

ELLSWORTH AIR FORCE BASE,
RUSHMORE AIR FORCE STATION
SECURITY CENTRAL CONTROL BUILDING
(Building No. 88304)
Quesada Drive
Black Hawk Vicinity
Meade County
South Dakota

HABS No. SD-21-E

HABS
SD-21-E

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDINGS SURVEY

National Park Service
Great Plains Support Office
1709 Jackson Street
Omaha, Nebraska 68102-2571

HISTORIC AMERICAN BUILDINGS SURVEY

ELLSWORTH AIR FORCE BASE RUSHMORE AIR FORCE STATION SECURITY CENTRAL CONTROL BUILDING (Building No. 88304)

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I. INTRODUCTION

Location: The Security Central Control Building is located at Ellsworth Air Force Base in Meade and Pennington Counties, South Dakota. The base is located approximately 10 miles east-northeast of Rapid City, the seat of Pennington County and about 10 miles due east of the community of Black Hawk in Meade County. The building (currently referred to as Security Police Entry Control Building) is located in the Weapons Storage Area (WSA) near the north end of the base's aircraft Flight Line, at the extreme northwest corner of the developed property at Ellsworth Air Force Base.

The current Munitions Storage Area (MSA) at Ellsworth was once (1952-62) known as the WSA within the confines of Rushmore Air Force Station (RAFS), a highly secret nuclear weapons storage and assembly facility.

Quad: Bend

UTM: Zone 13

Date of Construction: 1952

Architect: Black & Veatch, Consulting Engineers, Kansas City, Missouri.

Present Owner: United States Air Force

Present Occupant: None

Present Use: Abandoned

Significance: The RAFS Security Central Control Building is significant for its association with American military policy during the Cold War years of the early 1950s. During this era, the United States embarked on a period of nuclear weaponry proliferation, fueled by post World War II diplomatic and military tensions between the

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United States and the Soviet Union. These tensions resulted in the creation of thirteen nuclear weapons storage sites within the United States, one of which was the RAFS. These facilities were a central component of the United States' nuclear weapons strategy to deter a Soviet attack against Western Europe or North America.

Historian:

Kenneth L. Anderson
Rapid City, South Dakota
June 1996

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II. HISTORY

A. INTRODUCTION

This report, prepared for the Historic American Buildings Survey (HABS), provides historical and descriptive data on the Security Central Control Building, currently under the control of Ellsworth in western South Dakota. Erected in 1952 as part of the RAFS, an ancillary facility to Ellsworth Air Force Base, the building served as an administrative office, bunk, training, and staging facility for Air Police whose duty was to guard the Weapons Storage Area. During the period of operations in which RAFS was independent of the main base (1952-62), the building was known as Security Central Control. The mission of RAFS was the storage, maintenance, and preparation of nuclear weapons for loading onto long-range bomber aircraft.¹

Ellsworth was constructed by the United States Army in 1942 to serve as a temporary wartime aviation training facility. The base was reactivated following World War II to serve as a base for military bomber aircraft, and for other strategic purposes; it continues in this role in 1996. The United States Air Force assumed ownership of the base following the creation of that branch in 1947. Ellsworth Air Force Base's current name was adopted in 1953; the facility had earlier been known as Rapid City Army Air Base, Weaver Air Force Base, and Rapid City Air Force Base. As used in this report, the term "Ellsworth" refers to the current base as well as the same facility under its former names.

RAFS was constructed in 1952 and was completely independent of Ellsworth. While Ellsworth was under the control of the Strategic Air Command (SAC), RAFS was under the military control of the Air Materiel Command (AMC).² RAFS was assimilated into the command of Ellsworth at large in 1962.³ For the purposes of this report, occurrences of the term Rushmore Air Force Station (or RAFS) shall refer to the nuclear weapons repository installation that existed from 1952-62.

B. ELLSWORTH AIR FORCE BASE 1942-52

Construction activity on domestic American military bases increased dramatically in the late 1930s as a result of heightening international tensions. This expansion was particularly evident in the aviation units of the United States Army, an indication of the growing strategic importance of military air power. From 1937-41, for example, the number of Army Air Corps facilities grew from twenty-one to 114, and still more aviation facilities were built as America embroiled itself in World War II.⁴

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One phase of America's military aviation expansion program began in 1940 as the Army finalized plans to construct a number of new domestic military airfields for flight training and aircraft maintenance. Military site selection committees analyzed a number of potential locations for these new bases during 1941. The process inevitably generated substantial enthusiasm among the residents of communities being considered since a new military facility could provide a region with a major economic stimulus.

