NPS Form 10-900-b
(Jan. 1987)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

Titan II ICBM Launch Complex Sites Associated with the 308th Strategic Missile Wing in Arkansas

B. Associated Historic Contexts

Synopsis of the 308th Strategic Missile Wing, Little Rock AFB, Arkansas: Construction, major historical events, deactivation

C. Geographical Data

White, Faulkner and Van Buren counties, Arkansas

☐ See continuation sheet

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.

Catherine D. Slatton — 12-17-99
Signature of certifying official — Date

AR SHPO
State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Carol R. Shull — 2/10/00
Signature of the Keeper of the National Register — Date

ICBM Program History

Construction of an Intercontinental Ballistic Missile (ICBM) weapons system was considered in the late 1940s, but shelved because of budgetary constraints. It was not until the Soviet Union detonated its first thermonuclear bomb in 1953 in the wake of the Korean War that the United States, fearing the Soviets were ahead of the West in developing an intercontinental delivery system, became committed to the need for an ICBM weapon.[1]

Prior to the advent of the Inter-Continental Ballistic Missile, long-range bombers were the mainstays for strategic nuclear weapon delivery. ICBMs provided the third leg to the triad of manned bombers, land-based ICBMs, and sea launched ballistic missiles, or SLBMs. Not as accurate as bombers, ICBMs were favored because they were rapid and nearly impossible to defend against. Ranging 30 to 35 minutes to reach their targets, ICBMs offered the enemy less warning than bombers, which required hours to deliver. While they had the disadvantage of not having the ability to be recalled once launched, they had the advantage of having a potential first strike capability. ICBMs were designed to nullify the fighting capability of an enemy in one strike. Any retaliatory strike the enemy produced would have to be absorbed while a second strike of remaining missiles and bombers rallied to attack remaining targets. This is the origin of the concept of mutually assured destruction, the notion that a volley of ICBMs would result in total devastation on both sides.[2] This potential first strike capability and rapid response capability made the ICBM a very survivable weapon system that directly supported the initial strategic nuclear war policy of the United States: mutual assured destruction (MAD).

Atlas System

---

[1] David K. Stumpf, "Titan II ICBM Missile Site 8 (571-7) National Historic Landmark Nomination," (hereafter referred to as Stumpf, NHL), September 1993, pp. 10-11.

[2] David K. Stumpf, "Titan II: A History of a Cold War Missile Program," (Fayetteville, AR: University of Arkansas Press) From Chapter VI of book to be published in Spring 2000, copy supplied by author. (Referred to hereafter as Stumpf, History.) P. 2.

The first generation of ICBMs included the Atlas system, which in its most advanced form took at least 15 to20 minutes to fuel, raise to the surface from its silo, and launch. The first Atlas silos were almost completely unprotected, though hardened silos were later implemented. Still, the missiles had to be raised to the surface prior to launching. The first Atlas missile was placed on alert at Vandenberg AFB, California, on October 31, 1959; by the end of 1962, a total of 132 Atlas missiles were operational, manned by 13 squadrons.[3]

Titan I Program

Simultaneously with development of the Atlas systems, the Titan I program started "as a hedge against the catastrophic failure of the Atlas design."[4] All of the first generation missile systems were liquid fueled.[5] Titan I's rigid airframe allowed easier maintenance and faster fueling, and included several other improvements that couldn't be incorporated into operational Atlas missiles. The silos containing Titan I missiles were designed so that they were much easier to harden. The first Titan I ICBMs were placed on alert at Lowery AFB, Colorado, on April 20, 1962; by the end of the year, six squadrons manned a total of 56 operational Titan I missiles.[6]

Because of problems with development of long-range guidance systems for the ICBM systems, a pair of Intermediate-Range Ballistic Missile (IRBM) systems was developed: Thor and Jupiter, which were intended to counter immediate Soviet nuclear capabilities. Thor, the Air Force IRBM, featured 60 missiles deployed in the United Kingdom from June 1960 to November 1962, after which they were taken off alert and removed. A total of 30 Jupiters were deployed in Italy from April 1961 to April 1963; others were based in Turkey from March 1962 to April 1963. All equipment was removed from both countries by July 1963.[7]

---

[3] Stumpf, NHL. Pp. 11-12.

[4] Ibid, p. 12.

[5] Ibid, p. 18.

[6] Ibid.

[7] Ibid, pp. 12-13.

The most important design feature of the ICBM that increased its potential of survivability was its deployment in hardened missile silos. The purpose of hardened missile silos and the ICBMs they housed, as stated by the Department of Defense in the early 1960s, was deterrence. War would be prevented by the threat of retaliatory punishment for Soviet or Chinese nuclear aggression. As stated by Robert S. McNamara in 1963, "with secure retaliatory forces on both sides neither would need to fear a disarming blow from the other." President Kennedy ordered a build-up to close a perceived gap between the U.S. and the U.S.S.R that left the U.S. vulnerable to nuclear attack by superior numbers and capabilities of Soviet nuclear forces. According to experts however, this policy, "didn't close a gap but opened one up, to the disadvantage of the U.S.S.R."[8]

Titan II Program

The next generation of ICBMs consisted of the Minuteman and Titan II weapons systems. Minuteman I, and the Navy's submarine-based Polaris system, capitalized on breakthroughs in solid rocket fuel technology. Like the first generation missiles, Minuteman I carried a single warhead and re-entry vehicle. Minuteman III was improved to where it could carry "three multiple independently targeted re-entry vehicles, plus decoys." The first Minuteman I missile was deployed in 1963; four years later, 1,000 Minuteman I and II missiles were on alert. At its height, following a modernization program completed in 1975, a total of 450 Minuteman II and 550 Minuteman III missiles were operational.[9]

The Martin Company proposed a second generation of Titan missiles in 1958 that would significantly improve on the capabilities of the first generation of ICBMs. This Titan II system would be fueled by materials that could be stored on-board the missiles, eliminating the 15 to 20 minutes needed to raise, fuel and launch the Atlas and Titan I system missiles. Indeed, the Titan II could be launched directly from its underground silo

---

[8] Michael Mandelbaum, *The Nuclear Question: The United States and Nuclear Weapons, 1946-1976,* Cambridge Univ. Press: Cambridge, New York, 1979, pp. 75, 88-89.

[9] Stumpf, NHL. P. 14.

~~in less than one minute. "Titan II contained an all-inertial guidance system and had a~~ range of 6,000 miles."[10]

Deployment of Titan II was approved by the Air Force in October 1959, and two Strategic Missile Squadrons of nine missiles each were established at Little Rock AFB in Arkansas (308th Strategic Missile Wing), Davis-Montham AFB in Arizona (390th SMW), and McConnell AFB in Kansas (381st SMW).[11] In December 1963, when 54 Titan II missiles achieved full alert status they joined 123 Atlas, and 310 Minuteman missiles in a land-base force totaling 487 ICBMs. By 3 May 1967 the land-based ICBM force reached its maximum, with 54 Titan II and 1,000 Minuteman missiles.[12]

Titan II ICBMs were given a design range of 5,500 nautical miles with the Mark 6 reentry vehicle making targets in the U.S.S.R and China vulnerable to attack. Although specific targets for Titan II missiles remain classified they would likely have been aimed at "core areas," such as military, political, economic, or cultural centers.[13] Selections for silo locations in the United States were based on several factors: geology, availability of an existing base that could serve as support, excellent transportation, work force, and a relatively uninhabited flight path for missile trajectories.[14]

Beginning in August 1960, the Joint Strategic Target Planning Staff (JSTPS) coordinated U.S. nuclear war plans. They formulated several targeting plans designed to counter the Chinese-Soviet nuclear threat. In September 1962, the plan known as SIOP-63 was adopted. Allowing greater flexibility than earlier plans, this strategy incorporated five major target categories: Soviet nuclear forces; military facilities located away from urban areas; Soviet conventional forces close to urban areas; command and control centers; and total attack, including all of the above. From 1963 to 1974 Titan II served within SIOP-63 as the premier strategic weapon "...for use against a collection of soft targets that could be damaged by a single, high yield weapon." Under this plan, "the intent of the American response to a nuclear attack was," according to Secretary of Defense, Robert S.

---

[10] Ibid.

[11] Ibid, p. 15.

[12] Stumpf, "History," p. 2.

[13] Ibid, p. 1.

[14] David Stumpf (via e-mail) quoting Senator Barry Goldwater.

