SUPERSONIC SHADOWS: NRHP EVALUATION OF 23 NIKE AJAX TRAINING SITES IN RED CANYON, WHITE SANDS MISSILE RANGE, NEW MEXICO

by Mark Sale, Amy Silberberg, and Moira Ernst

> with contributions by Erin Mace and MSgt. J. P. Moore

W. Nicholas Trierweiler, Principal Investigator

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ABSTRACT

During April of 2016, AmaTerra archaeologists investigated 23 Cold War-period (1946-1989) archaeological sites on northern White Sands Missile Range (WSMR) in Sierra and Lincoln counties, New Mexico. The investigation was designed to fully document the remains and assess each location in terms of eligibility for the National Register of Historic Places (NRHP) pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA) as amended (16 USC 470). Although WSMR was aware of the sites, only a few had been visited and none had been previously documented. As several locations were suspected to potentially retain significant remains associated with an important period in our nation's military history, WSMR opted to have each site fully recorded and evaluated regarding NRHP eligibility. The investigation was conducted as WSMR Project Number 833 and was registered with New Mexico Cultural Resources Information System (NMCRIS) as Activity Number 135606.

AmaTerra archaeologists thoroughly documented the surface attributes at all 23 sites and conducted substantial background research in an effort to determine the function of the sites. In many cases, this research also enabled archaeologists to define individual site role(s) within the overall Red Canyon Nike Ajax Training Program (1953–1959). In numerous instances, clearing most of the physical remains following termination of the training program in 1959 had substantially reduced both site integrity and functional indicators. A combination of archival research and interviews with several individuals once stationed at Red Canyon helped bring clarity to the archaeological remains.

As noted above, deliberate 'cleaning' has served to minimize the integrity of many sites investigated during this study. The lack of physical remains—or more specifically, remains that illustrate functional roles—diminishes the sites' significance within the Cold War historic context. As a result, the majority of investigated sites are recommended ineligible for inclusion in the NRHP. Five locations, however, retain sufficient integrity to clearly illustrate a Cold War theme and are recommended eligible for the National Register under Criterion A: Important Events (Lavin 1998:110). These five sites (LA 185022, 185023, 185026, 185029, and 185030), which consist of launch areas for anti-aircraft guided missile training, all qualify under the Cold War Military Industrial historic context and fall within the air defense historic theme. The remaining 18 sites (LA 185021, 185024, 185025, 185027, 185028. 185031-185038, 185041, 185068-185071) are recommended not eligible for the NRHP.

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We appreciate the assistance of Debbie Walters at the WSMR museum. Special thanks are extended to Master Sergeant Jean-Paul Moore for his help in ferreting out many of the site functional details. Serving two tours at Red Canyon between 1954 and late 1957, MSgt Moore has published a substantial amount of information on the subject, both in hard copy and on the internet. Not only did he actively participate in the unravelling of the mysteries surrounding the sites documented during this investigation through an impressive string of emails, but he also connected us with three others who served at the facilities. These former soldiers of honorable mention include: Alan Graham (former communication shack switchboard operator and avid photographer 1956–58), Bill Shaw (ASP 1958), Hayden Moody (switchboard operator 1959), David Bohl (medic 1959–60), and Ed Thelen (IFC technician 1955, 1956 ASPs). The contributions of these men in preserving the history of Red Canyon appear on several websites and all were more than willing to lend any assistance possible to this endeavor.

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PREFACE

In the background of everyday life in America during the Cold War, particularly in the 1950s and 1960s, was the constant fear of nuclear annihilation. The Soviet Union had unveiled a significant advance in their aircraft technology at a military review in Moscow in 1947—the Tupolev Bull Tu-4 aircraft, which had the capability to carry and drop the atomic bomb. By the mid-1950s the Soviet's had developed both atomic and hydrogen bombs as well as the Tu-95 Bear, the Soviet's signature high-altitude long-range intercontinental bomber. These achievements heightened the fears of American military strategists who now believed that a nuclear attack by the aggressive, expansionist Soviet Union upon the United States, launched over the North Pole and arriving over undefended cities in America's heartland, was not only possible, it was likely.

(Dodge and Sawyer 2009:6)

CHAPTER 1

INTRODUCTION

Between April 4 and 22, 2016, AmaTerra archaeologists investigated 23 Cold War-period (1946–1989) archaeological sites on northern White Sands Missile Range (WSMR) in Sierra and Lincoln counties, New Mexico. The investigations were designed to assess eligibility for the National Register of Historic Places (NRHP) pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA) as amended (16 USC 470). At WSMR, this responsibility is managed by the Directorate of Public Works (DPW), Environmental Division.

WSMR provided locations for 21 of the investigated sites; two additional sites were discovered during fieldwork. The 21 targeted locations were known from either field visits or scrutiny of aerial photos, yet undocumented prior to the current study. The sites were inferred to represent military facilities associated with the Army's Nike Ajax Missile Training Program in Red Canyon, which was in operation from 1954 through 1959. Although little was known about the condition of the majority of the sites, intact features observed at several locations prompted WSMR to initiate the investigation.

Of the 23 documented locations, five (LA 185022, 185023, 185026, 185029, and 185030) retain sufficient integrity to be recommended eligible for inclusion in the NRHP. All five sites are Nike launch facilities complete with launch pads and safety bunkers and clearly illustrate an important Cold War theme; therefore, they are recommended eligible under NRHP Criterion A: *association with important events*.

The results of investigations reported herein were conducted as WSMR Project Number 833, and were registered with New Mexico Cultural Resources Information System (NMCRIS) as Activity Number 135606.

1.1 BACKGROUND

The United States Army established the Alamogordo Bombing Range in 1942, followed by establishment of the White Sands Proving Ground (WSPG) in 1945. These two large ranges were consolidated in 1958 and renamed White Sands Missile Range.

Today, WSMR is the largest military installation in the United States. Located in the Tularosa Basin of south-central New Mexico, the range encompasses almost 3,200 square miles, or more than 2 million acres. WSMR is part of the United States Army Installation Management Command and is home to a broad array of military testing programs, ranging from the largest land-missile range in the western hemisphere, to environmental testing chambers and computer modeling laboratories. In recent years, military training has been added to the activities conducted within WSMR's extensive landholdings.

WSMR's main cantonment is located 20 miles (32 km) east of Las Cruces, New Mexico, along the eastern foothills of the Organ Mountains. WSMR surrounds the 143,733-acre White Sands National Monument, which is managed by the National Park Service, and the 57,215-acre San Andres National Wildlife Refuge, which is managed by the US Fish and Wildlife Service. Adjacent and east of WSMR are 59,639 acres of Holloman Air Force Base, and to the south are the 1.1 million acres of Fort Bliss and the McGregor Range.

<u>1.2 PURPOSE OF THE PROJECT</u>

Under Section 110 of the NHPA of 1966, as amended (16 USC 470, NHPA), WSMR is required to identify, evaluate, and nominate to the NRHP historic properties that are under its jurisdiction or control. The DPW is responsible for NHPA compliance at WSMR. To facilitate mission planning in compliance with the NHPA, WSMR has conducted multiple large-scale field inventories, and thousands of cultural resource sites have been recorded and many have been assessed for their NRHP eligibility.

In compliance with NHPA Section 110, WSMR embarked on the current program to thoroughly document and evaluate the NRHP eligibility of 21 locations identified, either through in-house field visits, or remote sensing. None of the sites had been previously recorded or evaluated for NRHP eligibility. These archaeological sites are located in the Red Canyon area and were inferred to represent training facilities associated with the nation's first anti-aircraft defense missiles—the Nike Ajax. Hundreds of Nike missile sites were installed throughout the US, as well as in many allied nations, constituting both a defense and a deterrent against Soviet attack during the early years of the Cold War. As a result, associated cultural properties may be considered significant and warrant protection under NRHP legislation.

Importantly, nomination to the NRHP does not guarantee protection for any property. Rather, the responsible federal agency (in this case, the Department of the Army) must consider the property and its value when planning and carrying out undertakings—undertakings can often be designed to avoid damage to NRHP-eligible sites. If an eligible site cannot be avoided during earth-disturbing activities, the agency may elect to retrieve important information from the site before any anticipated damage can occur. Occasionally, a cost-benefit analysis dictates that the undertaking should proceed at the sacrifice of an eligible site; this decision rests with the responsible federal agency.

<u>1.3 The Site Sample</u>

WSMR provided a list of 26 locations for evaluation. With the understanding that not all 26 locations might be visited within the project funding parameters, WSMR prioritized 15 locations for evaluation. Most of these had been identified by reviewing aerial imagery, which suggested features at many locations. Their association with the 1950s Red Canyon training exercises was generally implied by spatial associations, as well as the presence of a gray-colored lacustrine soil used to surface roads and site areas. As none of the sites had been previously recorded, UTM locations and a brief description of what each site was known, or suspected to represent were provided (**Table 1-1**).

WSMR Temporary Site Designation	Site Type	Comments
Priority 1 Sites		
Annual Service Practice site 1	launch complex	Nike training launch site
Annual Service Practice site 2	launch complex	Nike training launch site
Annual Service Practice site 3	launch complex	Nike training launch site
Annual Service Practice site 4	launch complex	Nike training launch site
Annual Service Practice site 5	launch complex	Nike training launch site
Annual Service Practice site 6	launch complex	Nike training launch site
Annual Service Practice site 7	launch complex	Nike training launch site
Annual Service Practice site 8	launch complex	Nike training launch site
Annual Service Practice site 9	launch complex	Nike training launch site
Annual Service Practice site 10	military	part of RC complex
Annual Service Practice site 11	launch complex	Nike training launch site
Range Control (RC)	range control	range control for Red Canyon complex
Unknown Site 2 (A)	launch complex	part of Red Canyon complex
Unknown Site 3	launch complex	part of Red Canyon complex
Unknown Site 4	launch complex	part of Red Canyon complex
Unknown Site 5	launch complex	part of Red Canyon complex
Priority 2 Sites		
Assembly Area Aux Site 2	unknown	unknown function-probably part of RC complex
Aux site 3 (B)	unknown	unknown function-probably part of RC complex
Aux site 4	unknown	unknown function-probably part of RC complex
IFC Area	unknown	this is probably the IFC area for Red Canyon RC
Range Camp Sewer Complex (B)	sewer system	sewer tanks for Red Canyon RC
Unknown Site 1	gravel pad	unknown function as a part of RCRC
Unknown Site 2 (B)	gravel pad	unknown function as a part of RCRC
Unknown Site 1	launch complex	part of RC complex
Unknown Site 6 (B)	military	a concrete pad possibly associated with RCRC
Unknown Facility	military	air photo shows a loop

Table	1-1.	Site	List	Provided	b١	WSMR.
10010		0.00		1 1011000	\sim	

(A) - No cultural materials at this location

(B) – Site not recorded

In addition to the 21 sites evaluated from the list presented in Table 1-1, two additional sites (LA 185041 and LA 185068) were identified and recorded during the course of this investigation. Although the sample of sites recorded and evaluated are representative of the site types present in the project area, they do not include all sites associated with the Nike Ajax mission present within the study area.

All of the sites are located within a roughly 2×6 -mile $(3.2 \times 10$ -km) area in the northeastern portion of the WSMR installation, east of the Oscura Mountains and south of US Highway 380 (**Figure 1-1**). The majority of the sites are situated along the western side of Red Canyon, although, the two southernmost examples lie just east of the Red Canyon drainage and south of the canyon proper.

1.4 Organization of this Report

Chapter 2 of this report introduces the project area and briefly summarizes its environmental parameters, including physiography, soils, climate, and modern biota. Chapter 3 includes a discussion of the archaeological studies previously conducted in the area, and Chapter 4 provides the historic context and significance of missile-launch training at Red Canyon. Chapter 5 describes the methods that were used to collect data and evaluate the significance of each site. Chapter 6 includes the site descriptions and NRHP assessments. Chapter 7 presents a discussion of findings. Finally, Chapter 8 consists of management recommendations. The main text is followed by references and appendices. Appendix A contains detailed illustrations of extant features and selected items. Appendix B consists of historic photos depicting sites and/ or features.



Figure 1-1. Map of southern New Mexico with WSMR and project location.

CHAPTER 2

ENVIRONMENTAL SETTING

2.1 LOCATION AND SETTING

The dominant landform of WSMR is the Tularosa Basin, an internally drained basin bordered by the San Andres and Organ mountains on the west and the Sacramento Mountains on the east (**Figure 2-1**). The Jarilla Mountains lie at the southern boundary of the basin and at the north are the Oscura Mountains and Chupadera Mesa. The basin averages around 4,000 ft (1,219 m) in elevation, with the Sacramento Mountains reaching nearly 12,000 ft (3,300 m) and the San Andres Mountains rising up to 9,000 ft (2,700 m). In the center of the basin are the famous white sand dune fields and the remnant playa of Lake Lucero. Near the northern boundaries of WSMR (from west to east) is the Jornada del Muerto basin, the Trinity Basin, and the Carrizozo Malpais, a 75-km-long flow of black basaltic lava. This radically diverse landscape, ranging from upland forests and sheer scarps to extensive dry lakebeds, vast dune fields, and fractured lava beds, includes a multitude of environmental settings, vegetative communities, and even, variable weather patterns.

The study area is located in the northeastern portion of WSMR, along the eastern margins of a southward-trending valley between the Oscura Mountains and the Carrizozo Malpais (see Figure 2-1). More specifically, the sites are strung along an unnamed valley situated between Red Canyon to the west and a southward-trending chain of hills and ridges to the east. Beyond the hills to the northeast lies Chupadera Mesa which, like the Oscuras, rises more than 1,000 feet above the study area. Substantial runoff from these uplifted formations flows into the northern Tularosa Basin.

Most of the investigated sites are situated along elevated landforms that range from just over 5,000 ft to over 5,600 ft (1,450–1,542 m) in elevation (**Figure 2-2**). The site locations include prominent hilltops with extensive views, saddle-like (or perched, relatively flat) areas between hills, and low-rising ridgetops along alluvial fans. These specific topographic settings had been clearly selected with the Nike-Ajax mission parameters in mind.

Soil development at most of the site locations is extremely limited, with gravel/cobble surface matrices, angular boulders, and intermittently exposed bedrock present. The majority of surface rock is detrital siltstone (Abo formation), although, limestone is also present at several locations. Soils consist of silty loams weathered from surrounding uplifted formations and deposited through alluvial processes.



Figure 2-1. Location of the study area with major physiographic areas and property boundaries.



Figure 2-2. Topographic map showing locations of evaluated site.

2.2 CLIMATE

The northern Tularosa Basin is a high desert area characterized by harsh, and sometimes rapidly changing, climatic conditions. Summers are hot, averaging 95 °F (35 °C), with highs in July and August frequently reading over 100 °F (38 °C). Winters are relatively mild with nighttime temperatures often dropping below freezing and occasional cold spells with temperatures dipping below 0 °F (-18 °C).

Snowfall is minimal within the basin, although heavy snows have been recorded and periodically occur in the nearby Oscura and Sacramento mountains. Annual precipitation ranges from about 6 to 10 inches (15–25 cm) per year, most of which falls during localized, but intense summer thunderstorms. Prevailing southwesterly winds are strongest from February through May and occasionally reach gale force. Seemingly unrelenting spring windstorms can persist for several days and are often accentuated by the mountains along the Basin margins.

2.3 **BIOTA**

The vegetation of the Tularosa Basin, which is generally classified as Chihuahuan Desert scrubland community, varies with topography and elevation. Overall, the vegetation is dominated by creosote bush (*Larrea tridentata*) with clusters of cholla cacti (*Opuntia* sp.), honey mesquite (*Prosopis glandulosa*), juniper trees (*Juniperus monosperma*), and sumac (*Rhus microphylla*), comprising the most conspicuous forms. Broom snakeweed (*Gutierrezia sarothrae*) and various grasses (*Poaceae*) are fairly prolific along with occasional prickly pear (*Opuntia* sp.), Mormon tea (*Ephedra*), soaptree yucca (*Yucca elata*), and four-wing saltbush (*Atriplex canescens*).

Typical fauna in the basin includes kangaroo rat (*Dipodomys* sp.) and woodrat (*Neotoma* spp.), blacktailed jackrabbit (*Lepus californicus*) and desert cottontail (*Sylvilagus audobonii*), coyote (*Canis latrans*), badger (*Taxidae taxus*), bobcat (*Lynx rufus*), and various reptile and bird species. Desert Bighorn sheep (*Ovis canadensis nelsoni*) inhabit the adjacent mountains along with the occasional mountain lion (*Puma concolor*). Mule deer (*Odocoileus hemionus*) frequent the area, and Pronghorn antelope (*Antilocapra americana*) that thrive in the open grassland areas of northern WSMR may venture near the study area. The African Oryx (*Oryx gazella*) is often seen in the area today, having been successfully introduced to WSMR as a game species in 1969. Bands of javelina (*Pecari tajacu*) have become increasingly popular on northern WSMR, and game camera photos (Doug Burkett, personal communication August 6, 2015) of Barbary sheep (*Ammotragus lervia*) testify to the adaptation and spread of this African import following their introduction near Roswell beginning in the 1950s.