One such potential site was the Municipal Airport grounds near Rapid City, South Dakota. The location, on a low plateau a few miles east of town, seemed largely favorable to military inspectors. The site's ultimate selection for an air base was ensured through extensive lobbying by South Dakota's congressional delegation and local civic leaders. Rapid City was formally chosen as a new military airfield location in December 1941; local backing for the decision was proven when more than ninety-nine percent of Rapid City's voters supported a bond issue to assist in base construction.⁵

Construction work at the future Rapid City Army Air Base (RCAAB) began early the following year, and the facility was essentially complete by September 1942. As built, the new base featured three concrete runways and several dozen buildings. Most buildings were small, wood-framed structures, reflecting the base's status as a temporary, wartime facility. RCAAB initially served as a training facility for Army B-17 bomber crews; it continued in this role until the war's end in 1945, when the facility was deactivated.⁶

RCAAB faced a period of uncertainty after the war as many of the nation's temporary military bases were closed and disposed of. In 1947, however, the base was permanently reactivated as a major Army bomber base. This role continued after RCAAB was transferred to the newly formed United States Air Force at the end of the year, and assumed the name Rapid City Air Force Base (RCAFB). Under Air Force control, the facility initially served as home to a fleet of B-29 bombers operated by the Air Force's 28th Bombardment Wing. The bomber fleet continued to operate from the temporary facilities constructed by the Army in 1942.⁷

In 1949, the fleet of B-29s at RCAF B was supplanted by the arrival of B-36 "Peacemaker" bombers at the base. The B-36 assignment gave the base a sustained level of importance within the Air Force, while simultaneously pointing out the need for substantial physical improvements to the World War II-era facility. The B-36 was one of the largest and heaviest aircraft in the world at the time, requiring the Air Force to undertake major runway and hangar improvements at RCAF B to accommodate the new craft. This construction marked the beginning of a significant period of growth in the RCAF B physical plant.⁸

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A larger and more sustained period of expansion at RCAF B began in 1951. The strategic importance of Air Force as a whole grew significantly during the 1950s due to the international tension generated by the Cold War and the Korean conflict. Simultaneously, RCAF B emerged as a major operations center of the Air Force's SAC. The base grew markedly from 1951-56, with the construction of over a dozen new hangars, a control tower, new housing and mess facilities, a hospital, and numerous other structures.⁹ The largest construction project of the period was the building of RA FS (1952-54), a massive facility just north of RCAF B intended for the storage and maintenance of strategic nuclear weapons. Meanwhile, RCAF B was renamed Ellsworth Air Force Base in 1953.¹⁰

C. RUSHMORE AIR FORCE STATION 1952-62

The advancements in nuclear weapons technology that played a major role in ending World War II also added suspicion and unease to an already tenuous relationship between the two major Allied countries of the war: the United States of America, and the Soviet Union (USSR). This tension and mistrust led each nation to pursue nuclear weaponry advancements, which further heightened the anxiety between the two countries. The resultant arms race and associated diplomatic maneuvering is now commonly referred to as the Cold War.

The Atomic Energy Commission - Armed Forces Special Weapons Project (AEC-AFSWP) agreement consolidated the operation of national stockpiles of nuclear material and weaponry under the command of the AFSWP (now known as Defense Nuclear Agency) beginning on May 11, 1949. Within this arrangement, the Atomic Energy Commission (AEC), a civilian government agency established by the Atomic Energy Act of 1946, was responsible for the storage and custody of stockpiled material. The Sandia National Laboratories (SNL), a government-owned agency responsible for the research, development, quality assurance, and production of nuclear weaponry, acted in an advisory capacity on the functional specifications relating to the weapons' storage and assembly. The Air Materiel Command (AMC) of the Air Force managed site functions such as the overall command and operations support of the facility, storage and maintenance of atomic weapons test and handling equipment, training exercises and maneuvers, administration, and security.¹¹

Under the AEC-AFSWP arrangement, thirteen civilian controlled nuclear weapons facilities were created. These facilities were geographically positioned throughout the contiguous states. There were two facility types among the thirteen: six nuclear material stockpiles, and seven storage and maintenance facilities. The nuclear material stockpiles are referred to as "national," while the storage and maintenance facilities are referred to as