McNamara, "... to inflict an unacceptable degree of damage upon a single aggressor, or combination of aggressors, even after absorbing a surprise first strike." Titan II accounted for approximately 27 percent of the nuclear capability of the strategic nuclear alert forces and nearly 7 percent of the total strategic nuclear capability of the country in 1964. [15]

SIOP-5 replaced its predecessor in January 1976 and allowed for limited attack scenarios designed to reduce the probability of escalation to all out nuclear war. Newer technologies like Minuteman III and Poseidon and Trident submarine-launched warheads allowed precise targeting with far less collateral damage than the Titan II. Evidently, the two Strategic Arms Limitation Treaty agreements in 1972 and 1979 had little effect on Titan II. As late as September 1979, the Congressional Budget Office allocated funding for 54 Titan II silos to cover the 1980-84 time frame.[16]

On September 24, 1981, the Reagan administration announced the retirement of the Titan II system. On Armistice Day, November 11, 1981, the plan to deactivate one silo per month, conditions permitting, was released. In February 1982, General Bennie Davis, USAF, Commander-in-Chief, Strategic Air Command, explained the rationale for deactivation of the Titan II missiles in testimony before the Senate Committee on Armed Services. General Davis described Titan II as:

"... Designed at a time when the United States possessed a marked nuclear superiority, and the assured ability to destroy a large portion of Soviet society was viewed as the most credible deterrent to both nuclear and conventional war. The Titan II's massive yield and relatively poor accuracy tied in well with a strategy of massive retaliation where accuracy and discrimination were neither essential nor possible. The Titan II was a highly effective weapon for use against a collection of soft targets that could be damaged by a single, high-yield weapon."[17]

Four major reasons for deactivation were given. First were safety concerns due to recent accidents at Rock, Kansas, in August 1978 and at Southside, Arkansas, in September 1980. The second consideration was that funding for much-needed upgrades could be

---

[15] Stumpf, "History," pp. 5-6.

[16] Ibid, p. 8.

[17] Ibid, p. 10.

better spent on more modern systems. Third, more accurate smaller yield weapons were more in line with the current SIOP-6 war plan. Finally, Titan II silos hardening (300 pounds per square inch) against nuclear blast effects was insufficient when compared to more modern systems, like those of Minuteman III (2000 pounds per square inch) and their Soviet counterparts.[18]

The first Titan II removed under the deactivation program was at the 390th Strategic Missile Wing, Davis-Monthan AFB, Arizona, on September 29, 1982 and the last missile was removed on May 6, 1987 at the 308th Strategic Missile Wing, Little Rock AFB, Arkansas.[19]

The Titan II program spanned a 27-year period from December 1960 to May 1987. Its story is that of the evolution of U.S. nuclear policy. When MAD was the name of the game, the high-yield Titan II system met its design criteria for enemy intimidation. The Soviets were advocates of large yield weapons. As a result they feared and respected the Titan more than any other U.S. weapon system at the time. But technological advancements, such as submarine launch capabilities and the pinpoint accuracy of smaller-yield missiles, changed U.S. nuclear strategy. High-yield weapons and strategies of mutually assured destruction fell into disfavor. New technologies and ways of thinking about nuclear warfare combined with the inevitable need for expensive system upgrades brought an end to the Titan II system's era.

Physical Description of Titan II Missile Launch Complexes

The typical aboveground portion of a Titan II missile launch complex consisted of a square, 3.3-acre area surrounded by an eight-foot-high chain-link security fence topped with barbed wire. While the vast majority of the equipment and the complex's superstructure were located below ground, the typical complex had many common surface features.

Access to the typical Arkansas launch complex was via a paved, two-lane blacktop road, culminating in a security fence and large, sliding security gate that marked the entrance to the complex. The most distinctive feature within the complex was a huge steel and

[18] Ibid.

[19] Ibid, p. 11.

reinforced concrete door, mounted on steel rails that covered the opening of the launch duct containing the 103-foot-tall missile. This door provided blast protection for the missile during an attack and would slide back on the rails prior to a missile launch. The access portal to the complex and the launch control center was located approximately 200 feet from the launch duct.

On the surface at various locations around the complex were four tall poles and two tall communication antennas rising anywhere from 20 to 60 feet in the air. The four wooden poles supported an above-ground warning beacon and siren that was activated during emergencies, a monopole antenna used for above-ground communication with the missile crew, a DELT T used to measure temperature differentials during missile fueling and defueling operations, and a wind direction and speed transmitter used during emergencies and to provide landing information to helicopter crews approaching the complex. The two steel Intercomplex Radio Communications System (IRCS) antennas were used for communications by the missile and maintenance crews with the wing command post at the main base. These two antennas, one of which was designated a diversity antenna, were supported on fixed, stationary concrete slabs. All other surface features were more or less flush with the surface to provide for some protection from blast effects during an attack.

Other surface features included two concrete pads on either side of the silo door used to support fuel and oxidizer servicing trailers during fueling and defueling operations; three round concrete pads with steel, hinged doors that marked the top of extendable underground communication antennas (used for high frequency and diversity communications redundancy in case of an attack); a concrete pad with a hinged steel door covering the access portal; a concrete and steel ring that covered the control center air intake shaft; a revetted cooling tower pit that housed the equipment that maintained proper temperature and humidity conditions for the liquid-fueled missile; and numerous small pumps, valves and gauges that were used to perform and monitor various operations.

The vast majority of the complex was located below ground to afford protection from a missile attack. As with the above-ground components of these complexes, the underground components of all 18 complexes were, and are, virtually identical (while the missile and much of the massive amount of support equipment were removed during deactivation, the superstructure that housed this equipment and missile remains almost totally intact underground).

Starting from the access portal and moving through the complex, entry to the complex was either through a stairway or by way of an equipment elevator that was sent up by the missile crew on duty. After passing through various security doors, complex crews had to pass through two blast lock areas that were secured by a total of four massive, 6,000-pound doors made of steel I beams welded together; these were designed to help protect the crew and the missile from blast pressure should the complex be attacked. Once past the blast doors, the crew entered into the launch control center (LCC). The LCC had three floors. The top floor consisted of the crew sleeping quarters, kitchen and bathroom. The middle floor housed the heart of the LCC with the launch control consoles and all the equipment necessary to launch and monitor the launch of the missile. The bottom floor housed the massive array of communications equipment associated with the complex's operations. To leave the LCC and go to the missile launch duct, crew members entered a short underground cable way, passed through two more blast doors and entered a long, underground cable way that led to the nine-level equipment area surrounding the actual launch duct. The long cableway entered onto level two of this equipment area. All other levels were normally accessed by an elevator but could also be reached by ladders if necessary. The nine-level equipment area housed the massive amount of support equipment required by the liquid-fueled missile, all of which was checked by the crew at least twice a day. The launch duct contained the missile and could be accessed from all nine levels of the equipment area through steel doors.

Arkansas's Role in the Titan II Program: The 308th Strategic Missile Wing

Titan II was deployed in a 1x9 configuration, nine missiles per squadron, and two squadrons per missile wing. A total of 54 missiles were deployed, 18 at the 308th Strategic Missile Wing (SMW), Little Rock AFB, Arkansas; 18 at the 381st SMW, McConnell AFB, Kansas and 18 at the 390th SMW, Davis-Monthan AFB, Tucson, Arizona. The Titan II system was declared fully operational on 31 December 1963.

Figure 1 locates each of the 18 sites surrounding Little Rock. Figure 3 is a launch complex site map illustrating the relative location of above ground and below ground facilities. Figure 4 is a site elevation showing the magnitude of the underground components. Figure 5 is a cutaway drawing that describes major equipment location.

The Titan II era in Arkansas began on 23 June 1960 when Headquarters, U.S. Air Force designated Little Rock AFB, Jacksonville, Arkansas, as the site for the third Titan II ICBM

wing. In December 1961, Headquarters, Strategic Air Command (SAC), assigned the 308th SMW to the 2nd Air Force, 825th Strategic Aerospace Division. On 1 April 1962, the 308th SMW was activated. Two squadrons were assigned, the 373rd Strategic Missile Squadron (SMS) and the 308th Missile Maintenance Squadron, Colonel C. P. Sullivan, acting commander. On 1 June 1962, the 308th received its first commander, Colonel C.H. Davison. On 1 September 1962, the 374th SMS was activated, along with the 308th Headquarters Squadron.

On 5 October 1960, the Little Rock Area Office of the U.S. Army Corps of Engineers Ballistic Missile Construction Office was established at Little Rock AFB, Jacksonville, Arkansas, with Colonel R.E. Snetzer, Area Engineer. Four months earlier, the Little Rock District, Army Corps of Engineers, and an Air Force siting team had surveyed a general area around Jacksonville, selecting 23 possible sites for the 18 silo emplacements. A more detailed investigation, including subsurface and topographic surveys, as well as surface water studies, took place in June 1960. By the end of August 1960, final decisions on the 18 sites had been made. Construction began on 3 January 61 at Launch Complex 373-4 near Pangburn in White County. Table 1 lists the sites with major construction, activation and deactivation milestones.