CHAPTER 3

PREVIOUS INVESTIGATIONS

In order to determine whether any previously recorded properties related to activities associated with the Nike Ajax Missile program at Red Canyon were present within the roughly 6 x 2-mile project area reported upon herein, the NMCRIS/Archaeological Records Management System (NMCRIS/ARMS) online files and WSMR Global Information System (GIS) records were reviewed. The review included an area encompassing a 1-mile (1.6-km) radius around the project area.

3.1 PREVIOUS PROJECTS

This file search revealed eight previous projects and/or portions of projects near the current study area (**Table 3-1**) and 14 previously reported sites (**Table 3-2**).

NMCRIS No. / Project ID No.	Project Type	Report Date	Author(s)	Reference
17836 HSR 8534	2,280-acre survey	1986	Laumbach, K. W.	Red Rio II: An Archaeological Survey of 2,280 Acres Near Chupadero Mesa, White Sands Missile Range, Socorro County, New Mexico
64065 HSR 9427	Non survey	1995	Webb, D.	Resurvey of 27 Archaeological Sites on the Red Rio Bombing Range, Socorro County, White Sands Missile Range, New Mexico
20371/HSR 8503	6,690-acre survey	1985	Laumbach, L. W. and D. T. Kirkpatrick	A Cultural Resource Survey of the of the Southern Edge of the Chupadera Mesa: The Sgt. York Archaeological Project, 2 vols.
35781 HSR 8631	2,530-acre survey	1987	Kirkpatrick, D. T.	Archaeological Survey of the Red Rio and Oscura Target Areas, White Sands Missile Range, Socorro and Lincoln Counties, New Mexico
42594 HSR 8650	10,624-acre survey	1989	Shields, H., and K. Laumbach	Archaeological Survey of the FAADS I Project, Northern End of White Sands Missile Range, Socorro and Lincoln Counties, New Mexico (4 vols.)
45590 HSR 9133	750-acre survey	1992	Shields, H. B., and P. L. Eidenbach	The FAADS EIS Study: Sample Survey of Twelve Areas on the Northern Portion of White Sands Missile Range in Lincoln and Socorro Counties, New Mexico
49802 GMI 109EP	560.5-acre survey	1996	Browning, C. B., and M. Ernst	Red Rio Roads and Primary Impact Area Cultural Resources Survey, White Sands Missile Range, Socorro and Lincoln Counties, New Mexico
123913 GMI 808EP	Non survey	2012	Stowe, M., M. Ernst, and M.Swanson	Archaeological Evaluation of 27 Sites on the Red Rio Bombing Range, White Sands Missile Range, Socorro County, New Mexico

Table 3-1. Previous Projects within One Mile of the Current Study Area.

No reported archaeological investigations had been conducted in the vicinity of Red Canyon in the northern portion of WSMR prior to the mid-1980s. Of the eight projects conducted near the current study area, six are inventory surveys and five of these were conducted by Human Systems Research (HSR) between 1985 and 1992. The remaining survey project was completed by Geo-Marine, Inc. (GMI) in 1996. The surveys range in size from about 560 acres to over 10,000 acres and include contiguous block surveys, block surveys dispersed over large areas, and linear surveys along roads. The most significant of the previous projects are briefly summarized below.

The earliest of the previous surveys, known as Sergeant York, was conducted in 1985 and involved 6,690 acres (see Table 3-1). Over 3,000 acres of this study area consisted of State lands, and the remaining 3,600 acres were located on WSMR property. Several large blocks totaling 5.5 sections were inventoried, along with a 15-percent sample of an additional 40 sections, involving 40-acre sample quadrats stratified by soil zones (Laumbach and Kirkpatrick 1985). The Sergeant York project resulted in documentation of 47 archaeological sites representing activities from the Paleoindian period to historic times. Twenty of the prehistoric sites were aceramic, including eight attributable to Archaic period activities (and two possibly Paleoindian), while 11 lacked temporal diagnostics. The remaining aceramic site was attributed to ceramic times, based on the presence of an arrow point. Seventeen locations included ceramics, with Archaic period components identified at four of these sites and historic components at two. Probable structural remains (a pithouse) were identified at only one prehistoric site, although, it was noted that several sites may contain unidentified structures. The remaining sites are attributed to historic times and, in several instances, include structures. None of the sites recorded during the Sergeant York project near the current study area addressed historic military components related to activities associated with the Red Canyon Nike Ajax training/ practice mission.

A 2,280-acre survey near Chupadero Mesa was completed by HSR (Laumbach 1986). The survey consisted of a series of noncontiguous, 500×500 -m blocks in Socorro County, and resulted in the recording of 29 sites with prehistoric and historic components. While several of the sites reported here lie within these survey blocks, none of the historic components recorded relate to the Nike Ajax missile program investigated during the current study area.

Several of the sites in the current study area lie within large blocks surveyed by HSR for the Red Rio and Oscura target areas. This 2,530-acre survey was reported by Kirkpatrick (1987) and resulted in the recording of four previously undocumented sites and 32 isolated occurrences. One of these, LA 86476, is within the files search area and consists of a multicomponent prehistoric (Late Archaic and Jornada Mogollon) property with two hearths, lithic debitage, and ceramics. None of the sites associated with the Nike Ajax training and/or practice missions were recorded during that survey.

In 1989, HSR personnel inventoried 10,624 acres for the Forward Air Defense System I (FAADS I) project (Shields and Laumbach 1989). The parcels, which were located in the northern Tularosa Basin, included a block that abuts the current project area. The HSR survey resulted in the documentation of 68 sites in Socorro and Lincoln counties. Four of the sites are

included in the files search recorded during this project. These sites include two prehistoric properties and two historic ranching-related properties that predate the use of the area for Nike Ajax missile training/practice.

A substantial block survey conducted by HSR archaeologists was for an Environmental Impact Statement associated with the FAADS project (Shields and Eidenbach 1992). This sample survey covered 750 acres and included 12 parcels that were meant to be representative of environmental and topographic zones within the FAADS area. The sample units included parcels on the basin floor, dissected foothills, slopes along the east side of the Oscura Mountains, and along the south side of Chupadera Mesa. Seven sites were documented, and one of these (LA 88019) falls within the current search parameter. As reported, LA 88019 is a prehistoric property containing 1000s of artifacts and a possible check dam that is attributed to Late Archaic period activities. Sites attributed to military activities associated with the Nike Ajax missile program were not reported.

In 1995, Geo-Marine, Inc. (GMI) conducted an intensive cultural resources survey of 560.6 acres within the Red Rio Impact Area, Safety Impact Area, and the Surface Area on WSMR (Browning and Ernst 1996). The majority of the survey focused on road areas, with an additional 15 acres of block survey. The survey resulted in the identification and recording of 12 previously unidentified sites, the updating of one previously recorded site, and the documentation of 30 isolated occurrences. Seven of the newly identified sites contain prehistoric components, five contain historic components, one is of unknown temporal affiliation, and two are cement foundations associated with military activities. The prehistoric components span the Paleoindian period through the late Formative periods and appear to represent shortterm resource procurement activities. The historic resources represent ranching, homesteading, and military activities between the 1890s and 1950s. Two of the sites (LA 110809 and LA 110818) were considered to have the most potential for NRHP eligibility, five of the sites (LA 110810, LA 110813, LA 110816, LA 110819, and LA 110820) were considered to have the least potential for eligibility, and eligibility could not be determined based on survey level data for the remaining five sites (LA 110811, LA 110812, LA 110814, LA 110815, and LA 110817). The previously recorded site (LA 58933/Craven Cave) was updated. Although eligibility determination was not made. This project is the only survey near the current study area that recorded sites associated with the Red Canyon Nike Ajax missile training. These two sites, both of which were considered to have low potential for NRHP eligibility, are LA 110819 (Red Canyon Range Camp) and LA 110820 (Red Canyon Missile Assembly Area). These sites are briefly summarized in the next section.

3.2 PREVIOUSLY RECORDED SITES IN THE VICINITY

Summary data for the 14 previously reported sites located within one mile of the current investigation are presented in Table 3-2. Two known sites within this group are shown in the WSMR files that have not been fully documented. These sites include the Red Canyon Ready Missile and Craven Tank.

Site No./ Name	Site Type	Feature Types (quantity)	Site Size (m)	Recorders	Associated NMCRIS No.(s)	Comments
LA59142	Historic/ Prehistoric/ features-Jornada Mogollon/late Formative, Doña Ana phase (AD 1000–1100) and Anglo (1846–1945)	Brush corral (1)	80 x 50	HSR HSR GMI	17836, 64065, 123913	NRHP eligibility not listed in files; lithic debitage, projectile points, manufacturing items, groundstone, metal; 10s total
LA59143	Historic/features- Anglo (1920–1930)	Mound or foundation (1); activity area (1); dump/ charcoal and trash (1); brush corral (1); dugout (1); stone circle (1)	100 x 60	HSR HSR GMI	17836, 64065, 123913	NRHP eligibility not listed in files; glass, metal, ceramics, other historic trash (1917 penny); 100s total
LA59145	Prehistoric/no features-Mixed Anasazi/Mogollon (AD 1000–1100)	-	50 x 45	HSR HSR GMI	17836, 64065, 123913	NRHP eligibility not listed in files; lithic debitage, projectile points, manufacturing items, groundstone, fire-cracked rock; 10s total
LA60690	Prehistoric/no features-Archaic (3000–1800 BC)	_	96 x unknown	HSR	42594	NRHP eligibility not listed in files; lithic debitage; counts unknown
LA60691	Prehistoric/ features- Archaic (3000–1800 BC)	Bedrock mortar (1)	302 x unknown	HSR	42594	NRHP eligibility not listed in files; lithic debitage; counts unknown
LA60692	Historic/no features-Anglo (1912–1945)	_	96 x unknown	HSR	42594	NRHP eligibility not listed in files; no artifacts listed
LA60698	Historic/Features- Anglo (1912–1945)	Water control device (1); milled lumber structure (1)	96 x unknown	HSR	42594	NRHP eligibility not listed in files; no artifacts listed
LA86476	Prehistoric/ features-Archaic (1800 BC–AD 900) and Mogollon (AD 750–1175)	Hearth (2)	96 x unknown	HSR	35781	NRHP eligibility not listed in files; lithic debitage, prehistoric ceramics; counts unknown
LA88019	Prehistoric/ features-Archaic (1800 BC–AD 400)	Possible check dam (1)	600 x 400	HSR	45590	NRHP eligibility not listed in files; lithic debitage, tools, projectile points, groundstone, fire-cracked rock; 1000s total
LA110815	Prehistoric/ features-Archaic (900 BC –AD 200)	Fire- cracked rock concentration (1)	38 x 33	GMI	49802	NRHP eligibility not listed in files; lithic debitage, projectile points, fire-cracked rock; 1s total

Table 3-2. Previously Recorded Archaeological Sites within One Mile of Current Study Area.
Site No./ Name	Site Type	Feature Types (quantity)	Site Size (m)	Recorders	Associated NMCRIS No.(s)	Comments
LA110816	Historic/features- unknown temporal and Anglo (1860–1934)	Fire-cracked rock feature (3); axe-cut stumps (2)	86 x 71	GMI	49802	NRHP eligibility not listed in files; lithic debitage, projectile points, manufacturing items, groundstone, glass, metal; 10s total
LA110820 RC Assembly Area	Historic/features- Anglo/Military (1953–1959)	Foundations (7); tank (1)	900 x 500	GMI	49802	NRHP eligibility not listed in files; no artifacts noted/clean-up of facility at time of abandonment
RC Ready Missile	Historic/features Anglo/Military (1953–1959)	_	_	_	_	Not recorded?
Craven Tank	Historic stock tank	_	-	-	_	Not recorded?

Two sites, LA 110819 (Red Canyon Range Camp) and LA 110820 (Red Canyon Missile Assembly Area) relate to those documented during the current study, and were recorded by GMI (Browning and Ernst 1996). Based on its close proximity to the Assembly Area (LA 110820), the location labeled RC Ready Missile on WSMR GIS files also results from Red Canyon Nike exercises.

3.3 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES RELATED TO THE CURRENT STUDY

Both Red Canyon Range Camp (LA 110819) and the Red Canyon Assembly Area (LA 110820) include substantial structural remains that once supported large Morgan buildings and Quonset huts. The Range Camp, which lies nearly two miles (6 km) east of the current study area, once housed hundreds of soldiers. The Assembly Area, which was involved with missile assembly and systems testing, lies within the current study area near the easternmost margin. Like the sites documented during the current investigation, both of these locations were reduced to concrete foundations following termination of the training program in 1959.

Red Canyon Range Camp (LA 110819) consists of at least 28 concrete foundations, including a church, infirmary, recreation center, latrine, fire department, mess hall, officer's quarters, barracks, and other facilities. Due to its sprawling spatial extent, it was not intensively recorded during the GMI survey project. While GMI the recorders acknowledged that the Range Camp played a major role in the Nike Ajax missile training program, post-program dismantling and loss of integrity were considered to have significantly reduced the site's potential for NRHP eligibility. Nonetheless, it was recommended that the site be subjected to more adequate mapping and that in-depth archival research and an oral history be conducted. The Red Canyon Assembly Area (LA 110820) measures 900 x 500 feet and consists of at least seven concrete foundations. The site is bisected by Range Road 11, and based on an article by Eckles (1986:2), the site functioned as a missile assembly area, where missiles were "repaired, assembled, and fueled." At the time of recording, the WSMR archaeologist (Robert Burton) suggested that a subterranean room housing a Nike Ajax missile may be present and in good condition. Nonetheless, the site was considered to have limited potential for NRHP eligibility until the presence of the subterranean room could be confirmed, due to the fact that it had been extensively dismantled/cleaned up.

Chapter 4 Historic Context

As the current investigation deals only with military properties constructed during the early years of the Cold War (ca. 1947 to 1991), this historic background is focused exclusively on that period. The information included here was derived from personal communications, numerous websites, articles, and archival photographs. For more detailed information regarding the Nike Ajax missile program consult the References section and Appendix B of this document.

Although the area has been occupied for 10,000 years or more, only the latest aboriginal group potentially influenced modern developments in the Tularosa Basin region. Rather inhospitable Mescalero Apaches controlled the region until the mid-1800s, prohibiting infiltration by outsiders and temporarily stalling Manifest Destiny (Schneider-Hector 1993).

Non-native settlement of the area was primarily motivated by mineral and timber resources in the surrounding mountains, along with extensive grasslands for grazing livestock. Limited water resources restricted agricultural pursuits to a few permanent streams that flowed short distances from the foothills before disappearing into sandy desert sediments. Arid conditions discouraged those less than truly determined and made both agriculture and animal husbandry risky ventures. The delayed accessibility to the region, slow population growth during the decades following Apache control, and lack of accessible water, resulted in vast expanses of unoccupied and/or minimally occupied desert lands. This scenario proved attractive to the War Department (now known as the Department of Defense), which needed lots of room for training and missile testing.

4.1 THE NIKE AJAX

After the 1941 bombing of Pearl Harbor, a large portion of the Tularosa Basin area was leased by the US government and used to train bomber crews. Designated Alamogordo Bombing Range, the relatively unpopulated region served as an important training grounds for the remainder of World War II. By the end of the war, the importance of rocket technology in national defense had been recognized. Although America's rocketry pioneer Robert Goddard's experiments and successful launches had captured some interest since the 1920s, it was Germany's advancements in rocket science—particularly the successful delivery of warheads with V-2 rockets—that ultimately led American military officials towards developing rocket technology. Additional stimulus for rocketry investment came with the surrender of Werner von Braun and his team of German scientists that had developed the V-2.

As early as mid-1944, the Army's Ordnance Department had begun to develop working models of guided missiles. By late 1944 and early 1945, the first launches of US-developed rockets took place near what is currently Edwards Air Force Base in California and on Alamogordo Bombing Range (Starkweather 1990). These early tests revealed the need for extensive uninhabited areas with flat terrain and good visibility to facilitate flight analyses and recovery efforts.

With its surrounding hills providing good observation points considered an added benefit, the Tularosa Basin was selected as the Army's rocket testing grounds. During February of 1945, the Alamogordo Bombing Range and portions of the Fort Bliss Artillery Range were combined to form White Sands Proving Ground (WSPG). Officially, WSPG served as an adjunct facility to Aberdeen Proving Ground in Maryland, the nation's developmental and testing center for weapons and rocket systems. By the end of 1945, von Braun's team was assembling V-2s at WSPG, beginning the US manufacture and testing of large, liquid-fueled rockets that would eventually lead to the modern space program (Boehm 1997).