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"operational." Five of the operational facilities were located adjacent to Air Force bases to allow for ready loading onto waiting aircraft. RAFS was one of the operational facilities, and therefore played a major role in America's early Cold War nuclear strategy.¹²

The construction of RAFS began in 1950 and concluded in 1952. The station was designed and constructed to store and maintain nuclear bombs and other weaponry for possible use by the heavy bombers stationed at Ellsworth.¹³ RAFS featured concrete igloos and other heavily built buildings designed to be relatively inconspicuous to approaching enemy bombers as well as to withstand an enemy bombing raid. Ground security at RAFS was extremely tight, with access to the RAFS ordnance ("Q") area virtually impossible for most to obtain. Because of the extremely sensitive nature of the RAFS mission, its administration and operation was entirely independent from that at Ellsworth; the station maintained its own housing, warehouse, and shop facilities. In addition to the Air Force personnel assigned to RAFS, workers employed by the Atomic Energy Commission and Sandia National Laboratories were stationed at the base to oversee its operations. This arrangement continued until 1962, when RAFS was formally merged with Ellsworth.¹⁴

The RAFS consisted of two distinct and separate complexes. The primary complex was the ordnance storage area itself; this high security area was enclosed behind a multiple fence¹⁵ with extremely heavy security at the access gate. It included over forty buildings related to either the storage or maintenance of nuclear weapons systems, as well as a small group of offices, shops, and warehouses. The secondary complex, outside the secured area, contained RAFS's headquarters building, other offices, housing, and additional warehouses and shops. The housing and administration area featured a formal, landscaped layout, displaying a hint of the symmetry and order once considered mandatory in the design of American military posts.¹⁶

RAFS's military component was the 3081st Air Defense Group, under the military command of the Air Materiel Command. The largest single task at RAFS was the security of the station as a whole, and the WSA in particular. Secrecy and security of operations were such an issue at RAFS that no SAC personnel (from Ellsworth) were allowed inside the RAFS. It follows naturally then, that the largest contingent of military personnel at the station was the Air Police.¹⁷

The WSA of the former RAFS currently serves as a conventional munitions storage area for Ellsworth Air Force Base. Nuclear weapons were removed entirely from the mission of the base in 1991.¹⁸ Many of the original buildings and bunkers within the WSA are still in existence and in use. Most of the buildings within the former RAFS administrative and housing area have been demolished, or are slated for demolition.

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D. AIR POLICE ACTIVITY AT RAFS, 1952-62.

The initial contingent of Air Police spent the first weeks of their duty at RAFS assisting in the completion of the construction of the WSA. They laid soil on top of the hardened atomic weapons storage bunkers and completed a general cleanup of the area. Most of the initial contingent was newly assigned from basic training, and was reassigned within months, being replaced by the second wave of Air Police, most of whom had much longer duty periods at RAFS.

The Air Police were housed in the RAFS facilities outside the WSA compound. When they were not on duty, life for them was much like that of any Air Force personnel. They were allowed to travel off base, but they were required to provide their destination, route of travel, and expected arrival time upon signing out and their haunts were monitored by undercover FBI agents. Any mention of the goings on at RAFS, or of its existence, would cause an RAFS worker to be reassigned within days, never to see the base again.¹⁹

Duty assignments for security personnel assigned to the RAFS could be divided into two categories: outdoor and indoor duty.

Outdoor duty included Main Gate Guards (the gate into RAFS); "Q" Gate Guards (the gate to WSA); Security Patrols, who patrolled the WSA compound interior; weapon transport detail accompanying nuclear (or training) weapons from the WSA to the Flight Line for delivery to SAC personnel for loading onto B-36 bombers, or transport via rail or airplane to another facility. The latter duty included guarding the weapons and planes or train during loading.

Indoor duty (within the Security Central Control Building) included Communication Plotter, who took incoming calls and orders, recorded patrol radio check-ins, and dispatched patrols to investigate potential fence breaches; American District Telegraph (ADT) operator, who monitored telegraph connections to the nuclear facility's door alarms; a clerk; a Training noncommissioned officer, usually a master sergeant who developed and coordinated training exercises; Operations Assistant, usually a chief master sergeant who assisted the Security Operations Officer, who was either a captain or first lieutenant charged with overseeing the on-duty operations of the Air Police.

