation was turned over to the Army.

From 1946–1950, men from Ladd laid some of the groundwork of the early Cold War with strategic reconnaissance and Arctic research projects. Among other missions, they made initial assessments of the Soviet presence in the Arctic; more fully developed the practice of polar navigation; extended Arctic topography; tested cold weather equipment, clothing, and human performance, as well as maintained the area air defenses of the region. In 1948, as Cold War tensions heightened, the Army's 2nd Infantry sent ground defense soldiers to Ladd.[22]

From the onset of the Korean War in 1950 and continuing through 1957, Ladd saw intense use. It became a busy operations and logistics center with significantly expanded facilities and personnel strength. As the northern region headquarters of the 11th Air Division, the base was the logistical support center for Alaska's new defense projects. Ladd supported Aircraft Control & Warning (AC&W) sites and forward operating bases such as Galena, the northwestern segments of the Distant Early Warning Line (DEW Line), and the White Alice communications network (WACS). Research projects grew from early Arctic aeromedicine and cold weather testing to include ice station research on the polar pack ice and support for Air Force contracted research in geophysics, communications, and other disciplines. Air defense remained the primary combat mission, while tactical ground support, fighter escort, Arctic training exercises, and base defense were other parts of the base's integrated combat role. The 4th Infantry supplied the Army manpower through 1956.[23]

After 1957, several developments affected Ladd's mission. The technologies of warfare, communications, and reconnaissance had changed. Intercontinental ballistic missiles (ICBMs) and satellites would eventually mean a smaller role for AC &W units, the DEW line, and land-based communications such as White Alice. In

[20] Strobridge, 38. Woodman, 71.

[21] Marks AFB in Nome was another far northern base, built beginning in 1941 and used in World War II by Russian pilots returning from Ladd to the USSR with their Lend-Lease aircraft. Cloe, 52,156. Other major Arctic air bases, such as Thule in Greenland, did not exist yet.

[22] Woodman, 58.

[23] Woodman, 66, 148.

1958, substantial budget reductions forced commanders to reassess their resources. Near Fairbanks, two major air bases, Eielson and Ladd, existed less than thirty miles apart.[24] In 1960, citing economic factors, the Air Force ceased flying operations at Ladd and reassigned its functions to Eielson and to Elmendorf AFB in Anchorage. On Jan. 1, 1961, the Air Force transferred Ladd to the Army.

Ladd Air Force Base Missions, 1947-1961
• Air Defense Aircraft Control & Warning, Fighter-Interceptors/Ground Control Intercept
• Strategic Reconnaissance Photographic, Electronic, Long-Range Detection, Weather
• Search and Rescue
• Logistic Support of Northern Region Auxiliary Military Facilities Forward Bases, AC &W sites, DEW line, Clear BMEWS, MIDAS, Other
• Research Cold Weather Testing, Arctic Aeromedical Laboratory, Ice Stations, Polar navigation, Support of Contracted Research
• Communications
• Strategic Air Command (SAC) Support
• Tactical Ground Support, Offensive Fighter Escort
• Training Arctic indoctrination, ALCOM exercises
• Base Operations Administration, Materiel, Maintenance, Supply, Transport, Personnel, Installations (physical plant), Hospital, Food Service, etc.
• Civil Aircraft Operations, Facilities & Services
• Classified/unknown

Sources: 5001st Air Base Wing/Air Base Group Histories, 1951-1955; History of Ladd AFB (Close-out); Special Report, Closeout of Ladd AFB; Base Directories 1956, 1959; Cloe, *Top Cover for America*; Woodman, *Duty Station Northwest.*

Figure 2. Ladd AFB Missions.

[24]Originally known as Mile 26, Eielson Air Force Base had been an alternate landing field and storage facility for Ladd during World War II. A separate installation since 1947, it grew throughout the 1950s and served as a forward base for SAC bombers. See Section 4.1 *Two Air Bases Near Fairbanks* in this report.

CHAPTER 3.0 Air Force Missions

As the Northern Sector headquarters of AAC, Ladd AFB supported nearly all of the Air Force activities north of the Alaska Range in one way or another. A Composite Wing, sometimes designated as an Air Base Wing or an Air Defense Group, oversaw many of the base's primary functions. These included air defense, Arctic research, base administration and wide-ranging logistics functions. At any given time, so-called tenant organizations, which reported up different chains of command, also conducted important missions at Ladd. These included strategic reconnaissance, search and rescue, communications, and Army support.

3.1 Strategic Aerial Reconnaissance

In the early years of the Cold War, some of the most important of these tenant organizations were the strategic reconnaissance units. Strategic intelligence, as the Joint Chiefs of Staff define it, is "intelligence that is required for the formation of policy and military plans at national and international levels." Strategic aerial reconnaissance is one way of gathering this intelligence, by using aircraft to collect photographic or electronic information.[25] In early 1946, the newly formed Strategic Air Command began to plan strategic aerial reconnaissance on a global scale. The first efforts were in photo reconnaissance and mapping. By 1948, a small electronic intelligence, or ELINT, cadre was operating. Weather reconnaissance was part of the effort, as was Long Range Detection, the search for Soviet atomic explosions.[26]

Nonetheless, in the first years following World War II, strategic intelligence on Soviet capabilities and intentions was scarce. According to Air Force historian Maj. John Farquhar, this lack of knowledge affected military planning at the highest levels. Before the development of the U-2 high-altitude spy plane and reconnaissance satellites, technology and politics limited American reconnaissance efforts to the borders, and not the heartland, of the U.S.S.R.[27]

Alaska was one of the important staging areas for gathering what strategic intelligence could be obtained along Soviet borders. As one analyst described it, Alaska was a "great big fat listening post."[28] But the early reconnaissance crews did more than gather intelligence about Soviet coastal operations. With the advent of the polar concept, military planners realized that they had very little operational knowledge of the Arctic. Alaskan recon crews had a variety of missions that helped lay the groundwork for polar navigation, flying and maintaining aircraft under Arctic

[25] Major John T. Farquhar, "A Need to Know: The Role of Air Force Reconnaissance in War Planning, 1945-1953." (Ph. D. Diss, Ohio State University, 1991), 2.

[26] Farquhar, 56, 88, 117, 139.

[27] Farquhar, 9,10.

[28] Kolb, Richard. "Alaska, Cold War's Strategic Frontier, 1945 – 1991." *VFW Magazine,* electronic version, vfw.org/magazine/apr98/26.shtml, downloaded 6/30/00.

conditions, and understanding weather systems. Their missions contributed to military and civilian knowledge in topography, Arctic search and rescue, and other areas.

3.1.1 Photo Reconnaissance

> "photo reconnaissance…It is the one positive means by which we are able to study the enemy's back yard. Its relative importance cannot be over-rated—we must have it."[29]

Ladd was the base for one of the first strategic recon squadrons of the Cold War, the 46th/72nd. During the squadron's tenure at Ladd from 1946-1949, its men accomplished some of the most challenging tasks of Arctic flying and laid the groundwork for other units which carried on its mission through the 1950s. The 46th/72nd was a tenant unit, reporting directly to SAC headquarters. In addition to strategic recon duties, the 46th was to develop accurate polar navigation, survey and map the Arctic, perform comprehensive weather studies, test its men and equipment in Arctic conditions, and later train other units, particularly SAC bombers, in polar navigation and operations.[30]

SAC selected Ladd as the home for this unit because of Ladd's northern location. In 1946, prior to the formation of ALCOM, the base was in caretaker status. Demobilization was still the order of the day throughout the services. Ongoing cold weather testing was Ladd's main operation, together with oversight of the scattered outposts of the Yukon Sector.[31]

When Captain Carl Palmer arrived with the 46th's advance team in June, he had a choice of three available areas to base the unit: the "300", the "500" or the "900" areas. He recalled that "The '900' area was by far the best. The quarters, quonset huts, headquarters area, ramp, aircraft parking area, mess and supply areas …seemed to have a homogeneous arrangement that lent itself to our organization, plus the fact that it was remote enough to give us some independence.… We all agreed that the '900' area would be a good home."[32] The 900 area, with the exception of Hangar 6, has since been demolished.

Figure 3. Hangar 6. Summer 2000.

The squadron's reconnaissance missions were intertwined with basic operational concerns, particularly since this was the first such unit to undertake long-range, long-term duties in the western Arctic. In order to perform reconnaissance, for example, the crews had to perfect the grid navigation system for polar flying, a complex method which until that time had not been systematically tested. Initially,

[29] Farquhar, 184, quoting unidentified Army representative to Far East Air Force Reconnaissance conference, Aug. 1952.

[30] Ken White, *World in Peril: The Origin, Mission & Scientific Findings of the 46th/72nd Reconnaissance Squadron*, (Elkhart, IN: Ken White & Associates, 1994) 5. Fred John Wack, *The Secret Explorers: Saga of the 46th/72nd Reconnaissance Squadrons* (Turlock, CA: Seeger's Printing 1992) 1.

[31] White, 20.

[32] White, 19, 20. Ladd's original building numbers were designated in the 100-900 series, but have since been renumbered at least twice.

they were on their own for search and rescue as well, since rescue units did not have the long-range aircraft needed for polar area searches.[33] Very little information about polar flying was available to the men.[34] In fact, it was the lessons they learned about the practical aspects of polar flying and the development of arctic aircraft maintenance that became the most important military and commercial legacy of the squadron.[35]

As a photo reconnaissance unit, the 46th/72nd collected intelligence until 1949, when other units took over the work. Its missions included searching for unclaimed Arctic land masses, evaluating the Soviet presence in the Arctic, and photomapping Alaska, the Canadian archipelago, Greenland, and portions of Soviet territory. Using specially modified B-29s also known as F-13s, crews flew long-range missions of 12 to 30 hours' duration, virtually all of it under strict radio silence. The ten-man crews included a captain and a combination of relief pilots, navigators, radar operators, radio operators, and photographers. One aircraft, #871, had a high-tech oblique camera with 100 inch focal length which could photograph installations up to 100 miles away.[36]

Searching for undiscovered Arctic land was a high priority. Project Nanook was the code name for the general exploration of the Arctic, and Operation Floodlight was the particular search for new land masses. Commanders did not know whether the Soviets had already located any such previously unknown land for forward operating bases. They also wanted to find out whether they could locate their own bases or weather stations on such land. Furthermore, at the time, the United Nations was considering an international agreement on Arctic sovereignty. The U.N. document proposed to divide the polar regions along longitudinal lines drawn from each Arctic nation's eastern and western borders due north to the Pole. It would be in the United States' best interest to lay claim to any new-found Arctic land before that agreement took effect.[37] The 46th/72nd, in sorties from Ladd, searched and mapped extensive areas of the Arctic under Operation Floodlight.

While no one discovered any new land, there was quite a bit of excitement at Alaska Air Command in October 1946 over the first sighting of Target X, later called T-1. Initially, the crew suspected that the large object they sighted, covered with rocks and vegetation, was an uncharted island. Later reconnaissance determined that it was an ice island measuring about fourteen by seventeen miles. Within a few years, ice island research for military and scientific purposes became an important mission of the Air Force in Alaska, and of Ladd AFB in particular.[38]

[33] White, 15. In-house rescue was also preferable, due to the classified material on board the aircraft.

[34] Explorers such as Roald Amundsen, Admiral Richard Byrd, and Sir Hubert Wilkins had organized pioneer flights into the polar regions in the 1920s. The Soviets had made a few landings on the pack ice as early as 1937. [Vivian Bushnell, ed., "Scientific Studies at Fletcher's Ice Island, T-3, 1952-1955" Geophysical Research Papers No. 63, Air Force Cambridge Research Center, USAF, p. 3] Studies on polar air navigation, including one by Harold Gatty for the Navy Department in 1945, were not widely circulated and were not available to the 46th, according to White. White, 28. The 46th cooperated with the "Musk-Calf" detachment of the 4149th AAF Base Unit of the Air Materiel Command and the Royal Canadian Air Force in Edmonton, Alberta who began long-range polar reconnaissance in March of 1946. White, 28. Also see Keith Greenaway and Sidney Colthorpe, *An Aerial Reconnaissance of Arctic North America* (Ottawa: Joint Intelligence Bureau, May 1948), xi.

[35] Wack, 7. John T. Farquhar, "Northern Sentry, Polar Scout: Alaska's Role in Air Force Reconnaissance Efforts, 1946-1948," in Fern Chandonnet, ed., *Alaska At War, 1941-1945* (Anchorage: Alaska at War Committee 1995), 399, 405.

[36] Wack, 1, 6, 38, 75. White 11, 13, 15. Dick McIntyre, interviewed by author, Ft. Wainwright, AK, July 5, 2000.

[37] Wack, 1. Farquhar, "Northern Sentry," 400.

[38] Wack, 7. McIntyre interview. Farquhar, "Northern Sentry," 400. See below, Ice Islands.

The *Kee Bird's* Last Flight

On Feb. 20, 1947, a Ladd RB-29 disappeared during one of its polar reconnaissance flights. Nicknamed the *Kee Bird* after a mythical Arctic bird, the aircraft had been on a mission to track the ice island, T-1.

Realizing they were lost and low on fuel, the crew had safely made a controlled crash landing and was able to radio for help. They did not, however, know where they were, and the Alaskan Air Command coordinated a search effort out of Ladd. Another Ladd RB-29 crew captained by Dick McIntyre located the downed airmen in northern Greenland. After 22 hours in the air, the search plane was low on fuel. Reporting the *Kee Bird's* location, McIntyre's crew turned back. McIntyre, who currently resides in Fairbanks, remembers the *Kee Bird* search as the most exciting mission he flew as a member of the 46th/72nd Recon.

The next morning, as Ladd aircraft prepared for a rescue, a C-54 from Westover Field, Mass., reached the men of the *Kee Bird*. Using a landing strip the *Kee Bird* crew had packed down in the snow, the C-54 used new "jet-assisted takeoff" (JATO) technology to airlift the crew to safety. Before the rescue, *Kee Bird* commander Lt. Vern Arnett had all sensitive intelligence material destroyed at the site.

Returning to Westover Field, the *Kee Bird* crew discovered that the national press corps was eagerly covering their story. Instructed not to talk about the details of the mission, co-pilot Lt. Russell Jordan could only tell the massed reporters that they had been on a training mission. "They must have thought I was either stupid or a doggone liar…," Jordan recalled.

Two weeks later, the *Kee Bird's* crew was back at Ladd flying polar missions. Seventeen Ladd fliers, including McIntyre, received the Distinguished Flying Cross for participating in the search. The *Kee Bird* itself remained on the Greenland ice for more than forty-five years, before it was accidentally destroyed during a salvage operation.[43]

Aerial photographic reconnaissance provided critical military information. Some of the most important missions involved reconnaissance of the Soviets' Chukotski Peninsula in 1948 and 1949, which allayed fears of Soviet buildup in that region directed against the United States. The 46th/72nd also photographed the Kamchatka Peninsula, Anadyr, Diomede, Wrangel Island, northern Siberia, and Novaya Zemlya, the Soviet Union's nuclear testing area.[39]

Since the territory of Alaska had not yet been fully mapped at the time, aerial photos played an important role in site selection for both military and civilian engineering projects. From 1946–1948, soil engineers developed preliminary methods for determining permafrost locations from aerial photos provided by Ladd AFB photo recon units. The method involved studying the aerial photos to develop a soil map showing good, average, and poor soil locations. Poor locations could be ruled out immediately, allowing field parties to tailor their investigations to the most likely sites for construction.[40]

Aerial reconnaissance also contributed to mapping projects in Alaska and the Arctic carried out by a number of agencies including the Army Corps of Engineers, the Bureau of Land Management, the U.S. Geological Survey, and the Coast & Geodetic Survey. In 1946–48, the 46th/72nd recon squadron, with the assistance of Canadian crews, completed the "Polaris" project which systematically photomapped the Canadian archipelago. Later, builders of the DEW Line referred back to this information during site selection.[41] In October 1949, the National Geographic Society released its new map of the Arctic, crediting the aerial photography teams of the U.S. Air Force, and the Ladd squadron in particular, with providing the updated information.[42]

[39] Farquhar, "Need to Know," 104, 118. Wack, 82.

[40] Department of the Army, Corps of Engineers, *Comprehensive Report, Investigation of Airfield Construction in Arctic and Subarctic Regions*, Appendix 3, by Robert E. Frost et al, (Engineering Experiment Station, Purdue University, May 1947, revised May 1948).

[41] Wack, 44, 69.

[42] "Top of the World: The National Geographic Society's New Map of Northlands," *National Geographic* 96 (Oct. 1949): 524.