Following the end of World War II, efforts to counter Soviet aggression and stop the spread of Communism led to undeclared conflicts on several fronts. This period became known as the Cold War which is, perhaps, most simply characterized as a period of heightened political and military tension between Western Bloc (the US and NATO allies) and Eastern Bloc (the USSR and allies in the Warsaw Pact) countries. As the Soviet Union began developing a series of long-range bomber aircraft, concerns over a possible attack on the US grew. When the Soviets tested their first atomic bomb in 1949, the potential for nuclear attack by high-flying aircraft compelled American military leaders to take defensive action (Bender 1996).

Although intercepting fighter aircraft might succeed in destroying incoming bombers long before reaching their intended targets, absolute success could not be guaranteed. The effectiveness of anti-aircraft artillery was also questionable, as the high-altitude and evasive maneuver capabilities of targeted aircraft challenged the performance of "long guns." Recent Soviet advances in jet propulsion technology promised to increase aircraft speed in the near future, further diminishing the usefulness of artillery defenses. Rockets designed to destroy aircraft provided a suitable answer to the nuclear threat, and rapid development and deployment was considered necessary to protect vital targets.

During 1945, Western Electric and their research affiliate, Bell Telephone Laboratories were contracted to study the feasibility of surface-to-air missiles capable of destroying bomber aircraft. By year's end, the *Anti-Aircraft Guided Missile Report* was produced, outlining concepts of what would become the Nike missile system. Development of the system followed over the next several years without any real urgency, as the Soviets were thought to be busy rebuilding after the war. Although multiple Nike prototypes were launched from WSPG during the late 1940s, reduced defense spending during the post-war period stalled significant production. This rather casual approach changed, however, beginning with the Soviet detonation of an atomic bomb mentioned above. Increased tensions associated with the Communist takeover of China in 1949 and the Korean War in 1950 also played into accelerating US missile development efforts.

An official reevaluation of US military objectives and strategic plans in 1950 resulted in recommendations for increased defense spending to include air defenses. Consequently, the Department of Defense (DOD) initiated steps for better coordination of air defenses to include anti-aircraft missiles. In the fall of that year, the DOD Director of Guided Missiles recommended accelerating the Nike program "to build 1,000 production models by the end of 1952, and 1,000 missiles per month thereafter" (Lonnquest and Winkler 1996:56).

In January of 1951, the Secretary of Defense approved the production recommendations and by the end of that year, a Nike missile had successfully intercepted and destroyed a B-17 Flying Fortress bomber drone over WSPG. Shortly thereafter, the nation's first air defense or surface-to-air missile (SAM) was put into full production, and training troops to deploy the new weapon was initiated at McGregor Range on Fort Bliss, Texas. Coined Nike Ajax, the two-stage rocket was nearly 35 feet tall and weighed nearly 2,500 pounds with its booster attached (Figure 4-1). The solid-fuel booster was designed to provide initial launch thrust and then detach, allowing a liquid-fuel sustainer motor to carry the 21 footlong missile to its target. It was capable of speeds over 1,000 miles per hour, altitudes of around 70,000 feet, and had a range of at least 25 miles (Lonnquest and Winkler 1996).



Men who had never seen a missile leave the ground had plenty of chances in New Mexico. Each battery had three Nikes to fire. Firings took place in daylight and dark.

Figure 4-1. Nike Ajax missile ready to launch. *From the Baltimore Sun Sunday Magazine, September 30, 1956.*

During 1954, the Army deployed Nike Ajax batteries as its first operational, guided, surface-to-air missile defense

system. Hundreds of missile batteries were installed within the continental United States to replace radar-guided artillery batteries that protected urban, military, and industrial locations. Additional Nike batteries were installed within allied nations overseas, bringing the grand total of deployed missile batteries to 350. In addition to the more than 13,700 Nike Ajax missiles produced, the supporting radar and computer control systems, real estate acquisitions, training, manpower, and construction efforts required to install these ever-ready missile batteries constituted a relatively monumental peacetime undertaking.

Shortcomings with the effectiveness of the Nike Ajax warheads were recognized during the early 1950s, leading to the development of its successor; the Nike-Hercules. The Hercules utilized four of the solid-fuel rocket boosters borrowed from the Ajax, substantially increasing its payload potential and resulting in a faster, longer-reaching, and nuclear-capable upgrade. Although Hercules began gradually replacing the Nike Ajax in 1958, a few of the original Ajax batteries persisted into the early 1960s.

4.2 THE RED CANYON MISSION

As the US Army began development of the Nike Ajax missile system during the early 1950s, the need for a sufficient training grounds at Fort Bliss arose. That need included a range that was able to support launches of the Nike Ajax under combat conditions and facilities for the influx of trainees in the Antiaircraft Artillery (AAA) and Guided Missile (GM) schools. To meet this need, the Red Canyon Range was constructed as a temporary training facility. Located approximately 175 miles north of Fort Bliss near the northeast corner of WSPG, Red Canyon Range was intended to serve for two years or less while McGregor Range accommodations were completed on Fort Bliss. Despite this plan, the Red Canyon Nike Ajax facilities remained in use for nearly six years (Kennedy 2009).

The Nike Package Training Program was first developed at Fort Bliss in 1953. As part of this training program, instructors from the 1st Guided Missile Brigade's 1st Guided Missile Group taught "packages" of soldiers. Each package included 14 officers and 123 enlisted men

who formed the core group of the Nike battalions. The men attended classes at Fort Bliss to learn specialized skills. Following these classroom and laboratory hours, they completed a fiveintegrated week training that culminated segment with live missile launches at Red Canyon Range. After successfully firing at Radio Controlled Aerial Targets (RCATs) (Figure 4-2), the crewmen would gather their equipment and move to their posts at missile batteries around the country or overseas.



Figure 4-2. RCATs at Oscura Range Camp between 1958 and 1960. *Via https://www. ed-thelen.org/RCAT-JHoward-Army1.jpg, accessed June 5, 2016.*

Beginning in 1955, previously deployed Nike Ajax battery personnel would return to Red Canyon each year for Annual Service Practice (ASP) launches to prove their operational competence (**Figure 4-3**). For the next several years, Red Canyon served as a firing range for both package groups fresh from initial training and returning ASP teams. These visiting groups supplemented a substantial force of more permanent personnel stationed at the camp that were charged with construction and maintenance of its facilities and equipment.



Figure 4-3. Nike Ajax missile launch at Red Canyon, New Mexico. From the Baltimore Sun Sunday Magazine, September 30, 1956.

4.2.1 Red Canyon Facilities

Miles of new access roads and multiple facilities were required to enable missile launches and data collection at Red Canyon. A camp to house and feed those tasked with construction efforts became the first order of business. Known as Red Canyon Range Camp (RCRC), the lodging began as a series of army tents "in the middle of nowhere" and evolved into a sprawling series of structures supporting up to 500 enlisted men (Moore 1998:1).

The Camp

Initial responsibility for the construction of RCRC was assigned to the Army Corps of Engineers, but due to a lack of manpower, soldiers from the 495th Antiaircraft Artillery Missile Battalion arrived at the camp in September of 1953 to aid in the construction. The soldiers built wood frames for squad tents (**Figure 4-4**), poured concrete pads, and constructed a mess hall, roads, latrines, a missile assembly area, missile launch sites, and communication facilities.

At first the facilities were rudimentary, with the original headquarters and housing consisting of tents; canvas army cots and a kerosene-fueled stove were provided. Official policy limited the use of heaters to the winter months which ended by mid-March, despite frequent cold days/ nights in the New Mexico desert until June. Dusty conditions, primitive bathing facilities, rattlesnakes, poisonous insects, and undesirable meals also contributed to the discomforts experienced by the camp's early inhabitants.



Figure 4-4. Earliest known photograph (1953) of Red Canyon Range Camp (LA 110819). *Via https://www. ed-thelen.org/Red CanyonJP Moore/02.html, accessed July 23, 2015.*

Since RCRC was designated as a camp, there was no funding for permanent buildings, so all building materials were acquired from the Fort Bliss Salvage Yard or scrounged. RCRC was referred to as "The Gulch" and thought of as a thorn in the side of Fort Bliss and White Sands. Veterans have compared the primitive living conditions at the camp to a migrant camp from Steinbeck's (1939) *The Grapes of Wrath*, or a cavalry post (Moore 1996a).

By 1955, the camp had grown and the facilities were improved. Prefabricated metal "Butler" buildings supplanted the barrack tents, with only the motor pool and administrative areas retaining the tents. The mess hall, a 42-head shower facility, and several outhouses were completed. Eventually, more facilities, such as a Post Exchange, dispensary, mail room, fire department, recreation and service club, craft shop, theater, administrative buildings, softball fields, basketball courts, and volleyball courts, were added (**Figure 4-5**).



Figure 4-5. Red Canyon Range Camp (LA 110819) in 1959. Yellow dots mark chapel (foreground), mess hall (middle), and ballpark (background). *Via https://www. ed-thelen. org/Red CanyonJP Moore/43.html, accessed July 23, 2015.*

The successful launch of Sputnik 1 by the Soviets in 1957—described as "the political shot heard around the world"—brought major changes to the Red Canyon scene (Moore 1996a). The US suddenly felt vulnerable, and all eyes were turned to the Nike defense system for protection. RCRC instantly gained importance and became a demonstration theater for educating the media, elected officials, civil defense leaders, foreign dignitaries, and other VIPs about the Nike missile system (Moore 1998:18). Tours known as Operation Understanding (OU) brought visitors to the facilities to view the systems (**Figure 4-6**) and witness launches weekly (**Figure 4-7**). This increased interest rapidly brought improved support and facilities to the camp, including many Quonset huts, one of which was used to house a much-welcomed latrine with flush toilets (Moore 1996b).

Late in 1957, construction of an unofficial church at RCRC began. Commissioned by Lt. Col. John McCarthy, who served as commander from 1955 until late in 1959, the church was largely constructed of salvaged and/or recycled materials. Despite funding limitations, the picturesque church introduced an element of civilized grace to an otherwise minimalistic military outpost and became a main attraction for the press and other visitors during OU tours.



Figure 4-6. Operation Understanding event showing visitors sitting on bleachers at LA 185071, a combined IFC and VIP viewing area. *Courtesy of WSMR Archives.*



Figure 4-7. Operation Understanding event showing visitors at LA 185032, a combined IFC and VIP viewing area prior to installation of theater seats. *Courtesy of WSMR Archives.*

Other Construction

While the initial inhabitants of RCRC were living in tents, construction began at several other locations crucial to the mission. Missile assembly facilities were constructed approximately two miles (3.2 km) southwest of the camp. A short distance (0.3 miles, 0.5 km) to the southeast, Range Control and communication buildings (a.k.a. *Range Ops* and *Commo Shack*, or *The Switch*) and their ancillary features were constructed on a prominent hilltop. This location provided a commanding view of the Assembly Area and launch facilities to the west. Nearly a dozen launch areas were constructed along the edge of a north/south-trending valley to the west of Range Control, and corresponding Integrated Fire Control (IFC) complexes were established in the hills to the east of the launch areas.

In addition to these installations, miles of access roads were bladed, and areas were leveled for supporting equipment such as radar stations. Earthen berms were created to protect locations vulnerable to erosion, or fallout, and paths were cleared to run miles of communication wire. In total, an area measuring six miles (10 km) north/south and just over four miles (6 km) east/ west was affected by construction efforts to enable missile training at Red Canyon. Following initial construction, routine maintenance, continuous improvements, and the evolving need for additional facilities kept crews and heavy equipment busy throughout Red Canyon's Nike training history.

4.3 RED CANYON AND NIKE AJAX EPILOGUE

During the early years of the Nike Ajax program, the Army actively sought land to accommodate a missile training range closer to Fort Bliss than the Red Canyon area, which was always intended to be a temporary, two year, location. After purchasing land from area ranchers, the Army activated McGregor Range Headquarters during July of 1956 and began construction on new launch facilities. Once operational in the spring of 1957, the Army moved the Nike Package Training Program to McGregor Range. Annual Service Practice (ASP) exercises were continued at Red Canyon Range until the summer of 1959, when they too were moved to McGregor. Red Canyon was officially closed on June 19, 1959; a detail of 53 men (50 engineers and three medics) remained at RCRC until November 1960 to remove all structures except the chapel (Bohl 1996; Moore 1996a). The chapel was sold and removed in 1961 (Kennedy 2009:241).

During its six years in service, the Red Canyon Range supported nearly 3,000 Nike Ajax firings, served as a temporary home for thousands of soldiers, and played a key role in public relations by hosting educational tours for hundreds of visitors. Today, the most apparent remains of military endeavors at Red Canyon are concrete pads, bladed roads, cleared areas, and rock alignments. Closer inspection adds several earth-covered bunkers, C-shaped barricades, bits of scattered roofing metal, rock-bordered platforms, guy anchors, and the occasional 55-gallon drum, or rocket fuel bottle. In few cases do these individual vestiges accurately portray the challenges, accomplishments, or national importance associated with missile training activity in the region during the early Cold War. When viewed as a whole, however, the magnitude of planning, effort, and conceived value remains apparent.

By the mid-1960s, the Nike Ajax missile program had been relegated to the annals of history. As the Ajax not only represents a turning point in the nation's defensive strategy, but may be viewed as symbolizing the tensions between superpowers characterizing the Cold War, it is historically significant. Technologically, its significance is exemplified by the fact that many of the propellant, navigation, and computer control technologies initially developed for the Ajax played key roles in the nation's continued rocketry systems development for decades. Socially, it embodied the perceived need to protect against threat of nuclear attack, provided assurance that we were protected, and stood as a symbol of defensive posturing to help deter such threats.

CHAPTER 5

METHODS

5.1 Prefield

Most of the locations documented during this investigation were provided by the WSMR Archaeologist. Some of them had been previously visited by him and others had been observed on aerial photos and inferred to represent related sites. A gray-colored soil used to surface the roads accessing and surrounding the majority of sites attributable to the Red Canyon Nike Training Program is visible on aerial photos, facilitating remote identification. Two sites newly encountered during fieldwork (LA 185041 and LA 185068) were also documented, as they contained substantial remains related to the project.

As noted in Chapter 3, prior to fieldwork, the NMCRIS/ARMS online files and WSMR GIS records of an area encompassing a one-mile (1.6-km) radius of the project area were reviewed. In addition, the WSMR GIS database and NMCRIS files were searched to confirm that none of the 26 site locations had been previously recorded. The locations were then plotted on aerial photo backgrounds and examined for visible features and indications of mechanical disturbance. Once the estimated extent of each site was defined, aerial photographs with UTM coordinate grids were printed to aid in the field recording process.

5.2 FIELDWORK

The site locations were accessed by following previously established (though oftentimes heavily eroded) routes as much as possible. This practice provided an opportunity to look for any previously unrecognized features along what were once roadways accessing the sites. After reaching the site location, all features visible on the aerial photographs were sought and marked with flagging tape. Reconnaissance of the site and its surrounds was then undertaken to search for additional features and/or artifacts, which were similarly flagged to be recorded.

Given the level of mechanical disturbance leading to, and associated with typical site locations, surficial disturbances were not considered while defining boundaries. Rather, sites were defined based on the locations of features and, to a lesser extent, artifact distribution. Features were generally considered to be immobile elements of sites that probably served a distinct function and remained in situ, despite their current physical integrity or condition. This eliminated segments of wind-blown roofing materials and other structural remains that had been displaced during dismantling of the facilities.

Once site limits were defined, feature forms designed for the project were completed and accompanied by photographic documentation. The feature forms included prompts for site number, feature type, assigned number, condition, and size, along with any associated artifacts,

collections, and photographs. Narrative space was provided for additional feature details and discussion, with prompts to include information on soils, artifacts, any associated features, and vegetation. Artifact and feature locations were recorded with a Trimble Explorer GPS unit, and site boundaries were defined using Arcmap® software.

5.3 LABORATORY

Existing records of any previously reported related sites were attained from WSMR, and internet accessible documents and those available in WSMR archives were searched for details regarding use of the Red Canyon training facilities. In addition, four former Army personnel (J. P. Moore, David Bohl, Ed Thelen, and Alan Graham) that were once stationed at Red Canyon, were contacted in search of details not readily gleaned from extant literature or physical remains. These personal communications were conducted by email and telephone calls (David Bohl only) and proved instrumental in identifying the function of several locations.

Laboratory of Anthropology (LA) site forms, including narratives detailing attributes of features and associated artifacts were completed for each location. All photographs were cataloged for archival storage and selected examples were uploaded with LA forms to augment site/feature narrative descriptions.