On-call duty was also housed within the Security Central Control Building, and usually consisted of a three-man Sabotage Alert Team (SAT) to respond to open ground (fence breach) or alarms from any of the structures within the WSA.²⁰ When Alerts were signaled, Air Police

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would sleep within the bunk area of the Security Central Control Building for three days, remaining ready at all times for dispatch by the communications plotter. Alert conditions were frequent in the early days of RAFS, indicating the level of unease of the times.²¹

When arriving for duty at the Security Central Control Building, the Air Police followed a strict order of events starting with Guard Mount, (when duty shift changed), which was held in the basement in inclement weather and outdoors in mild weather. At the Guard Mount, Air Police received post assignments and orders from the officer in charge. Then, the Air Police were issued weapons from the Armory in the basement. Carbine rifles and .45 caliber sidearms were standard issue. Finally, the Air Police would go on duty at the various positions described previously. Upon returning from patrol or duty, weapons would immediately be checked into the Armory. Once the weapon was checked, the patrol immediately went off duty.

While on patrol duty, Air Police traveled on the roads inside the WSA. They did not physically touch the buildings that they were guarding or test door latches for fear of setting off an alarm.

E. SECURITY CENTRAL CONTROL BUILDING

The RAFS Security Central Control Building was built in 1951-52 as part of the construction of the Station as a whole. While a massive building program was being publicly undertaken at nearby Ellsworth (1951 appropriations of \$8.5 million was authorized for the base by March, with an additional \$17.5 million appropriated by September),²² construction activity at RAFS was completed under tight security, with as little publicity as possible.

The design of the Security Central Control Building was overseen by the Department of the Army, Office of the Chief of Engineers, Washington, D.C. This was in contrast to the design work occurring for Ellsworth; that was overseen by the Omaha District of the Army Corps of Engineers, which held responsibility for all construction activities at Ellsworth proper. The firm of Black & Veatch was retained to execute the design and construction documents for the project.²³

Headquartered in Kansas City, Missouri, Black & Veatch was a private consulting firm offering architectural and engineering design services. The firm was founded in 1915 when Ernest Bateman Black and Nathan Thomas Veatch began providing consulting engineering services.²⁴

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Construction of the Security Central Control Building began soon after Black & Veatch completed the final building plans and specifications in 1951, and was completed in July 1952. The total cost of the project was \$46,568.²⁵ As built, the Security Central Control Building stood near the southeast corner of the WSA. The "Q" gate to the WSA was just south of the Security Central Control Building making it the first building encountered upon entry into the WSA.

The building housed the compound's electronic security and surveillance systems, including telegraphic monitoring of the doors of each of the nuclear weapons storage or maintenance facilities within the compound, audio sensing equipment, and equipment to indicate interference with the electronic security perimeter fence.²⁶

The Security Central Control Building's role as an Air Police administrative, communications, and staging facility continued throughout the era (1952-62) that RAFS functioned as an independent facility. In 1962, RAFS was incorporated to the Strategic Air Command mission of Ellsworth. From 1962 to May of 1994, the building was used in a similar capacity. In 1994, the building was permanently abandoned in favor of a new entry control facility.²⁷