Unlike the McConnell AFB and Davis-Monthan AFB geology, the sites around Little Rock were characterized, with one exception, with shallow overburden. This required extensive blasting in order to excavate a "working bench" area at the collar beam level. Spaces were cramped at both the launch control center and silo shaft area and much of the work ordinarily done at this work bench level was done elsewhere on the site. Due to this narrow work bench area, and the varying height from the working bench level to the collar beam, a special structural steel bridge pier was fabricated at each of the sites to enable operation of the 50-ton crane. This bridge spanned the silo and also served as support for the personnel elevator and fresh air supply tube. It also served to carry the main load of the slip-forms used to construct the silo walls.

On 6 February 1963, the 308th received its first Titan II missile, B-8 (61-2762). The missile was unloaded and taken to the Missile Assembly and Maintenance Shop where major discrepancies were discovered, including a thrust chamber leak in the Stage I engine and seal failures in the oxidizer pump and gearbox of Stage II. These discrepancies threatened to delay the programmed installation of the missile into Launch Complex 373-4, near Pangburn, Arkansas. Fortunately a second missile, B-20 (61-2774), arrived on 22 February and was installed at Launch Complex 373-4 on 28 February 1963. Three months

later, on 16 May 1963, Launch Complex 373-4 became the first 308th SMW Titan II launch complex to be placed on strategic alert. The missile combat crew composed of Major J.R. Rhoads, Missile Combat Crew Commander (MCCC); 1st Lieutenant J.E. Vannoppen, Deputy Missile Combat Crew Commander (DMCCC); Senior Master Sergeant W. Kundis, Ballistic Missile Analyst Technician (BMAT); and Airman 2nd Class U.F. Ainsworth, Missile Facilities Technician (MFT).

On 6 June 1963, missile B-36 (62-0017) arrived at the 308th SMW, the ninth Titan II delivered to the wing. By the end of June all nine were installed but on 26 June 1963, missile B-20 was removed from strategic alert status because of an oxidizer leak. Stage I had to be removed and returned to Denver for repairs. By 30 June 1963 only two complexes, 373-5 near Center Hill in White County and 373-7 near Velvet Ridge in White County were in an emergency combat capability status due to oxidizer leaks in the remaining missiles. By 30 September 1963, the 308th had four complexes, 373-4 near Pangburn in White County, 374-4 near Springfield in Conway County, 373-5 and 373-7, in emergency combat capability status due to the continuing oxidizer leakage problems. Actual turnover of all sites to the 373rd SMS took place on 29 November and for the 374th SMS, 28 December 1963. Three days later, the 308th SMW had 18 missile complexes in an emergency combat capability status. Even in late December, oxidizer leaks were still causing some missiles to be removed from emergency combat capability status but the Air Force had directed all Titan II complexes to be turned over to SAC by the end of 1963. Only extensive efforts by the Site Activation Task Force personnel and those of the 308th SMW permitted this directive to be accomplished.

A missile crew manned each complex 24 hours a day, seven days a week, 365 days a year. A crew consisted of four people: the missile combat crew commander (MCCC) who was in charge of the crew and had overall responsibility for the complex and all ongoing operations; the deputy combat crew commander (DMCCC) who backed up the MCCC and had overall responsibility for all the communications equipment; the ballistic missile analyst technician (BMAT) who was responsible for the missile's guidance system; and the missile facilities technician (MFT) who was responsible for monitoring all the support equipment in the nine-level equipment area. The MCCC and DMCCC were military officers while the BMAT and MFT were military enlisted personnel.

A tour of duty at a missile complex by a missile crew, called an alert tour, lasted 24 hours. At the end of an alert tour, the crew was relieved at the complex by the oncoming crew. Most crews pulled eight alert tours per month. A typical alert tour began with a 6

a.m. predeparture briefing for all 18 ongoing crews at the main base. Crews would be briefed on the alert status of their particular complex, any maintenance that was or would be occurring at their complex during the next 24 hours, and the readiness level of the nation's strategic military forces. After the 30-minute predeparture briefing, the crews would load their personal gear into their crew van and depart for their assigned complex. Travel time to the various Arkansas complexes varied from 30 to 90 minutes, depending on the complex's location. On arrival at the complex the ongoing crew would conduct a change over inspection during which all equipment on the surface, in the LCC, and on all nine levels of the equipment area, as well as the missile itself, would be checked. The departing crew would then brief the ongoing crew. Once satisfied with the condition and status of the complex, the ongoing MCCC would sign for the complex, thereby officially assuming responsibility for it. The departing crew would then leave the complex in the crew van and return to the main base.

Required activities by the crew while on alert at the complex varied greatly from one alert tour to the next. Complex, time-consuming tests often had to be conducted either on the missile itself or on major components of the support equipment. Scheduled or nonscheduled exercises executed by the Strategic Air Command Headquarters (SAC) in Omaha, Nebraska, required the crews to perform certain activities directed by coded communication transmissions. Maintenance crews were usually on site conducting maintenance operations on various components of the complex. The crew was responsible for the activities of these maintenance crews and had to coordinate with them as they conducted their procedures. Some of these maintenance activities were exceptionally complex and hazardous, such as fueling or defueling operations that required anywhere from several days to weeks and dozens of maintenance personnel to complete. The crew also conducted routine monitoring activities during each alert tour. Crews slept in shifts as at least one officer and one enlisted person had to be awake and on level two of the LCC at all times. Crew officers were armed at all times while on alert.

Two of the Titan II program's biggest disasters occurred at Arkansas launch complexes. On August 9, 1965, 53 civilian workers modifying Launch Complex 373-4 near Pangburn died in an accidental fire that was ruled caused by human error. On September 20, 1980, an Air Force maintenance worker dropped a wrench socket in the launch duct, puncturing the skin of the missile and causing a fuel leak. The missile exploded the next day, killing an airman and showering tons of wreckage as far as a half mile from the launch complex. Air Force

and congressional hearings ruled that this accident too was caused by human error and that the Titan II system was sound, but unforgiving of mistakes.[20]

On 15 August 1986, just 17 days shy of 24 years of service, the 374th SMS was formally deactivated. By November 1986 eight of the launch complexes had been deactivated. On 19 November 1986 at 1200 civilian demolition experts set off the explosive charges that destroyed the headworks at Launch Complex 374-9 near Quitman in Cleburne County. The contractor had spent 20 hours drilling 405 holes and placing 6,500 pounds of liquid and solid explosives, including T-5, T-100 and T-500 ammonium nitrate, which remained inert until combined and ignited. The resulting explosion both exploded and imploded the silo structure, helping to fill the launch duct with rubble. The top 25 feet of silo structure was thoroughly destroyed. The blast shook the ground more than 1,500 feet away and was witnessed by a small crowd of reporters, photographers, police officers, military personnel and onlookers who had gathered on a small hill overlooking the site.

Two officials from the Tennessee Earthquake Information Center were among the crowd. They had placed 19 seismic meters in a straight line that lead directly east of the site. They were hoping that the blast might help locate an underground fault that was suspected of being the cause for some 50,000 minor earthquakes that had started at Enola, Arkansas, in January 1982.

The next phase of dismantlement required excavation of the soil surrounding the silo to a depth of 25 feet and then left for six months of Soviet satellite observation. At the end of this period, the launch duct would be filled with debris, and capped with a steel and concrete cover. The crater would then be brought back to a level grade and seeded with grass. All 18 sites were scheduled to be destroyed and regraded by November 1988.

On 14 July 1987 at Launch Complex 373-8 near Judsonia in White County, the missile combat crew composed of Captain J.N. Couch, MCCC; Captain S.W. Martin, DMCCC; Technical Sergeant J.P. Ross, BMAT; and Technical Sergeant M.W. Lee, MFT, completed the last 24-hour alert tour of the 308th SMW and the Titan II program. Deactivation activity had begun on 5 May 1987 as Launch Complex 373-8 was taken off of alert.

---

[20] David K. Stumpf, "Titan II: A History of a Cold War Missile Program," (Fayetteville, AR: University of Arkansas Press) From Chapter IX of book to be published in Spring 2000, copy supplied by author.

The 308th SMW and 373rd SMS were formally deactivated on 18 August 1987. General Chain, Commander-in-Chief, Strategic Air Command, presided over the ceremony that ended 25 years, four months and 18 days of service. Lieutenant C.D. Payne, the 308th Assistant Deputy Commander for Maintenance assumed command of Detachment 1, 19th Air Division, the last SAC unit at Little Rock AFB. Detachment 1 had been formed to process the remaining equipment and personnel from the 308th SMW.

National Register Consideration: Arkansas's Titan II Launch Complex Sites

Three Titan II ICBM Launch Complex Sites in Arkansas are being submitted for National Register consideration: Titan II ICBM Launch Complex 374-5 Site near Springhill in Faulkner County, Titan II ICBM Launch Complex Site 373-5 near Center Hill in White County, and Titan II ICBM Launch Complex 374-7 Site near Southside in Van Buren County.