5.4 NRHP Evaluations

The evaluation of sites documented during this investigation included a review of current literature focused on determining NHPA eligibility on Cold War-period military sites. This search led to an in-depth, Cold War properties evaluation conducted in 1998 for Aberdeen Proving Grounds (Lavin 1998). Basic guidelines, clearly established within that document, were then applied to the sites. The NHPA identifies four broad criteria (as well as several special considerations) for NRHP eligibility. Under 36 CFR 60.4, a historic property may be placed on the NRHP if it:

- a) is associated with events that have made a significant contribution to the broad patterns of our history; or
- b) is associated with the lives of persons significant in our past; or
- c) embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- d) has yielded, or may be likely to yield, information important in history or prehistory.

Historic military properties, such as the subjects of this study, are most appropriately evaluated under Criterion A. The training of military personnel operating the nation's first defensive missile sites along the US coastlines and encircling major industrial areas is readily considered important, however, more specific qualifications must be met to meet eligibility requirements. The property "must be associated with an important Cold War event or have physical features

that clearly illustrate an important Cold War theme" (Lavin 1998:116). In addition, the property must retain integrity, which has been defined as "the ability of a property to convey its significance" (Lavin 1998:116-117). As all of the investigated sites can be considered associated with important Cold War events, the integrity criterion plays a crucial role in determining eligibility for the NRHP.

As mentioned previously, the army spent considerable effort to, "return the camp to its original desert state" (Bohl 1996). As Moore (1996a) relates: "When Red Canyon Range Camp closed in August 1959, everything was supposed to be torn down and removed. Everything, that is, except the chapel, concrete foundation pads for buildings and down range underground bunkers." This dismantling and policing of the area fulfilled the stated goals, as systematic removal of structures and facilities have largely reduced the Red Canyon Training Exercise area to clusters of concrete slabs, roadways, flattened areas, and bits of refuse. The current lack of physical remains—or more specifically, remains that illustrate functional roles—diminishes their significance within the Cold War historic context.

A few of the locations, however, do retain sufficient integrity to "convey its significance" and illustrate the "important Cold War theme" of early missile defenses (Lavin 1998:116-117). These properties consist of launch complexes with intact earthen bunkers, missile launch pads, and discernable barricades used to protect generator locations. Although remnants of these features are present at most of the 11 launch complexes documented during this study, many have deteriorated, or were partially destroyed during the dismantling process. As a result, only five of the launch complexes retain sufficient integrity to clearly convey their original function. These five sites are recommended eligible for inclusion in the NRHP—the remaining 18 investigated locations do not retain sufficient integrity to convey function and are recommended ineligible.

CHAPTER 6

RESULTS

This chapter consists of detailed descriptions of each of the 23 investigated sites. The narratives are presented in numerical order by LA number and include descriptions and informative photos of the locational settings, extant features, and any remaining artifact assemblages—whenever possible, functional interpretations are presented. A summary of findings and the NRHP recommendation is also included. Appendix A contains illustrations of selected features and items. Historic photographs of many of the sites and/or features are included in Appendix B.

6.1 SITE LA 185021

LA 185021 is a Cold War-era launch complex associated with the Nike Ajax Missile, Annual Service Practice (ASP) at Red Canyon on WSMR. The site is located approximately 0.70 miles (0.88 km) west of Range Road 11 and 0.70 miles (1.14 km) north of Craven Tank. Cultural materials are distributed on the top and east-facing slope of a low alluvial ridge on the east side of the mouth of Red Canyon. Six features and a rock alignment were recorded within a 400 x 350-foot (122 x 107-m) area (**Figure 6-1**). Vegetation is desert scrubland, with creosote, mesquite, snakeweed, soaptree yucca, prickly pear cactus, hedgehog cactus, cholla cactus, four-wing saltbush, and grasses; visibility averages about 90 percent. Sediment consists of red gravelly loam with cobbles and boulders of siltstone and limestone. In addition, gravels and gray silt with selenite crystals have been imported to the location. Only 10 percent of the site is estimated to be intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military. Few artifacts beyond construction materials such as wood, metal, concrete, nails, and a few fragments of beverage bottle glass were encountered.

6.1.1 Features

The six features include three launch pads, the remains of a semi-subterranean bunker, a threesided barricade, and a stone slab/pad/foundation. A rock alignment of unknown function was also documented.

Features 1, 2, and 3 are identical, wedge-shaped, concrete launch pads in various stages of deterioration. Based on the orientation of the pads, launch direction was to the northwest from this location. Feature 1 is heavily deteriorated and eroded, such that only elements of the original wooden concrete forms, concrete-coated gravels, and a steel plate remain. Feature 2 is in fair condition: the concrete is heavily weathered and deteriorating, with aggregate rock matrix exposed. The four anchor bolts are present within the main pad area of Feature 2 and a small, roughly circular concrete pad with two anchor bolts lies just beyond the western exterior.



Figure 6-1. LA 185021 plan map.

Feature 3 is the most intact of the three launch pads (**Figure 6-2**). The concrete pad is 17.5×13 feet, and the arc-shaped portion has a lipped edge. A 4×4 -foot steel plate is in the west-central portion, and a set of two one-inch anchor bolts are set into the concrete on either side. A remote anchor, consisting of a small, roughly circular, puddled-concrete pad with two anchor studs, is approximately 13 feet west of the pointed portion of the pad (see Appendix A, page A-3).

Feature 4 is the collapsed/demolished remains of a structure of unknown function connected to what is likely the remains of a semi-subterranean bunker (**Figure 6-3**). The construction materials (power poles, corrugated metal roofing, earth-filled crates, wood beams, cast-iron pipe, etc.) for the structure are scattered, suggesting disturbance or dismantling of this portion of the feature.



Figure 6-2. LA 185021, Feature 3 launch pad, view north.



Figure 6-3. LA 185021, Feature 4, view south-southeast.

Construction of Feature 4 involved mechanical excavation of an approximately 10-foot-deep area into the east-facing ridge slope to form a 16×20 -foot structure. A steel roof truss that was pieced together with recycled sections of transport rail is on the southern end of the structure. Stacked below the truss and against the southern face are earth-filled rectangular crates (possibly from small rocket motors). There is no indication of a truss support on the northern end, and two sections of six-inch cast-iron pipe protrude from the ground and rise slightly as they extend to the south. While it is not clear how they were integrated into the structure, they may have provided some support for the roof or, alternatively, they may have functioned as ventilation pipes. A welded hinge visible on upright channel-iron framing the entrance to the bunker remains suggests a door at this transition.

Extending from the southwest corner of the demolished structure is a possible semi-subterranean bunker. The bunker is 20 feet long, and the 12 feet abutting the demolished structure is about vie feet wide and six feet or more high. This portion of the bunker is comprised of stacked, earth-filled, 55-gallon drums topped with wood and steel. A one-inch transport rail was cut and welded to create a gabled support frame, which was then covered with corrugated metal roofing material. The remaining eight feet of the bunker narrows to less than three feet in width. This southernmost portion is constructed of stacked, earth-filled, rectangular crates and faced on the interior with corrugated roofing material. The framework, with a header at the south end, suggests a possible doorway. A trench continues 70 feet south from the feature, and an irregular, but roughly linear mound continues about 40 feet to the north.

Feature 5 is a three-sided generator barricade of dirt- and cobble-filled wooden crates situated in a swale or saddle (**Figure 6-4**). It is in fair to poor condition, with collapsing walls and deteriorating crates. The feature is open to the south and is about 22×22 feet in size.

The west wall of the barricade retains the highest level of integrity, exhibiting a series of six horizontally stacked crates that reach a maximum height of about three feet. The crates are held together with wire nails and a series of metal bands/straps, large bolts with wing nuts, and diamond-shaped metal plates; many are also reinforced with three bands of baling wire that appear to have been added for extra support. Three panels, which may have been flooring or wall reinforcements, lie inside the barricade. The panels are constructed of 2.5 x 3.5-inch lumber and are 33.5 feet long; there are also boards of various lengths nailed to the panels in perpendicular fashion. It is also possible that these constructions represent the remains of improvised wooden walkways. A buried section of five-inch-diameter cast-iron pipe extends in an upright position along the northeastern exterior of the barricade. Associated artifacts are limited to the wooden crates used in construction, scattered lumber and wood, corrugated metal, a five-gallon fuel can, and a paint can lid.

Feature 6 is a 20x 13-foot rock platform. A roughly square arrangement of rocks is about two feet to the north and, although not contiguous with the main platform, is clearly associated (see Figure 6-1). The main platform is constructed of dry-laid, tabular siltstone slabs, 8–10 inches above the surrounding ground surface. There are anchor bolts/studs protruding from the southeast interior of the feature and just beyond the feature limits to the south. A portion of a partially exposed stud plate is near the southwest corner, indicating structure stabilization



Figure 6-4. LA 185021, Feature 5 generator barricade area, view north with Feature 4 bunker in background.

efforts. Two lengths of two-inch transport rail are about eight feet to the north, two shorter pieces of similar rail joined at a 90-degree angle are just northwest, and multiple torch-cut bolts and washers lie just south.

In addition to the features described above, a 124-foot-long rock alignment of unknown function was documented at LA 185021. Situated on the east-facing slope in the southwestern portion of the site, the alignment is oriented east/west and is comprised of a single course of approximately 40 limestone boulders and tabular siltstone blocks. Although the majority of the alignment is single coursed in both height and width, several areas have a width of two to three boulders. Near the center of the main alignment, a five-foot-long, perpendicular, linear arrangement of rock extends to the north. A piece of steel machinery lies nearby and is, most likely, related to more recent military activities. While the function of this alignment is unknown, it may have served as erosion control.

6.1.2 Summary and NRHP Eligibility Recommendation

LA 185021 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Six features were documented in an area measuring 117,325 sq feet (10,900 sq m). The features include three launch pads, bunker remains, a three-sided generator barricade, and a stone pad/platform; a rock alignment of unknown function was also documented.

Red Canyon Range Camp (LA 110819) and the supporting training facilities associated with the Nike Ajax Missile program were active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at

Fort Bliss, a group remained until 1960 to police the camp and supporting facilities and remove structures. LA 185021 is one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. Although the presence of wedge-shaped launch pads only at this site is unique among the launch complex sites assessed during this study, Feature 3 is the only launch pad feature that retains integrity. The remaining features are eroded and deteriorated and/or have been purposely demolished and the materials removed. While the site may be considered to be associated with important events of the Cold War, the physical remains lack integrity and no longer embody the Cold War-Nike Ajax development/training/practice theme. LA 185021 is recommended not eligible for inclusion in the NRHP.

6.2 SITE LA 185022

LA 185022 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon on WSMR. A total of five features and a sparse artifact scatter occupy a 245 x 248-foot (75 x 76-m) area (**Figure 6-5**). The site is located approximately 0.10 miles (0.15 km) west of Range Road 11, and cultural materials occupy the top and east-facing slope of a low ridge on the east side of Red Canyon. The desert scrubland vegetation consists of creosote, snakeweed, soaptree yucca, bear grass, prickly pear cactus, banana yucca, scattered sumac, and grasses; visibility averages about 90 percent. Sediment consists of brown gravelly loam, and gravels and gray silt with selenite crystals have been imported to the location. The site is estimated to be about 80 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and cleanup by the military.

6.2.1 Features

The five features include three launch pads, a semi-subterranean bunker, and a generator barricade. Historic photos illustrate that features at LA 185022 evolved over time. In this case, the original launch pads consisted of sections of interlocking landing mat (see Appendix B, Figure B-1). The bunker evidently was remodeled to include additional earth covering and an adit-type main entry rather than a sky-facing doorway showing in historic photographs (see Appendix B, Figure B-2).

Feature 1 is a 40×10 -foot barricade and berm constructed of stacked sandbags and mechanically pushed dirt (**Figure 6-6**). The feature is eroded, with many of the sandbags broken and the burlap deteriorating. Based on historic photos and its similarity to other features in the project area, Feature 1 likely functioned as a generator barricade. The barricade is oriented northwest/ southeast, and short east-facing extensions form wings on both the north and south. At least six courses of sandbags were stacked to form Feature 1, which is currently about five feet high. Sandbags are visible on the east face, although the west face of the barricade exhibits only a gradually sloping dirt berm, and a chunk of concrete is adjacent to the southern exterior.

Feature 2 is an intact, earth-covered, semi-subterranean bunker that is virtually identical to Feature 1 at LA 185023. The feature mound is approximately 60 feet in diameter with a



Figure 6-5. LA 185022 plan map.



Figure 6-6. LA 185022, Feature 1 generator barricade area, view west with Feature 2 bunker in background.

vertical, steel, vent pipe extending from the top center (**Figure 6-7**). Feature 2 has a threefoot-wide main entry on the northeast elevation and an ancillary entry on the north elevation. Both entryways are framed with wood and have a corrugated metal covering overlain by soil. The ancillary entry is flanked on the west by what appears to be stacked sandbags filled with calcic gravel-free soil. Although burlap is not evident, their patterning supports the inference that bags of dirt were stacked. This construction may have been intended to bolster the woodframed entry prior to covering the bunker with earth.

Features 3, 4, and 5 are intact, rectangular, concrete launch pads (**Figure 6-8**). Based on the arrangement of the pads, along with the number of boosters and tailfin segments visible in the distance, launch direction was to the southwest.

Each pad is 21 x 20 feet, has a lipped east edge, an access port/recess framed in angle iron in the west-central portion, steel plate "caps," and a series of anchor bolts (see Appendix A for examples). The steel plate caps, which index within the access port/recess, include short sections of vertically protruding five-inch steel pipe. The caps may have protected cables and/ or hoses that ran through horizontal piping in the base of the access port/recess, under the pad, and through the pipe into a concrete access box situated just beyond the pad (see Figure 6-8). Features 3 and 4 both have an associated, formed-concrete access box about 19 inches to their south; the access box associated with Feature 5 may be buried. A horizontal, five-inch-diameter steel pipe at the base of the access boxes, that presumably housed cables or hoses, extends



Figure 6-7. LA 185022, Feature 2 bunker, ancillary entry on north elevation, view south.



Figure 6-8. LA 185022, Feature 3 rectangular launch pad, view north.

beneath the concrete pads and into the base of the access port/recess. Features 3 and 4 also have shadows of steel plates and anchoring bolts in their east-central portions indicative of plates and bolts that have been removed, and Feature 4 has an excellent example of a scorch mark from a missile blast (**Figure 6-9**). Features 4 and 5 retain one or more steel anchoring plates with a series of two, centered, one-inch bolts used to secure the launcher.

Few artifacts beyond construction materials such as wood, metal, concrete, nails, and two rocketfuel bottles (**Figure 6-10**) were encountered. The fuel bottles are aluminum with black plastic screw-on caps, and each includes a painted label reading "98ABB Fuel Rocket Engine +/-1CU IN Lot 40682-4/5 Loaded 9-55 Courtland Laboratories Los Angeles 63, California...Warning: Poison Do Not Drop, If Leaking Do Not Breath Fumes, Touch Contents, or Swallow. Caution: Do not reuse as food container." These bottles are inferred to have contained unsymmetrical dimethylhydrazine (UDMH). The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-9. LA 185022, scorch mark in east-central portion of Feature 4 launch pad.

6.2.2 Summary and NRHP Eligibility Recommendation

LA 185022 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Five features, including three launch pads, an intact bunker, and a generator barricade were documented in a 58,074-sq-foot (5,395-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960.

Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/ cleanup the camp and the supporting facilities and to remove structures. LA 185022 is one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments (see Appendix B). The physical remains at LA 185022 retain good integrity and embody the Cold War-Nike Ajax development/training/ practice theme. The site may be considered under the important events (Criterion A) associated with Cold War readiness missions at WSMR. For these reasons, LA 185022 is recommended eligible for inclusion in the NRHP.



Figure 6-10. LA 185022, aluminum rocket-fuel bottle.

6.3 SITE LA 185023

LA 185023 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon on WSMR. A total of seven features was mapped and described within a 320 x 198-foot (98 x 60-m) area (**Figure 6-11**). Located approximately 0.13 mi (0.21 km) west of Range Road 11, LA 185023 occupies the top and slopes of a low ridge overlooking a tributary drainage of Red Canyon to the west. Vegetation includes creosote, soaptree yucca, snakeweed, four-wing saltbush, prickly pear cactus, ocotillo, scattered sumac, and grasses; visibility averages about 95 percent. Sediment consists of residual, red-brown, gravelly loam. As with the majority of the sites recorded during this investigation, gravels and a large quantity of gray silt with selenite crystals have been imported to the location. The site is estimated to be about 80 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and some demolition/cleanup by the military.

