DYESS AIR FORCE BASE, ATLAS F MISSILE SITE S-8, **HAER No.** TX-25-A
LAUNCH CONTROL CENTER (LCC)
Approximately 3 miles east of Winters, 500 feet
southwest of Highway 1770, northwest of Launch Facility
Vicinity of Winters
Runnels County
Texas

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

HISTORIC AMERICAN ENGINEERING RECORD
Southwest System Support Office
National Park Service
P.O. Box 728
Santa Fe, New Mexico 87504

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Approximately 3 miles east of Winters, 500 feet southwest of Highway 1770, northwest of Launch Facility
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UTM:

Date of Construction: 1962

Engineer: U.S. Army Corps of Engineers

Builder: U.S. Army Corps of Engineers, H.B. Zachary and Brown & Root, Inc.

Present Owner:

Present Use:

Significance: The threat posed by intercontinental ballistic missiles (ICBMs) lay at the heart of nearly all foreign policy decisions during the Cold War Era. The Atlas program produced the United States' first operational intercontinental ballistic missile and served as the template for the technological and organizational aspects of later ICBM programs. The Atlas F missile represents the culmination of this pioneering effort and the Atlas F Missile Site S-8 Launch Control Center at Winters, Texas is a representative example of a critical facility at one of the first operational ICBM launch complexes in the United States.

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Date: February 1996

Atlas F Missile Site S-8 Launch Control Center (LCC)

The LCC is a reinforced concrete and steel structure consisting of two circular levels, approximately 40 feet in diameter. The floor levels are supported within a two story steel crib structure suspended from the reinforced concrete outer wall. This structure performed the same function as the crib assembly within the silo--serving as a shock absorber to insulate the LCC from the effects of a ground blast. The reinforced concrete wall that surrounds the interior closure, 2.5 feet thick, also protected the command center and launch crews from the effects of a ground blast. The lower level of the LCC housed the communications equipment and the launch control console. The upper floor contained mess facilities and berth facilities capable of sustaining the launch crew for up to ten days in the event of a nuclear attack.[1]

The LCC is buried 6.5 feet below the surface and is located approximately 45 feet northwest of the silo. Entry into the LCC from the surface is by means of a stairwell that descends through a tunnel and into an entry vestibule. While the stairway portion of the entrance was not designed to withstand a significant explosion, the bends were intended to provide nuclear radiation protection for the occupants of the LCC. An emergency escape hatch was provided in the roof of the LCC in the event the entrance stairway was destroyed. This escape hatch was blast proof.[2] The main entrance to the launch facility was located within the LCC. This entrance was protected from overpressure by two interlocked blast doors at the top of the shaft adjacent to the LCC. A utility tunnel at the lower level joined the LCC with the launch silo. The cylindrical tunnel is of reinforced concrete and steel construction with an interior diameter

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[1] Atlas E and F launch crews consisted of five members. This was much smaller than the 12-man Atlas D crew. The latter consisted of a launch control officer, a missile system analyst, a power distribution system technician, a missile electrician, three missile maintenance technicians, a missile engine mechanic, a ground support equipment specialist, a propulsion system technician, a guidance system analyst, and a hydraulics technician. These crews were rotated regularly to prevent boredom and a resulting decline in efficiency. Neufeld, 204; "SAC Shapes Missile Force for Survival, Fast Reaction," Aviation Week, June 20, 1960, 105.