Any consideration of the eligibility of these sites must be measured against the existence of Titan II ICBM Launch Complex 571-7 at Green Valley, AZ, which has been preserved intact and was, in fact, designated a National Historic Landmark in 1993. While 571-7 is unquestionably the most significant launch complex site associated with the Titan II program, it does not tell the entire story of Titan II. The complex was part of the 390th SMW based out of Davis-Monthan AFB in Tucson, AZ, one of three Strategic Missile Wings comprised of six Strategic Missile Squadrons, each of which was served by thousands of airmen and officers over the 27-year history of the Titan II program. Each of these squadrons manned the largest, deadliest missiles in the United States' arsenal, providing a crucial link in the land-sea-air nuclear triad that kept the Cold War from becoming something more. The exceptionally significant mission of these squadrons justifies inclusion of the best, most-intact representative sites of their service and struggles. Indeed, documentation of the remaining launch complex sites in Kansas and Arizona would be warranted to identify those sites best associated with the remaining three Strategic Missile Squadrons.

The 571-7 site, because of its intact nature, also fails to reflect the entire span of the Titan II ICBM launch complex story. All of the other launch complexes were decommissioned, their aboveground components removed, launch ducts blasted and filled, control centers and access portals closed off and sealed. The best examples of sites that contain the site and terrain features that distinguished the layout of the complexes when active while reflecting the demolition activities associated with deactivation should be considered

exceptionally significant as the best representatives of the entire spans of their respective squadrons' history.

The training facilities at Vandenberg Air Force Base in California from which several Titan missiles were fired are not comparable to the Arkansas sites, in that they were never placed on alert status and thus are not historically comparable to those Titan complexes that stood ready to launch nuclear missiles.[21]

Titan II ICBM Launch Complex 374-5 Site near Springhill in Faulkner County, Titan II ICBM Launch Complex Site 373-5 near Center Hill in White County are exceptionally significant as the most-intact sites associated with each of the two Strategic Missile Squadrons comprising the 308th Strategic Missile Wing, one of three SMWs responsible for manning the nation's Titan II launch complexes.

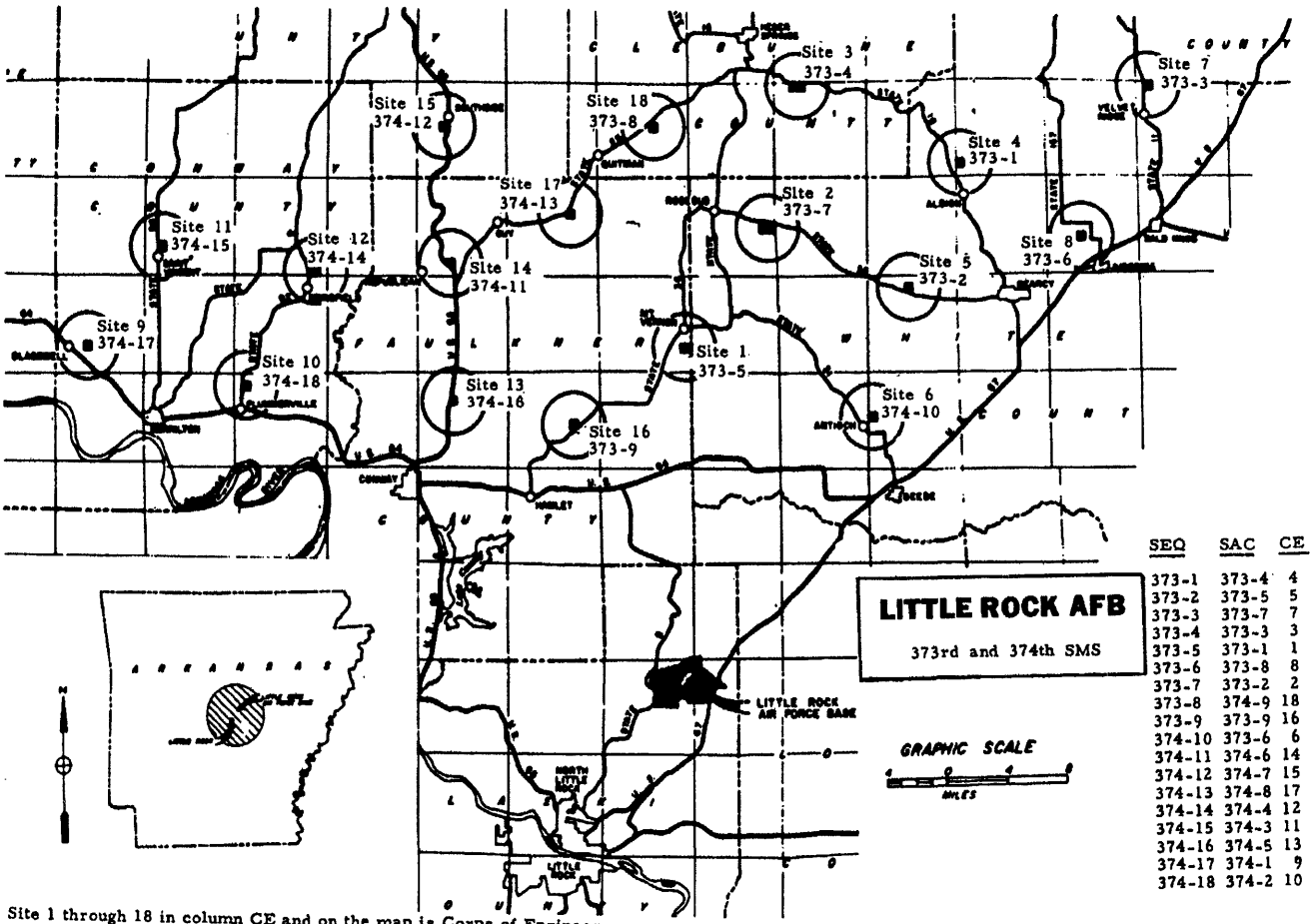
The third, Titan II ICBM Launch Complex 374-7 Site, is nationally significant for its unique role in Titan II history as the location of the September 1980 accident that resulted in an explosion that destroyed the complex's launch duct, hurled its nuclear warhead free, killed an airman, and brought the safety of the entire Titan II program into question. While the Rock, Kansas, accident also is cited as a source of safety concerns for the Titan II program, that accident was contained within the launch complex and did not result in the intense media and government scrutiny engendered by the Arkansas accident. This same accident resulted in Launch Complex 374-7 being the first of the 54 Titan II complexes to be removed from service.

[21] Stumpf, NHL, p. 18.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page 15



SEQ	SAC	CE
373-1	373-4	4
373-2	373-5	5
373-3	373-7	7
373-4	373-3	3
373-5	373-1	1
373-6	373-8	8
373-7	373-2	2
373-8	374-9	18
373-9	373-9	16
374-10	373-6	6
374-11	374-6	14
374-12	374-7	15
374-13	374-8	17
374-14	374-4	12
374-15	374-3	11
374-16	374-5	13
374-17	374-1	9
374-18	374-2	10

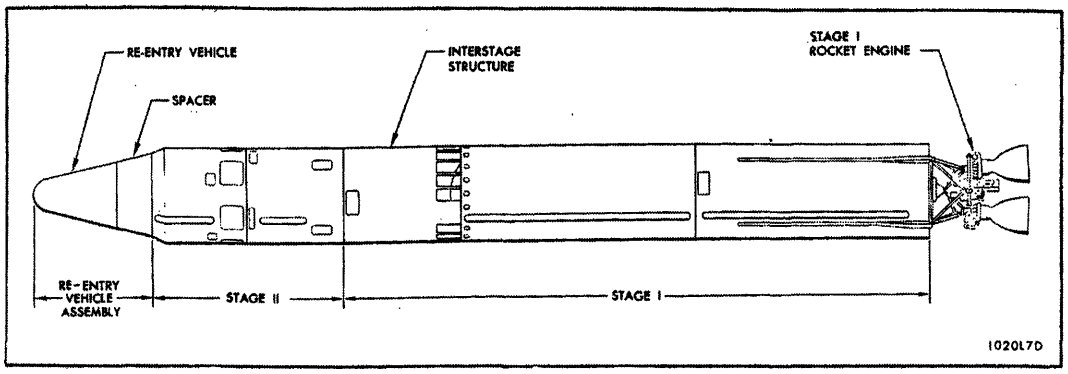
Site 1 through 18 in column CE and on the map is Corps of Engineer identification. 373-1 through 374-18 in column SEQ and on the map is Squadron/Complex identification for Titan II Master Schedules. The Squadron/Complex number also indicates the sequence of Air Force acceptance. 373-1 through 373-9 and 374-1 through 374-9 in column SAC are SAC operational launcher designations. * Denotes location of Alternate Command Post (ACP).