6.3.1 Features

Seven features include three launch pads, a semi-subterranean bunker, a generator barricade, and two displaced concrete pads. Feature 1 is an intact, earth-covered, semi-subterranean bunker (**Figure 6-12**). The feature mound is approximately 80 feet in diameter with a four-inch-diameter, vertical, steel vent pipe extending from the top center and a horizontal steel pipe extending five feet from the southwest edge at ground level. Feature 1 has a main entry on the northeast elevation and an ancillary entry on the northwest elevation. Both entryways are framed in wood with a corrugated metal covering overlain by soil. The main entry is approximately three feet wide x four feet tall and has an 11-foot-long hall leading into the interior bunker room (**Figure 6-13**). This entrance is constructed of recycled power poles with notched corbels and 2 x 6-inch angle braces. The walls are plated with boards wrapped in corrugated metal roofing material. The ancillary entry is similar to the main entry, but it is only about two feet wide and three feet high and extends approximately 10 feet into the interior room.



Figure 6-11. LA 185023 plan map.



Figure 6-12. LA 185023, Feature 1 bunker, view south.



Figure 6-13. LA 185023, Feature 1 bunker, southwest view into main entry.

The main room of the bunker is constructed of double-stacked, 55-gallon drums filled with earth or concrete. Sections of load-bearing, steel I-beams, or transport rails span the ceiling. These were, in turn, covered with lumber, and possibly, overlain by a concrete slab. Although the concrete slab is not visible in this instance, it has been noted in other features of this type, and may be evidenced by spoil/displaced concrete (Features 5 and 7) on the site.

Feature 2 is a wedge-shaped launch pad that, although partially buried, appears to be in good condition. The pad is 17.5×13 feet in size and has a lipped edge (see Appendix A for example). A 4×4 -foot steel plate is just west of center, and a set of two anchor bolts on either side are in a one-foot center.

Features 3 and 4 are rectangular concrete launch pads (**Figure 6-14**). Based on the arrangement of the pads and the number of boosters and tail fin segments visible in the distance, launch direction was to



Figure 6-14. LA 185023, Feature 4 launch pad, view west.

the southwest. Each launch pad is 21×30 feet, exhibits a lipped east edge, has an access port/recess in the west-central portion, and a series of anchor bolts (see Appendix A for examples).

Feature 5 is a displaced, upside down, wedge-shaped launch pad (**Figure 6-15**). Four rods, corresponding with the location of steel plates observed on other launch pads of this type, protrude from the pad. Cases with anchors are at the corners, and fan-shaped metal anchors on rods, likely representing soil anchors, extend from these anchor molds/footings.

Feature 6 is a three-sided generator barricade that opens to the east. The barricade is constructed of stacked sandbags filled with local soil and gravels (**Figure 6-16**). The feature is in fair condition, but is actively eroding, with many of the sandbags broken and the burlap deteriorating.

Feature 6 is 14 x 12 feet in size, although, the westernmost four feet of the south wall is offset to the north, restricting the western portion of the interior to a width of about nine feet. The most intact portions of the barricade walls are about three feet high and exhibit the remains of at least four courses of sandbags. Four concrete blocks that are likely footings or stands for elevating a generator are centered in the open end of the barricade; each block has been broken from a larger piece of concrete. A fifth concrete block is about seven feet downslope in a drainage, however, its original location and association is unclear. An insulated electrical cable protrudes about two feet to the west from an eroded gap in the west wall of the feature, and the presence of three vertical anchoring rods and a partially buried copper pipe suggests that a fuel tank may have been situated just outside.



Figure 6-15. LA 185023, Feature 5 displaced launch pad, view south.



Figure 6-16. LA 185023, Feature 6 generator barricade with Feature 1 bunker in background, view northwest.

Feature 7 is a displaced, upside-down, roughly ovoid-shaped, concrete slab fragment measuring 3×4.5 feet. The concrete was poured over a layer of tabular siltstone rocks and is reinforced with welded square-panel fencing; one anchor protrudes from the concrete.

In addition to the seven features, a rock pile and an area of puddled concrete with cobbles were noted. The rock pile measures 12×6 feet and is situated 100 feet outside the northern site boundary along the access road. The pile does not exhibit a discrete shape or evidence of intentional arrangement and may simply be a push pile resulting from the clearing of the access road. The puddled concrete is likely waste material resulting from construction of a nearby launch pad.

Few artifacts beyond construction materials such as wood, metal, concrete, nails, and clear beverage bottle glass fragments were observed. The lack of artifacts—which was noted at all of the sites recorded during the current investigation—is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.3.2 Summary and NRHP Eligibility Recommendation

LA 185023 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Seven features, including three launch pads, an intact bunker, a generator barricade, and two displaced/upside down concrete pads, were documented within an area measuring 55,233 sq feet (5,131 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a crew remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185023 is one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. The physical remains at LA 185023 retain good integrity and embody the Cold War-Nike Ajax development/training/practice theme. The site may also be considered under the important events (Criterion A) associated with Cold War readiness missions at WSMR. For these reasons, LA 185023 is recommended eligible for inclusion in the NRHP.

6.4 SITE LA 185024

LA 185024 is a Cold War-era site of unknown function associated with the Nike Ajax Missile, ASP at Red Canyon on WSMR. A single feature, a few artifacts, and a scatter of construction debris were recorded in a 106 x 89-foot (32 x 27-m) area (**Figure 6-17**). Located approximately 450 feet (137 m) west of Range Road 11, cultural materials occupy the east-facing slope of a low, south-trending alluvial ridge overlooking a tributary drainage of Red Canyon to the west. Vegetation includes creosote, snakeweed, prickly pear cactus, yucca baccata, cholla cactus, bear grass, and grasses; visibility averages about 90 percent. Surface soil consists of residual,



Figure 6-17. LA 185024 plan map.

red-brown, silty, gravelly loam. Only 10 percent of the site is estimated to be intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.4.1 Features

Feature 1 is the remains of a possible bunker or storage building; however, unlike other bunkers recorded during this investigation, it is not semi-subterranean (**Figure 6-18**). The structure appears to have been constructed in the center of a 10-foot-high, C-shaped, mound/berm of dirt, rock, and concrete chunks. The mound/berm is approximately 65×45 feet, and the structure is about 10.5×10.5 feet (**Figure 6-19**). There is upright framing on the north side of the feature, which is indicative of an entry—the framed area is 4.5 feet wide and five feet high.

Construction appears to have involved imported soil and rocks to form the mound/berm and mechanical excavation to a depth of approximately three feet into the gently sloping northeast-facing landform at the central portion of the berm/mound. The trench that was excavated for the structure continues northward for about 20 feet beyond the building, although no indication of blading to level access is apparent.

The room itself has walls constructed of a frame of 4×4 -inch lumber uprights plated with 2×6 -inch wooden boards, with rock and piled against the east, west, and south walls. The walls on the east and west are capped with steel C-channel, and the north and south ends are capped with transport rail. Two, horizontal, 10-inch-diameter pipes protrude into the structure through the upper portion of the south wall at converging angles. No indication of these pipes is visible on the exterior of the mound. Sections of rail similar to that used to cap the north and south walls were cut and welded at just over a 90-degree angle to form five roof joists. The presence of lumber and corrugated metal scattered in the area around the feature suggests that the roof was decked with the lumber and sealed with the corrugated sheet metal.

Few artifacts beyond construction materials such as wood, metal, concrete, nails, steel rail, and pipe were observed. Artifacts associated with Feature 1 include a .45 ACP cartridge with a head stamp reading "WCC 67" (indicating Western Cartridge Company 1967); an industrial spark plug; nails; a tin hub-like cylinder from a heavy paper roll; and three beverage cans with interlocking tab-type seams suspected to be emergency drinking water cans (**Figure 6-20**).

Additional artifacts include a fragment of steel machinery, a rocket booster fragment, and a large coil spring (Figure 6-21). The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-18. LA 185024, overview of Feature 1 bunker remains, view south-southeast.



Figure 6-19. LA 185024, Feature 1 bunker remains, view southwest.



Figure 6-20. Example of emergency drinking water cans similar to those found at LA 185024 (note interlocking tabs along seam on the left).



Figure 6-21. Rocket booster fragment and coil spring located on the southeastern boundary of LA 185024.

6.4.2 Summary and NRHP Eligibility Recommendation

LA 185024 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. An artifact scatter and a single room or bunker feature were documented in an area measuring 10,558 sq feet (981 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. While LA 185024 shares a similar feature type (bunker-like room) with the 11 launch complexes reported upon herein, it lacks evidence of the other
features, such as launch pads and a generator barricade area, that were consistently found on these sites. It is postulated that the feature at this location functioned as a storage room, although, no evidence remains to indicate what may have been stored here. The physical remains at LA 185024 do not retain integrity and do not embody the Cold War-Nike Ajax development/ training/practice theme. Due to the absence of intact remains, the site cannot be considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185024 is recommended not eligible for inclusion in the NRHP.

6.5 SITE LA 185025

LA 185025 is a Cold war-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon on WSMR. Located approximately 0.32 miles (0.52 km) west of Range Road 11, LA 185025 consists of seven features in a 427 x 350-foot (130 x 107-m) area (**Figure 6-22**). The cultural materials occupy the top and slopes of a southeast-trending ridge overlooking the mouth of Red Canyon to the west. Desert scrubland vegetation includes creosote, soaptree yucca, four-wing saltbush, prickly pear cactus, snakeweed, and sparse grasses; visibility averages about 85 percent. Sediment consists of brown, alluvial and residual, gravelly loam with cobbles and remnant exposures of red-brown Abo Formation silt and gravels. As with the majority of the sites recorded during this investigation, gravels and a large quantity of gray silt with selenite crystals have been brought to the location. The site is estimated to be about 30 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military (**Figure 6-23**).

6.5.1 Features

The seven features include three launch pads, the remains of a semi-subterranean bunker and associated trench, a depression, a rock alignment, and a circular arrangement of boulders. Features 1, 2, and 3 are identical, rectangular, concrete launch pads on the mechanically bladed/leveled ridge top. A drawing of Feature 1 can be found in Appendix A, page A-4. Based on the arrangement of the pads, along with a number of boosters and tail fin segments visible in the distance, launch direction was to the west. Each launch pad is 21×30 feet, exhibits a lipped east edge, an access port/recess in the west-central portion, and a series of anchor studs indicative of the former location of steel anchor plates and a steel scorch plate (**Figure 6-24**).

Each pad also exhibits two anchor plate locations on the northeast- and southeast-central portion and a 4x4-foot steel anchor plate location centered in the east-central portion. This larger plate location on Feature 2 has an excellent example of a scorch mark (see Figure 6-24). On the west-central portion of the pad is another 4x4-foot steel plate location with a pattern of anchor studs set on a 14-inch center. Remnants of concrete plaster surrounding the locations of the steel anchor pads indicate that a plastered or concrete-sealed base was once attached. Unlike other examples recorded during this project, no steel plates, angle-iron lining in the access port, or steel access-port caps remain, and no evidence of a concrete access box was observed. Nonetheless, the concrete pads themselves remain intact.



Figure 6-22. LA 185025 plan map.



Figure 6-23. Overview of LA 185025 with Feature 1 on right, Feature 2 on left, and Feature 4 in center background, view northeast.



Figure 6-24. LA 185025, Feature 2 launch pad (note scorch mark and ghost of scorch plate location), view northwest.

Feature 4 is the demolished remains of a semi-subterranean bunker (**Figure 6-25**). The feature mound is approximately 60 feet in diameter and composed of dirt, rock, and concrete slab fragments. A single entry is on the east elevation at the end of a 150-foot-long and 20-foot-wide and six-foot-deep, mechanically excavated trench. The trench was partially excavated into the ridge slope to allow construction of the bunker structure. It is not clear whether Feature 4 was covered with earth, or built in the center of the excavated mound/semicircular berm. The center is at an elevation 6–9 feet below the top of the mound.



Figure 6-25. LA 185025, Feature 4 bunker remains, view southwest.

Although completely demolished, the majority of the original construction materials remain and include: at least 12 six-inch-wide, steel I-beams or transport rails; about 10 concrete-filled, 55-gallon drums; 10 or more steel landing-pad panels; more than 10 railroad tie-sized lumber beams; sheets of corrugated metal; rebar; seven-inch-diameter steel pipe; and concrete slabs. In addition, multiple pieces of mangled metal and steel are scattered throughout the bunker location.

Presumably, the steel landing pad panels formed the bunker walls. Each panel is 12 feet long and 1.7 feet wide, and they are joined together with interlocking tabs. The majority of the accessible panels are backed with large aggregate concrete, with thicknesses varying from eight to 24 inches. It is postulated that the walls were framed with the railroad tie-sized pieces of lumber and then plated with the concrete-backed landing pad panels. The concrete-filled 55-gallon drums likely provided roof and/or additional wall support. The roof appears to have been constructed of wooden beam supports overlain by concrete and corrugated metal. The steel pipes likely functioned as ventilation shafts between the bunker room and the exterior.

About midway between the bunker remnant and the east end of the trench are four concrete blocks arranged in about a 5×3 -foot rectangular pattern (**Figure 6-26**). These blocks, along with an upright steel pipe, may represent the footings or stand for a generator.



Figure 6-26. LA 185025, Feature 4 concrete footings in trench with bunker remains in background, view west.

Feature 5 is a depression of unknown function along the southeastern site perimeter. The depression is approximately 10 feet in diameter and has a maximum depth of 2.5 feet. A makeshift segment of a wooden ladder was noted along the northwest edge of the depression.

Feature 6 is a 23-foot-long, northeast/southeast-oriented boulder alignment near the northern site boundary. The alignment is single course and comprised of 16 limestone and siltstone boulders with one, upright lumber post on the west end and two upright tabular boulders on the east end that likely supported another lumber post that lies nearby. There is an artifact cluster approximately 100 feet to the southwest of the feature. Although the function of Feature 6 is unknown, it may have been a sign, or possibly a communication-wire path marker, as it lies across a faint north/south-trending scar in the landscape.

Feature 7 is a roughly circular arrangement of boulders northwest of the main launch-feature area and about 50 feet west of the access road into the launch complex. The feature is about three feet in diameter and is comprised of limestone boulders and cobbles, along with one red siltstone slab. Some of the feature elements are stacked, and, although no charcoal was noted, it appears to be a hearth. A scatter of brown bottle glass was noted about seven feet to the north.

Few artifacts beyond construction materials such as wood, metal, concrete, nails, steel pipe, corrugated metal, landing-pad panels, rebar, a wooden ladder segment, 55-gallon drums, and sheet metal with "US Army" stenciled on it were observed. Artifacts not related to construction include several small beverage cans (see Figure 6-20) with interlocking tab seams (emergency water cans), brown bottle glass, clear gallon-sized bottle glass, a rocket booster and coil spring, and multiple aluminum rocket propellant bottles clearly marked unsymmetrical dimethylhydrazine. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.5.2 Summary and NRHP Eligibility Recommendation

LA 185025 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Seven features, including three launch pads, a demolished bunker, a depression of unknown function, a rock alignment, and a rock ring postulated to be a hearth, were documented in an area covering 106,836 sq feet (9,925 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185025 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, barricades/generator areas, and rock alignments. The physical remains as a whole at LA 185025 retain fair to poor integrity and do not embody the Cold War-Nike Ajax development/training/ practice theme. Due primarily to poor integrity, LA 185025 is recommended not eligible for inclusion in the NRHP.

6.6 SITE LA 185026

LA 185026 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon on WSMR. The site consists of four features in a 273 x 171-foot (83 x 52-m) area (**Figure 6-27**). Located approximately 0.6 miles (0.94 km) west of Range Road 11, cultural materials occupy the top and east-facing slope of a low, east-trending alluvial ridge overlooking a southeast-running drainage to the east. Vegetation includes creosote, four-wing saltbush, prickly pear cactus, snakeweed, yucca, scattered sumac, and sparse grasses; visibility averages 95 percent. Sediment consists of red-brown, alluvial and residual, gravelly loam. As with the majority of the sites recorded during this investigation, gravels and a large quantity of gray silt with selenite crystals have been brought to this location. The site is estimated to be about 80 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military. A tremendous amount of gray soil has been brought into the site—it covers the entire west half, as well as the bunker (Feature 3).



Figure 6-27. LA 185026 plan map.

6.6.1 Features

Four features include two launch pads, an intact bunker and associated trench, and a depression. Features 1 and 2 are identical, rectangular, concrete launch pads (**Figure 6-28**). The pads are arranged north/south on the west side of the bunker feature. Based on the arrangement of the pads, along with boosters and tail fin segments visible in the distance, launch direction was to the west. A dense concentration of nails, metal, and bottle glass is off the southwest corner of Feature 2 (see Appendix A, page A-5).

The pads are 21×30 feet and have a lipped east edge. An access port/recess and a series of anchor studs indicate the former location of three steel anchor plates situated within the west-central portions of the pads. About a four-foot-square, steel scorch plate is in the east-central portion of each pad, and surrounding the scorch plate locations are square arrangements of 14 lead anchors—six on the east, six on the west, and one each on the north and south.