[43] Compiled from accounts in Wack, 27, 29; White, 107, 111, 118; McIntyre interview, July 5, 2000.

3.1.2 Electronic Reconnaissance: the Ferret missions

ELINT, or electronic intelligence, refers to collecting information on the technical details of an opponent's radar and communications systems. Electronic reconnaissance is a way of collecting ELINT by seeking out and monitoring radar systems from the air.[44] In one method, aircraft approach foreign airspace in order to trigger the radar net. Radar works on the echo principle by bouncing radio waves off an object. The radar installation on the ground transmits a radio signal and receives the echo, measures the elapsed time, converts that to distance and displays the result on an oscilloscope. The target reconnaissance aircraft also receives the transmission as the radio waves strike it. With the proper equipment, its radar observer, or radio countermeasures officer (RCM), can evaluate the characteristics of the signal. Electronic reconnaissance works hand in hand with aerial photo reconnaissance, and at various times the two were combined during the same flights. However, some aircraft were specially modified solely to collect ELINT. These were known as Ferrets.[45]

Electronic reconnaissance out of Ladd AFB began when the SAC's only B-29 ELINT aircraft flew missions during the summer of 1947. One year later, SAC had six RB-29 Ferrets flying sorties from England, Germany, Yokota, Japan, and Ladd. SAC directed the Ferrets to collect information on the locations, characteristics and capabilities of foreign radar. It also directed them to search the electronic spectrum for evidence of Soviet research and development, for tipoffs about Soviet advances in electronics, guided missiles and pilotless aircraft. Analysts on the ground could then map and assess foreign radar nets and estimate Soviet electronic potential.[46]

The early Ferret missions out of Ladd provided vital information to military planners. By 1949, the missions had discovered and assessed eleven Soviet radar sites, and had revealed where significant gaps in Soviet Arctic defenses lay. This gave planners the information they needed to develop routes for strategic bombers, and laid the groundwork for the initial war plans covering the Soviet Far East. By that time, though, the Soviets had figured out how to outsmart the Ferrets, at least for a while. Picking up the Ferrets' navigational radar signals, they used this advance warning to simply switch off their radars whenever the aircraft approached. The Ferrets responded with alternate methods.[47]

Ferret crews were not the only ones conducting ELINT missions out of Ladd. Sorties with other aircraft could combine photo and electronic reconnaissance. Flights also routinely collected signals intelligence (SIGINT) to assess Soviet communications systems. One crew member with the 91st Strategic Recon Wing, which replaced the 49th/72nd, recently described his 1949 experiences. "We were officially on 'weather recon' missions," the RCM officer recalled. "Tail numbers were removed, and no identifying logos were…painted on the fuselage. Our missions took us all up and down the Kamchatka Peninsula, up into the Bering Sea and down off Sapporo, Japan." He added, "We were careful to stay out of radar range, so

[44] Farquhar, "Need to Know," 6, 7.
[45] Ibid, 6-8.
[46] Farquhar, "Need to Know," 88, 115.
[47] Farquhar, "Northern Sentry," 403, 405, and "Need to Know," 120.

we could record operating characteristics of the Soviet sites without being detected."[48]

Electronic reconnaissance continued through the 1950s although little information is available. At neighboring Eielson AFB, ELINT missions took place throughout the 1950s and continued to the 1980s.[49]

3.1.3 Weather Reconnaissance

Weather reconnaissance took place throughout Ladd's Cold War years, from the first arrival of the 59th Weather Recon in 1946 through the flights of the 55th Weather Recon Squadron in 1960. Gathering weather information for combat readiness was an integrated part of strategic aerial reconnaissance.[50] Weather recon, though, was a particularly loose term. There was a constant need for weather information, but weather flights were also a convenient cover for the more covert missions described above.[51]

Figure 4. Hangar 3. Used by 55th Weather Recon Squadron: commander, administration, maintenance and operations. Summer 2000.

Code named Ptarmigan or Loon (based on the route flown), thousands of these flights departed regularly from the runways at Ladd and Eielson. By 1960, over 3,000 Ptarmigan flights had originated at Ladd alone.[52] Publicized Ptarmigan routes generally ran from Ladd/Eielson to the North Pole via Point Barrow. Depending on the weather conditions they encountered, the flights would return either via Wainwright, Point Hope, or Aklavik, Canada, for a round trip of about 3,600 statute miles.[53] Ptarmigan flights, with their weather cover, were generally better known to the public than the other recon programs. In 1948, for example, *Popular Mechanics* ran an illustrated account of one of Ladd's polar weather flights.

Long-term weather reconnaissance programs also contributed to the establishment of Alaska's weather forecasting system. In 1947, ALCOM established the Alaskan Meteorological Committee, which included military meteorological units, the U.S. Weather Bureau, and other interested agencies. Throughout the 1950s, ground-based weather detachments at Ladd collected observations, made forecasts, and participated in weather-related geophysical research as directed by USAF's Air Weather

[48] Kolb, quoting Paul R. Horton, 3.

[49] Denfeld discussed these missions through the 1970s. Colt Denfeld, *Historic Building Inventory, Eielson AFB*, (U.S. Army Corps of Engineers, Sept. 1995), 13. Lee Griffin of Ft. Wainwright's DPW/ENV office was formerly stationed at Eielson, and noted that the missions continued there through the 1980s. Lee Griffin, personal communication, 7/24/00.

[50] Farquhar, "Need to Know," 117. 46th/72nd crew captain Dick McIntyre noted that weather recon and photo recon were separate units under separate commands. Interview, Dick McIntyre, July 5, 2000.

[51] Lee Griffin, personal communication. Kolb, 3.

[52] Loon flights traveled routes along the Bering Sea and Aleutian Islands. Denfeld, *Eielson*, 20. Re Ptarmigans, "'Ptarmigan' Missions Hit 3000 Mark at Ladd," *Air Force Times*, April 6, 1960. [Elmendorf AFB History Office File, Ladd History & Misc]

[53] "375th Reconnaissance Squadron Stationed at Fast-Growing Eielson Air Force Base" Fairbanks *Daily News-Miner*, n.d.[ca. 1950] from Elmendorf AFB History Office File, Ladd History & Misc. Aubrey O. Cookman, Jr. "Top of the World Weather Run" *Popular Mechanics* 90 (Nov. 1948): 101. "U.S. Air Force Weather Reconnaissance Flights to the North Pole" *The Polar Record* 6 (1951): 268. "'Ptarmigan' Missions Hit 3000 Mark at Ladd," *Air Force Times, April 6, 1960.*

Service.[54] The weather recon units, under separate commands, provided much of the raw data.

3.1.4 Long Range Detection

The program known as Long Range Detection (LRDP) began in June 1947 when Atomic Energy Commission member Lewis L. Strauss became concerned that the U.S. had no system for monitoring Soviet nuclear activity. Most military experts believed that the U.S.S.R. could not achieve nuclear capability before 1950, and that it was not likely to happen before 1953. Instituted over some military objection, the LRDP directed USAF to collect airborne samples that could document the time and location of large explosions anywhere in the world, and determine without question whether the explosions were nuclear. After developing collection techniques during U.S. atomic testing in early 1948, the program began operating in May 1948.[55]

The technique involved mounting box-like cans onto the aircraft and loading the cans with filters which could detect radioactive particles. Different filters would be exposed during different portions of the long flights, allowing analysts to track the geographic origin of any suspicious activity.[56]

In its first sixteen months, the program registered over 100 alerts when radiation levels exceeded the program's cutoff; in every case, analysts determined the results came from natural phenomena. However, on Sept. 3, 1949, an LRDP sample from a Japan-to-Alaska reconnaissance flight provided the first evidence of a Soviet nuclear explosion, and subsequent flights confirmed it. The aircraft and crew of that momentous flight were from the Ladd/Eielson complex.[57]

3.1.5 Eielson Air Force Base

Over the years, as neighboring Eielson AFB developed into a SAC base, much of the reconnaissance mission shifted to its facilities. The extent and timing of the shift and the possible interrelationship of the two landing fields is unclear. A reasonable assumption would be that Eielson became the primary site for strategic reconnaissance around 1949, when the 375th Recon was transferred from Ladd to Eielson. Ladd continued to host weather reconnaissance units and Ptarmigan flights up until its transfer to the Army.[58]

3.2 Air Defense

Ladd's central mission during the period of this study was air defense. Ladd AFB was the northern hub for Alaskan air defense operations and logistics. It was the sector command headquarters for air defense engagement, coordinating ground con-

[54] Strobridge, 31. "Base Weather Detachment Answers Queries on Sky," Fairbanks *News-Miner,* 14 May 1954, 18. Also see proceedings of the Alaska Science Conference throughout the 1950s for papers contributed by Ladd-based meteorologists.

[55] Farquhar, "Need to Know," 139.

[56] Ibid. Also, Denfeld, *Eielson*, 9.

[57] Information cited in Denfeld gives the credit to the Eielson crew of a Sept.1, 1949 Loon Charlie flight. Denfeld, *Eielson*, 9. Re alerts, Farquhar, "Need to Know," 139.

[58] Denfeld, *Eielson*, 2, 4-5. Base directory, Ladd AFB, Oct. 1959. "375th Reconnaissance Squadron Stationed at Fast-Growing Eielson Air Force Base" Fairbanks *Daily News-Miner*, n.d.[ca. 1950] from Elmendorf AFB History Office File, Ladd History & Misc.

trol and intercept functions and supporting the outlying northern elements of the air defense system. It was a time when America's and Alaska's Cold War air defense system grew up "from scratch," always responding to technical change.[59] Initially, Ladd's role was to emphasize defense against manned aircraft attack. After the watershed year of 1957, ballistic missiles changed the direction of air defense, and Ladd's role would change accordingly.

3.2.1 Alaskan Air Defense System

The Alaskan elements of the air defense system in the 1950s eventually consisted of Aircraft Control and Warning (AC&W) sites, the Distant Early Warning Line (DEW Line), the White Alice Communication System, the Ballistic Early Warning System (BMEWS) at Clear Air Force Station, and base antiaircraft and Nike missile batteries.

Northern Alaska's AC&W sites were a series of radar surveillance and ground-controlled intercept facilities built between 1950 and 1954.[60] Located along the western and northwestern coast with intermediary sites in the Interior, the AC&W sites were intended to warn of attack from the west and to support regional air battles. The DEW Line was another element of the expanding air defense system. Built between 1953 and 1957, DEW stations extended from Alaska across Canada to Greenland. Their purpose was to provide radar coverage of the Arctic approaches to North America and to give SAC and the new North American Air Defense Command (NORAD) the earliest possible warning of bomber intrusions.

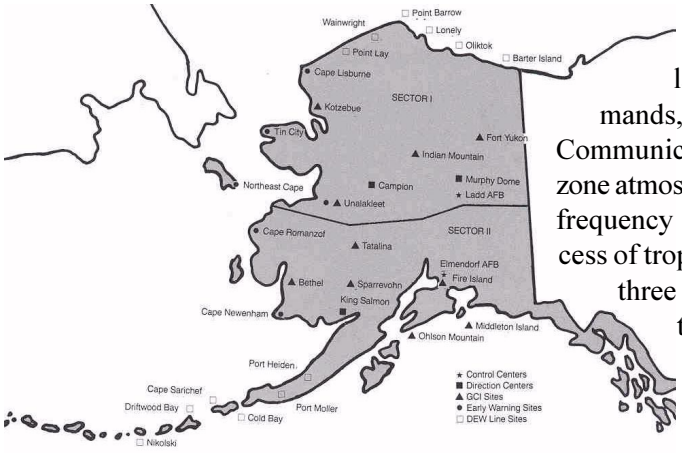


Figure 5. Alaskan AC &W and DEW System, 1959. (From Cloe, *Top Cover for America*. Used with permission).

To improve communications between the isolated AC&W and DEW line sites and their commands, the Defense Department funded the White Alice Communications System. Engineered to overcome auroral zone atmospheric disturbances which disrupted ordinary high frequency radio transmissions, White Alice utilized a process of tropospheric scatter to relay messages. In 1958, after three years of construction, officials dedicated the system; expansions continued for more than a decade.[61]

Air defense missions changed with the advent of intercontinental ballistic missiles (ICBMs) late in 1957. The Department of Defense directed construction of a ballistic missile early warning system (BMEWS) facility at Clear Air Station, one of three worldwide. Completed in 1961, the Clear BMEWS could provide NORAD with a fifteen-minute advance warning of missile attack. A related program, known as MIDAS (Missile Identification, Detection, and Alarm System) began at Ft. Greely in 1959 or 1960. MIDAS collected satellite data to detect hostile missiles at launch, before the BMEWS would be able to begin tracking them.[62]

[59] "The Emerging Shield," *Air University Quarterly Review* 8 (Spring 1956): 61.

[60] Cloe, 167, 170.

[61] Cloe, 171-173. See Cloe and Reynolds for further information on White Alice. Georgeanne L. Reynolds, *Historical Overview and Inventory: White Alice Communications System*, (Anchorage: U.S. Army Corps of Engineers, 1988.)

[62] Re BMEWS, Cloe, 207-209. Re MIDAS, Woodman 112; also "Alaskan Air Command," *Army Information Digest*, 16 (1961): 56-57.

On the ground, antiaircraft artillery (AAA) units protected air bases from attacking enemy aircraft. At first AAA emplacements consisted of conventional 90mm and 120mm gun batteries. By 1959, missile battalions equipped with Nike Hercules surface-to-air missiles operated at eight sites around the Anchorage and Fairbanks base complexes.[63]

3.2.2 Ladd Operations

> *Prior to the outbreak of World War II, Ladd AFB was an obscure name ….Since then, however, it has become one of the most respected bases in North America due to its strategic location, enabling operations to offer resistance to any enemy force striking at the United States via the short North Pole route.*
>
> - Ladd Public Information Office, ca. 1953[64]

On September 1, 1946, the Alaskan Air Command designated Ladd as the headquarters for the Yukon Sector, covering the northern half of Alaska. During the reorganizations of the early 1950s, Ladd became the headquarters of the 11th Air Division, Defense, responsible for all Northern Sector air defense operations. [65]

The regional air defense mission involved locating, identifying, and destroying hostile manned aircraft. It consisted of several coordinated functions. Radar sites swept the skies for indications of air intrusions; communications links provided information to the ground controllers and intercept pilots; fighter-intercept aircraft were kept on alert for dispatch to identify and intercept intruders. Ground controllers prepared to track and direct potential air battles, while ground-based artillery units stood by to attack any enemy aircraft that passed through the intercept net and approached the air base itself.

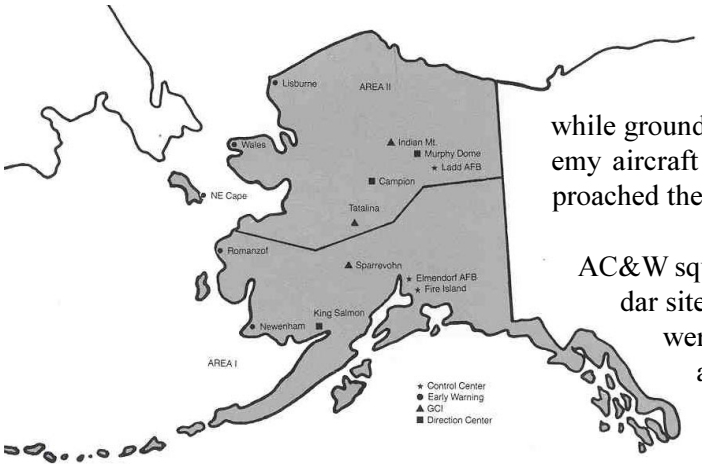


Figure 6. Air Defense System, 1954. (From Cloe, *Top Cover for America*. Used with permission).

AC&W squadrons from Ladd manned the new outlying radar sites as they came on line in the early 1950s. They were supported by fighter intercept squadrons based at Ladd itself. In 1951, three AC&W squadrons were active; by the late 1950s, there were as many as ten AC&W squadrons assisted by three squadrons of fighter-interceptors at Ladd and Galena, the major forward base.[66] Fighter-intercept pilots and ground crews served on alert duty, ready to scramble their aircraft to intercept any unknown airplanes entering Alaskan airspace in the northern zone.

[63] Siedler, 26.

[64] Press release, "History of Ladd Air Force Base," n.d., Public Information Office, 11th Air Division. Copy at Eielson AFB History Office.

[65] Woodman, 49. Cloe, 187.