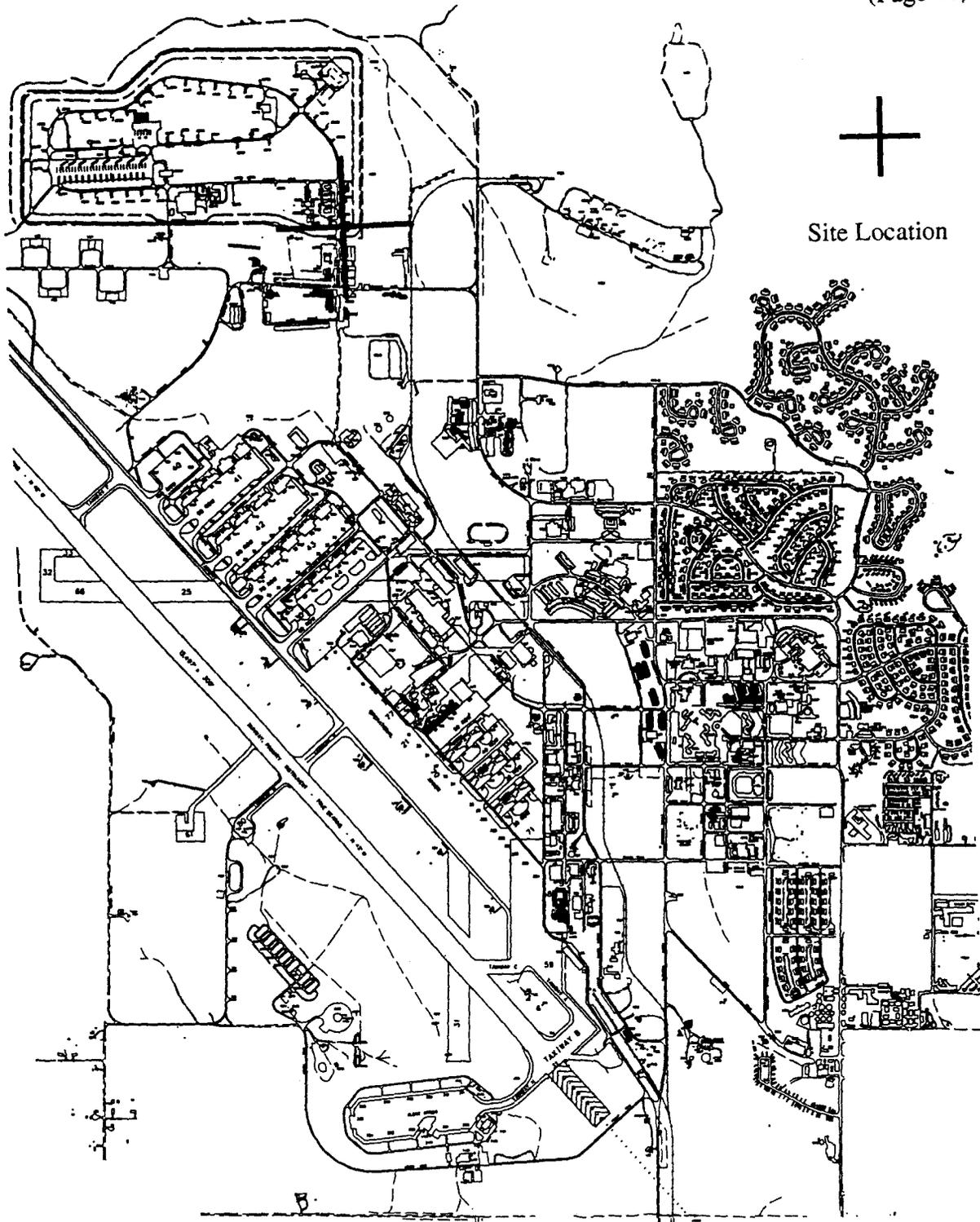
III. ARCHITECTURAL DESCRIPTION

The Security Central Control Building (Building No. 88304) is located in the northwestern portion of Ellsworth. The base is geographically divided into three functionally differing areas: housing and support services (to the east), aircraft and base operations (west), and ordnance storage and maintenance (north). The latter area includes the WSA of the former RAFS, where the Security Entry Control Building is located. The building itself is located in the southeastern corner of the WSA compound, and is the first historic building encountered upon entry. (See map series on page 10 and 11 of this report.)

Although the Security Central Control Building lacks architectural detail and interest, it is representative of the functionality desired for period military buildings. Its appointments are Spartan and layout orderly. Its design reflects its use as a security monitoring and staging facility.