The access ports are lined with angle irons—a steel pipe built into the base of the access ports extends to the north beneath the pads. West of the access ports is another steel plate location with a pattern of anchor studs set within a 15-inch center.

Each pad also has two anchor plate locations that exhibit square patterns of anchor studs at 15-inch centers. Remnants of concrete plaster surrounding the anchor pad locations indicate that a plastered, or concrete-sealed base was once attached. Unlike other examples recorded during this project, no steel plates, steel access port caps, or evidence of an exterior concrete access box was observed. Nonetheless, the concrete pads themselves remain in good condition.

Feature 3 is an intact, earth-covered, semi-subterranean bunker (**Figure 6-29**). The feature mound measures approximately 55×40 feet. The bunker was constructed by mechanically excavating a 15-foot-wide and 10-foot-deep trench into the ridge slope. The excavated area at the west end of the trench was then lined with upright 55-gallon drums, which were filled with concrete and/or dirt to form walls. The outside of the drum wall was then plated with indexed steel landing plates. The interior of the bunker appears to have a roof that only reaches four feet in height—steel transport rails were laid to frame the ceiling and then were overlaid by a concrete slab. The entire structure was covered with earth and topped with gray soil to form the mound. A steel pipe extends from the top of the bunker mound, and a communication-wire path runs in a southeast direction from the southeast end of the bunker mound beyond the site boundary.

The bunker has two entrances—the main entry is on the east elevation and an ancillary entry is on the north elevation. The main entry of Feature 3 extends 10 feet from the main chamber, is about four feet wide, and has a maximum height of four feet (**Figure 6-30**). The entry is framed with large timbers and beams, some of which are perforated or notched and are similar to powerline crossbeams. The walls and roof were covered in corrugated metal sheeting and then in soil. The ancillary entry is a 21×27 -inch lumber-lined shaft (**Figure 6-31**). The shaft, which is about six feet eight inches deep, contains a ladder constructed of 2×4 -inch lumber.



Figure 6-28. LA 185026, Feature 1 launch pad with Feature 3 bunker in background, view east.



Figure 6-29. LA 185026, Feature 3 bunker, view south.



Figure 6-30. LA 185026, Feature 3 main entry, view southwest.



Figure 6-31. LA 185026, Feature 3 shaft entry on north elevation.

Feature 4 is trench/depression of unknown function, although, it may have functioned as a privy. The feature is 10×3 feet in size and has a maximum depth of 2.5 feet. A 1957 green glass "Coke" bottle lies on the northern exterior edge of the trench. No evidence of a superstructure is visible, but several boulders are situated along the southeast exterior perimeter.

The majority of the artifacts consist of construction materials such as wood, metal strapping, concrete, nails, and scraps of corrugated metal. A dense concentration of thousands of nails, along with bottle glass and metal strapping is located along the southwest corner of Feature 2. Artifacts not related to construction include a complete "Coke" bottle, brown bottle glass, and a wooden crate. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.6.2 Summary and NRHP Eligibility Recommendation

LA 185026 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Four features, including two launch pads, an intact bunker, and a trench/depression of unknown function, were documented in an area measuring 46,980 sq feet (4,365 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185026 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. The physical remains as a whole at LA 185026 retain good integrity and appear to embody the Cold War-Nike Ajax development/ training/practice theme. Due primarily to the good condition of the launch pads and the bunker, LA 185026 is recommended eligible for inclusion in the NRHP and is considered under Criterion A.

6.7 SITE LA 185027

LA 185027 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP in Red Canyon at WSMR (**Figure 6-32**). A total of five features was mapped and described within a 329 x 173-foot (100 x 53-m) area (**Figure 6-33**). Cultural materials occupy the top and east-facing slope of a low, southeast-trending ridge, overlooking a tributary drainage of Red Canyon to the east. The desert scrubland vegetation includes creosote, four-wing saltbush, snakeweed, sumac, yucca baccata, sagebrush, scattered juniper, and grasses; visibility averages about 70 percent. Surface sediment is residual, Abo Formation, silty loam with siltstone and limestone gravels and cobbles. As with the majority of the sites recorded during this investigation, gravels and gray silt with selenite crystals have been imported to the location. The site is estimated to be about 30 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.



Figure 6-32. LA 185027 overview (note Feature 4 bunker mound in background and Feature 5 generator barricade on slope) view southwest.

6.7.1 Features

The five documented features include three launch pads, the remains of a semi-subterranean bunker, and a stone barricade. Features 1, 2, and 3 are concrete launch pads that are arrayed in a northwest/southeast direction on the west side of Feature 4 (bunker). Based on the arrangement of the pads, along with a number of boosters and tail fin segments visible in the distance, launch direction was to the southwest.

Features 1 and 3 are 21 x 30-foot rectangular-shaped pads (see Appendix A for examples, page 4). Both features have a lipped east edge, an access port/recess in their west-central portion, and a series of anchor bolts. They both also have a seven-inch diameter pipe in the base of the access port that runs in a southerly direction underneath the concrete and terminates in the base of an exterior access box about 18 inches to the south. Feature 1 retains three steel mounting plates, while the blast plate is missing, and steel angle plating has been removed from the access port. All anchor plates, the blast plate, and the angle iron access-port lining have been removed from Feature 3—a rectangular pattern of lead anchors surrounds the former blast plate locations on the pad.

Feature 2 is a wedge-shaped launch pad centered between Features 1 and 3 (see Appendix A for example, page A-3). The pad is 17.5×13 feet in size, and the arc-shaped portion faces east-northeast. This arc-shaped portion has a formalized lipped edge bearing an impression that reads, "SET 99 PKG. 20 B Battery 504 AAA BN" (Figure 6-34). A 4x 4-foot steel plate has been removed from just west of center, leaving only the bolt pattern—a set of two one-inch anchor bolts in a one-foot center on either side. Another set of two anchor bolts is approximately 12 feet west of the pad.



Figure 6-33. LA 185027 plan map.



Figure 6-34. LA 185027, Feature 2 wedge-shaped launch pad. Photograph inverted to show inscription on lipped edge, view east.

Feature 4 is the demolished remains of an earth-covered semi-subterranean bunker (**Figure 6-35**). The feature mound is approximately 110×100 feet, and both entryways have either collapsed or been demolished. There is debris, including massive timbers, large concrete beams/blocks, wooden posts, perforated beams, and corrugated roofing metal at the location of the main entry on the east elevation. A six-inch-diameter steel pipe once protruded from the bunker mound west of the entry, but this area has caved in, exposing rebar and a portion of a buried concrete roof. A shallow trench with buried wires runs east from near the location of the collapsed ancillary entry on the north elevation to Feature 5 (barricade).

Feature 5 is a 16 x 12-foot, three-sided, wall/barricade approximately 90 feet east of Feature 4 (bunker). Although a generator location is inferred, this example is not only exceptionally large, it is also difficult to access due to the steep slope. The feature, which is partially excavated into the east-facing ridge slope, is constructed of stacked siltstone and limestone slabs (**Figure 6-36**). Slabs were stacked to complete the upper three feet of the walls, and the stacked-slab walls were covered in earth (or possibly now-deteriorated sandbags) and capped with tabular cobbles and gravels. The barricade was originally about six feet deep, and the upper limits are flush with the slope surface on the west (upslope) side. Feature 5 is open on the east, and the edge of the southeast wall appears to have been supplemented with stacked sandbags (**Figure 6-37**). Two insulated power cords (typical 110 volt) enter the barricade on the west end from the trench that runs east from the bunker (Feature 4). A five-gallon metal bucket bearing an embossed label reading "STC ICC 37A80 J6L 24 5 58" was noted downslope from the barricade.

Few artifacts beyond construction materials such as wood, metal, concrete, bolts, and nails were observed. Artifacts not associated with construction include a few pieces of clear bottle glass and a five-gallon bucket. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-35. LA 185027, Feature 4 demolished bunker.



Figure 6-36. LA 185027, Feature 5 barricade area, view west.



Figure 6-37. LA 185027, Feature 5 barricade southeast wall detail, view west.

6.7.2 Summary and NRHP Eligibility Recommendation

LA 185027 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Five features, including three launch pads, a demolished bunker, and a three-sided barricade, were documented within an area measuring 47,062 sq feet (4,372 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185027 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, barricades/generator areas, and rock

alignments. Although the launch pads remain intact, the majority of the associated hardware has been removed. The barricade also retains good integrity and is unique. The bunker, however, has been completely demolished. The physical remains at this location do not retain the level of integrity necessary to exemplify the Cold War-Nike Ajax development/training/practice theme and the site, therefore, is not considered under the important events (Criterion A) criteria. LA 185027 is recommended not eligible for inclusion in the NRHP.

6.8 SITE LA 185028

LA 185028 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon at WSMR. A total of six features in a 329×210 -foot (100×64 -m) area was mapped and described (**Figure 6-38**). Cultural materials occupy the top and east-facing slope of a low, southeast-trending ridge overlooking a tributary drainage of Red Canyon to the west. Vegetation includes creosote, four-wing saltbush, sumac, snakeweed, yucca (soaptree and banana), prickly pear and cholla cactus, bear grass, scattered juniper, and grasses; visibility averages about 80 percent. Surface sediment is red-brown, residual, silty loam with siltstone and limestone gravels. As with the majority of the sites recorded during this investigation, gravels and gray silt with selenite crystals have been imported to this location. The site is estimated to be about 50 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and cleanup by the military.



Figure 6-38. LA 185028 plan map.

6.8.1 Features

The six documented features include three launch pads, an intact semi-subterranean bunker, an earthen mound, and a rock alignment. Features 1, 2, and 3 are launch pads aligned in a northwest/ southeast direction on the west side of Feature 4 (bunker). Based on this arrangement, along with a number of boosters and tail fin segments visible in the distance, launch direction was to the southwest from this location.

Launch pad Features 1 and 2 are both rectangular, 21 x 30 feet in size, have a lipped east edge, an access port/recess in the west-central portion of the pad, three steel anchor pads, a series of anchor bolts associated with the previous blast plate location, and a concrete access box on the southern exterior (**Figure 6-39**). The blast plates have been removed from both features, although a rectangular pattern of lead anchors surrounds the former locations, and the angle iron access-port lining has also been removed from Feature 2 (see Appendix A, page A-4).

On Feature 1, steel angle plating remains on the lip of the access port. A pipe in the base of the access port (**Figure 6-40**) runs in a southerly direction underneath the concrete and terminates in the base of an exterior access box about 18 inches north of the pad. Feature 2 has this same access port configuration, except the exterior box is south of the pad (**Figure 6-41**).

Feature 3 consists of two, paired, 1-inch-diameter anchor studs with poured concrete bases in 23-inch-diameter round steel forms, or drums. This pad, although not typical, has the usual launcher bolt patterns and a series of anchor bolts that are 14 feet apart at the outside studs. A 15-foot-long length of transport rail, secured by five round bars, or pins, is partially buried about 6.5 feet to the east of the anchor studs. These, and other protruding anchor pins appear to have been intentionally mushroomed with a cutting torch (see Appendix A, page A-6).

Feature 4 is an intact, earth-covered, semi-subterranean bunker (**Figure 6-42**). The feature mound measures approximately 50 feet in diameter and has a main entryway on the northeast elevation and a collapsed ancillary entry on the north elevation. The main entry has a gabled wooden roof overlain with blocks of siltstone, and communication wire extends into the bunker from a drilled hole above it. There is a small wooden crate approximately 20 feet southeast of the bunker entry (**Figure 6-43**).

Construction of the bunker involved the excavation of approximately three feet into the eastfacing slope, building the bunker room, and then covering the structure in siltstone blocks and earth. The interior of the bunker room, which was built of 4×4 -inch lumber framing reinforced with wooden plating, is approximately 10×10 feet. The ceiling/roof is constructed of a number of wooden joists and cross beams covered with boards that have, in turn, been covered with corrugated metal sheeting. Horizontally laid transport rail is incorporated into the roofing structure against the interior walls. Two ventilation pipes are in the upper corners of the west wall (**Figure 6-44**), but no evidence of these pipes is visible on the mound exterior.

Feature 5 is a 120-foot-long single-course rock alignment. The alignment is in the eastern portion of the site and runs roughly north/south; a cluster of boulders lies at the north end of the alignment. The function of Feature 5 is unknown, although, it may demarcate the location of buried communication wire, or have possibly functioned as erosion control.



Figure 6-39. LA 185028, Feature 1 launch pad, view northeast.



Figure 6-40. LA 185028 Feature 1 access port (top view left, interior view with pipe right).



Figure 6-41. LA 185028, Feature 2 (note exterior concrete access box) view north-northeast.



Figure 6-42. LA 185028, Feature 4 bunker, view southwest.



Figure 6-43. LA 185028, wooden crate associated with Feature 4 bunker.



Figure 6-44. LA 185028, Feature 4 bunker interior (note ceiling/ roof detail and vent pipes in upper corners of far wall).

Feature 6 is a 50×25 -foot mound/berm of earth, rock, and concrete spoil on the southwestern site periphery (**Figure 6-45**). A shallow, 20 foot-wide cut adjacent and east of the mound extends about 12 feet to the east. This may be a mechanically leveled area, as it would not provide sufficient materials to produce the mound/berm. The function of Feature 6, if any, is unknown. In addition to the concrete spoil in the south end of the mound/berm, a weathered, 10 foot-long, 2×6 -inch board lies just to the west.



Figure 6-45. LA 185028, Feature 6 earthen mound/berm, view north-northwest.

About 60 feet east of Feature 6 is a cluster of three small concrete blocks similar to those found at other sites. Although associated with generator locations/barricades at the other sites, these seem to be displaced/discarded at this location, as LA 185028 lacks the barricade feature common to other launch complex sites in the project area. In addition to the features described above, two large piles of gravel were mapped along the northwest site perimeter.

Few artifacts beyond construction materials such as wood, metal, concrete, and nails were observed. Artifacts not associated with construction include a small wooden crate, a few telegraph poles, and a 55-gallon drum. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.8.2 Summary and NRHP Eligibility Recommendation

LA 185028 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Six features, including three launch pads, a mostly intact bunker, a single-coursed rock alignment, and an earthen mound/berm, were documented within an area measuring 65,125 sq feet (6,050 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a detail remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185028 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. Although the bunker retains good integrity, the physical remains at this location do not appear to retain the level of integrity necessary to exemplify the Cold War-Nike Ajax development/training/practice theme and the site, therefore, is not considered under the important events (Criterion A) criteria. LA 185028 is recommended not eligible for inclusion in the NRHP.

6.9 SITE LA 185029

LA 185029 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon at WSMR. The site is located approximately 0.06 miles (0.09 km) east of Range Road 11 and approximately 0.08 miles (0.13 km) southeast of the Red Rio Bombing Range gate. Red Canyon Range Control (LA 185034) is visible on a ridge top 0.82 miles (1.32 km) to the northwest. LA 185029 consists of seven features in a 248 x 227-foot (76 x 69-m) area (Figure 6-46). Cultural materials occupy the top and slopes of a low, southwest-trending alluvial ridge overlooking a tributary drainage of Red Canyon. Desert scrubland vegetation includes creosote, four-wing saltbush, snakeweed, soaptree yucca, prickly pear and cholla cactus, scattered sumac and mesquite, and grasses; visibility averages about 80 percent. Surface sediment is silty loam with siltstone and limestone gravels and cobbles. As with the majority of the sites recorded during this investigation, the landform has been mechanically modified, and gravels and grav silt with selenite crystals have been imported to this location. Particularly visible on aerial photos, these materials have been used at this location to form pathways/road access to all the site features and the surrounding area (see Figure 6-46). The site is estimated to be about 40 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/ cleanup by the military.

6.9.1 Features

The seven documented features include four launch pads, the remains of a semi-subterranean bunker, the remains of a barricade, and a rock alignment. Features 1, 2, 3, and 4 are hexagonal-shaped concrete launch pads that are arrayed in a northwest/southeast arc on the west side of the bunker (**Figure 6-47**). Based on the arrangement of the launch pads, along with a number of boosters and tail fin segments visible in the distance, launch direction was to the southwest from this location.

Each launch pad is 28×20 feet in size and has three sets of paired anchors for securing the missile launcher. A square pattern of four studs indicative of a blast plate location; numerous small anchors, including 7/16-inch, $\frac{3}{8}$ -inch, and $\frac{1}{2}$ -inch examples; and a grounding rod. Many of the anchors (including the launcher anchors) were originally secured with molten lead rather than the "drop-in" types observed at other launch complex sites. With the exception of the launcher anchor studs, all the anchors have been torch cut.



Figure 6-46. LA 185029 plan map.