[66] History of the 5001st Composite Wing, Ladd AFB, 1 May – 30 June 1951, 41. 5060th AC&W Group, Ladd AFB, Deactivation report, Sept. 1959. In 1956, for example, the fighter interceptor squadrons stationed at Ladd were the 449th, the 18th, and the 433rd. Ladd AFB Directory, 1956, 13.

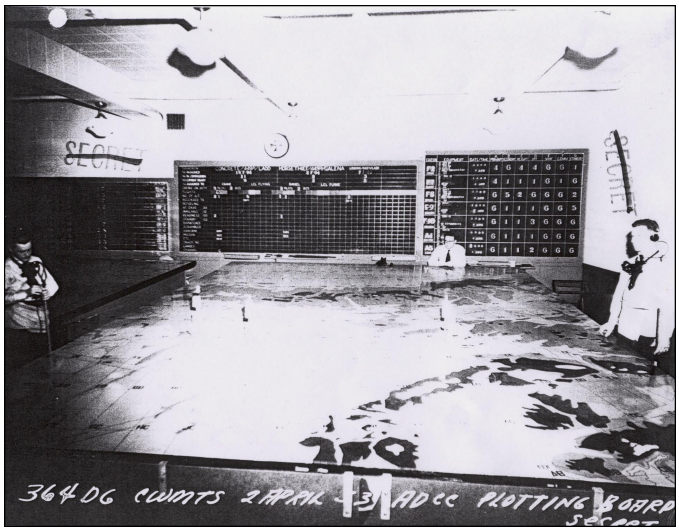


Figure 7. Interior of Air Defense Command Center, 1953.

Figure 8. Ladd AAA emplacement. USAF photo 33257, Eielson History Office.

An Air Defense Control Center (ADCC) coordinated air defense operations and training exercises for the AC&W, Fighter-Interceptor, and AAA units. In 1952, this center moved into Bldg 1060. The ADCC was described as "[t]he brain center or nerve center for north of the range defense…."[67] This control center oversaw subsector direction centers at neighboring Murphy Dome and outlying Campion, and would coordinate battle efforts with Elmendorf AFB. After 1958, the entire air defense operation ran out of the Alaskan NORAD Region Command and Control Center at Elmendorf.[68]

As part of the national-level division of roles and missions, Army units were responsible for certain ground-based air defenses. At Ladd, Army AAA units cooperated with the ADCC to provide antiaircraft defense with Skysweeper artillery. One of the AAA sites existed next to the present-day base hospital. After 1959, five outlying Nike sites protected the Ladd/Eielson complex. The Nike Hercules weapons were computer-guided surface-to-air missiles designed to explode amid enemy bomber formations. Nike batteries could require as many as 125 soldiers to operate on a continuous basis. Maintenance facilities for the missiles existed within Ladd's cantonment area.[69]

3.2.3 Base Expansion

As Ladd's role as an air defense center grew, so did the base itself. During World War II, temporary buildings with inadequate heating, ventilation, and utilities comprised a substantial portion of the installation. The Cold War brought increased military activity, thousands of new servicemen, and for the first time, airmen's families. Many of the World War II structures were not adequate for the new demands. After the Korean War broke out, military construction boomed throughout Alaska. Between 1951 and 1955, defense construction poured over one billion dollars into the territory's economy. Civilian contractors handled construction, under the supervision of the Army Corps of Engineers. At Ladd, Engineer Aviation Battalions also assisted with minor construction projects and building upgrades.[70]

[67] History of 5001st Composite Wing, Ladd AFB, July – Dec 1952, 64. "Command Analogy of Alaskan Air Command," n.d., Office of Information Services, HQ, 11th Air Div. At Elmendorf History Office, Ladd AFB History & Misc file.

[68] Cloe, 187. NORAD, or North American Air Defense Command, was created in 1957 as a joint command between the U.S. and Canada for continental coordination of air defense efforts.

[69] Re description, operation: Alaska Office of History and Archaeology, Department of Natural Resources, *Site Summit: Nike Hercules Missile Installation*, (Anchorage: June 1996), 10, 11. Re locations, Colt Denfeld, *Nike Missile Defenses in Alaska, 1958-1979*, (U.S. Army Corps of Engineers, Jan. 1988), 11.

[70] Colt Denfeld, "The Cold War: Alaska the Northern Bulwark," *Journal of America's Military Past,* 23 (Spring 1996): 42. Woodman, 104. History of 5001st Composite Wing, Ladd AFB, April – June 1952, 54.

Figure 9. Headquarters, Bldg 1555. Summer 2000.

The new facilities transformed the appearance of the base and made room for more of the air defense functions. When a new hospital opened in 1954, Building 1555, which housed the former hospital, became the headquarters facilities for the 11th Air Division and the 5001st Air Defense Group. A series of related moves freed up hangar space just in time to accommodate the two additional fighter-intercept squadrons which arrived that year. Other construction added quarters, family housing, utilities, maintenance shops, ammunition storage, a flight simulator, jet refueling system, and communications center.[71]

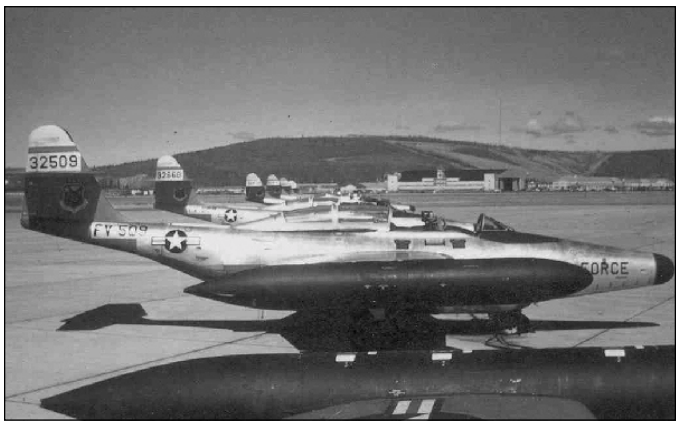


Figure 10. F-89s at Ladd. Photo credit, Dave Menard.

After 1954, the F-89 Scorpion was the primary air defense aircraft at Ladd, replacing the F-94. Under its wings, the F-89 carried two types of weapons. In each of two large wing tip pods, there were 102 2.75-inch folding fin aircraft rockets, or FFARs, used as close-in weapons. In addition, the F-89s carried AIR2A Genie unguided atomic rockets, which would be used at long range to attack enemy bomber formations. Both were unguided systems, requiring the F-89 pilot to use his on-board computerized radar system to figure trajectories before firing.

Ground support for this system included hangars and weapons storage. Originally, the 449th Fighter Interceptor Squadron (FIS) was based out of Hangar 3. In 1954, the 449th moved to Hangar 1 as the F-89s came into Ladd's inventory. A heavy airplane with narrow landing wheels, the F-89D aircraft placed a considerable amount of weight on its small footprint, causing ramps at Hangar 3 to repeatedly buckle under the strain.[72] Loading the aircraft with its rocketry also caused difficulties on the ground. In September 1954, workers constructed a special loading zone for the F-89s with a 400-foot dirt barricade adjacent to the south taxi ramp between hangars 3 and 4 (today's hangar 6.) Large enough to accommodate five aircraft, it was located far enough away from other facilities to provide a safety buffer for the high explosives, while still providing access to a Ready Rocket Storage building, planned for completion in 1955.[73]

> The presence of high explosives was not just a concern on the base itself. In February 1955, one of Ladd's F-89 jets crashed just after takeoff in a Fairbanks neighborhood adjacent to the base, killing both crew members aboard. In addition to the loss of life and the destruction of the aircraft, 52 FFARs remained unaccounted for, lost in the snow in the residential area. The following spring, a six-year-old girl found one of the unrecovered missiles by the driveway to her home.[74]

[71] History of 5001st Air Defense Group, Ladd AFB, 20 Sep–31 Dec 1954, 4. Woodman, 116. History of 5001st Composite Wing, Ladd AFB, April – June 1952, 53.

[72] History of 5001st Air Defense Group, Ladd AFB, 20 Sep – 31 Dec 1954, 4.

[73] Ibid, 11-12.

[74] "Jet Rockets Still Unfound," *Fairbanks Daily News-Miner,* 2 Feb 1955, 1. "Six-Year-Old Finds Rocket," *Jessen's Weekly*, 21 April 1955, 1. According to Lee Griffin, in another accident during the middle 1950s, an F-89 experienced an electrical short, which caused one full pod of rockets to fire into the Cushman Street area. Personal communication, 8/7/00.

After 1957, the 2200 area, or "missile multicube," stored spare rockets for the F-89s. The complex of eight buildings had double perimeter fencing and full perimeter lighting. Within the complex stood a guardhouse, a maintenance facility, and six heated storage structures with rollup doors providing access to the missiles. Missile multicubes at Ladd and Elmendorf may have been among the first complexes of their type to be constructed.[75]

3.2.4 Logistic Support of Northern Region Auxiliary Sites

In 1952, the missions of Ladd's 5001st Composite Wing included the directive to "Be responsible for the operation, administration and logistical support of auxiliary bases and off-post facilities…."[76] Over the years, this task grew from supporting scattered AC&W sites and auxiliary airfields such as Marks AFB in Nome to include logistical support of DEW line sites, Clear BMEWS, forward airfields such as Galena, and various research stations. The AAC was aware that "[s]upply and logistical responsibilities…present two of the most critical problems encountered by the Air Force in Alaska."[77] The logistics function, while it lacked glamour, was critical to the operation of the air defense system as a whole.

Ladd officers coordinated efforts with the Army and Navy to establish an annual Bering Sea maritime resupply expedition during summer months. However, airlift remained the only method for year-round resupply and maintenance assistance. During one reporting period in 1955, for example, Ladd airlifted nearly 1.5 million pounds of cargo to its auxiliary sites. Ladd also coordinated petroleum supply to these areas, managed logistics for the BMEWS and MIDAS projects, and handled contracting and procurement for its own needs as well as those of all outlying sites in the northern region. In 1959, the 11th Air Division maintained an Off Base Logistical Support Division at its headquarters in Bldg 1555. A logistical support unit used Bldg 3652; remote site Materiel and Resupply operated out of Bldg 1564; and a warehouse for remote site surplus existed in Bldg 1120.[78]

3.3 Search and Rescue

During World War II, Alaska's military search and rescue teams had developed equipment, operating systems and knowledge to serve the men in action. At the end of the war, the resources all but disappeared. By April 1946, the Alaskan Air Command realized that it would need to re-establish this capability, and it consolidated its efforts into one reorganized unit, the 10th Air Rescue Squadron. With headquarters and a coordination center located at Elmendorf AFB, this unit took responsibility for search, aid and rescue. The 10th maintained the 74th detachment at Ladd, which was upgraded to a squadron in 1952. By the time USAF inactivated the 10th

[75] Lee Griffin, 8/7/00.

[76] History of 5001st Composite Wing, Ladd AFB, April – June 1952, 4.

[77] "Alaskan Command" Information Brochure, 1950, 29. From Kay Kennedy Papers, box 21 folder 244, Alaska and Polar Regions Archives, University of Alaska Fairbanks.

[78] History of 5001st Composite Wing, Ladd AFB, Jan – March 1952, 50. Cloe, 173. History of 5001st Composite Wing, Ladd AFB, Jan – March 1955, 14. Base Directory, Ladd AFB, Oct. 1959.

Rescue in 1958, it had saved military and civilian lives throughout the Territory and had become well known as the glamour unit of the 1950s Air Force in Alaska.[79]

3.3.1 Missions

The military search and rescue function of the 10th was directly related to the polar theatre concept of Cold War strategic planning. The 10th developed techniques and prepared itself for rescues in Arctic wartime conditions. For example, it trained for a scenario in which the American bomber fleet would be launched over the Pole and would sustain casualties, forcing aircraft to go down on the pack ice. Consequently, by 1958 when the advent of ballistic missiles made these scenarios obsolete, the 10th disappeared in the Air Force's worldwide reductions of search and rescue units.[80]

As it turned out, the 10th served as a peacetime search and rescue unit in Alaska. Detachments of the 10th Rescue responded to both military and civilian rescue calls. When a military aircraft failed to make its expected radio contacts, the 10th would be alerted and sent to search in a prescribed radius from the craft's last known position. Civilian calls could involve any life-threatening situation from an overdue aircraft to medical evacuations. Because Alaskan settlements were so far-flung and could be so isolated, the timely assistance of the 10th saved many lives. "To us," one old prospector once said, "the Tenth Rescue Squadron is like the Mounted Police are to Canadians in the Far North. They're always there when you need them."[81]

Figure 11. B-29 and dog team of 10th Rescue Squadron. USAF photo 33517, Eielson History Office.

The unit could perform both aerial and ground searches. In large-scale searches, the various detachments assisted one another anywhere they were needed. Specially trained paramedics could parachute down to rescue sites to handle medical emergencies while other members of the unit made arrangements to retrieve the stranded victims. Detachments such as Ladd's 74th Air Rescue Squadron (ARS) would have had long-range C-54s, SB-17s that could carry lifeboats, as well as hospital gliders, single and twin-engine aircraft including ski and floatplanes, and helicopters. Ground vehicles included snow jeeps with tracks and skis, weasels, boats, and even dogsleds.[82] In the early years, the 74th ARS occupied office and aircraft space at Hangar 1; in 1954 they moved to Hangar 3.[83]

[79] Re unit history, Cloe, 195-6; Lee Griffin, personal communication, July 26, 2000; and Bill Davidson, "Viking on the Ice Frontier," *Collier's*, 7 Jan. 1950, 70. In 1950, AAC transferred control of the unit to USAF's Air Rescue Service. In 1952 the 10th was upgraded from a Squadron to a Group and its detachments similarly upgraded to squadrons. The Air Rescue Service discontinued the 10th Air Rescue Group as part of a worldwide reduction in search and rescue forces. Re glamour, see contemporary press articles and role of Bernt Balchen, cited below.

[80] Bill Davidson, "Mission to Frozen Nowhere," *Collier's,* 14 Jan., 1950, 49. Cloe, 196.

[81] Bill Davidson, "Rescue Below Zero," *Collier's,* 31 Dec. 1949, 42.

[82] Davidson, "Viking on the Ice Frontier," 26. Cloe, 195-96. In its early years, the 10th had no long-range capability, which left the 46th Recon on its own for polar search and rescue.

[83] History of 5001st Air Defense Group, Ladd AFB, 20 Sep – 31 Dec 1954, 4.

In addition to their primary mission of search and rescue, units of the 10th also provided support to research stations, improved arctic rescue equipment, and became adept at pack ice landings. They continually improved the process of polar region search and rescue with longer-range planes and greater experience with conditions. Together with the recon crews, who had documented the routes and procedures for commercial trans-polar flights, the 10th Rescue's experience helped to make those commercial operations possible.[84]

3.3.2 Bernt Balchen

The best known of the 10th's commanders was Col. Bernt Balchen, who was in charge of the 10th from 1948 to 1950. A pioneer Arctic and Antarctic pilot and

The 10th Rescue's "Mystique"

The 10th Rescue's flights provided an opportunity to satisfy popular interest in Alaska military aviation without drawing undue attention to the many layers of reconnaissance work. Selected journalists and occasional dignitaries would sometimes accompany the 10th's crews on their polar sorties.[85] The exploits of the unit's rescue crews also appeared in newspaper accounts, especially in Alaska where rescue sagas were of immediate concern.

One example of the national recognition that the 10th received was a series of three articles in the widely circulated *Collier's* magazine at the beginning of 1950.[86] Presented as "The Story of Bernt Balchen's Arctic Airmen," the articles had titles like "Rescue Below Zero" and "Mission to Frozen Nowhere." Heavy on the human interest angle, dramatizing difficult and dangerous rescues, the articles helped surround the 10th with a romantic mystique. This attention stood in stark contrast to the information blackout imposed on the recon units, whose equally dangerous politically and militarily sensitive activities along Soviet borders remained classified for decades.[87]

Riding with the Tenth Rescue

We were roused out of bed at Ladd Field in Fairbanks at 2:00 a.m. We ate breakfast in the cold, dark kitchen of the detachment mess hall, and at 3:15 we were briefed.…

The C-54 lumbered into its take-off at 5:26 a.m. The big plane was filled with more than 5,000 gallons of gasoline—a matter that caused us all to speculate on the hereafter, until the aircraft finally got into the air. In addition to the gasoline, the plane carried three pilots, two navigators, one engineer, two radar men, one radio operator and several cases of C rations, which have not changed much since the war.…

The navigator is by far the most important man on a polar flight, and that's why these planes always carry two and sometimes three [of them].…Because of the polar magnetism, the ordinary magnetic compass swings crazily about and might just as well be left at home.…Even ordinary maps are useless,… so the navigators use infinitely more complicated grid maps.…The radar men help the navigators check the drift [of the gyroscopes]; and the radio operator, of course, never unglues his ear from the earphones.…

On our flight there wasn't too much scenery.…Soon we passed the arctic coastline of Alaska…and after crossing miles of ugly, gray, open water, we caught our first glimpse of the polar ice pack.