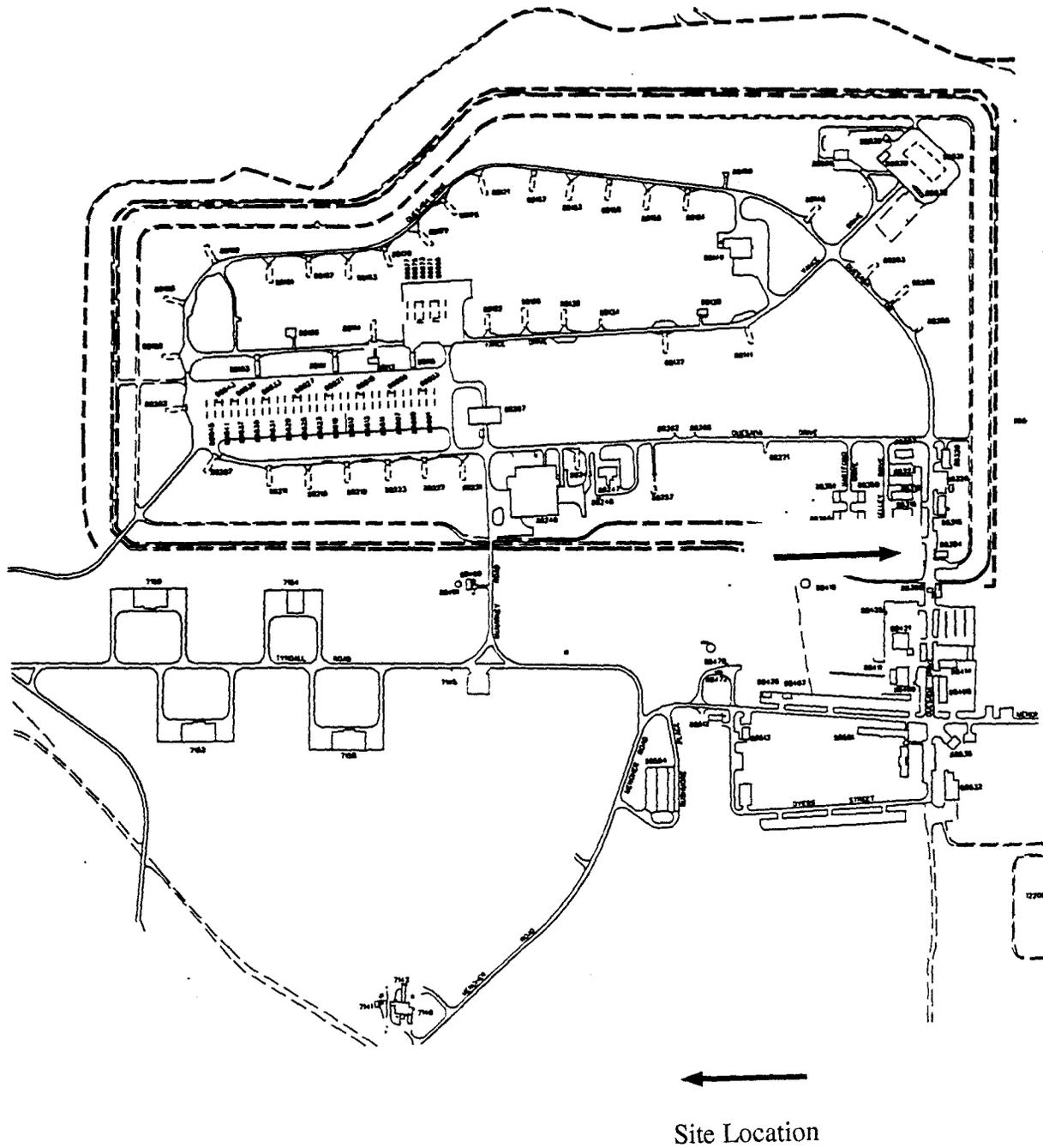
The building has been stripped of nearly all non-integral components, leaving only its shell and original finishes. Lack of maintenance and weatherization are evident, as the roof leaks and other openings are beginning to affect the integrity of the structure. However, the building retains a level of integrity sufficient to convey its historic appearance and its intended role in the operation of the RAFS.

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ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA
Map on file at Engineering Flight, Ellsworth Air Force Base, South Dakota.

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Location of structures and facilities on the former Rushmore Air Force Station.
Map on file at Engineering Flight, Ellsworth Air Force Base, South Dakota.

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The Security Central Control Building is a one-story, wood-framed building with a reinforced concrete foundation. It is rectangular in plan, measuring 28' north-south x 60' east-west. The distance from grade to underside of the roof overhang is 12'. The building has a full basement.

The roof consists of 2" x 10" joists placed 16" on center, 1" x 6" tongue-and-groove board decking, and a built-up asphalt membrane with gravel embedded in the top coat. The joists are laminated above window and door openings. The roof is flat and extends beyond the perimeter walls, forming a 2' wide overhang, which is trimmed with galvanized roof edging that has been painted to match the rest of the building.

Perimeter walls are built of 2" x 6" studs placed 16" on center, with the exterior sheathed with diagonally applied 1" x 6" tongue and groove boards. Thirty-pound asphalt felt is between the sheathing and the finish material, which is cement asbestos siding with a 10-1/2" exposure. Lag bolts anchor the walls to the concrete foundation.

The building's floor system consists of 1" x 6" tongue and groove boards secured to 2" x 10" joists placed 16" on center. This system is supported by three 6" x 8" steel I-beams, which rest on reinforced concrete block walls in the basement.