Figure 6-47. LA 185029, Feature 3 hexagonal launch pad (note Feature 5 bunker mound in background), view northeast.

The hexagonal concrete launch pads are unique among the other pads documented during this investigation (see Appendix, Figure B-3). Unlike the other launch pads, these examples do not have lipped edges, nor do they contain access ports/recesses or associated exterior access boxes (see Appendix A, page A-7).

Feature 2 has a section of sheet metal channel along the east side (**Figure 6-48**), which presumably, functioned as protection for electrical cables. Feature 3, although identical to Features 1 and 2 in every other aspect, lacks all of the smaller anchors except for those associated with the blast plate and the launcher feet, and the blast plate anchors have not been torch cut. The Feature 3 pad is badly cracked with vegetation (grasses) exacerbating the deterioration. Feature 4, also badly cracked, is identical to Feature 3, although, it retains the $\frac{1}{4}$ -inch studs securing the sheet metal cable cover near the south end (**Figure 6-49**).

Feature 5 is an earth-covered, semi-subterranean bunker. On the south side of the bunker mound, along the highest elevation, a segment of two-inch rail was sunk vertically, supporting a horizontal board, apparently to retain soil in this area of the mound. No discernable evidence of the bunker construction materials, such as a concrete slab cap or 55-gallon drums, is visible.

The feature mound is approximately 60×75 feet in size and has two collapsed/demolished entryways. The main entry is on the southeast elevation, and the ancillary entry is on the north/ northwest elevation. The main entry (**Figure 6-50**) appears to have had a passageway that extended at least 10 feet from the feature mound, then turned west before intersecting with the main chamber. This entry was constructed of large timbers, wire nails, and 2×6 -inch boards.



Figure 6-48. LA 185029, Feature 2 sheet metal cable protector.



Figure 6-49. LA 185029, Feature 4 (note anchor pattern and sheet metal cable cover) view south.



Figure 6-50. LA 185029, Feature 5 bunker, collapsed main entry on south elevation, view north.

The ancillary entry, which was constructed of large timbers, wire nails, 2 x 6-inch boards, and corrugated metal roofing, is two feet wide and only 15 inches high (**Figure 6-51**). The passage extended approximately nine feet south into the mound before turning west toward a more elevated portion of the mound and, presumably, into the main bunker chamber.

Feature 6 is a 30-foot-long, single-course, limestone and siltstone, boulder alignment near the northeast site boundary. The alignment is oriented northeast/southwest and runs toward the open end of Feature 7 (barricade remains). The alignment lies on an imported gravel path/ pad which may have been part of the original access into this launch complex. Although the function of Feature 6 is unknown, based on its location in relation to the barricade, and its consistency with other alignments in the project area, the alignment may have demarcated an electrical cable or communication wire path. One piece of green "Coke" bottle glass is associated with Feature 6.

Feature 7 is the deteriorated remains of a 30×20 -foot, three-sided, wall/barricade. The presence of shreds and fragments of burlap bags indicates that the feature was originally constructed of stacked bags filled with gray dirt. Currently, the barricade consists of a two-foot-high, "C-" or "U-shaped" mound of gray silt. A low spot or depression along the northeast portion of the mound indicates that the original three-sided barricade was open to the northeast, and a rock pile on the southeast corner suggests the area needed extra support while the barricade was in use. A $\frac{1}{2}$ -pint, brown glass, liquor bottle was noted on the southwest corner of the feature. Based on its location in relation to the bunker, and the similarity of this site's layout with other launch complex sites in the project area, Feature 7 is the remains of a generator barricade.



Figure 6-51. LA 185029, Feature 5 bunker, collapsed ancillary entry on north elevation, view south.

Few artifacts beyond construction materials such as wood, metal, concrete, bolts, and nails were observed. Artifacts not associated with construction include: sparse green "Coke" bottle glass; a complete brown glass liquor bottle ("Federal Law Forbids Sale"); six 55-gallon drums (just outside mapped site boundary); a sanitary-seal can; a latch pin (½-inch-round bar); and intrusive cartridges. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.9.2 Summary and NRHP Eligibility Recommendation

LA 185029 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Five features, including four launch pads, a demolished bunker, the remains of a three-sided barricade, and a boulder alignment were documented within an area measuring 45,968 sq feet (4,271 sq m).

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a crew remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185029 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. The launch pads remain largely intact, and their shape is unique among the other launch pads in the project area. The Feature 5 bunker, while exhibiting collapsed entryways, is suspected to remain largely intact. The physical remains at this location appear to retain the level of integrity necessary to exemplify the Cold War-Nike Ajax development/training/practice theme, the site is, therefore, considered under the important events (Criterion A) criteria. Based primarily on the integrity of the features, LA 185029 is recommended eligible for inclusion in the NRHP.

6.10 SITE LA 185030

LA 185030 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon at WSMR. The site consists of five features in a 220x168-foot (67x51-m) area (**Figure 6-52**). Located about 1.2 miles (2 km) west of Red Canyon Range Control (LA 185034), the cultural materials occupy the top and east-facing slope of a south-trending ridge between two south-flowing tributary drainages of Red Canyon. The desert scrubland vegetation includes creosote, four-wing saltbush, sumac, juniper, soaptree yucca, and grasses; visibility averages about 80 percent. Surface sediment is residual, Abo Formation, silty loam, with siltstone and limestone gravels and cobbles. As with the majority of the sites recorded during this investigation, gravels and gray silt with selenite crystals have been imported to this location. The site is estimated to be about 70 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.10.1 Features

The five features include three launch pads, a semi-subterranean bunker, and a generator barricade. Features 1, 2, and 3 are concrete launch pads set in a northwest/southeast arrangement on the west side of the bunker (Feature 4). Based on the alignment of the launch pads, along with a number of boosters and tail fin segments visible in the distance, launch direction was to the southwest from this location. Features 1 and 2 are 21×30 feet in size and rectangular shaped, they both have a lipped east edge, an access port/recess in the west-central portion, a poured concrete access box on the exterior, and a series of anchor bolts (see Appendix A for examples, page A-4).

Feature 1 does not retain any of the three steel mounting plates, or the blast plate, and the steel angle plating has been removed from the access port. An 8x9-foot outline of the blast plate with a rectangular pattern of lead anchors surrounding it is in the east-central portion of the pad. In the blast blade location there is an image of a smaller plate, indicating some modification in this area. A seven-inch-diameter pipe in the base of the access port runs in a southerly direction beneath the concrete pad and terminates in an exterior access box about 19 inches south (**Figure 6-53**). Feature 2 is identical to Feature 1, except that the angle-iron collar has been removed from the top of the access box.

Feature 3 is a wedge-shaped launch pad set to the south of Features 1 and 2 (see Appendix A, page A-3). The pad is 17.5×13 feet, with the arc-shaped portion facing northeast. This portion of the pad has a lipped edge and is the only part not covered in silt (**Figure 6.54**). The pad has the typical bolt pattern, but with an additional, ³/₄-inch-bolt near the center. A 4×4 -foot steel plate has been removed, leaving only the bolt pattern—a pair of anchor bolts on either side are set into the concrete in a one-foot center. Another pair of two remote anchor bolts are 13–14 feet west of the main pad, but no evidence of a concrete footing is evident, although it may be buried.



Figure 6-52. LA 185030 plan map.



Figure 6-53. LA 185030, Feature 1 launch pad with associated concrete access box, view northwest.



Figure 6-54. LA 185030, Feature 3 silt-covered launch pad (note Feature 4 bunker in background), view north.

Feature 4 is an earth-covered semi-subterranean bunker. The feature mound is approximately 60×80 feet and has two entryways. The main entry is on the east elevation, and the ancillary entry is on the north elevation. The main entry is 3×5 feet and is constructed of recycled utility poles, 2×4 -inch stringers, and corrugated metal roofing. This entry is in good condition and appears to have had a passageway that extended at least 10 feet in a westerly direction before turning south into the main chamber (**Figure 6-55**). The ancillary entry is two feet wide and two feet high, with construction materials similar to the main entry. This entry also has sandbag flanking/buttressing on the east and west (**Figure 6-56**). The sandbags are deteriorated, but still retain their loaf-like shape and bits of burlap. A steel pipe protrudes about three feet from the peak of the bunker mound.



Figure 6-55. LA 185030, Feature 4 bunker main entry, view southwest.

Feature 5 is a 15 x 12-foot, three-sided, wall/barricade constructed of at least 11 courses of stacked sandbags (**Figure 6-57**). The feature, which is approximately 50 feet east of the bunker (Feature 4), is the most massive sandbag barricade in the project area. The barricade is open to the northeast with walls reaching a maximum height of five feet above the surrounding surface. The north and south walls are two feet thick, and the west wall has a width of the sandbags and a thickness of five feet at the base. A rebar grounding rod with attached wire is in the central portion of the open end; a small C-ration can was found in association. Although the sandbags forming the barricade are deteriorating/eroding, the feature is in good condition and retains much of its original height and shape. The location of the feature in relation to others, along with the presence of the grounding rod, support the inference that the barricade functioned as a generator protection area.



Figure 6-56. LA 185030, Feature 4 bunker ancillary entry and ventilator pipe, view southeast.



Figure 6-57. LA 185030, Feature 5 barricade with Feature 4 bunker in background, view west.

Few artifacts beyond construction materials such as wood, metal, concrete, bolts, and nails were observed. A scatter of concrete spoils was also mapped on the southwest site perimeter. Artifacts not associated with construction include: a small C-ration can; green "Coke" bottle glass; sparse clear bottle glass; an aluminum poison-fuel bottle with a plastic screw cap; five olive-drab paint cans; paint can lids; an oval potted-meat can; a sanitary can; and a church-key-opened beverage can (emergency water). The paucity of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.10.2 Summary and NRHP Eligibility Recommendation

LA 185030 is a Cold War-era launch complex associated with the Nike Ajax Missile, ASP at Red Canyon. Five features, including three launch pads, an intact bunker, and a three-sided sandbag barricade, were documented in a 40,473-sq-foot (3,760-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185030 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. The launch pads, the bunker, and the sandbag generator barrier area all retain good integrity. The physical remains at this location retain the level of integrity necessary to embody the Cold War-Nike Ajax development/training/practice theme. This site exemplifies everything a launch complex should be and is considered under the important events (Criterion A) criteria. For these reasons, LA 185030 is recommended eligible for inclusion in the NRHP.

6.11 SITE LA 185031

LA 185031 is a Cold War-era launch complex associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon at WSMR. The site consists of four features in a 339 x 195-feet (103 x 59-m) area (**Figure 6-58**). LA 185031 is located approximately 0.23 miles (0.38 km) west of an unnamed range road north of the Red Rio Bombing Range gate and about 1.1 miles (1.8 km) west-southwest of Red Canyon Range Control (LA 185034); Red Canyon is 0.30 miles (0.48 km) to the west. Cultural materials occupy the top and east-facing slope of a south-trending ridge between two southwest-flowing tributary drainages of the canyon. The desert scrubland vegetation includes creosote, four-wing saltbush, sumac, snakeweed, and sparse mesquite and grasses; visibility averages about 90 percent. Surface sediment is residual, Abo Formation, silty loam with siltstone and limestone gravels and cobbles. As with the majority of the sites recorded during this investigation, gravels and gray silt with selenite crystals have been imported to this location—in this case, gray silt covers most of the site area (**Figure 6-59**). The site is estimated to be about 40 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/ cleanup by the military.



Figure 6-58. LA 185031 plan map.



Figure 6-59. LA 185031, overview facing east toward Red Canyon Range Control (LA 185034) from the top of Feature 3 bunker (note tremendous amount of imported gray silt).

6.11.1 Features

The four site features include two launch pads, a semi-subterranean bunker, and a set of parallel wooden runners. Features 1 and 2 are rectangular concrete launch pads that are oriented northwest/southeast on the west side of the bunker (Feature 3). Based on the arrangement of the launch pads, along with a number of boosters and tail fin segments visible in the distance, launch direction was to the southwest from this location. Each pad is 21×30 feet in size and has a "lipped" edge, an access port/recess in the west-central portion, and a series of anchor bolts (see Appendix A for examples).

Feature 1—the northernmost of the two launch pads—does not retain any of the three steel mounting plates or the blast plate. These plates were intentionally unbolted; however, the studs that secured a larger blast plate were cut with a torch. Steel angle-iron plating is absent from the access port, and based on the absence of indentations that were observed on similar features, it may have never been present. The poured-concrete access box on the exterior of the pad is also absent. A 7-inch-diameter pipe in the base of the access port runs in a southerly direction beneath the concrete pad towards Feature 2.

Feature 2 is identical to Feature 1, except that the pad is about 75 percent buried by intrusive gray silt. The access port has also been infilled and is not visible. In addition, many of the anchor studs are either missing, or have been cut short and are buried. Torch-cut nut fragments and melted slag are near/within the blast plate area on the west-central portion of the pad.

Feature 3 is a rock- and earth-covered, semi-subterranean bunker. The feature mound measures approximately 55×75 feet and has two entryways and a steel pipe protruding from the top. The main entry (**Figure 6-60**) is on the east elevation, and the ancillary entry is on the north elevation. The main entry is 3×4 feet and is constructed of upright, dirt-filled, 55-gallon


Figure 6-60. LA 185031, Feature 3 bunker main entry, view southwest.

drums. The drums were capped with large, railroad-tie-sized timbers then covered with landing pad panels and dirt and rocks. Indexed landing pads, or decking plates have been installed above the entrance to help stabilize the mound. The easternmost eight feet of the entry is partially demolished, with drums displaced and scattered to the east. The entry extends for about 16 feet into the bunker mound before abruptly turning west, presumably into the main chamber. A 70-foot long x 20-foot-wide x three-foot deep, entrenched pathway runs east from the main entry. The path is visible, both on the ground and on aerial photos, for at least 0.50 mile towards Red Canyon Range Control (LA 185034).

The ancillary entry, or air shaft is constructed of one-inch transport-rail framing and is capped with a section of landing mat; large cobbles and stone slabs have also been incorporated. The exposed portion is currently only 10 inches high, and the full width is unknown due to erosion and/or demolition.

Feature 4 consists of two parallel sections of 2 x 4-inch runners with short sections of one- and two-inch boards covering one side. The southern runner is 20 inches wide and at least 14 feet long, and the northern example is 20 inches wide and 29 feet long. This northern runner probably consisted of two 14-foot-long sections arranged end to end. Feature function is unknown, although the runners may be wall remnants. Based on its location compared to the spatial arrangement of features at other sites of this type, Feature 4 may be the demolished remains of a generator barricade. Alternatively, these constructions may represent the discarded/displaced remains of makeshift wooden walkways.

Few artifacts beyond construction materials such as wood, metal, 55-gallon drums, and nails were observed. Artifacts not associated with construction include: a few pieces of metal strapping; a small fish tin with a key-type opening ("Norway"); a single-hinge tobacco can; and a missile head/bomb fragment (intrusive). The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.11.2 Summary and NRHP Eligibility Recommendation

LA 185031 is a Cold War-era launch complex associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Four features, including two launch pads, a bunker, and two parallel sections of wooden runners were documented within an area measuring 46,070 sq feet (4,280 sq m).

Research into the history of the Nike Missile program indicates that the Red Canyon Range Camp (LA 110819) and the supporting training facilities associated with the Nike Ajax Missile program was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police the camp and supporting facilities and to remove structures. LA 185031 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. With the exception of the launch pads, none of the physical remains at this location retain the level of integrity necessary to embody the Cold War-Nike Ajax development/ training/practice theme and is, therefore not considered under the important events (Criterion A) criteria. LA 185031 is recommended not eligible for inclusion in the NRHP.

6.12 SITE LA 185032

LA 185032 is a large historic site associated with Cold War-era Nike Ajax missile training/ practice and is the remains of an IFC area. The site consists of 11 historic features and six prehistoric artifacts in a 660 x 451-foot (201 x 138-m) area (Figure 6-61). LA 185032 is located approximately 0.08 miles (0.14 km) northwest of Range Road 11 and 0.40 miles (0.64 km) west-northwest of Red Canyon Range Control (LA 185034). Cultural materials occupy the top and slopes of a steep, south-trending ridge that overlooks a southwest-flowing tributary drainage of Red Canyon. At least five launch complex sites (LA 185022, LA 185029, LA 185031, LA 185030, and LA 185027), as well as Red Canyon itself are visible from the top of the ridge. Vegetation consists of creosote, cholla cactus, banana yucca, scattered juniper (mostly dead), Mormon tea, and grasses; visibility averages about 80 percent. The thin sediment consists of brown gravelly loam with limestone cobbles and boulders. There is bedrock on the ridge top and gypsum soils on the lower portion of the slope. As with the majority of the sites recorded during this investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 20 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/ cleanup by the military.



Figure 6-61. LA 185032 plan map.