Figure 1. Site Map for the 308th Strategic Missile Wing.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page 16



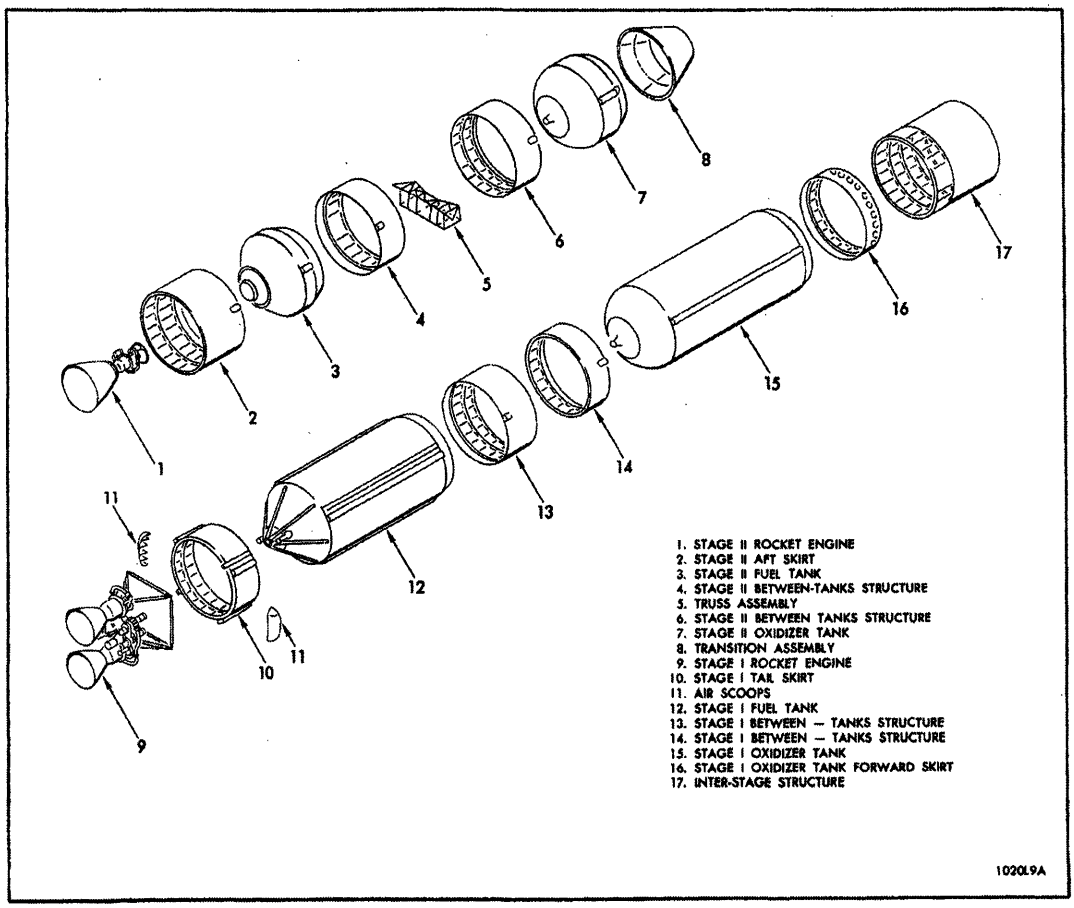


Figure 2. Titan II ICBM Airframe and Major Structural Elements

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page 17

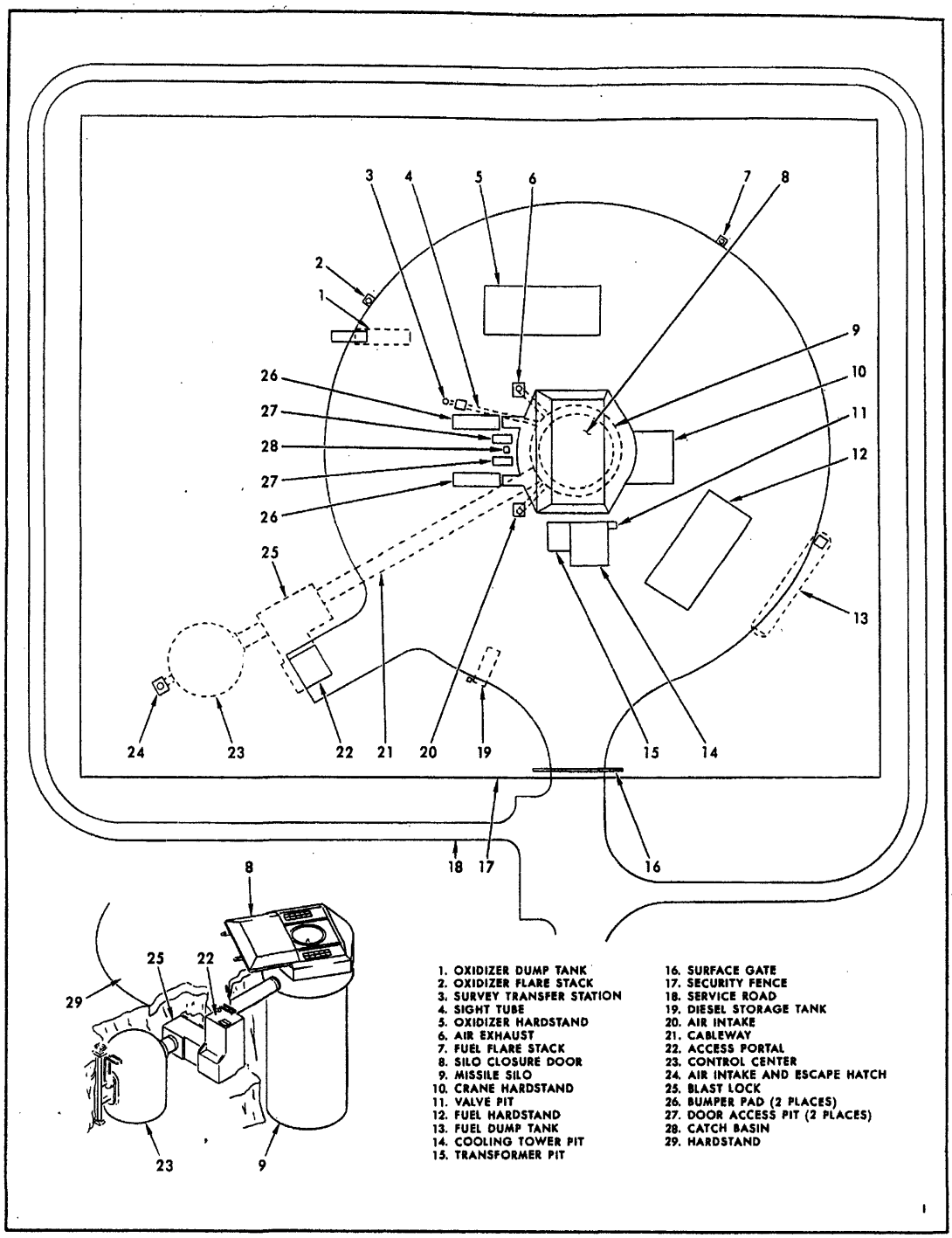


Figure 3. Typical Titan II Launch Complex Site Map

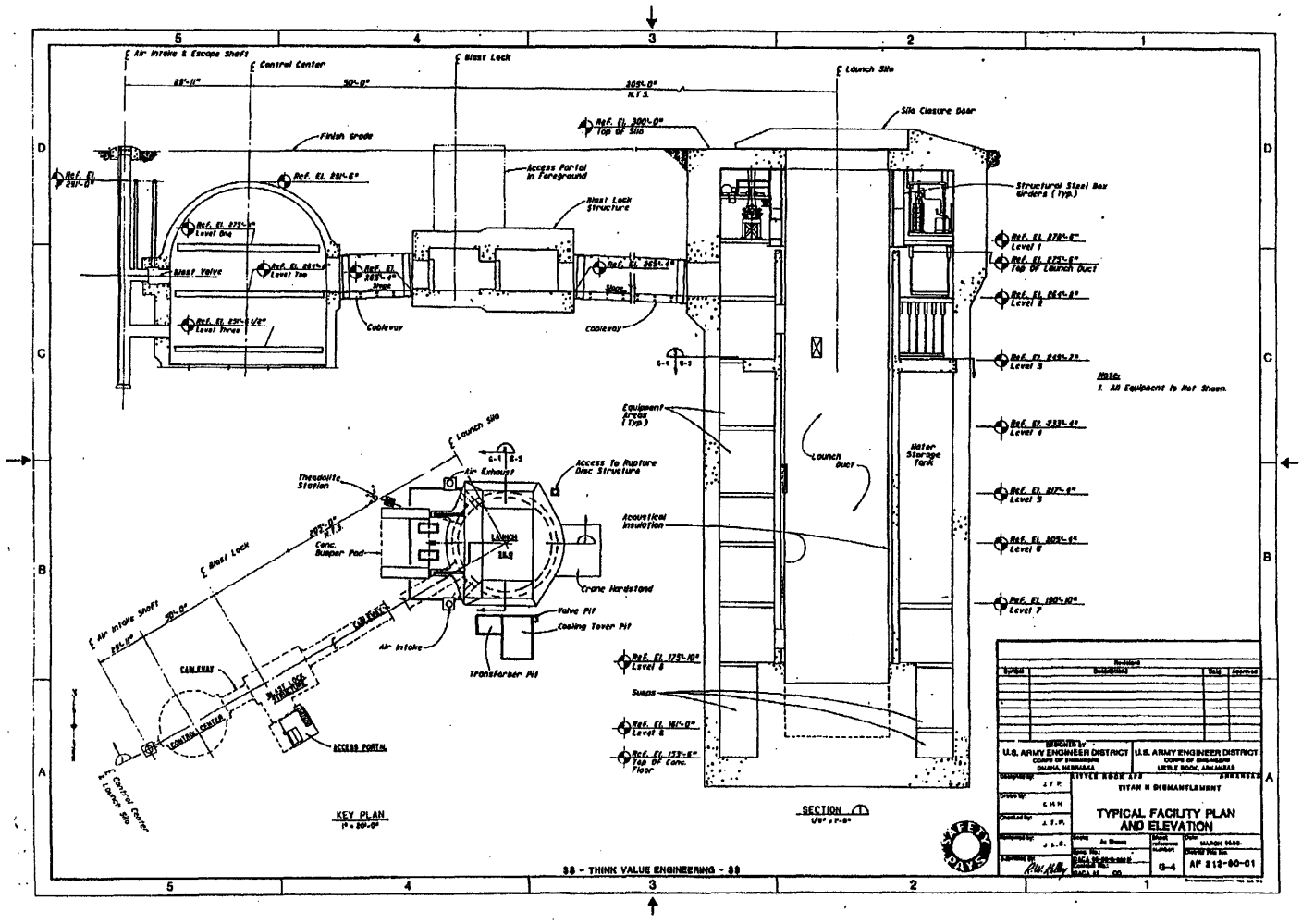


Figure 4. Typical Titan II Launch Complex Facility Plan and Elevation

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page 19

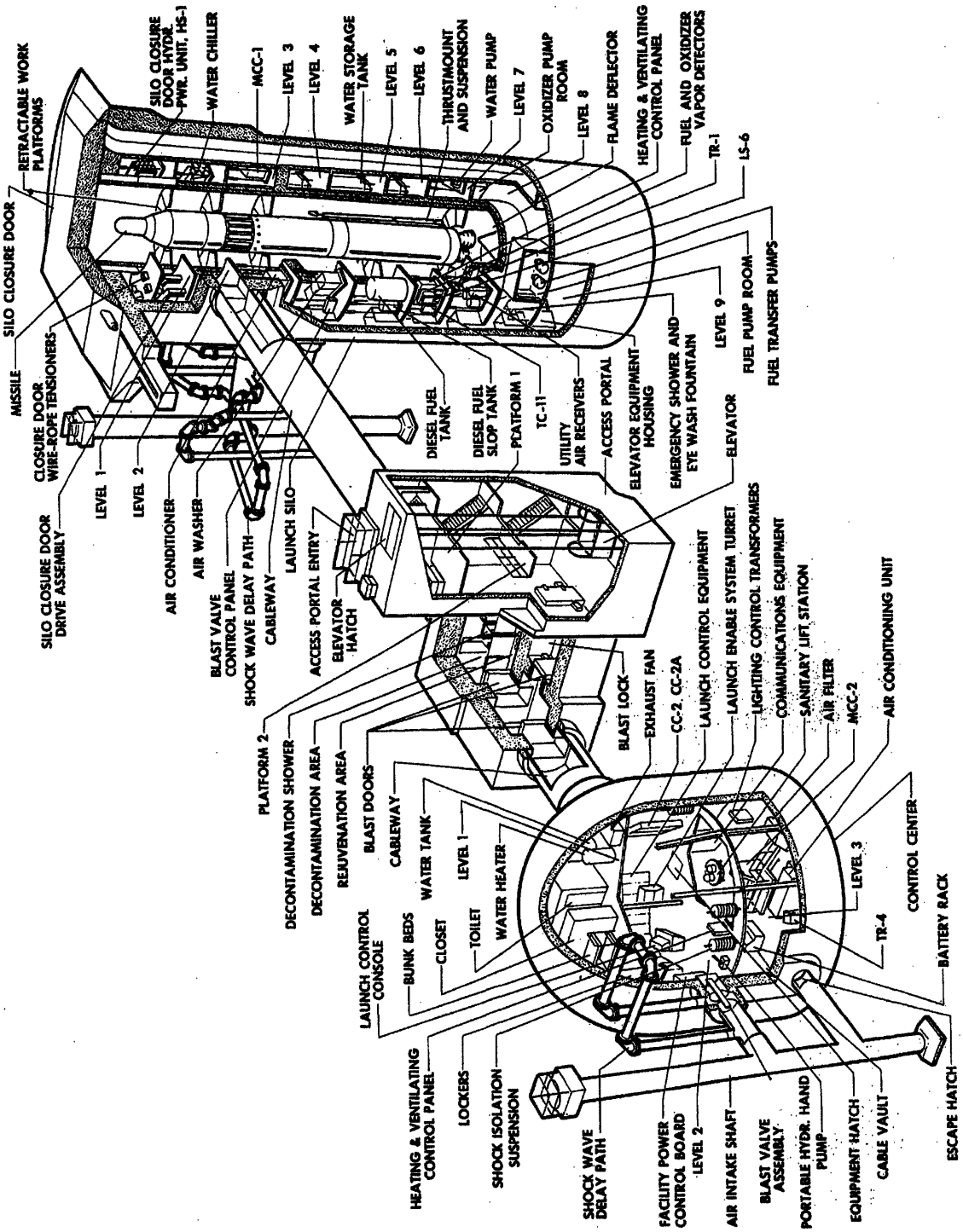


Figure 5. Cutaway of Titan II Launch Complex

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page 20

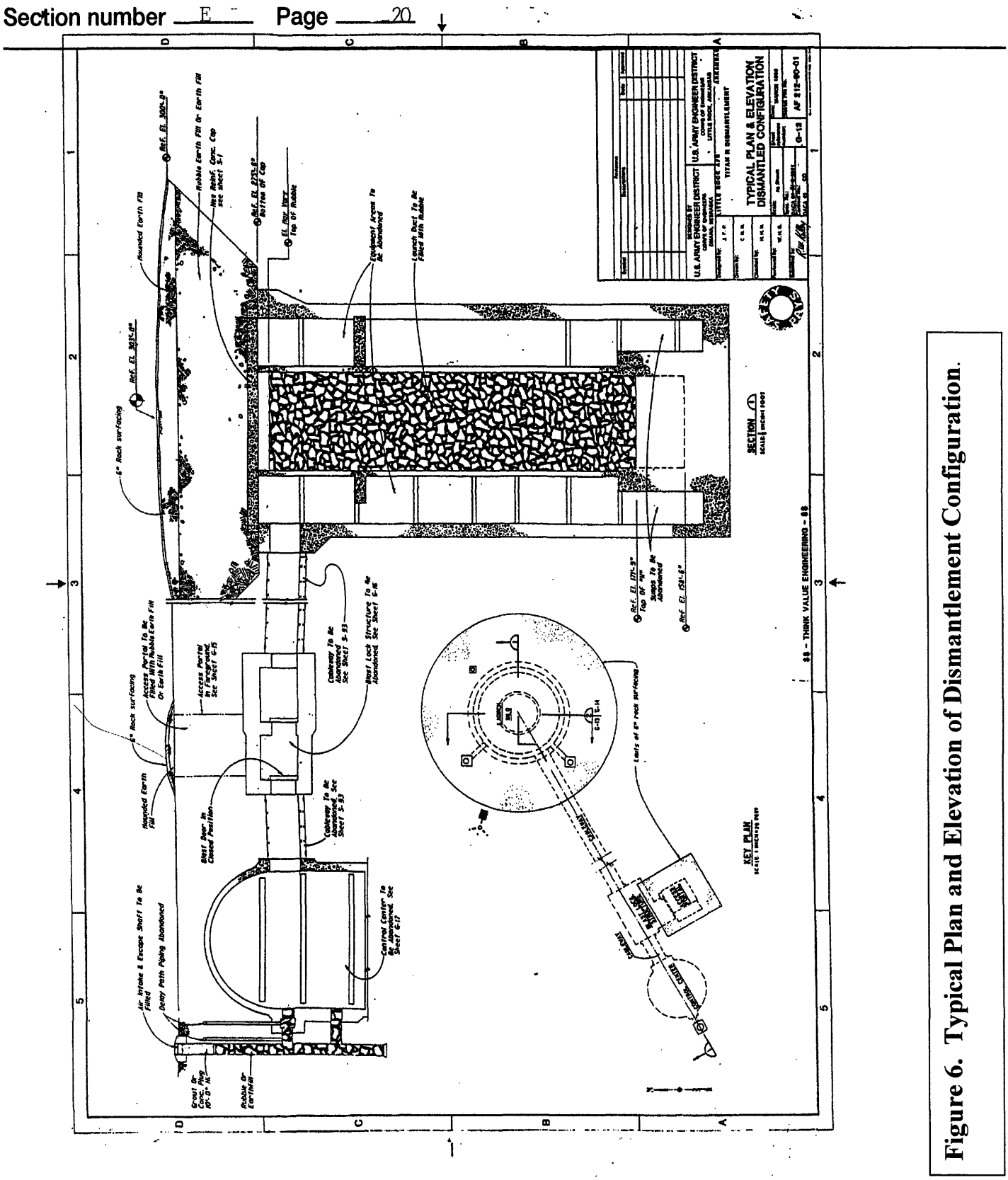


Figure 6. Typical Plan and Elevation of Dismantlement Configuration.

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page 21

Table 1. Milestone Dates for Silo Construction, Operation and Deactivation at the 308th Strategic Missile Wing, Little Rock AFB

Site		Phase I			Phase II			Phase IIA			MMC	Months	First			Years	
Number	complex #	Start	Complete	Months	Start	Complete	Months	Start	Complete	Months	SAC	to Alert	On Alert	Off Alert	On Alert	On Alert	
4	373-4	3-Jan-61	1-Sep-61	8	2-Sep-61	31-Jul-62	11	16-Feb-62	31-Jul-62	5	10	28	16-May-63	18-Feb-87	24		
5	373-5	3-Jan-61	5-Sep-61	8	5-Sep-61	14-Aug-62	11	5-Feb-62	14-Aug-62	6	10	29	15-Jun-63	20-Oct-86	23		
8	373-8	3-Jan-61	8-Sep-61	8	9-Sep-61	28-Aug-62	12	2-Feb-62	28-Aug-62	7	15	35	8-Dec-63	6-May-87	23		
7	373-7	5-Jan-61	19-Sep-61	8	20-Sep-61	16-Sep-62	12	14-Mar-62	16-Sep-62	6	9	30	26-Jun-63	3-Apr-86	23		
3	373-3	7-Jan-61	29-Sep-61	9	2-Oct-61	25-Sep-62	12	9-Feb-62	25-Sep-62	8	13	33	19-Oct-63	18-Mar-87	23		
2	373-2	9-Jan-61	11-Oct-61	9	16-Oct-61	9-Oct-62	12	21-Mar-62	9-Oct-62	7	14	35	29-Nov-63	4-May-87	23		
18	374-9	16-Jan-61	25-Oct-61	9	27-Oct-61	23-Oct-62	12	1-Apr-62	23-Oct-62	7	12	33	28-Oct-63	3-Oct-85	22		
1	373-1	23-Jan-61	26-Oct-61	9	13-Nov-61	6-Nov-62	12	29-Jan-62	6-Nov-62	9	12	34	15-Nov-63	5-Jan-87	23		