We could see leads…and pressure ridges…It was all white, with gray-white tones here and there, and it extended frighteningly to the horizon…

Two hours later we began to have trouble. The heat went out in the rear cabin…[then] the radar equipment was on fire.…shortly thereafter the gyroscope went out in the drift meter.…And [the navigator] ordered the plane turned around and headed back for Alaska.…..[W]e had reached 80 degrees of latitude.…

— Excerpted from Bill Davidson, "Mission to Frozen Nowhere" [88]

[84] Carroll Glines, *Bernt Balchen, Polar Aviator* (Washington: Smithsonian Institution Press, 1999), 216, 218-221. Bernt Balchen, *Come North With Me*, (New York: E.P. Dutton, 1958), 304. Davidson, "Rescue Below Zero," 78. Davidson, "Mission to Frozen Nowhere," 49, 50.

[85] The *Midnight Sun*, Ladd's post newspaper, even mentioned a Warner Brothers movie crew filming sequences at Ladd for a film about the "famous" Tenth Rescue Squadron. "Warner Crew Here to Film 'Top of the World' Feature," *Midnight Sun*, 21 March 1952, 1.

[86] Bill Davidson, "Rescue Below Zero," *Collier's,* 31 Dec. 1949, 7-9, 42-43. Bill Davidson, "Viking on the Ice Frontier," *Collier's,* 7 Jan. 1950, 26-27, 70-71. Bill Davidson, "Mission to Frozen Nowhere," *Collier's,* 14 Jan. 1950, 48-50.

[87] Wack, 18. There were some exceptions, notably Air Force press releases about limited aspects of the recon missions. White, 130.

[88] Bill Davidson, "Mission to Frozen Nowhere," 50.

explorer, Balchen had distinguished himself in the Norwegian resistance campaigns of World War II and was widely considered an Arctic aviation and operations expert. Holding dual citizenship and a commission in what was then the U.S. Army Air Forces, Balchen briefly retired from military service until he was called back to command the 10th Rescue. It is probably no coincidence that the 10th Rescue became famous while under his command.

"Hollywood itself has never done a better job of type casting," a journalist wrote when describing Balchen. "[He] is a handsome, gray-haired viking of heroically paunchy proportions." He added that Balchen "confounds his U.S. Air Force superiors…by making unexpected transpolar flights to Europe; by walking about with buttons missing from his uniform; by snoring prodigiously at military functions; and by addressing everyone—including privates and corporals…as 'Colonel.'"[89] Balchen applied his Arctic survival knowledge beyond the improvement of military search and rescue. He was an advocate of survival preparedness, acquiring test clothing and survival equipment for Ladd pilots and helping to establish the AAC's Arctic survival school in Nome. He also improved the directives and training for Arctic aircraft operations, particularly for cold-weather engine heating and ski-flying.[90]

3.4 Research

Scientific research was itself one of the battlefronts of the Cold War. The Air Force in particular understood that its technological effectiveness depended upon successful research in aeronautics and related atmospheric and geophysical sciences. As a result, by 1951 it had established an Air Research and Development Command (ARDC) to oversee both basic and applied research. During the 1950s ARDC supervised Air Force research laboratories, sponsored outside contracts, and commanded research and testing units. In-house laboratories included the Air Force Cambridge Research Laboratories (AFCRL) and the Aeronautical Research Laboratory at Wright-Patterson AFB.[91]

The Arctic presented its own conditions requiring scientific research and technical adaptation, and Alaska soon became a center for Arctic research projects. Ladd AFB contributed substantially to these efforts.

3.4.1 Cold Weather Testing

Cold weather testing was Ladd Field's original mission. The first Cold Weather Detachment arrived in September 1940 and set to work testing aircraft, clothing and equipment. By the end of the war, they had evaluated nearly every type of aircraft in the frigid conditions of interior Alaska. Initially, Ladd Field had been the only U.S. facility which could perform these tests under continuous conditions of extreme cold.[92]

[89] Davidson, "Viking on the Ice Frontier," 26.
[90] Wack, 9. Glines, 215.
[91] "The History of AFOSR," Policy and Integration Directorate, electronic document, http://afosr.sciencewise.com/afr/afo/any/text/any/afrhistory.htm, 7/26/00
[92] Cloe, 143, 147.

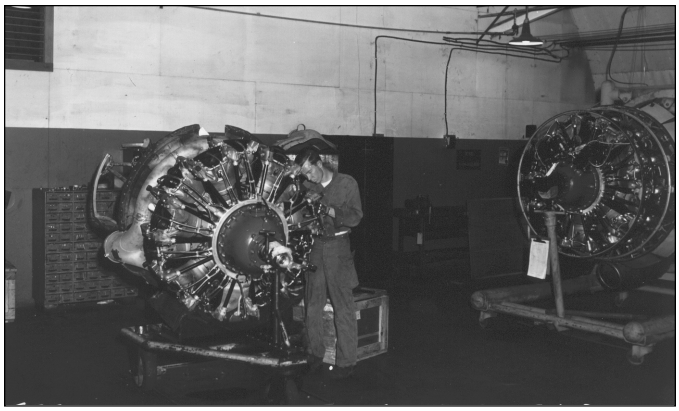


Figure 12. Maintenance Shop, 1951. USAF photo 151756AC, Eielson History Office.

In 1947, the Air Force opened its new cold weather test hangar at Eglin AFB, Florida. In this setting, the Air Force could overcome the many disadvantages of on-site testing in Alaska.[93] By 1949, the Air Proving Ground Command had re-examined Ladd's role in aircraft testing, assigning it secondary support duties. Staff at the Eglin hangar would make the initial cold weather tests, then small units would conduct "operational suitability testing" primarily in the northern U.S. and Canada. Ladd would instead become the primary site for Arctic flight training operations, though the operational tests continued on a reduced basis.[94]

Although Ladd was no longer the main location for evaluating cold weather aircraft performance, there was always a need for other types of cold weather tests. By 1950, Ladd's Cold Weather Test Group had been assigned to the new Air Force Research and Development Command. The 5001st Research and Development Group at Ladd came into existence a year later "to monitor all arctic tests of equipment and material…which are conducted in Alaska…, [and] to furnish test facilities and administrative services…."[95] Under this umbrella, the 5064th Cold Weather Materiel Testing Squadron continued the cold weather testing mission together with the Arctic Aeromedical Lab.[96] In 1951, for example, the 5064th performed tests on engines, arctic flying clothing, and armament as well as on aircraft maintenance procedures. The 5064th operated aircraft maintenance and shop facilities.[97]

3.4.2 The Arctic Aeromedical Laboratory

In 1947, the new Air Force organized its Arctic Aeromedical Laboratory under the umbrella of the School of Aviation Medicine at Randolph AFB, Texas. The unit moved to Ladd almost immediately, and a year later came under the direction of the Alaskan Air Command. The lab operated until 1967.[98] Its general missions were to address the AAC's problems of human adaptation to the Arctic, and by extension, to assist all of the armed services in adapting to the environmental conditions of polar theatre warfare.[99]

---

[93] Disadvantages included expensive logistic support, natural weather fluctuations, and inefficient use of manpower, with the Command losing a 100-man detachment to Alaska duty each winter. History, Air Proving Ground Command, 1 Jan – 30 June 1952; at Elmendorf AFB History Office Ladd AFB History & Misc file.

[94] Letter, Julie Massoni, Historian, HQ Armament Div., Eglin AFB to John Cloe, 20 Dec. 1983; at Elmendorf AFB History Office Ladd AFB History & Misc file. Cloe, 148.

[95] History of 5001st Composite Wing, Ladd AFB, 1 March –30 April 1951, 20.

[96] Cloe 148. History of the 5001st Composite Wing, 1 Jan. – 28 Feb. 1951, 17-18. See below on Arctic Aeromedical Lab.

[97] History of the 5001st Composite Wing, 1 Jan. – 28 Feb. 1951, 18. The specific buildings the 5064th used are not identified in the sources.

[98] "The Arctic Aeromedical Laboratory: Its History, Mission, Environment" Fort Wainwright Alaska, July 1961, from Elmendorf AFB History Office, Ice Islands Collection, 1. When the lab was disbanded, its functions and records transferred to Brooks AFB, TX. National Research Council Institute of Medicine, *The Arctic Aeromedical Laboratory's Thyroid Function Study: A Radiological Risk and Ethical Analysis.* (Washington: National Academy Press 1996), 8.

[99] Some of USAF's particular cold weather concerns included the following: 1)aircraft operated at higher altitudes, exposing crews to colder temperatures; 2) the increase in transpolar flying generated a need for better emergency survival capability; 3) maintenance crews needed to work efficiently and accurately in the cold. *Thyroid Function Study*, 8. On mission, "Arctic Aeromedical…," 1.

Figure 13. Site of Arctic Aeromedical Lab. Summer 2000.

In its earliest years, the lab performed research in areas such as cold weather equipment, survival rations, acclimatization, and morale. Initially, the unit used temporary quonset huts for its facilities. In spite of the importance of its mission, it often struggled to obtain resources and supplies.[100]

By 1955, the lab operated out of a four-building complex across from the new hospital.[101] The main laboratory building housed offices, a library, and two floors of laboratories. In the rear stood a materiel warehouse and office. Next to that, a structure housed a fabrication shop for woodworking and sheet metal projects as well as a small-animal colony. A flammable storage facility rounded out the site. In the late 1950s, the lab also had two satellite facilities. The "River Lab" was a quonset hut in an undeveloped section of the post along the Chena River. It served as a staging area for field tests and large animal work as well as quarters for visiting contract scientists. The "Bridge Lab" located near the Trainer Bridge added more work space. It consisted of temporary buildings which were formerly the base veterinary facility. However, as the lab staff pointed out, all of Alaska and even the Arctic basin were extensions of the lab due to its emphasis on studying actual field conditions.[102]

By the latter 1950s, five departments conducted in-house research, and the lab also supported visiting contracted researchers. As of 1959, researchers also cooperated with four other Alaska-based Arctic research organizations: the Arctic Health Research Center, the University of Alaska, University of Alaska's Geophysical Institute, and the Naval Arctic Research Lab at Point Barrow.[103]

Arctic Aeromed's Environmental Medicine Department focused mainly on diseases, preventive medicine, and sanitation. Its staff studied water purification, sewage disposal, frostbite, and bacteria and viruses. They also researched defense against chemical and radiological warfare in the Arctic, and countermeasures for possible Arctic biological warfare. They expressed interest in studying ancient microorganisms frozen in the Arctic ice, and in the development of photosynthetic gas exchange systems to provide oxygen for space travel.[104]

The Physiology Department directed its studies toward three areas: cold acclimatization, acute cold exposure, and hypothermia. The acclimatization projects included efforts "to study all groups of people in the world who are habitually exposed to extreme cold" and included metabolic studies on Alaska natives as well as controlled experiments on members of the armed forces. The intention was to determine whether acclimatization could offer "significant protection" to military personnel in the Arctic. Studies on acute cold and hypothermia dealt with the inevi-

[100] "Arctic Aeromedical…." 4. *Thyroid Function Study*, 11.

[101] These buildings were in the area now numbered 4067, 4068,4069, 4070. The research lab itself was in 4070. The former Flammable Storage building is now gone.

[102] "Arctic Aeromed…." 4-5.

[103] Ibid, 3, 21.

[104] Ibid, 6-8.

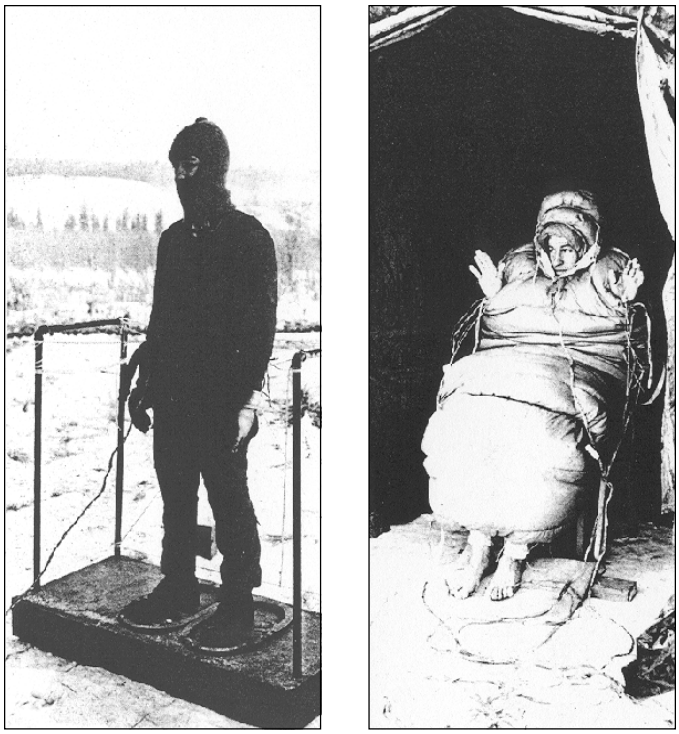


Figure14. Military Test Subjects, AAL Personal Equipment Dept.

table risks of severe cold exposure. Several projects observed cold exposure in animal subjects such as dogs, rabbits, and hibernating squirrels.[105]

The Biochemistry Department investigated biochemical responses to cold, cold weather metabolism, and developed and tested cold weather rations. The Department of Protective Equipment field-tested clothing and equipment for Arctic use, applied scientific methods to clothing design, developed prototypes, spot-checked the survival training programs, and disseminated its findings by sponsoring conferences within the Alaskan Air Command. A small Department of Psychology oversaw research on issues such as morale, the vigilance of radar scope operators, the effects of cold on mental performance, the problems of isolation at remote duty stations, and even the psychological stress of handling missiles in a cold environment.[106]

The Arctic Aeromedical Lab was an important contributor to Arctic science in the 1950s, in both military and civilian arenas. Responding to its mission to increase the Air Force's operational capabilities in the far north, the lab's research led to improvements in cold weather clothing and survival equipment, treatment of cold injury casualties, and other aeromedical advances. Scientists from the lab regularly participated in the annual Alaska Science Conferences, and in 1957 hosted a joint U.S.- Canadian Conference on Cold Injury. The Lab published a substantial amount of research results in technical notes and reports. Even now, the lab's basic research on cold adaptation is still cited.[107]

Another legacy of the lab is the controversy over an experiment with Alaska Native subjects. In 1993, concerns surfaced about a 1957 iodine-131 experiment on thyroid function. Both the National Research Council and the North Slope Borough investigated the study, interviewed participants, and published reports in 1996 and 1997 respectively. The details of the controversy are beyond the scope of this study, but the substantive ethical questions and cross-cultural issues raised by it are likely to remain part of the historical fabric of the Air Force's Cold War presence at Ladd.[108]

[105] Ibid., 9-11. See also Irene Ferrer, ed. "Cold Injury: Transactions of the Fifth Conference, Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska," (New York: Josiah Macy Foundation, 1958).

[106] "Arctic Aeromed…" 12-17. Former Eielson munitions specialist Lee Griffin noted that cold temperatures would cause serious malfunctions in both solid and liquid fuel rocket assemblies which required "several orders of magnitude" more planning and care in operations than in temperate climates. "To err is human; to forgive is not SAC policy," he explained. Personal communication, 7/27/00.

[107] See annual Proceedings, Alaska Science Conference, years 1955-1961. Irene Ferrer, ed. "Cold Injury: Transactions of the Fifth Conference, Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska" (New York: Josiah Macy Foundation, 1958.) Arctic Aeromedical Laboratory, Fort Wainwright, Alaska. *Publications of the Arctic Aeromedical Laboratory, August 1949- 31 December 1966*. Re current citations, "Internal Environment of Manned Space Vehicles," electronic document, Http://www.hq.nasa.gov/office/pao/History/conghand/mannede.htm, 7/3/00.

[108] National Research Council Institute of Medicine, *The Arctic Aeromedical Laboratory's Thyroid Function Study: A Radiological Risk and Ethical Analysis*, (Washington: National Academy Press 1996). Birch, Horton, Bittner and Cherot, *Threats to the Health and Environment of Alaska Natives in the Nuclear Age: The U.S. Government's Treatment of Alaska Native Research Subjects in a Thyroid Function Study Involving the Administration of Radioactive Iodine-131*, (Anchorage: Birch, Horton, Bittner and Cherot, 1997).