[2] Bertrand L. Hansen, "The Atlas F Operational Suitability Test Facility Number 2 (OSTF-2)," (Ohio State University, 1963), 23.

of eight feet. The tunnel has flexible connections at its ends to provide for differential settlement between the launch control center and the silo. The tunnel also served as the conduit for all interconnecting utilities between the silo and the Launch Control Center.[3] Three of the five blast doors at the launch site were located within this utility tunnel. These protected the launch crew from any internally-generated blast pressures. The other two blast doors at the ground level entrance protected the launch site and crew from any external blast pressures.[4]

The suspension system for the LCC was comprised of four air cylinder spring supports attached at the ceiling of the structure and at the first floor level. A small amount of "rattle" space, approximately 1 foot, served as a buffer between the steel crib and the outer wall of the LCC. Four level-detecting devices were mounted between the second floor level and the concrete base. If the floor level was lowered or tilted, the level sensing device would detect the change. Solenoid operated valves would then be actuated to allow compressed air to enter or bleed from the appropriate air cylinders in order to level the floor.[5]

The upper level of the LCC was divided into the following rooms: ready room and storage area; janitor room; latrine; kitchen; heating, venting and air conditioning (HVAC) room; and a medical supplies room. The ready room and storage area consisted of facilities such as bunks, lockers, bookshelves, etc. The air receiver tank, also located in this area, distributed pneumatic pressure to the support cylinders for the LCC. The HVAC room contained the equipment necessary to maintain the air temperature of the LCC within the required range of 70 to 80 degrees Fahrenheit. The function of the remainder of the rooms is self-explanatory.

The lower floor of the LCC was divided into various rooms in which the launch equipment was located. These rooms included the launch control room, an office, the battery

[3]Hansen, 22-23.

[4]Ibid., 9.

[5]Department of Missile and Space Training, Missile Launch/Missile Officer Student Study Guide, (Sheppard Air Force Base, Texas, 1964), 4.

room, and the communications and equipment room. The launch control room contained the panels and consoles necessary to initiate missile launch and monitor complex activities. The Facility Remote Control Panel (FRCP) provided a means of remote control and monitoring of various equipment. It did not monitor the operating ground equipment (OGE) or the missile itself. When a facility unit malfunctioned or when a hazardous condition existed, a light came on in one of the corresponding windows and a buzzer sounded. The Launch Control Console monitored and controlled the missile and associated ground equipment during standby and countdown. The Power Remote Control Panel (PRCP) provided for limited operation and monitoring of silo power generation equipment. The Control Station Manual Operating Level (CSMOL) panel contained the controls for raising and lowering the launch platform manually. Two LOX Tanking panels were located in the Launch Control Room so that in an emergency situation manual tanking and detanking could be accomplished. Other equipment included a Fire Alarm Cabinet and lighting panels that provided controlling circuit breakers for the lighting systems. The battery room contained battery banks used to provide power to the Communications and Equipment Room.

According to a classified report issued by Convair in 1960, the countdown for an Atlas missile would take no more than 15 minutes from receipt of the launch order.[6] This step-by-step procedure included fueling the missile, rechecking its systems operability, and the launch itself. The Missile Operations Officer was in command during the launch, assisted by a Guidance Control Officer (GCO) and a Launch Control Officer (LCO). The order to launch would include azimuth and range of the target, and type of burst (air or ground) to be used. This information was set remotely in the missile flight-control programmer and warhead-fusing system, and would be fed into the guidance station computer. Servicing functions, such as fueling and

[6]Atlas Intercontinental Ballistic Missile, United States Air Force WS 107A-1, April 1960. This report is deposited at the Air Force Historical Research Center at Maxwell Air Force Base in Montgomery Alabama (File # K208-20A). My thanks to Mr. John Lunndquist, PhD candidate, Duke University, for providing me with a copy of this report.

pressurization, were performed under the control of semiautomatic sequencers. The LCO initiated and monitored each sequence from his panel in the LCC and would also conduct final tests of the guidance and flight-control systems. Upon receiving a "missile ready" indication, the LCO would initiate the "missile commit" sequence 40 seconds before liftoff. In these last 40 seconds the igniters would be armed and the missile transferred to internal power. During ignition, the missile would be held in place until the amount of thrust reached the desired level. The hold-down mechanism would then release the missile. The umbilicals, or ground cable connectors, would be ejected once the missile reached a distance of 8 inches above the ground.