16	373-9	23-Jan-61	1-Nov-61	9	2-Dec-61	20-Nov-62	12	22-May-62	20-Nov-62	6	12	34	15-Nov-63	6-Feb-86	22		
6	373-6	19-Jan-61	9-Nov-61	10	4-Dec-61	29-Nov-62	12	15-May-62	29-Nov-62	7	12	34	23-Nov-63	20-Jun-85	22		
14	374-6	30-Jan-61	17-Nov-61	10	21-Dec-61	13-Dec-62	12	15-May-62	13-Dec-62	7	12	35	18-Dec-63	25-Jun-86	23		
15	374-7	30-Jan-61	28-Nov-61	10	1-Jan-62	27-Dec-62	12	9-Jul-62	27-Dec-62	6	12	35	18-Dec-63	21-Sep-80	17		
17	374-8	31-Jan-61	7-Dec-61	10	8-Jan-62	15-Jan-63	12	12-Jul-62	10-Jan-63	6	11	35	20-Dec-63	17-Mar-85	21		
12	374-4	6-Feb-61	14-Dec-61	10	20-Jan-62	24-Jan-63	12	31-Jul-62	24-Jan-63	6	11	35	28-Dec-63	27-Aug-86	23		
11	374-3	6-Feb-61	26-Dec-61	11	20-Jan-62	7-Feb-63	13	25-Sep-62	7-Feb-63	4	10	34	19-Dec-63	5-Aug-86	23		
13	374-5	15-Feb-61	19-Jan-62	11	8-Feb-62	26-Feb-63	13	26-Sep-62	26-Feb-63	5	10	34	26-Dec-63	19-May-86	22		
9	374-1	9-Feb-61	3-Mar-62	13	1-Mar-62	12-Mar-63	12	4-Oct-62	12-Mar-63	5	9	34	23-Dec-63	15-Aug-85	22		
10	374-2	14-Feb-61	23-Apr-62	14	23-Apr-62	26-Mar-63	11	8-Jun-62	26-Mar-63	10	9	34	19-Dec-63	15-Sep-86	23		
		long	long	14	long	long	13			10	15	35			24		
		short	short	8	short	short	11			4	9	28			17		
		average	average	10	average	average	12			6	11	33			23		

Table 2. Vandenberg Air Force Base Launch Operation Dates for the 308th Strategic Missile Wing

	Date	Launch Complex	Missile #		AF SN	Code Name	Op. #	Program	Unit
4	2-Oct-64	395-C	B-1		61-2755	Black Widow	W-4907	DASO	308th SMW
13	16-Aug-65	395-C	B-6		61-02760	Magic Lamp	W-7806	OT-8	308th SMW
14	26-Aug-65	395-D	B-19		61-2773	New Role	W-7835	OT-9	308th SMW
16	20-Oct-65	395-C	B-33		62-0014	Power Box	W-7849	OT-11	308th SMW
17	27-Nov-65	395-D	B-20		61-2774	Red Wagon	W-1404	OT-12	308th SMW
19	22-Dec-65	395-C	B-73		63-7728	Sea Rover	W-7914	OT-14	308th SMW
23	5-Apr-66	395-D	B-50		62-12293	Gold Ring	W-8020	OT-18	308th SMW
26	22-Jul-66	395-B	B-95		64-0459	Giant Train	W-7968	ST	308th SMW
30	12-Apr-67	395-B	B-81		63-7736	Glamor Girl	W-7995	FOT-5	308th SMW
33	30-Nov-67	395-B	B-69		63-7724	Glowing Bright 49	abort	FOT-8	308th SMW