Project SARAH

Glenn Stanley, a physicist on staff with the Aeromedical Lab from 1959–1962, provided technical assistance to the other researchers, particularly with instrumentation. One of his contributions while at the lab was to develop Project SARAH (Search and Rescue Homing) for the Alaskan Air Command. SARAH solved problems with the crash locator beacons used at that time. Existing beacons put out very weak signals which could not be picked up from any distance; furthermore, their batteries failed in cold weather. Stanley adapted the SARAH system which the British were developing. He made modifications to the battery packs and to the antennas which the search aircraft would use, and then he demonstrated the practicality of the system in field tests.[109] In his memoirs he described one of these tests at Okinawa.

"All of the representatives were…taken to White Beach…and told to activate our beacons. If I remember correctly, there were four Air Force beacons and mine. All of this under the eyes of observer brass from the Fifth and Thirteenth Air Forces' Headquarters and from Headquarters Pacific Air Forces. The others carefully set up their beacons on the edge of the beach, extended their antennas and looked hopeful. My feeling was 'in for a penny - in for a pound' so I pulled the cap off my transmitter which allowed the spring loaded antenna to extend and threw the beacon out into the surf. I let it stay there for a few minutes, then suit and all walked into the surf, retrieved the beacon, set it on a low seawall…, walked back to the beach, and looked unconcerned. Even if it hadn't worked, it would have been worth the whole trip to see the expressions on the faces of the others. Fortunately, the amphib [aircraft]…picked up on my signal at sixty miles from eight thousand feet and homed in on it. The other beacons were not even in the race.…

…General [Rosy] O'Donnell…apparently got the word very soon and said that he would have them for his Command. I am told that this led to a heated discussion [with] General Curtis Le May….O'Donnell won the battle and equipped his whole Command with the beacons. It was after this that I began to be introduced as 'Mr. SARAH.'" [110]

3.4.3 Ice Station Research

From 1946 to 1961, USAF engaged in observations of polar ice pack phenomena which resulted in the support of three major manned ice stations. The Russians had begun drift station research a decade earlier. In 1937, they undertook scientific experiments from a drifting ice station near the North Pole, and they had followed that up after the war with an accelerated program of ice pack investigations.[111] USAF began its inquiries in 1946 with the reconnaissance sorties of Project Nanook, as the 46th photo recon unit from Ladd searched the Arctic for undiscovered lands.[112]

[109] Glenn M. Stanley memoirs, University of Alaska Fairbanks, Alaska and Polar Regions Archives, 80-85. "Arctic Aeromed…" 18.

[110] Glenn M. Stanley memoirs, 84-85.

[111] The Russian station was not the first experience with drifting in the ice pack. Norwegian explorer Fridtjof Nansen was the most notable predecessor. In 1898, he and his crew drifted, frozen fast in the Arctic ice in the Fram, a specially designed vessel. Re Russian activity, Bushnell, 1.

[112] While making that search, the squadron located "T-1," the largest ice island ever discovered. T-1 was never manned, but the recon units at Ladd and Eielson monitored its drift pattern until it disappeared north of Greenland three years later. Wack 22. Project Nanook consisted of more than just the Ladd flights. The 311th Recon Squadron systematically photo-mapped the Greenland region. Farquhar, "Need to Know," 60.

Beginning around 1950, both the Air Force and Navy began to develop research plans for investigating the Arctic from the pack ice. AFCRL's Geophysics Research Directorate made preliminary studies just off Barter Island, while the Navy, in Project Skijump, performed oceanographic studies from the pack ice, supported by aircraft landings on the ice.[113] At the same time, the AAC began preparations to establish a manned scientific station on a drifting ice island.

During the 1950s, AAC and Ladd AFB were involved in supporting a series of ice stations. The first, T-3, was located on a drifting ice island and hosted scientific parties during several lengthy occupations. Joint military-civilian teams first occupied T-3 from 1952 – 1954 during Project Icicle. Under Project Ice Skate, the station was used again during the International Geophysical Year (IGY) of 1957-58 and beyond. Over the years, T-3 drifted across the Arctic basin, leaving the zone of AAC support periodically. During the IGY, when T-3 had drifted to Greenland, two other stations were established in the western Arctic as pack ice stations. Ice Station Alpha was occupied from 1957 – late 1958. When it began to break up, crews established a new station the following spring. Known as Ice Station Charlie, it lasted ten months before meeting the same fate. In 1961, USAF ended its sponsorship of ice station research, turning its remaining facilities on T-3 over to the Navy.[114]

Umbrella organizations like AFCRL, USAF's Air Weather Service, and the Arctic Aeromedical Lab conducted or contracted the research;[115] AAC and Ladd/Eielson provided logistic support. For example, the 5001st Composite Wing from Ladd furnished personnel clothing and equipment, the 10th Rescue Squadron assisted in selecting and establishing landing sites and was on call for rescue assistance, and the Arctic Aeromedical Lab furnished general planning support for health and diet requirements. Regular C-47 flights to the stations brought in camp supplies.[116]

In an approach typical of the Cold War, ice station research included both basic and applied science in a framework of partnership between military and contracted researchers. By sponsoring and supporting the stations, USAF contributed to basic geophysical research as it tested military applications for its own purposes. Contributions to basic geophysics included studies in oceanography, arctic meteorology and the upper atmosphere, ice movement, solar radiation, gravity and magnetism, and ice island features and origins.[117] The Air Force also gained experience in developing the islands as forward military stations with weather stations, emergency landing facilities and listening posts.[118]

3.4.4 Support of Air Force Contracted Research

During the 1950s and beyond, the Air Force sponsored research to address technical problems involving atmospheric sciences, communications, and propulsion systems and their application in the Arctic. Its own centralized laboratories, such as AFCRL, directed research, but USAF also relied on outside research contracts for

[113] Bushnell, 1. AFCRL did its seismic studies in 1950 and 1951; Project Skijump took place in 1951 and 1952.
[114] Cloe, 225-226. Bushnell, 1._ Bushnell notes that T-3 was also occupied during the summer of 1955 by a small party from AFCRL.
[115] Bushnell, 1.
[116] History of 5001st Composite Wing, Ladd AFB, Jan- March 1952, 53. Cloe, 226.
[117] Bushnell, 4.
[118] History of 5001st Composite Wing, Jan – March 1952. Re listening posts, Wack 22.

a significant proportion of its investigations. These outside universities and agencies required Air Force logistical support for research projects in remote northern locations. The University of Alaska's Geophysical Institute also had close ties with AFCRL, conducting sponsored research in atmospheric science and auroral studies.[119] Ladd AFB, as USAF's northern hub, undoubtedly contributed logistical support in many of these efforts. At this time, Ladd's specific contributions to these programs could not be documented, but this would be a fruitful area for future inquiries.

[119] Former Geophysical Institute Director Keith B. Mather noted that "The Air Force Cambridge Research Laboratories (AFCRL) exercised a significant influence over a period of years because the effect of solar particles channeled into the arctic ionosphere is to cause a level of disturbance that renders HF telecommunications unreliable—the study of which was one of the missions of AFCRL and also an important reason why the Institute had come into existence in the first place." Keith B. Mather, "The Geophysical Institute, University of Alaska," unpublished report, (Dec. 1974), 10. On Geophysical Institute see William S. Wilson, "On Activities at the Geophysical Institute," *Science in Alaska 1951:* Proceedings, Second Alaskan Science Conference, Sept 4-8, 1951, 298-302. "Annual Report, 1962-63," Geophysical Institute, University of Alaska, (College, Alaska: University of Alaska, 1963). "Report of the Director for the Period Ending December 31, 1949," University of Alaska, Geophysical Institute, 6, 12-22.

CHAPTER 4.0 Ladd AFB Becomes Fort Wainwright

4.1 Two Air Bases Near Fairbanks

Ladd AFB was the original military base in the Fairbanks area. During World War II, fliers at Ladd realized they would need an additional landing field as a weather alternate. At a site approximately twenty-six miles southeast of Fairbanks, the Army Air Forces built this alternate facility, originally known as "Mile 26" and later renamed Eielson AFB. In 1947, Eielson became a separate installation, and in 1948 it was expanded to serve as a SAC bomber base. The runway was lengthened to 14,518 feet—nearly three miles long—to accommodate the B-36 bomber. At the time, it was the longest runway in North America. Eielson was then one of only four bases in the U.S. which could launch B-36 flights.[120]

During the 1950s, Eielson and Ladd grew simultaneously, but the two installations had distinct missions. Ladd developed into a center for air defense, search and rescue, and logistics. Eielson was primarily a SAC bomber and refueling site. The early strategic reconnaissance units had used facilities at both Ladd and Eielson, but Eielson took over the major strategic reconnaissance work from Ladd when the 375th Recon Squadron transferred there.[121]

Figure 15. Ladd Runway, ca. 1943. USAF photo 10695, Eielson History Office.

Eielson offered practical aviation advantages over Ladd. The Eielson runway sat on a level plain with no approach hazards. Ladd, on the other hand, was situated on a bend of the Chena River, adjacent to hills rising up on the far side of the Chena's northern banks. Ladd's primary runways had been laid out just before World War II with nothing more than aircraft testing in mind. They ran east-west, enclosed in a bend of the river. Already lengthened from their original 5,000 feet to a maximum of 9,200 feet, the runways could not be extended any further to accommodate large bombers nor to provide additional safety margins for takeoffs and landings. Changing the direction of the runways to the north/south meridian would not improve the situation much due to the proximity of the hills.[122]

The city of Fairbanks had also expanded toward Ladd's boundaries. In the 1950s in particular, new neighborhoods sprouted across the Chena River from the runways, adding concerns about aircraft accidents and noise. "At present the air routes make

[120] Denfeld, "Northern Bulwark," 40.
[121] Ladd retained a weather reconnaissance unit and continued Ptarmigan weather flights until 1960.
[122] Tony Jacob, "Eielson turns 50," Heartland Magazine, in Fairbanks Daily News-Miner, 7 Nov. 1993, H-10.

three crossings of the river, go directly over the Island Homes project, one over the center and the other the southern edge, and pass over Fairbanks in a southeasterly direction," the Fairbanks city manager noted in 1955.[123] Eielson provided a location farther from population centers, having its main facilities several miles south of the nearest community, North Pole.

4.2 The Transfer of Ladd AFB

By 1958, the space age was dawning. ICBMs changed the focus of air defense away from responding to manned bombers, and satellites were poised to revolutionize communications. That year, the Eisenhower administration drastically curtailed defense funding. One year later, in September 1959, USAF Headquarters informed the Alaskan Air Command that Ladd would be closed and its functions transferred to Eielson and Elmendorf AFBs. While AAC objected to the realignment, USAF held firm in its decision, citing economic factors.[124]

For some time, the closure plans remained secret. In May 1960, USAF announced that the 449th Fighter Interceptor Squadron would be deactivated as part of a "recent re-evaluation of the Air Defense Master Plan," raising concerns in the local community. Rumors flew, and gradually the realignment plans were made public as USAF continued negotiations with Army planners to transfer rather than close the base. By September 1960, Air Force flying operations ceased at Ladd, while announcements confirmed that the Army would take over the installation.[125]

By 1960, operations at Ladd had already diminished from the height of activity in the mid 1950s. The last fighter squadron, the 449th, was deactivated in August 1960. Remaining operations included the Arctic Survival Training School, the 55th Weather Squadron and the MATS Beaverette passenger flights to Elmendorf and McChord AFBs. These responsibilities transferred entirely to Eielson. Most other functions transferred to Elmendorf, including a unit of C-123 transport aircraft, Tactical Air Navigation (TACAN) operations, and all logistic support for auxiliary sites. A few operations continued on-site as Army tenants under Air Force control after the transfer, most notably the USAF hospital and the Arctic Aeromedical Laboratory.[126]

The actual transfer operation was an administrative undertaking lasting more than six months. Each Air Force function was scrutinized and either transferred or closed out, with supplies and equipment turned in, inventories zeroed out, and personnel reassigned. Support units had the most responsibilities and inventories to phase out. The Housing Services unit vacated and transferred 971 family apartment units. Personnel Services turned over recreational facilities including hobby shops, a gym, two theaters, a sauna room, libraries, a bowling alley, teen clubs, a nursery, and Birch Hill Ski Area. The Food Services unit, to its chagrin, had to turn over five dining facilities, including Dining Hall 1, the jewel in its crown. Dining Hall 1 had been remodeled in the spring of 1960 and had just reopened with "beautifully mod-

[123] "City Manager Tells of Jet Plane Crash," *Jessen's Weekly,* 3 Feb 1955, 8.

[124] Cloe, 210.

[125] "Eielson AFB Strength to Be Upped by 600," *Jessen's Weekly,* 30 June 1960, 1. During the summer of 1960, some Alaskans even advocated using Ladd as a new site for Alaska's capital. "Ladd No Place For Our Capital," *Fairbanks Daily News-Miner*, 5 Aug 1960, editorial.

[126] Special Report, Closeout of Ladd AFB. History of Ladd Air Force Base (Close-out) 1 Oct – 31 Dec 1960, HQ 5060th Air Base Group. "Flying Operations to Cease," *Midnight Sun,* 1 July 1960, 1.

Figure 16. Building 1004 housed the following in 1959: 5060th Support Group HQ SQ Section Charge-of-Quarters, Unit Supply, Food Service In-Flight Kitchen, Mess Hall #1, Housing Services Transient Billeting, Personnel Services Site Recreation Officer, Personnel Services Supply, Training Branch Indoor Rifle & Pistol Range, and Tenant Organization Air Force Team 204 Barracks. Summer 2000.

ern surroundings" and new food service equipment which had made it "one of the top overseas dining facilities in the Air Force."[127]

As part of the close-out process, the 5060th Engineering Squadron inventoried all real property.[128] They reported 671 buildings on the installation. Of that number, 50 were scheduled for disposal because they had either deteriorated beyond economical restoration or because they did not fit into the "foreseeable requirements" of either the Army or Air Force. According to the closeout report, the 50 buildings were released either for sale to the public or for transfer to the State of Alaska.[129]

Ladd, already the headquarters of the Army's Yukon Command, would see the arrival of 2,000 Army personnel previously stationed at Eielson as part of the transfer.[130] On January 1, 1961, the Army formally took over the installation and renamed it Fort Wainwright.

[127] History of Ladd Air Force Base (Close-out) 1 Oct – 31 Dec 1960, HQ 5060th Air Base Group, 20. Special Report, Closeout, 48-55, 59.

[128] Special Report, Closeout, 69-71. This inventory was routed through AAC to USAF Headquarters, through U.S. Senate Armed Services Committee, then to the District Engineer for "transfer action." 69.

[129] Special Report, Closeout, 70. The actual buildings are not specified in this document.

[130] News Miner clipping, 8/31/60, Elmendorf History Office, Ladd AFB History & Misc file.

CHAPTER 5.0 Conclusion

During the early Cold War years of 1947–1961, Ladd AFB was the Air Force's sector command center for northern Alaska. Ladd was an integrated part of the total Alaskan defense network, and supported a variety of Cold War missions. The foremost were air defense, strategic reconnaissance, and Arctic research; others included search and rescue, tactical support, communications, training, base operations, and civil aircraft operations.

In the earliest years of the Cold War, Ladd hosted some of the first long-range strategic aerial reconnaissance units. These units flew photo recon, ELINT, LRD and SIGINT sorties in the polar regions and along the northeast coasts of the Soviet Union, gathering intelligence on Soviet military installations, radar nets, communications capabilities, and atomic testing. This information, although sometimes limited in scope, provided critical background for national military planners. The early reconnaissance flyers also opened up commercial and military polar aviation by solving problems in polar navigation and arctic aircraft maintenance. They contributed to geographical knowledge by photographing the topography of Alaska and northern Canada for mapping agencies. All of these activities had national significance. The units made additional contributions to weather studies, tracked ice islands, and trained new recon units and SAC bomber crews in polar flying.

Ladd's air defense mission also had clear national significance. As a center for theater defense, Ladd's fighter-interceptors, ground controllers, and antiaircraft batteries were part of the plan to deter the Soviet Union from taking Alaskan territory and using it as a base from which to threaten the continental U.S. In addition to defending the military bases during an air battle, Ladd and the Alaskan Air Command would also serve as a front line of battle, attempting to destroy any attackers before they could pass to targets farther south. Ladd also supported the DEW Line, the warning system which served to alert continental defenses and SAC bases of polar air attacks.