The main floor of the building is above-grade and has three entrances: a door on the north side near the west corner, and two doors on the south side; each entrance has a concrete stoop. The only other original access to the building was through a basement entrance on the north side. This opening was infilled, but the stairwell and stairs remain in place. The relatively high number of exits for a building of this size indicates the need for quick exiting by the original users. Access to the basement is now by an interior stairway adjacent to a main floor entrance, which minimized disruption of main floor operations.

The building has two window types. The thirty-two double-hung windows have wood-framed sash with two divided lights oriented horizontally, and appear to be original units in original locations. A non-original aluminum storm window has been added to each window of this type. These windows are grouped in long horizontal bans. On the east and west sides, these window bans are from corner to corner. The other window type is an awning style, with one rectangular, operable sash and a single light. There are seven of these windows, oriented horizontally, in two groups, one with three and the other with four, on the south facade. The quantity, location, and arrangement of the building's windows maximized the ability of the occupants to monitor outside activity around the building.

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The main floor of the Security Central Control Building consists of an alert room, communications room, offices, and bathroom. The basement has an armory, break room, common area, rest room, mechanical room, storage room, and small communications equipment room. Interior finishes are common. The main floor walls and ceiling are covered with painted gypsum board and the floors are finished with asbestos composition tile, except for the bathroom floor, which is raised and finished with 6" square quarry tile. The basement's concrete walls are painted, and its concrete floor is either unfinished or asbestos tile covered, depending on the room.

The building has a gas-fired, forced-air heating system. The size of the mechanical room, ductwork, supply air grills, and return air registers indicate the gas-fired furnace is not original. Most likely, the original furnace was fueled by coal or heating oil, and was larger than the existing furnace.

Interior artificial lighting is primarily by surface-mounted, 4' long fluorescent tube fixtures, which are found throughout the building. In some rooms, these fixtures were replaced with surface-mounted, porcelain fixtures, each of which held a single incandescent bulb. There are numerous electrical panels and control boxes in the basement, which undoubtedly were necessary to supply and regulate the electrical power for the non-extant communications and sensing equipment associated with the building's role as a security monitoring facility.

IV. FUTURE OF THE PROPERTY

At the time of this writing, demolition of the Ellsworth Security Central Control Building has begun. This HABS documentation is intended as mitigation for the adverse effects created by the building's demolition.

V. ADDITIONAL SOURCES OF INFORMATION

At the time of this writing much of the information regarding RAFS and its mission remains classified. The following is a list of probable sources of information once it is made available to the public at large.

Air Force Historical Research Agency, Maxwell AFB, Alabama
HQ AFHRA/CC
600 Chenault Circle
Maxwell Air Force Base, Alabama 36112-6424

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This is the official Air Force historical repository. Questions regarding missions, organizational or unit histories, past and present U.S. military aviation bases, plans, programs, etc., can be answered by contacting this agency. Information regarding classification or declassification of documents regarding the RAFS may also be obtained.

Department of Defense Legacy Program.

At the time of the writing of this report, a comprehensive history of early U.S. nuclear military strategy as related to eleven decommissioned Atomic Energy Commission (AEC) and Armed Forces Special Weapons Project (AFSWP)/Defense Atomic Support Agency (DASA) nuclear weapons storage and maintenance sites (including RAFS) is being prepared in conjunction with the Department of Defense Legacy Program. The project is under the administration of the University of South Carolina Department of History, and is scheduled for completion in fiscal year 1996, pending funding appropriations. For more information regarding this research contact:

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VI.. ENDNOTES

1. Ellsworth Air Force Base, Historic Contexts, page 63.
2. "Ellsworth Air Force Base, South Dakota: Former Special Weapons Storage Area Trip Report March 15-17, 1994" Page 1.
3. Ibid.
4. For a broad discussion of the growth of military aviation during this period, see Ellis L. Armstrong, Ed. History of Public Works in the United States, 1776-1976 (Chicago: American Public Works Association, 1976), 620-637.
5. "City Votes Smashing Approval of Army Air Base Bond Issue." Rapid City Daily Journal, 31 December, 1941.
6. "History Document: Call Number 287.88-20 V.1" Manuscript Records on file at the Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery, Alabama.
7. Cook, "A History of Ellsworth Air Force Base," 6-10.
8. Ibid.
9. Ibid.
10. Relatively little information on the construction of the Rushmore Air Force station and the nation's other period nuclear storage facilities is readily available, presumably due to Cold War national security concerns. See Sandia National Laboratories (Albuquerque, New Mexico), "Ellsworth Air Force Base, South Dakota: Former Special Weapons Storage Area, Trip Report," March 1994, Letter copy on file at the Base Historic Preservation Office, Ellsworth Air Force Base, South Dakota.
11. "A Look at America's Top Secret Nuclear Weapons Storage Sites", Page 2.
12. For more information on the locations of the other facilities, see one of the following:

Ellsworth Air Force Base, South Dakota: Former Special Weapons Storage Area Trip Report March 15-17, 1994." Report prepared by Sandia National Labs personnel on file at 28th Bomb Wing History Office, Ellsworth Air Force Base, South Dakota;

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Hufstedtler, Mark "Ellsworth Air Force Base, South Dakota, Statement of Historic Contexts" (April 1995). Manuscript on file at 28 CES/CEVE Office, Ellsworth Air Force Base, South Dakota;

Hufstedtler, Mark "Ellsworth Air Force Base Historic Sites Inventory" 1994. Manuscript Records on file at 28 CES/CEVE Office, Ellsworth Air Force Base, South Dakota;

Larson, George A. Lt. Col., USAF (Ret.), "A Look at America's Top Secret Nuclear Weapons Storage Sites" Unpublished, due for publication by Cowles History Group, Military History Magazine, 1998.

13. "Ellsworth Air Force Base, Historic Contexts," Page 63. Other sources indicate that nuclear weaponry stored and maintained at RAFS may have been shipped by C-124 Transport aircraft to waiting bombers at other air bases. In such an event, security personnel from RAFS would accompany the weapon to its destination (another SAC base) and SAC personnel would sign for it at that point. This occurrence is unsubstantiated by official documents made available for this report.
14. "Ellsworth Air Force Base, South Dakota: Former Special Weapons Storage Area Trip Report March 15-17, 1994" Page 1.
15. Sources differ on how many levels of security fencing were actually present in the historical fence configuration at the WSA. "Ellsworth Air Force Base, Historic Contexts" page 77, has the number at two; an oral interview June 12, 1996, with Bud Fischer, Sr., MSgt (Ret.) Air Police Stationed at Rushmore Air Force Station March 1955 to November 1959, indicates there were four levels of fencing; "A look at America's Top Secret Nuclear Weapons Storage Sites" page 8, places the number of perimeter fences at five separate fences. All sources agree, however, that there was a fence that was electrified, and could be monitored from the Security Central Control Building. For further information on multiple zones of security around nuclear weapons storage sites, see "Security Lighting for Nuclear Weapons Storage Sites: A Literature Review and Bibliography."
16. "Ellsworth Air Force Base, Historic Contexts," Page 77.
17. Oral interview June 12, 1996: Bud Fischer, Sr., MSgt (Ret.) Air Police Stationed at Rushmore Air Force Station March 1955 to November 1959.

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18. "Ellsworth Air Force Base, Historic Contexts," Page 81.
19. Oral interview June 12, 1996: Bud Fischer, Sr., MSgt (Ret.) Air Police Stationed at Rushmore Air Force Station March 1955 to November 1959.
20. Oral interview June 12, 1996: Bud Fischer, Sr., MSgt (Ret.) Air Police Stationed at Rushmore Air Force Station March 1955 to November 1959.
21. Oral interview June 12, 1996: Bud Fischer, Sr., MSgt (Ret.) Air Police Stationed at Rushmore Air Force Station March 1955 to November 1959.
22. Rapid City Daily Journal 15, 23, 25 March; 25 April; 14 September 1951.
23. See accompanying photographic reproductions of the construction documentation attached to this report.
24. Black & Veatch World Wide Web home page. [Http://www.bv.com](http://www.bv.com), 1996.
25. "Ellsworth AFB Historic Sites Inventory," Building 88304.
26. Although the building is known to have housed this type of equipment, records to the exact types of equipment and nature of their use are not available. It is only through oral interviews that this information can be extracted. Even to this day, personnel assigned to Rushmore Air Force Station, are cautious about possibly giving too much information during interviewing.
27. Oral interview April 18, 1996: Cheryl Cordray, Realty Assistant, 28 CES/CERR, Real Property Office, Ellsworth Air Force Base, South Dakota.

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