42	27-Aug-71	395-C	B-100		65-10644	M2-1	W-0291	SSTTP	308th SMW
45	5-Oct-73	395-C	B-69		63-7724	M2-27	W-8340	SSTTP	308th SMW
48	9-Jan-75	395-C	B-27		62-0007	ST	W-2592	SOFT-1	308th SMW
51	27-Jun-76	395-C	B-17		62-2771	Rivet Hawk	W-8440	ITF-1	308th SMW

F. Associated Property Types

I. Name of Property Type: Titan II ICBM Launch Complex Sites

II. Description: All of the 308th Strategic Missile Wing Launch Complexes in this nomination were built between 1960 and 1963 and deactivated between 1980 and 1987. All nominated sites include extensive aboveground remnants of key launch complex facilities, including communications antenna bases, patrol road beds, access roads, hardened fuel and oxidizer trailer pads, and in some cases helicopter pads and theodolite siting markers. Every launch complex site includes extensive belowground structures, including intact control center and blast lock facilities and partial launch duct structures (the launch ducts were demolished to a depth of 30 feet, filled with rubble, and topped with earthen fill materials).

III. Significance: The significance of the Titan II ICBM Launch Complex sites included in this nomination derives chiefly from their importance as manifestations of the efforts of the 308th Strategic Missile Wing and its 373rd and 374th Strategic Missile Wings to present a strong nuclear deterrent during the United States' Cold War with the Soviet Union until their deactivation under President Reagan's arms modernization program. The launch complex sites are now almost all used as pasture land, deer-hunting club properties, or open meadows. They embody through their surface and subterranean site features the resolve to confront the Soviet Union in the 1960s, '70s and '80s. In much the same way as Civil War battlefields reflect the resolve of the soldiers of an earlier century, these abandoned sites reflect the duties and activities of a generation of soldiers who served on the front lines of the Cold War.