Ladd was also a nationally significant location for Cold War Arctic research. The major contributor was the Arctic Aeromedical Laboratory, which studied human adaptation to Arctic and subarctic climates with an eye toward military applications. The lab's research program addressed northern medicine, sanitation, and disease; cold acclimatization, acute cold exposure, and hypothermia; biochemical responses to cold, cold weather metabolism, and psychology. The lab's research led to improvements in cold weather clothing and survival equipment, treatment of cold injury casualties, and other aeromedical advances. Its basic research on cold adaptation remains a foundation of current research in the discipline, while its comparative medical studies of enlisted personnel and indigenous people remains a contentious issue within Alaska. Ladd also contributed to Arctic science and engineering with its program of cold weather equipment testing which began during World War II and continued in an adapted form in the 1950s. Ladd also supported

geophysical research on Arctic Ocean ice islands and provided other Air Force-sponsored research programs with logistical assistance.

While these missions all had national significance, others had primarily state or local importance. Search and rescue efforts of the 10th Rescue Squadron were heralded throughout Alaska; rescues by Ladd's detachment, the 74th ARS, regularly appeared in the Fairbanks news. Alaskans, whatever their circumstance, appreciated the presence of these rescue units.

Due to time constraints, this study focused primarily on determining what the major Air Force Cold War missions at Ladd AFB were, and on documenting the most important of these. Several secondary missions were not included in this report; they remain areas for future research. These include communications—the connection between Ladd and the White Alice Communication System and the Rearward Communications System, as well as the base communications and telephone system and its relationship to the Fairbanks telephone utilities. Other areas for research are tactical fighter support for ground combat, and the extensive training programs which took place for both Air Force and ALCOM purposes. Some training programs were regular flights and drills; others were major cold weather exercises. Ordinary base support operations have not been addressed; neither have the details of the extensive construction program undertaken from 1950 to 1957. Finally, civilian air operators, including major transpolar airlines such as Pan Am, used the runways at Ladd AFB during the 1950s, before the Fairbanks International Airport could accommodate them. This regular commercial civilian presence caused security headaches for the Ladd commanders, and may have contributed to the transfer of sensitive intelligence operations to the more secure Eielson AFB. Further research is needed to delineate the extent of the civil air presence at Ladd.

This study provides the historic context for evaluating properties at Fort Wainwright (Ladd AFB) according to NHPA requirements. While it is not intended as a comprehensive history of the base complex, it does identify the major Cold War roles and missions of the Air Force at Ladd, using published histories, cultural resource reports, archival collections, personal interviews, period journalism, and military records. The review of Ladd's missions in this study is not definitive. Some of Ladd's missions were classified at the time; it stands to reason that others are unknown, either still classified or simply forgotten amid the era's organizational flux, unit rotations, and records transfers. As more historical research is done on the Cold War period, and as more veterans share their reminiscences, new information on the role of Ladd AFB may come to light. Consequently, this historic context should be updated periodically. Five-year reviews are recommended.

Developing a Cold War historic context for the Army at Fort Wainwright is also left for future projects. While the Army was also present at Ladd from 1948-1961, the properties it was using are no longer extant. Army missions were therefore not included in this study. At an appropriate future time, cultural resource managers can prepare the context for the Army's Cold War role at Fort Wainwright from 1961–1991.

SELECTED BIBLIOGRAPHY

Books:

Balchen, Bernt. 1958. *Come North With Me.* New York: E.P. Dutton & Co.

Cloe, John Haile, and Michael Monaghan. 1984. *Top Cover for America, the Air Force in Alaska 1920-1983*. Missoula: Anchorage Chapter-Air Force Association with Pictorial Histories Publishing Co.

Gaddis, John Lewis.1997. *We Now Know: Rethinking Cold War History*. Oxford: Clarendon Press.

Glines, Carroll V. 1999. *Bernt Balchen: Polar Aviator*. Washington: Smithsonian Institution Press.

Greenaway, Keith and Sidney Colthorpe. 1984. *An Aerial Reconnaissance of Arctic North America.* Ottawa: Joint Intelligence Bureau, 1948.

Kort, Michael. 1998. *The Columbia Guide to the Cold War*. New York: Columbia University Press.

Millett, Allan R. and Peter Maslowski. 1984. *For the Common Defense: A Military History of the United States of America.* New York: The Free Press.

Naske, Claus-M. and Herman E. Slotnick. 1987. *Alaska: A History of the 49th State*. 2nd ed. Norman: University of Oklahoma Press.

Nielson, Jonathan M. 1988. *Armed Forces on a Northern Frontier: the Military in Alaska's History, 1867–1987.* New York: Greenwood Press.

Schwartz, Richard Alan. 1997. *The Cold War Reference Guide*. Jefferson, NC: McFarland & Co.

Wack, Fred John. 1992. *The Secret Explorers: Saga of the 46th /72nd Reconnaissance Squadrons*. Turlock, CA: Seeger's Printing.

White, Ken. 1994. *World in Peril: The Origin, Mission and Scientific Findings of the 46th/72nd-Reconnaissance Squadron.* Elkhart, IN: K.W. White & Associates.

Woodman, Lyman. 1999. *Duty Station Northwest: The U.S. Army in Alaska and Western Canada, 1867–1987*, vol. 3, 1945–1987. Anchorage: Alaska Historical Society.

Cultural Resource Reports:

Air Force Center for Environmental Excellence. 1998. *Galena Air Force Station Historic Building Inventory and Evaluation.* Prepared for 611th Civil Engineers Squadron/cEVP, Elmendorf AFB, AK. Brooks AFB TX: Air Force Center for Environmental Excellence.

Alaska Department of Natural Resources. *Integrated Cultural Resources Management Plan 2001–2005 Fort Wainwright and Fort Greely Alaska.*

Alaska Department of Natural Resources. 1996. Office of History and Archaeology. *Site Summit: Nike Hercules Missile Installation.*

Buzzell, Rolfe. 1998. *Ladd Field National Historic Landmark, Boundary Review and Re- Nomination.* Anchorage, AK: Office of History and Archaeology, Alaska Department of Natural Resources.

Center for Ecological Management of Military Lands, Colorado State University with Gene Stout & Associates, and Jeff Blythe. 1998. *Cold War Resources Inventory United States Army Alaska: Fort Richardson, Fort Wainwright, Fort Greely.*

Center for Air Force History. 1994. *Coming in from the Cold: Military Heritage in the Cold War.* Report on the Department of Defense Legacy Cold War Project.

Department of Defense Legacy Resource Management Program, in cooperation with Alaska State Historic Preservation Officer. 1996. *The Coldest Front: Cold War Military Properties in Alaska.* Draft report by William J. Siedler.

Denfeld, D. Colt. 1988. *Nike Missile Defenses in Alaska, 1958-1979.* U.S. Army Corps of Engineers.

————. 1995. *Historic Building Inventory: Eielson Air Force Base*. U.S. Army Corps of Engineers.

Hoffecker, John F. and Mandy Whorton. 1996. *Cultural Resources Management Plan Eareckson Air Station.* Prepared for 611th Air Support Group, U.S. Air Force, Pacific Air Force Command. Argonne IL: Argonne National Laboratory.

Metcalf and Eddy, Inc. 1993. *Historical Overview of the DEW System in Alaska, and Documentation of Facilities at POW-3, Bullen Point, Alaska*. Wakefield, Mass: Metcalf and Eddy, Inc.

Mobley, Charles M. 1997. *Historic Architecture Inventory and Evaluation of Fort Greely, Delta Junction, Alaska.* Draft report prepared for U.S. Army Corps of Engineers and Tetra Tech, Inc.

Reynolds, Georgeanne L. 1988. *Historical Overview and Inventory: White Alice Communications System.* Anchorage: U.S. Army Corps of Engineers.

Tetra Tech, Inc. 1999. *Final Inventory and Evaluation of Military Structures at Fort Greely, Delta Junction, Alaska*. San Bernardino, CA: Tetra Tech, Inc.

Thompson, Erwin N. 1984. *National Register of Historic Places Nomination for Ladd Field Historic Landmark, Alaska.* Denver: Denver Service Center, National Park Service.

Thompson, Gail and Robert Weaver. 1986. *DEW Line : The Alaska Segment*. Determination of Eligibility for the National Register of Historic Places. Documentation on file at the Office of History and Archaeology, Anchorage, AK.

US Air Force Space Command. 21st Space Wing. 1996. *Historic Properties of the Cold War Era: 21st Space Wing, US Air Force Space Command,* by John F. Hoffecker and Mandy Whorton. Argonne IL: Argonne National Laboratory.

———. 1997. *Historic Properties of the Cold War Era Clear Air Station, Alaska,* by Mandy Whorton and John F. Hoffecker. Argonne IL: Argonne National Laboratory.

US Air Force. Air Combat Command. 1999. *Historical and Architectural Overview of Military Aircraft Hangars.* Electronic document, http://www.cecer.army.mil/techreports/webster98.

US Air Force. 611th Engineer Squadron. 1999. *Final Historic Building Inventory and Evaluation of King Salmon Airport, Alaska.* Elmendorf Air Force Base, Alaska.

————. 1998. *Historic Building Inventory and Evaluation for Aircraft Control and Warning (AC&W)Sites*. Elmendorf Air Force Base, Alaska.

US Army Alaska. [1999] *Alaska Army Lands Withdrawal Renewal, Final EIS*.

US Army Corps of Engineers, Alaska District. 1994. *The Cold War in Alaska: A Management Plan for Cultural Resources, 1994–1999*. by D. Colt Denfeld.

US Army Environmental Center. *"For Want of a Home…" A Historic Context for Wherry and Capehart Military Family Housing*. Aberdeen, MD

————. *Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties*. Aberdeen, MD

Other Government Documents:

"The Arctic Aeromedical Laboratory: Its History, Mission, Environment." 1961. Pamphlet, Fort Wainwright Alaska.

History, Air Proving Ground Command, 1 Jan – 30 June 1952. Elmendorf AFB History Office, Ladd AFB History & Misc.

History of Ladd AFB (Close-out). Elmendorf AFB History Office.

Special Report, Closeout of Ladd AFB. Elmendorf AFB History Office.

5001st Air Base Wing/Air Base Group Histories, Ladd AFB, quarterly reports 1951–1955. Elmendorf AFB History Office.

Arctic Aeromedical Laboratory, Fort Wainwright, Alaska. *Publications of the ArcticAeromedical Laboratory, August 1949- 31 December 1966.*

Department of the Army. Corps of Engineers. 1948. *Comprehensive Report, Investigation of Airfield Construction in Arctic and Subarctic Regions*, Appendix 3, by Robert E. Frost et al. Engineering Experiment Station, Purdue University.

Department of the Interior. National Park Service. 1998. National Register Bulletin, *How to Apply the National Register Criteria for Evaluation*. Washington, DC: National Park Service.

Nalty, Bernard C., ed. 1997. *Winged Shield, Winged Sword: A History of the United States Air Force.* Vol I, 1907–1950. Washington, DC: Air Force History and Museums Program, USAF.

————, ed. 1997. *Winged Shield, Winged Sword: A History of the United States Air Force.* Vol II, 1950–1997. Washington, DC: Air Force History and Museums Program, USAF.

National Research Council Institute of Medicine. 1996. *The Arctic Aeromedical Laboratory's Thyroid Function Study: A Radiological Risk and Ethical Analysis*. Washington: National Academy Press.

Salley, E. Marie. *Highlights of History: Alaskan Air Command and its Predecessors, 1901–1970.* U.S. Air Force Alaskan Air Command.

Schaffel, Kenneth. 1990. *The Emerging Shield: The Air Force and the Evolution of Continental AirDefense 1945–1960.* Washington, DC: Office of Air Force History, USAF.

Shaw, Frederick J., Jr. and Warnock, Timothy. 1997. *The Cold War and Beyond: Chronology of the United States Air Force, 1947–1997.* Washington, DC: Air Force History and Museums Program, USAF.

Strobridge, Truman R. 1966. *Strength in the North: A History of the Alaskan Command, 1947–1967.* Elmendorf AFB.

U.S. Army. 172nd Infantry Brigade, Alaska. 1976. *The US Army in Alaska.* Pamphlet 360-5. Sixth ed., May 1976.

Newspapers:

Fairbanks Daily News-Miner. 14 May 1954; 21 Feb 1955; 5 Aug. 1960.

Jessen's Weekly . 3 Feb. 1955; 21 April 1955; 30 June 1960.

(Ladd AFB) Midnight Sun. 21 March 1952; 1 July 1960.

Periodicals:

"Alaskan Air Command." *Army Information Digest* 16:10 (1961): 56-57.

"The Emerging Shield," *Air University Quarterly Review* 8 (Spring 1956): 61.

"Top of the World: The National Geographic Society's New Map of Northlands." *National Geographic* 96 (Oct. 1949): 524-528.

Cookman, Aubrey O. "Top of the World Weather Run." *Popular Mechanics* 90 (Nov. 1948): 97-101, 262-264.

Davidson, Bill. "Rescue Below Zero." *Collier's,* Dec. 31, 1949, 7-9, 42-43.

————. "Viking on the Ice Frontier." *Collier's*, Jan. 7, 1950, 26-27, 70-71.

————. "Mission to Frozen Nowhere." *Collier's*, Jan. 14, 1950, 48-50.

Denfeld, D. Colt. "The Cold War: Alaska the Northern Bulwark." *Journal of America's Military Past* 23 (Spring 1996): 38-52.

Farquhar, John T. "Northern Sentry, Polar Scout: Alaska's Role in Air Force Reconnaissance Efforts, 1946–1948." in Fern Chandonnet, ed., *Alaska at War 1941–1945*. Anchorage: Alaska at War Committee, 1995.

Fletcher, Roy J. "Military Radar Defence Lines of Northern North America: an Historical Geography." *Polar Record* 26 (1990): 265-76.

Greenberg, Milton and Gerlach, Alan. "Air Force in the International Geophysical Year." *Air University Quarterly Review* 8 (Spring 1956): 70-84.

Jacob, Tony. "Eielson turns 50." *Heartland Magazine, in Fairbanks Daily News-Miner*, 7 Nov. 1993, H 8-14.

Kolb, Richard. "Alaska, Cold War's Strategic Frontier, 1945–1991." *VFW Magazine*, electronic version, vfw.org/magazine/apr98/26.shtml, downloaded 6/30/00.

Maclure, Kenneth C. "'Ptarmigan' weather reconnaissance flights to North Pole." *The Arctic Circular* 1 (May 1948): 46-48.

Metcalf, John E. "Alaska – Its Strategic Role in Our Defense." *The Magazine of Wall Street* (3 January 1959): 345-347.

Moore, W. Robert. "Alaska, the Big Land: Airplanes, New Industry and Military Defense Speed Progress in the Far North, Where Men Once Struggled for Gold and Furs." *National Geographic* 109 (June 1956): 776-807.

Scientific Reports:

Annual Proceedings, Alaska Science Conference, 1955–1961.

Arctic Aeromedical Laboratory, Fort Wainwright, Alaska. *Publications of the Arctic Aeromedical Laboratory, August 1949–31 December 1966.*

Bushnell, Vivian, ed. "Scientific Studies at Fletcher's Ice Island, T-3, 1952–1955" Geophysical Research Papers No. 63, Air Force Cambridge Research Center.

Ferrer, Irene, ed. 1958. "Cold Injury: Transactions of the Fifth Conference, Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska." New York: Josiah Macy Foundation.

Wilson, William S. 1952. "The Geophysical Institute at the University of Alaska," *Science in Alaska*: Selected Papers of the Alaskan Science Conference, National Academy of Sciences National Research Council, Washington, Nov. 9–11, 1950. Arctic Institute of North America.

————. "On Activities at the Geophysical Institute," *Science in Alaska 1951*: Proceedings, Second Alaskan Science Conference, Sept 4-8, 1951.

Miscellaneous:

"Annual Report, 1962–63," Geophysical Institute, University of Alaska, (College, Alaska: University of Alaska, 1963).

"Report of the Director for the Period Ending December 31, 1949," University of Alaska, Geophysical Institute, 6, 12-22.

Birch, Horton, Bittner and Cherot. 1997. *Threats to the Health and Environment of Alaska Natives in the Nuclear Age: The U.S. Government's Treatment of Alaska Native Research Subjects in a Thyroid Function Study Involving the Administration of Radioactive Iodine-131.* Anchorage.

Elmendorf Air Force Base, History Office. Clipping files, "Ladd History & Misc."

Farquhar, John T. 1991. "A Need to Know: The Role of Air Force Reconnaissance in War Planning, 1945-1953." Ph.D. Diss., Ohio State University 1991.

Hirsch, Lt. Col. Edward. "United States Policy Regarding Arctic Security," G. & P. 206, American Foreign Relations, July 29, 1964. Typescript copy; UAF Rasmuson Library.

Kay Kennedy papers. Alaska and Polar Regions Archives, University of Alaska Fairbanks.

Ladd AFB Base Directories, 1956, 1959.

Mather, Keith B. 1974. "The Geophysical Institute, University of Alaska." Unpublished report. Copy available at UAF Geophysical Institute Library.

McIntyre, Dick. Interview, July 5, 2000.

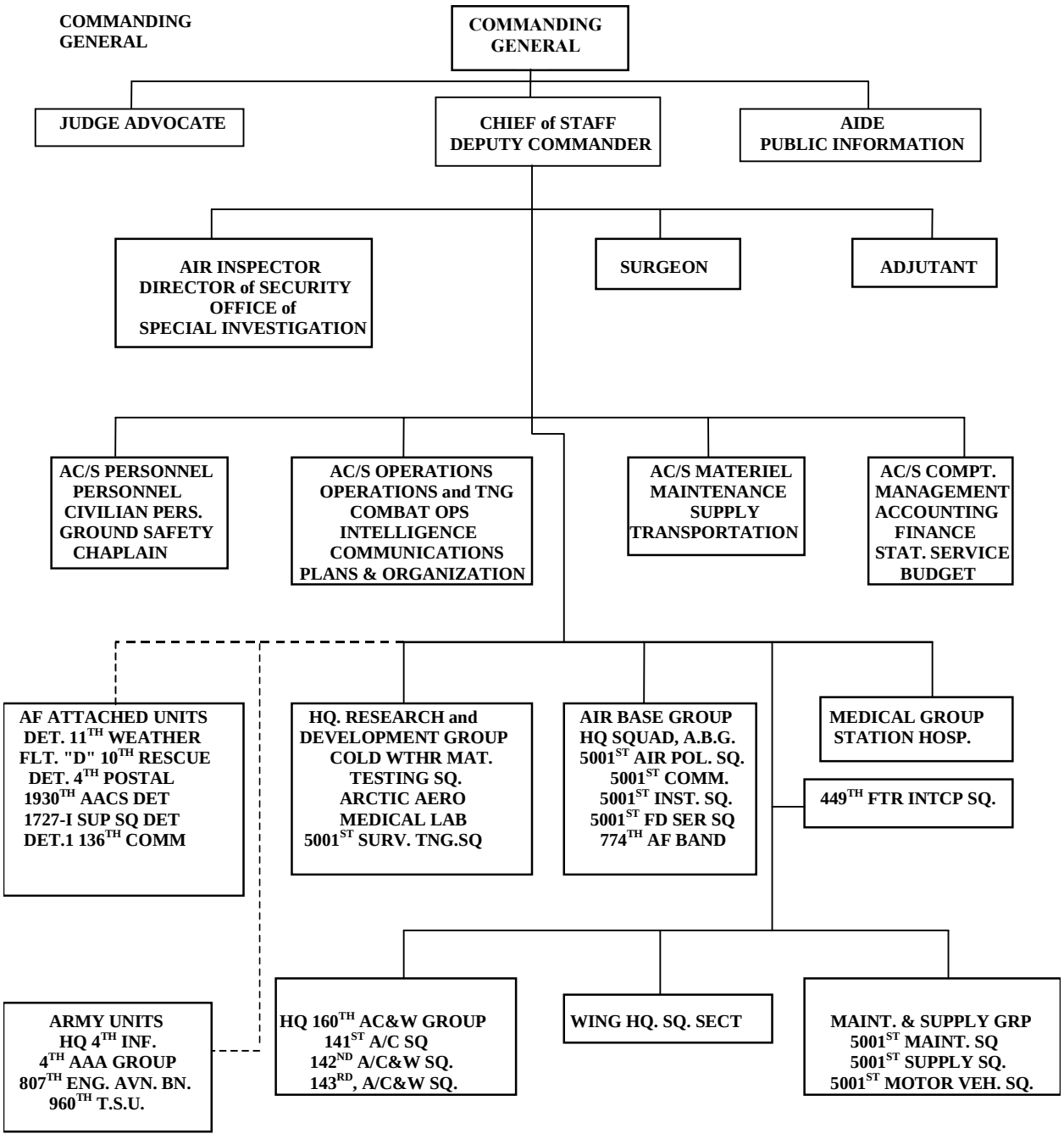
Stanley, Glenn M. Memoirs. Unpublished manuscript, Glenn Stanley collection. Alaska and Polar Regions Archives, University of Alaska Fairbanks.

APPENDIX A: Abbreviations and Acronyms

AAA	Antiaircraft artillery
AAC	Alaskan Air Command
AC&W	Aircraft Control & Warning
ADCC	Air Defense Control Center
AFB	Air Force Base
AFCRL	Air Force Cambridge Research Laboratory
ALCOM	Alaskan Command
ARDC	Air Research and Development Command
ARS	Air Rescue Squadron
BMEWS	Ballistic Missile Early Warning System
CANOL	Canadian Oil (Pipeline)
DEW Line	Distant Early Warning Line
ELINT	Electronic Intelligence
FFAR	Folding Fin Aircraft Rockets
FIS	Fighter Interceptor Squadron
ICBM	Intercontinental Ballistic Missile
IGY	International Geophysical Year
LRDP	Long Range Detection Program
MATS	Military Air Transport Service
MIDAS	Missile Identification, Detection and Alarm System
NHPA	National Historic Preservation Act
NORAD	North American Air Defense Command
RCM	Radio Countermeasures
SAC	Strategic Air Command
SARAH	Search and Rescue Homing
SHPO	State Historic Preservation Officer
TACAN	Tactical Air Navigation
UAF	University of Alaska Fairbanks
USAF	United States Air Force
USARAK	United States Army Alaska
USARAL	United States Army Alaska (predecessor of USARAK)
U.S.S.R.	Union of Soviet Socialist Republics
WACS	White Alice Communications System

APPENDIX B: Ladd AFB Organizational Chart, January 1952

5001st COMPOSITE WING



APPROVED

DONALD B. SMITH
BRIG. GEN. U.S.A.F.
COMMANDING
EFFECTIVE 1 JAN. 1952

APPENDIX C: Acknowledgments

The author would like to acknowledge the assistance of a number of people in the completion of this study. Russ Sackett, the Installation Cultural Resources Manager for Ft. Wainwright, guided the project through all its phases. H. Lee Griffin of the Ft. Wainwright DPW/Environmental Office shared materials and expertise from his experience with the cultural resources program at Ft. Wainwright and with the U.S. Air Force. All of the staff members of the DPW/Environmental Office at Ft. Wainwright were also very helpful.

Mr. John Cloe, historian at Elmendorf Air Force Base in Anchorage, provided access to the Ladd AFB records in Elmendorf's collection. His book, *Top Cover for America*, was also invaluable as an overview of Air Force history in Alaska. Tech. Sgt. Joe Orr of the Eielson AFB History Office also provided assistance to the project, and shared a fine collection of historic photographs. Staff at the Alaska and Polar Regions Archives of the University of Alaska Fairbanks were courteous and knowledgeable. Thanks also go to Dick McIntyre and Randy Acord of Fairbanks for sharing recollections of Ladd AFB.

APPENDIX D: Ladd Air Force Base Principal Units and Facilities Occupied–1959

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
1001	EXTANT	FAI-01248	11th Air Division (Defense) Chaplain Religious Education Center; 5060th Support Group Exchange-BX Carpenter & Decorator Shop, Food Service Central Meat Plant, Pastry Shop, Personnel Services Education Services, Library, Pre-Teen Club, Teenage Club, Training Branch
1004	EXTANT	FAI-01249	5060th Support Group HQ SQ Section Charge-of-Quarters, Unit Supply, Food Service In-flight Kitchen, Housing Services Transient Billeting, Personnel Services Site Recreation officer, Personnel Services Supply, Training Branch Indoor Rifle & Pistol Range; Tenant Organization Air Force Team 204 Barracks
1012	EXTANT	FAI-01250	5060th Installation Group Utilities & Maintenance Old Water Plant
1020	DEMO'D	N/A	5060th Support Group Exchange-BX Branch #2 (Snack Bar), Branch #11 (Retail Outlet)
1021	EXTANT	FAI-00448	5060th Support Group Personnel Services Central Base Fund, Fish & Wildlife Section, and Recreation Officer
1024	EXTANT	FAI-00449	11th Air Division (Defense) Operations Management Training
1036	DEMO'D	N/A	Arctic Aero Medical Laboratory
1040	EXTANT	FAI-01251	5060th Support Group Housing Services BOQ 5
1041	EXTANT	FAI-01252	5060th Support Group Housing Services BOQ 4
1042	EXTANT	FAI-01253	5060th Support Group Housing Services BOQ 3
1043	EXTANT	FAI-00451	11th Air Division (Defense) Chaplain Base Chapel-Protestant
1044	REPLACED	N/A	5060th Support Group Officers Open Mess
1045	EXTANT	FAI-00452	11th Air Division (Defense), Administrative Services Records Management; 5060th Support Group Exchange-BX Beauty Shop, Housing Services V.I.P., Personnel Services AF Aid Society, Casualty Reporting, Family Services Center, Personal Affairs
1050	EXTANT	FAI-00455	4th Air Postal Detachment
1053	EXTANT	FAI-01254	5060th Installation Group Maintenance & Repair Division Electric shop
1054	EXTANT	FAI-01255	5060th Transportation Squadron Motor Pool NCOIC-Pool #2, Dispatcher-Pool #2
1058	DEMO'D	N/A	5060th Installation Group Utilities & Maintenance Old Sewage Plant
1059	EXTANT	FAI-00457	5060th Transportation Squadron Motor Pool Gate Check-Pool #2
1060	EXTANT	FAI-01257	11th Air Division (Defense) Operations Intelligence AF Special Security Officer; 5060th Support Group Comm & Elect, RCA Tech Rep, Telephone Trouble Calls
1062	DEMO'D	N/A	5060th Supply Group Petroleum Gas Sales Gas Station
1073	DEMO'D	N/A	5060th Support Group Communications & Elect Outside Plant
1080	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Signal Research Unit #5
1111	DEMO'D	N/A	5060th Support Group Commissary Cold Storage
1120	DEMO'D	N/A	11th Air Division (Defense) Materiel Remote Station Excess Warehouse.
1130	EXTANT	FAI-00460	5060th Transportation Squadron Base Transportation Hold Baggage Warehouse

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
1136	DEMO'D	N/A	5060th Installation Group Maintenance & Repair Division Railroad Maintenance
1142	DEMO'D	N/A	5060th Installation Group Utilities & Maintenance POL Maintenance Foreman; 5060th Supply Group Petroleum Avgas Truckfill Stand
1149	DEMO'D	N/A	11th Air Division Surgeon Veterinarian; 5060th USAF Hospital Veterinarian
1157	DEMO'D	N/A	5060th Support Group Housing Services BOQ 10
1158	DEMO'D	N/A	5060th Support Group Housing Services BOQ 9
1159	DEMO'D	N/A	5060th Support Group Housing Services BOQ 8
1160	DEMO'D	N/A	5060th Support Group Housing Services BOQ 7
1161	DEMO'D	N/A	5060th Support Group Housing Services BOQ 6
1165	DEMO'D	N/A	5060th Support Group Personnel Services Athletic Field Maintenance Office
1168	DEMO'D	N/A	5060th Supply Group Petroleum Drum Storage
1169	DEMO'D	N/A	5060th Support Group Housing Services BOQ 11
1401	DEMO'D	N/A	5060th Supply Group Petroleum Hydrant Pumphouse L-2
1513	DEMO'D	N/A	5060th Support Group Training Branch Arctic Survival School
1533	DEMO'D	N/A	5060th Installation Group Maintenance & Repair Division Paint Shop
1534	DEMO'D	N/A	5060TH Consolidated Maintenance Group, Field Maintenance Flight,, Prop Shop
1536	DEMO'D	N/A	5060th Installation Group Power & Heating Plants Heating Plant
1538	EXTANT	FAI-00533	Office of Special Investigation Transportation
1540	DEMO'D	N/A	5060th Installation Group Remote Station M&R Division Power Production Section
1541	EXTANT	FAI-00503	1930th Airways & Air Comm Svs Sq Commander, Administration, Maintenance, Operations, Flight Facilities and Supply
1542	DEMO'D	N/A	5060th Transportation Squadron Base Transportation Air Freight Warehouse-Outbound
1543	DEMO'D	N/A	5060th Transportation Squadron Base Transportation Air Freight
1546	DEMO'D	N/A	5060th Supply Group Petroleum Hydrant Pumphouse L-1
1548	DEMO'D	N/A	5060th Support Group Exhange-BX Toyland
1549	DEMO'D	N/A	5060th USAF Hospital Clinic, Dental "B"
1550	DEMO'D	N/A	1930th Airways & Air Comm Svs Sq Supply NCOIC.
1551	DEMO'D	N/A	U.S. Army Headquarters Yukon Command, Staff Transportation
1555	EXTANT	FAI-00467	11th Air Division (Defense), Commander, Administrative Services, Chaplain, Comptroller, Judge Advocate, Materiel, Office of Information, Operations, Personnel-Civilian Incentive Awards, Provost Marshal; 5060th Support Group, Commander, HQ SQ Section, Comm & Elect Radio Relay, Exchange Branch #5, Exchange-BX Concessions Photo Finisher, Personnel Services Theater #2; 5060th Transportation Squadron Base Transportation Freight Section, Staff Transportation
1556	EXTANT	FAI-00468	5060TH Consolidated Maintenance Group, Field Maintenance Flight, Recip Engine Shop

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
1557	EXTANT	FAI-00469	11th Air Division (Defense) Personnel; 5060th Consolidated Maintenance Group Conventional Flight H-21 Maintenance Section; 5060th Installation Group Maintenance & Repair Division Night Lighting; 5060th Support Group Base Operations; 5060th Operations Squadron; Tenant Organization Armed Forces Courier Service; 11th Weather Sq. Det 1; 55th Weather Recon. Sq. Det. 1 Weather Monitor; 1727-I Support Sq-DET; 1930th Airways & Air Comm Svs Sq Weather Teletype, Control Tower
1558	DEMO'D	N/A	5060th Transportation Squadron Base Transportation Transportation Services
1560	EXTANT	FAI-00471	5060th Support Group Personnel Services Bowling Alley #2
1561	DEMO'D	N/A	11th Air Division (Defense) Base Procurement Administrative Section; 5060th Installation Group Power & Heating Plants Power Plant
1562	EXTANT	FAI-00472	5060th Air Police Squadron Confinement & Retraining/ 5060th Supply Group Airforce Service Stores Department #4, Department #6; 5060th Support Group Exchange-BX; 5060th Transportation Squadron Motor Accident Investigation, Drivers' School
1563	DEMO'D	N/A	5060th Supply Group Airforce Service Stores
1564	DEMO'D	N/A	11TH Air Division (Defense) Base Procurement, Personnel-Civilian; 5060th Installation Group Commander, Administrative Branch, Engineering Division, Maintenance & Repair Division, Materiel Control, Real Estate Section, Remote Station M&R Division, utilities Division, Insect & Rodent Control, Unit Supply, Work Control Branch; 5060th Supply Group Petroleum Officer; Tenant Organization, Auditor General, Air Force; Office of Special Investigation
1565	EXTANT	FAI-01258	5060th Supply Group Petroleum Ground Product Stock Record, Petroleum Mobile Aft Refueling Section; 5060th Transportation Group Transportation Maintenance Refueling Maintenance Shop
1575	EXTANT	FAI-00473	5060th Installation Group Maintenance & Repair Division Carpenter Shop
1578	DEMO'D	N/A	5060th Installation Group, Fire Department, Crash Site #1
1579	EXTANT	FAI-01288	5060th Supply Group Airforce Service Stores BOM Warehouse Department #1
1592	DEMO'D	N/A	5060th Installation Group Maintenance & Repair Division Overhead Door Shop
1595	EXTANT	FAI-00474	5060th Installation Group Maintenance & Repair Division Machine Shop; 5060th Transportation Squadron Transportation Maintenance Heavy Equipment Materiel Con.
1605	DEMO'D	N/A	5060th Supply Group Petroleum GI Gas Station
1606	DEMO'D	N/A	5060th Installation Group Maintenance & Repair Division Plumbing Shop, Utilities & Maintenance Garbage & Refuse
1610	DEMO'D	N/A	5060th Transportation Squadron Base Transportation Railroad Roundhouse & Yard
2032	DEMO'D	N/A	5060th Support Group Personnel Services Auto Hobby Shop
2038	DEMO'D	N/A	5060th Support Group Personnel Services Wood Hobby Shop
2053	DEMO'D	N/A	449th Fighter Interceptor Squadron Alert Hangar; 5060th Consolidated Maintenance Group Alert Hangar NCOIC; 5060th Support Group Food Service Dining Hall #6 (Alert Kitchen)
2063	DEMO'D	N/A	5060th Support Group Housing Services Supply Warehouse