IV. Registration Requirements:

The Titan II ICBM Launch complexes included in this nomination were evaluated using the seven basic National Register "aspects of integrity" in order to be included in this multiple-property listing. All 18 Arkansas launch complexes surveyed have integrity of location, since the belowground components and surface features remain where originally constructed. Similarly, all surveyed launch complex sites have integrity of setting in that they remain in the largely rural, out-of-the-way locations where they were built – areas that generally have changed little since the late 1980s. However, the nominated launch complexes – 373-5, 374-5 and 374-7 – differed from those that were not in that they retained a high standard of integrity in regard to the other five aspects. Each nominated site had physical manifestations of all of the major components of the launch complex as outlined in the original engineer's design – the antenna bases, fuel and oxidizer hardstands, launch duct and control center locations, patrol roadbeds, etc. – that defined the sites when on active duty. In addition, two

sites also include the intact two-lane blacktop roads that provided access between the launch complex and the nearest main road and the helicopter landing pads sometimes used when crew members were transported by air, making them the most intact associated with their respective Strategic Missile Squadron. Those hardened concrete pads survived the trauma of deactivation, a credit to the workmanship and materials that devised a complex designed to withstand repeated nuclear blasts. Those complexes deemed ineligible within this study had suffered substantial post-deactivation alterations through removal of concrete pads, alterations of roadbeds, loss of helicopter pads, and construction of buildings and roads within the launch complex that substantially altered the appearance of the site. Those alterations compromised the integrity of workmanship, materials, feeling, and association to the degree that even an experienced eye would have difficulty interpreting the site as an ICBM launch complex. Thus, it is the changes that occurred after the demolition performed in decommissioning the sites that altered the bulk of the individual complexes to where they were considered ineligible within this study. The remaining sites best represent this property type in association with the activities of the 308th SMW and its constituent Stragegic Missile Squadrons in Arkansas.

G. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

☒ See continuation sheet

H. Major Bibliographical References

☒ See continuation sheet

Primary location of additional documentation:

- ☒ State historic preservation office
- ☐ Other State agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other

Specify repository: _____

I. Form Prepared By

name/title Mark Christ/Community Outreach Director
organization Arkansas Historic Preservation Program date 12-17-99
street & number 1500 Tower Building, 323 Center St. telephone (501) 324-9880
city or town Little Rock state AR zip code 72201

G. Summary of Identification and Evaluation Methods:

In June of 1998, the Arkansas Historic Preservation Program (AHPP) initiated a context-driven survey of Cold War resources associated with the 308th Strategic Missile Wing of the United States Air Force, continuing a four-year collaboration with the U.S. Department of Defense Legacy program to document and recognize Cold War history in Arkansas. This work followed up on an incomplete survey started in 1994 that was never completed by a former employee. It was felt that these properties were in danger of being lost to history as they reverted to civilian ownership, or as the Air Force Base structures suffered from insensitive rehabilitation, deterioration, or abandonment. It was hoped that by emphasizing the importance of these properties to the understanding and appreciation of Arkansas history during the Cold War, the AHPP could encourage their continued preservation, protection, use, and adaptive re-use.

The project involved significant interaction and cooperation between the AHPP's program areas. The AHPP Special Projects staff identified the launch complex sites and Little Rock Air Force Base support structures and scheduled survey trips to document and photograph each property. All phases of the project were coordinated with the National Register of Historic Places staff to determine which of the 308th SMW-related properties were eligible for National Register recognition. The owners of the launch complex and relevant LRAFB personnel were contacted and consulted with throughout the project.

The multiple-property listing of Cold War Resources Associated with the 308th Strategic Missile Wing in Arkansas is based on a survey of 17 of the 18 former Titan II ICBM Launch Complex sites (the current private owners of the remaining site refused access to their property) and all of the support structures remaining at Little Rock Air Force Base in Jacksonville, Arkansas. The survey was conducted by Mark Christ, community outreach director for the AHPP, and Kenneth Grunewald, AHPP deputy director and a veteran of both the 373rd Strategic Missile Squadron and the 308th Strategic Missile Wing. Consultant Dr. David Stumpf, docent at the Titan Missile Museum National Historic Landmark in Arizona, contributed much of the historic context for the project and provided historical information on the relevant launch complexes. Additional context information was gathered by Christie McLaren, AHPP special projects historian. Christ holds a B.A. in journalism and liberal arts from the University of Arkansas at Little Rock. Grunewald holds a B.S. in geology from Penn State University and an M.A. in public administration from Webster University. Stumpf holds a Ph.D. from the University of Wisconsin, Madison, and currently is writing a history of the Titan II ICBM program for the Department of Defense Legacy program to be published by the University of Arkansas Press in 2000. McLaren holds a B.A. in history and an M.A. in history with archives specialization from Auburn University.

The survey team visited 17 launch complexes and nominated three of them to the National Register within the context since they met the project registration criteria. The launch complexes that were not nominated had suffered alterations since their deactivation that compromised their integrity of design, workmanship, materials, feeling and association, as outlined in the Property Type analysis. No support structures at the Little Rock Air Force Base were determined eligible since all had suffered alterations since the deactivation of the 308th SMW. All properties nominated were determined eligible by the professional historians and architectural historians of the AHPP's Survey and National Register staffs. Those launch complexes not nominated were so seriously altered that their integrity was compromised due to the removal of concrete pads, alterations of roadbeds, loss of helicopter pads, and construction of buildings and roads within the launch complex. Integrity requirements were based on knowledge of existing properties and the *Secretary of the Interior's Standards of Eligibility to the National Register of Historic Places*. For each recorded property, locations were noted on USGS topographical and city maps; photographs, both black and white prints and color slides, were taken of site features. Computerized inventory forms, complete with site drawings, were completed; and research, utilizing primary, secondary and oral history sources was conducted. Any information on research, events or issues not adequately covered in this study should be directed to the AHPP's community outreach director.

These properties represent significant physical reminders of an important period in Arkansas and United States history, a period when the U.S. was in constant standoff with the Soviet Union and nuclear weapons were used as a deterrent to prevent aggressive military activities that could result in World War III. By publicly recognizing the importance of these resources to the understanding and appreciation of Arkansas history through this project and the accompanying media campaign, the AHPP hopes to encourage the preservation, protection, continued use and adaptive reuse of these properties.

H. Major Bibliographical References

Part I A Brief History of Liquid Propellant Intercontinental Ballistic Missiles

Chapman, John L. 1960. "Atlas: The Story of a Missile." Harper & Row, New York.

Medaris, Maj. Gen. John B., USA (Ret.). 1960. "Countdown to Decision." G.P. Putnam's and Son, New York.

Neufeld, Jacob. 1989. "Ballistic Missiles in the United States Air Force." Office of Air Force History, United States Air Force, Washington, D.C.

Ruggiero, Major Francis X., USAF. 1981. "Missileers' Heritage." Air Command Staff College, Air University (ATC), Maxwell AFB, Alabama.

Schwiebert, Ernest G. 1965. "A History of the U.S. Air Force Ballistic Missiles." F.A. Praeger, New York.

Part II Titan II Site Construction and Missile Deployment

"History of the Little Rock Area Office, Corps of Engineers Ballistic Missile Construction Office, 5 October 1960 – 31 July 1963." 1963. Office of History, Headquarters, U.S. Army Corps of Engineers, Alexandria, Virginia.

"Histories of the 308th Strategic Missile Wing, 1963-1987," Air Force Historical Research Agency, Maxwell AFB, Alabama. These documents are classified SECRET. The information used is declassified.

Part IIITitan II Program Deactivation

"Felling the Giants: Titan II Deactivation at Davis-Monthan AFB, Arizona." Office of History, 15th Air Force. Office of History, Air Force Space Command, Peterson AFB, Colorado. This document is classified SECRET. The information used is unclassified.

"Histories of the 308th Strategic Missile Wing, 1986-1987," Air Force Historical Research Agency, Maxwell AFB, Alabama. These documents are classified SECRET. The information used is declassified.

Illustration Credits

Figure 1. BMD Management Data System Titan Master Schedule, March 1965.
Figures 2-3. Technical order 21M-LGM25C-1, Titan Missile Museum Archives, Sahuarita, Arizona.
Figures 4-6. Titan Missile Museum Archives, Sahuarita, Arizona.

SM: Strategic Missile

Michael Mandelbaum, *The Nuclear Question: The United States and Nuclear Weapons, 1946-1976,* Cambridge Univ. Press: Cambridge, New York, 1979.

David K. Stumpf, "Titan II: A History of a Cold War Missile Program," (Fayetteville, AR: University of Arkansas Press)

David K. Stumpf, "A Synopsis of the 308th Strategic Missile Wing, Little Rock, AFB, Arkansas: Construction, Major Historical Events, Deactivation" July, 1998.

Lt. Col. Ken Grunewald, retired USAF