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
2077	EXTANT	FAI-00504	5060th Consolidated Maintenance Group Armament & Electronics Flight Flight Line Armament Section, Hughes Aircraft Tec Reps, Text Equip & Calibration, Weapons Sys Dispatch (Radar), Field Maintenance Flight Afterburner Shop, Jet Flight
2079	EXTANT	FAI-01259	5060th Consolidated Maintenance Group Armament & Electronics Flight Communications Section, Hoffman Tech Rep, MDCAU Section; Philco Tech Rep, Radar Shop
2085	EXTANT	FAI-00478	449th Fighter Interceptor Squadron Commander, Flight Records; 5060th Consolidated maintenance Group Commander, materiel Control, Armament & Electronics Flight, Jet Flight T-33 Flight, Maintenance Control Branch, Quality Control Branch, Records, Analysis & Reports Branch, and Standardization & Training Branch
2095	DEMO'D	N/A	5060th Support Group NCO Open Mess Club
2104	EXTANT	FAI-01260	5060th Consolidated Maintenance Group Armament & Electronics Flight Falcon Missile Section
2106	EXTANT	FAI-00505	5060th Supply Group Materiel Facilities Reparable Processing Section
2107	EXTANT	FAI-01261	5060th Consolidated Maintenance Group Armament & Electronics Flight Synthetic Trainer.
2201	EXTANT	FAI-01230	5060th Consolidation Maintenance Group Armament & Electronics Flight Ord Storage Area.
2202	EXTANT	FAI-01231	5060th Consolidation Maintenance Group Armament & Electronics Flight Ord Storage Area.
2203	EXTANT	FAI-01232	5060th Consolidation Maintenance Group Armament & Electronics Flight Ord Storage Area.
2204	EXTANT	FAI-01233	5060th Consolidation Maintenance Group Armament & Electronics Flight Ord Storage Area.
2205	EXTANT	FAI-01234	5060th Consolidation Maintenance Group Armament & Electronics Flight Ord Storage Area.
2206	EXTANT	FAI-01235	5060th Consolidation Maintenance Group Field Maintenance Flight, Tech Supply Section (FM)
2207	EXTANT	FAI-01236	5060th Consolidation Maintenance Group Armament & Electronics Flight Ord Storage Area.
2555	DEMO'D	N/A	11th Air Division (Defense) Inspector General
2900	DEMO'D	N/A	5060th Supply Group Petroleum Hydrant Pumphouse L-3&4
3001	DEMO'D	N/A	11th Air Division (Defense) Chaplain, Chapel #3-Protestant/Catholic; District Engineers (U.S. Army) District Survey Branch; Resident Engineers (U.S. Army) Assistant District Engineer; 5060th Air Police Squadron Commander, Desk Sergeant, Operations officer, Traffic NCO; U.S. Army Headquarters Yukon Command Provost Marshal
3005	EXTANT	FAI-00482	55th Weather Recon Sq Det 1 Commander, Administration, Maintenance, Operations, Supply NCOIC
3006	EXTANT	FAI-00483	55th Weather Recon Sq Det 1 Maintenance Transportation
3007	DEMO'D	FAI-00484	55th Weather Recon Sq Det 1 Maintenance Equip Maint & Vehicle Control
3008	EXTANT	FAI-00485	55th Weather Recon Sq Det 1 Comm-Elect Shop, Line Maintenance, Sheet Metal Shop and Specialist Support, Supply Aircraft Turn-In & Receiving, Pre-Issue Manager, Priority Section, and Tech Supply; U.S. Army Headquarters Yukon Command S-3 Army Aviation Operations

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
3009	EXTANT	FAI-00486	5060TH Consolidated Maintenance Group, Field Maintenance Flight, Wood Shop
3010	DEMO'D	N/A	5060TH Consolidated Maintenance Group, Field Maintenance Flight, Paint Shop
3013	DEMO'D	N/A	5060th Supply Group Project Seaweed/ Materiel Facilities Packing and Shipping, Warehouse #10
3015	DEMO'D	N/A	5060th Transportation Squadron Unit Supply; Transportation Maintenance
3018	EXTANT	FAI-00487	5060th Supply Group Arctic Clothing Warehouse #4
3019	EXTANT	FAI-00488	5060th Supply Group Airforce Service Stores Department #2, Department A; 5060th Transportation Group Transportation Maintenance Production Control
3020	EXTANT	FAI-00489	5060th Supply Group Airforce Service Stores Department #3
3021	EXTANT	FAI-00490	5060th Supply Group Materiel Facilities Outside Storage, Warehouse #7
3022	EXTANT	FAI-00491	5060th Supply Group Materiel Facilities Warehouse #8
3024	DEMO'D	N/A	5060th Installation Group Utilities & Maintenance Sewage Lift Station Maintenance
3101	DEMO'D	N/A	5060th Support Group Concessions B&B Garage
3102	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Speical Services Auto Hobby Shop
3124	DEMO'D	N/A	5060th Consolidated Maintenance Group Conventional Flight Float Dock
3142	DEMO'D	N/A	5060th Transportation Squadron Motor Pool Heavy Equipment, Wrecker Service.
3225	DEMO'D	N/A	5060th Support Group Laundry & Dry Cleaning
3496	DEMO'D	N/A	5060th Air Police Squadron Vehicle Garage
3498	DEMO'D	N/A	5060th Supply Group Administration Section
3499	DEMO'D	N/A	5060th Supply Group Administration Section EOD Section
3511	DEMO'D	N/A	5060th Supply Group Airforce Service Stores R and U Yard
3515	RELOCATED	N/A	U.S. Army, Headquarters Yukon Command, S-4 Warehouse Officer and TA 21 Issue & Receiving, Supply & Maintenance Sub-Center, Commanding Officer
3516	DEMO'D	N/A	5060th Support Group Personnel Services Curling Rink
3518	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, S-3 Training Aids Sub-Center
3521	DEMO'D	N/A	5060th Transportation Squadron Motor Pool Bus Barn
3522	DEMO'D	N/A	District Engineers (U.S. Army) Motor Pool; Resident Engineer Motor Pool.
3524	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Supply & Maintenance Sub-Center, Ship-Warehouse #2
3525	DEMO'D	N/A	5060th Installation Group Fire Department Inspection & Supply
3526	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, S-4 Supply Branch
3572	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Det 48th Engineer Co (FM), Machine Shop
3573	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Det 48th Engineer Co (FM), Commanding Officer
3574	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Staff Engineer R&U Supply and Warehouse; 47th Transportation (Armored Carrier) Motor Pool

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
3576	DEMO'D	N/A	District Engineers (U.S. Army) Equipment Division; Resident Engineers (U.S. Army), District Plant & Equipment Branch
3591	DEMO'D	N/A	5060th Support Group Commissary Sales Store
3592	DEMO'D	N/A	5060th Support Group Personnel Services Gym
3595	EXTANT	FAI-01279	5060th Installation Group Power & Heating Plants Power Plant
3598	EXTANT	FAI-01280	5060th Support Group Housing Services Supply Warehouse
3599	DEMO'D	N/A	5060th Support Group Exchange-BX Branch #19 (Warehouse)
3603	DEMO'D	N/A	5060th Support Group Commissary DEWLine Subsistence Supply Section
3605	DEMO'D	N/A	5060th Installation Group Power & Heating Plants Diesel Power Plant
3606	DEMO'D	N/A	5060th Support Group Exchange-BX Branch #12 (Service Station)
3652	DEMO'D	N/A	11th Air Division (Defense) Comptroller Materiel Branch, Statistical Service Division, Materiel Logistic Support Unit; 5060th Consolidated Maintenance Group Materiel Control CAM Liaison; 5060th Supply Group Base Supply, Administration Section IBM Section, Inspection, inventory & Research, Management & Procedures, Materiel Facilities, Shipping; 5060th Transportation Squadron Freight Section Warehouse
3658	DEMO'D	N/A	5060TH Consolidated Maintenance Group, Field Maintenance Flight, Battery Shop
3660	DEMO'D	N/A	5060th Supply Group Airforce Service Stores Department #5
3661	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Signal Company, Motor Pool
3663	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Signal Company, Radio Motor Pool; 136th Ordnance Company, Motor Officer
3666	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 1st Battle Group 9th Infantry, Company D Commanding Officer
3667	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 1st Battle Group 9th Infantry, Company C Commanding Officer
3668	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Staff Signal MARS; Signal Company, Commanding Officer ; USA Signal Communication Unit #6
3669	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, S-1 Education Officer and Central Welfare Funds, S-2 C.I.C. (47th Det), Adjutant Publications, Staff Ordnance Staff, Guard House; 136th Ordnance Company, Ammunition Officer; Special Services Site Recreation Director
3670	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 15th Artillery "B" Battery, Commanding Officer.
3671	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, S-3 NCO Academy; Staff Surgeon; Staff Transportation, Driver's Testing Station/ Det 514th Medical Co (Clearing), Commanding Officer (Surgeon).
3672	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, S-1 Catholic/Protestant Chaplains, Adjutant Reenlistment Officer, Special Services Arts & Crafts Director, HQ & HQ Company, Commanding Officer/ 9th Army Band
3673	DEMO'D	N/A	5060th Support Group Food Service Dining Hall #4
3674	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 40th Armored Co "A", Commanding Officer/ Det 48th Engineer Co (FM) Editing Section/Warehouse

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
3675	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 15th Artillery "B" Battery, Motor Pool/ 40th Armored Co "A" Motor Pool; 1st Battle Group 9th Infantry Company C and Company D Motor Pool
3676	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 136th Ordnance Company, Field Maintenance Officer.
3677	DEMO'D	N/A	5060th Installation Group, Fire Department Crash Station #2
3678	DEMO'D	N/A	U.S. Army Headquarters Yukon Command, Office of Commanding General, Executive Officer, S-1, S-2, S-3, S-4, Comptroller, Adjutant, Purchasing & Contracting
3679	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Special Services
3680	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Quartermaster; 136th Ordnance Company, Ordnance Property Warehouse.
3683	DEMO'D	N/A	5060TH Consolidated Maintenance Group, Field Maintenance Flight, Test Cells
3684	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Quartermaster Gas Station
3687	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Comptroller Finance & Accounting
3688	DEMO'D	N/A	5060TH Consolidated Maintenance Group, Field Maintenance Flight, Fabrication & Parachute Shop.
3690	DEMO'D	N/A	5060th Supply Group Petroleum Hydrant Pumphouse L-5&6
3700	EXTANT	FAI-01263	5060th Support Group Personnel Services Golden North Service Club; U.S. Army Headquarters Yukon Command Library
3701	EXTANT	FAI-01264	5060th Support Group Exchange-BX Branch #3 (Main Store), Barbara Shop (Main Store), Johas Brothers Fur Shop, Dan's Portrait Studio
3706	EXTANT	FAI-01265	5060th Support Group Housing Services Barracks
3707	EXTANT	FAI-01266	5060th Consolidated maintenance Group HQ SQ Section, Unit Supply; 5060th Support Group Exchange-BX Branch #4
3708	EXTANT	FAI-01267	5060th Support Group Housing Services Barracks
3711	EXTANT	FAI-01268	5060th Support Group Housing Services Barracks
3712	EXTANT	FAI-01269	5060th Support Group Concessions Rene's Dance Studio; Food Service Dining Hall #2
3713	EXTANT	FAI-01270	11th Air Division (Defense) Personnel Processing
3716	EXTANT	FAI-01271	5060th Installation Group Unit Supply Troop Support Section
3717	EXTANT	FAI-01272	5060th Installation Group HQ SQ Section, Instl GP; 5060th Support Group Food Service Dining Hall #3
3718	EXTANT	FAI-01273	5060th Support Group Housing Services Barracks
3719	EXTANT	FAI-01274	5060th Transportation Squadron Commander
3720	EXTANT	FAI-01275	5060th Support Group Housing Services Barracks
3721	EXTANT	FAI-01276	5060th Support Group Housing Services Barracks
3722	EXTANT	FAI-01277	5060th Supply Group Commander, Materiel Facilities Clothing Sales Store
3723	EXTANT	FAI-01278	5060th Air Police Squadron Charge-of-Quarters; Supply
3760	DEMO'D	N/A	5060th Support Group NCO Open Mess Barber Shop
3824	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Dog Kennels.
3828	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Staff Signal
3830	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Staff Engineer; Fire Marshall/ 18th Engineer Co (Construction), Commanding Office

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
3834	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Staff Transportation, Motor Transportation Office; Det 514th Medical Co (Clearing), Motor Pool; Det 521st Transportation Co (Light Truck); 581st Ordnance Det.
3841	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 136th Ordnance Company, Commanding Officer
3843	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Staff Ordnance Staff Douglas Aircraft Tech Rep
3844	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 18th Engineer Co (Construction), Motor Pool.
3845	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, Quartermaster Field Maintenance Shop; Staff Signal Signal Maintenance Shop
3853	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, S-1 Civilian Personnel Officer, Adjutant Mail & distribution, Inspector General, Judge Advocate, Public Information
3855	DEMO'D	N/A	U.S. Army, Headquarters Yukon Command, 199th Ordnance Det (GMM NIKE DS); Det 514th Medical Co (Clearing), Supply
3943	DEMO'D	N/A	U.S. Army Headquarters Yukon Command, 136th Ordnance Company, Armament Shop
3997	DEMO'D	N/A	5060th Transportation Squadron Motor Pool Gate Check-Pool #1
3998	DEMO'D	N/A	5060th Transportation Squadron Motor Pool Administration, Dispatcher-Pool #1
4026	REPLACED	N/A	5060th Air Police Squadron Main Gate
4031	DEMO'D	N/A	5060th Air Police Squadron Town Patrol
4036	DEMO'D	N/A	Office of Special Investigation Cabin Day Room
4054	EXTANT	FAI-01285	5060th Support Group Housing Services CBQ Office, CBQ Women
4055	EXTANT	FAI-01286	5060th Support Group Housing Services CBQ Women
4056	EXTANT	FAI-01287	5060th Support Group Housing Services CBQ Women
4062	EXTANT	FAI-01256	5060th Support Group Housing Services CBQ Men
4063	EXTANT	FAI-01262	5060th Support Group Housing Services CBQ Men
4064	EXTANT	FAI-01281	5060th Support Group Housing Services CBQ Men
4065	EXTANT	FAI-01237	11th Air Division (Defense) Chaplain Hospital Chaplain, Safety Officer Surgeon, Safety Officer, Surgeon; 5060th Support Group Exchange-BX Branch #13, Concessions Optical Shop; 11th Air Division Surgeon; 5060th USAF Hospital Base Medical Services
4066	DEMO'D	N/A	5060th Support Group Housing Services BOQ 12 (Nurses Quarters)
4067	DEMO'D	N/A	Arctic Aero Medical Laboratory
4068	DEMO'D	N/A	Arctic Aero Medical Laboratory Materiel
4069	EXTANT	FAI-01282	Arctic Aero Medical Laboratory
4070	EXTANT	FAI-01283	Arctic Aero Medical Laboratory Commander, Administration, Biochemistry, Environmental Medicine, Library, Physical Sciences, Physiology, Plans & Programs, Protective Equipment, Psychology, Publications Editor and Technical Director
4072	DEMO'D	N/A	5060th Installation Group Utilities & Maintenance New Sewage Plant
4073	DEMO'D	N/A	5060th Installation Group Utilities & Maintenance Sanitation Forman, New Water Treatment
4075	EXTANT	FAI-01284	5060th USAF Hospital Unit Charge-of-Quarters
4076	DEMO'D	N/A	5060th Support Group Personnel Services Theater #1
4164	DEMO'D	N/A	5060th Installation Group, Fire Department Fire Station #3

BLDG NO	STATUS	AHRS NUMBER	UNIT/FUNCTION
5001	DEMO'D	N/A	5060th Supply Group Base Redistribution & Marketing Officer, Recording & Reporting Section, Retail Store
5004	DEMO'D	N/A	5060th Supply Group Base Redistribution & Marketing Receiving Section
5006	DEMO'D	N/A	5060th Supply Group Base Redistribution & Marketing Class 27 Property