6.12.1 Features

The 11 site features include: an array of partially decomposed theater seats; a bladed area with concrete blocks; a berm/pad area; a depression; two rock-lined pathways; a bladed path; an outdoor oven; a collapsed wooden structure; a masonry wall/dirt pad; and a rock-lined pad.

Feature 1 is a 43 x 32-foot, southwest-facing arrangement of four wooden footers with the end pieces of theater seats attached (**Figure 6-62**; Appendix B, Figure B-4); the feature functioned as seating for visiting dignitaries. The seat assemblies are laid in an arc, or radiating pattern at the highest point of the ridge along the southwest site perimeter. Each of the four assemblies is 10-20 feet long and is comprised of parallel 2×4 -inch boards supporting three to four rows of iron seat ends with pivot/seat-folding attachments. The supporting boards rest on 1×12 -inch baseplate boards. The seats themselves were likely recycled from the theater at the Red Canyon Range Camp (LA 110819). One crown-type bottle cap was found in association with Feature 1.



Figure 6-62. LA 185032, Feature 1 array of theater seat remains, view north.

Feature 2 is a slight depression, or bladed flat about 60 feet northeast of the array of theater chairs and about 30 feet northwest of a rock-lined pathway (Feature 5) that runs down the ridge slope. This location correlates well with a historic photo of the site showing a radar setup behind (northeast) of the theater chairs (see Appendix B, Figure B-4). The feature is about 6x10 feet in size, and there are four concrete blocks and several limestone boulders associated. The concrete blocks, which are broken from larger blocks or slabs, are similar to those documented in association with generator areas on nearby launch complex sites. Centered along the eastern side of the depression is a five-inch-diameter, brass, cannon-round casing that

has been driven vertically into the ground. The exposed base has grinding marks, indicating that the head stamp was intentionally removed (**Figure 6-63**). Although no wire is attached, the casing may have served as a ground terminal. Alternatively, this casing may have functioned as a survey/location marker for a radar setup.



Figure 6-63. LA 185032, cannon-round casing with head stamp removed associated with Feature 2.

Feature 3 consists of a 10-foot-diameter depression/bladed area with a low, C-shaped berm along its south and west edge. The berm is about one foot high and several wooden plank fragments protrude from its south edge. No additional historic artifacts were noted in this area, although a piece of lithic debitage and four San Clemente Glaze Polychrome bowl sherds were found about 15 feet to the east. The function of Feature 3 is unknown, and it is suspected that the prehistoric ceramics were imported to this location.

Feature 4 is another depression of unknown function approximately 60 feet north of Feature 3. The feature is approximately 4×8 feet and contains a four-foot section of 2×8 -inch lumber. A back dirt pile that is likely the result of excavation of the depression is about six feet to the west.

Feature 5 is a 165-foot-long and 6-foot-wide rock-lined pathway. The pathway begins at the ridgetop about 30 feet east of Feature 2 and descends the slope in a southeasterly direction, terminating at a concrete block. The stub of a utility pole is approximately 45 feet north of the eastern terminus. The pathway may have functioned to delineate a communication wire or electrical cable, although, no evidence of wires was noted.

Feature 6 is a 560-foot-long x 13-foot-wide, rock-lined, bladed pathway which runs up the eastern ridge slope, traverses the top of the thin ridge and terminates at a gray silt-covered turnabout in the northern portion of the site (**Figure 6-64**). The pathway runs in a northwesterly direction from the base of the slope, and where it crests the top of the ridge there are three concrete blocks similar to those described in Feature 2. At this juncture, a rock-lined path (Feature 7) runs down the slope to the west. A pile of gravel lies adjacent to the pathway.



Figure 6-64. LA 185032, Feature 6 overview on the right and Feature 2 in the center background, view northwest.

In addition, a five-inch-diameter, brass, cannon-round casing that has been driven vertically into the ground lies about 60 feet northwest of the intersection of Feature 2 and Feature 7. The exposed base has grinding marks, indicating that the head stamp was intentionally removed (see Figure 6-63). Although no wire is attached, the casing may have served as a ground terminal. Alternatively, this casing may have functioned as a survey/location marker for a radar setup. Feature 6, although quite steep on its eastern edge, appears to be an access road to the ridgetop and the features located there. This road may have been used for site construction and/or to transport equipment and visitors to the seating area at the top of the ridge.

Feature 7 is a rock-lined pathway that runs from the top of the eastern ridge slope in a westerly direction to the base. The pathway is about 90 feet long and three feet wide and intersects Feature 6 (bladed pathway/road) at the top of the ridge. The feature is in poor to fair condition due to slope wash erosion and may, like Feature 5, have functioned as a cable path.

Feature 8 is an outdoor oven/fireplace located in the south-central site area at the base of the ridge slope (**Figure 6-65**). The cooking facility is incorporated into a 15 x 7.5-foot patio that was constructed by pouring a four-inch-wide perimeter wall, leveling the interior space with soil and gravel, and then capping the area with siltstone slabs mortared in place with concrete. A single-course of cinder blocks faced with siltstone slabs and concrete mortar forms a low wall around the perimeter of the patio, and low upright pillars of cinderblock and siltstone are on the northeast and southeast corners. The oven/fireplace, which is on the exterior west elevation of the patio, is constructed of cinder blocks and lined on the interior with yellow firebrick (**Figure 6-66**). The cinder-block exterior is plated with tabular siltstone and concrete mortar. Three galvanized steel brackets are attached to the interior, providing two positions for horizontal cooking racks and a possible support for a cover. The fire box is 1.5 feet wide and 4.5 feet long and has a siltstone-veneered cinder block chimney on the west elevation.



Figure 6-65. LA 185032, Feature 8 outdoor fireplace/oven and patio, view west.





Figure 6-66. LA 185032, Feature 8 oven/ fireplace detail, view west (left) and example of yellow fire brick (right).

Feature 9 is the remains of a wooden structure, and although the structure may have been intentionally razed, a substantial amount of remnants were left behind. Currently, Feature 9 is a rectangular mound of gypsum soil bordered, and partially covered, by lumber and green asphalt roofing. The feature measures approximately 12x16 feet and is adjacent and north of the fireplace/patio. A few limestone boulders and fire bricks ("DFC HIFIRE") located along the southeast corner are suggestive of stabilization efforts. A shallow cut just west and upslope indicates that the soil was excavated and used to level the feature area. Construction related and other associated artifacts include hundreds of nails, metal flashing, green roofing, a three-inch diameter vent pipe with a flashing collar, lumber, fire bricks and brick fragments, a button, clear window glass, and brown bottle glass.

Feature 10 is a 21-foot-long U-shaped wall adjacent and south of the oven/fireplace/patio. The wall, which is open to the west, is constructed of limestone and gypsum-laden soil clumps in a concrete matrix and reaches its maximum height of 2.5 feet on the east elevation. Presumably, Feature 10 was constructed to create a level pad within the wall perimeters. A piece of rebar with a single-strand insulated wire partially stripped and wrapped around it, indicating use as a grounding rod, is about eight feet west of the wall. Feature 10 is heavily eroded and actively deteriorating. There is no evidence that the leveled area within the wall ever supported a structure. Aside from the rebar and wire, no artifacts are associated.

Feature 11 is a semicircular alignment of a single course of limestone boulders and siltstone blocks and slabs. Measuring about 40×25 feet, the alignment has a three-foot-wide opening on the southeast. Just south of the opening on the alignment interior are two partially buried vertical pipes set eight inches apart. The westernmost of these is iron, is torch-cut, and contains a smaller diameter nested steel pipe—they protrude about two inches above the surface and reach a depth of 20 inches. The eastern pipe is steel and extends to a height of about 10 inches. The landscape does not appear to have been modified to create a pad at this location, and although there is no evidence to suggest that a structure once existed, this feature may be a tent pad.

Few historic artifacts beyond construction materials such as wood, metal, concrete, nails, firebricks (Denver Fire Clay Company), clear window glass, and roofing paper were observed. Historic artifacts not related to construction materials include iron theater seat ends/ supports (**Figure 6-67**). The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-67. LA 185032, Feature 1 theater seat ends/supports (Appendix B, Figure B-4).

Six prehistoric artifacts, including a biface fragment, a flake, and four San Clemente, Glaze A bowl sherds, were also identified.

6.12.2 Summary and NRHP Eligibility Recommendation

LA 185032 is a large, Cold War-era site representing an example of an IFC area associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. The primary function of the site was associated with communications and monitoring Nike Ajax missiles and targets during practice and training. The secondary function of the site was as a VIP/dignitary, missile launch viewing area during "Operation Understanding" which post-dates the original function. Eleven features relating to these combined activities were documented within an area measuring 189,054 sq feet (17,564 sq m). While prehistoric materials were identified on the small ridge top in the northern site area, the four sherds were likely transported to this location, and the two lithic items fail to meet artifact density criteria to qualify as a site temporal component.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a crew remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185032 represents one of two combined IFC and missile launch viewing areas associated with "Operation Understanding" (see LA 185071) recorded during the current project, but it is unique in terms of the theater seats and the outdoor fireplace/ oven. Although unique, the physical remains at LA 185032 do not retain a great deal of integrity and do not embody the Cold War-Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events (Criterion A) associated with Cold War readiness missions at WSMR. LA 185032 is recommended not eligible for inclusion in the NRHP.

6.13 SITE LA 185033

LA 185033 is a Cold War-era site of unknown function associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon on WSMR. The site consists of a single feature and a sparse scatter of artifacts in a 106x95-foot (32x29-m) area (**Figure 6-68**). The feature is situated on an alluvial flat approximately 162 feet (49.3 m) northwest of Range Road 11. Red Canyon Range Control (LA 185034) is approximately 0.60 miles (0.90 km) to the southwest, and LA 110820 (missile assembly area) is approximately 0.22 miles (0.35 km) to the south. Vegetation consists of mesquite, four-wing saltbush, cholla cactus, sumac, snakeweed, grasses, and scattered juniper in the surrounding area; visibility averages about 50 percent. Surface soil is alluvial, red-brown, silty, gravelly loam, and like many of the sites included in the project, gray silt has been imported to the location. LA 185033 is estimated to be less than 10 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/ blading associated with site construction, and demolition/cleanup by the military.



Figure 6-68. LA 185033 plan map.

6.13.1 Features

Feature 1 is the severely eroded and deteriorated remains of a three-sided enclosure of unknown function (**Figure 6-69**). The interior of the enclosure consists of a leveled pad of gray silt. The northeast end is open and abuts a gravel/gray silt access road that runs through the valley in a northwesterly direction. The enclosure is 70×70 feet in size and was constructed by blading the area to a maximum depth of three feet (on the west) and arranging a single course of soil-filled wooden crates end to end. The individual crates are 11 feet long and three feet wide, with a depth or thickness of approximately two feet.



Figure 6-69. LA 185033, Feature 1 three-sided enclosure of wooden crates.

With one exception, only artifacts associated with the enclosure, such as wooden crate fragments, lag bolts, lead anchors, nails, and metal crate braces were observed. The remaining artifact is a three-foot-diameter missile container lid with a tag with the serial number 10049 and a date of 12/21/56 (**Figure 6-70**). Examples of Nike Ajax missile containers shown in historic photos acquired from the Nike Historical Society web site (nikemissile.org/Ajax.shtml) and Getty Images (by famous photographer John Dominis) show the large size, the packing tag, and the port exhibited by the container lid (see Appendix B, Figures B-5 and B-6). The scarcity of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



6.13.2 Summary and NRHP Eligibility Recommendation

LA 185033 is a Cold War-era site of unknown function associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon on WSMR. A single feature—a three-sided enclosure constructed of wooden crates—was documented in a 7,969-sq-foot (740-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185033 is one of two sites (see LA 185035) recorded during the current investigation that contain a single example of this feature type. The function of these features is unknown, and the example at LA 185033 is in poor condition, as the crates are eroded and deteriorated. The physical remains do not retain integrity and do not embody the Cold War-Nike Ajax development/training/practice theme. Due to the lack of intact remains, the site cannot be considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185033 is recommended not eligible for inclusion in the NRHP.

6.14 SITE LA 185034

LA 185034 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Seven features representing the remains of the Red Canyon Range Control were mapped and described in a 365 x 258-foot (111 x 79-m) area (**Figure 6-71**). The site is located approximately 0.20 miles (0.31 km) south of Range Road 11 and 0.25 miles (0.41 km) southwest of the Red Canyon Missile Assembly Area (LA 110820). Cultural materials occupy the top and slopes of a steep, southeast-trending ridge overlooking a southwest-flowing tributary drainage of Red Canyon. The prominent ridge top provides a 360-degree view of the surrounding sites and landscape. All of the launch complex sites, as well as Red Canyon



Figure 6-71. LA 185034 plan map.

itself, are visible from the top of the ridge. Vegetation consists of creosote, four-wing saltbush, sagebrush, Mormon tea, and grasses; visibility averages about 80 percent. Surface sediment consists of thin, brown, gravelly loam with limestone bedrock exposures. As with the majority of the sites recorded during this investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 30 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.14.1 Features

The seven documented features include: a concrete pad; two rock and gravel pads; one gravel pad with anchor bolts; a rock alignment; a series of concrete stands/pylons; and two subterranean recesses built into gravel mounds.

Feature 1 is the remains of the Red Canyon Range Control Center. The feature consists of a concrete pad/foundation measuring 78 feet 9 inches and 29 feet 6 inches (**Figure 6-72**). The foundation sits on the edge of a steep, west-facing ridge slope and rises to a height of about four feet above the ground surface on the east elevation. The main portion of the pad is made up of poured concrete slabs with a series of four anchor bolts set into the pad just north of center (see Appendix A, page A-8). Associated materials include a large quantity of asbestos tile fragments, aqua window glass, nails, communication wire, and a few crown-type bottle caps.



Figure 6-72. LA 185034, Feature 1 Range Control Center foundation, view northwest.

A rectangular perimeter foundation, consisting of a six-inch-wide poured concrete footer with a west-facing extension, is centered along the west edge of the main foundation. A series of 16 anchors are in the eastern perimeter of the main foundation, and a set of two are found on the northeast corner, as well as along the interior corners of the western extension.

Based on a review of photographs curated in the WSMR archives, a concrete slab walkway was a later addition on the western edge of the foundation (see Appendix B, Figure B-7). The walkway appears to have had a handrail along the west edge, which overlooks the steep cliff. This is evidenced by a series of six pairs of bolts/anchors set in a four-inch center along the western edge of the foundation and a one-inch-diameter pipe set in the center of the four-bolt pattern on the northwest and southwest ends. A buried two-inch-diameter pipe is situated on the exterior west-central edge of the walkway pad.

Feature 2 abuts a series of concrete stands or pylons (Feature 8) which were used to support the Communications Building (a.k.a. Commo Shack). Feature 2 was a patio or flat access area on the south side of the building (see Appendix B, Figure B-8). Feature 2 is a 20×20 -foot gravel pad with tabular siltstone slabs defining the perimeter (**Figure 6-73**). The siltstone slabs range from two courses in height on the west to six courses on the east. An opening and the remains of a stairway or rock-lined ramp are along the edge of the south elevation. Associated artifacts include a few shards of clear bottle glass, a telephone-type junction box, insulated cables, lumber and cut utility pole segments, and a piece of sheet metal with transferred type (**Figure 6-74**).



Figure 6-73. LA 185034, Feature 2, detail of southeast corner and east elevation (note Feature 8 concrete stands/structural supports in background), view west-northwest.



Figure 6-74. LA 185034, sheet metal with transferred type.

Feature 3 is a gravel and rock pad of unknown function that is situated at the top of a west-facing ridge slope along the northwestern site perimeter (Figure 6-75). Measuring 18x13 feet, the pad is constructed of between one and four courses of drylaid blocks of limestone and siltstone with a gravel interior. The feature is irregular in shape and is open to the northwest where the dry-laid blocks continue into the interior to form an open loop (see Figure 6-71)—there is also a break in the alignment along the south edge. No evidence of structural remains or hardware such as anchoring bolts are associated. Nearby artifacts include about 20 shards from a clear glass "Pepsi" bottle, a light bulb, ceramic insulator fragments, and a brass or copper can with two slipon-type lids embossed with "Cook" and a lightning bolt (Figure 6-76).

Feature 4 is a subterranean recess built into a gravel mound on the top of a steep northeast-facing ridge slope along the northern site periphery (**Figure 6-77**). The gravel mound is approximately 30 feet in diameter and about 5 feet high. Centered in the mound is a six-foot-long and five-foot-wide and three-foot-deep pit constructed of large, railroad-tie-size, timber framing with corrugated sheet metal plating (**Figure 6-78**). The metal sheeting, which is secured with two-inch wire nails, varies in size and

exhibits varying degrees of overlap. The interior of the Feature 4 is filled with construction debris such as wood, wire nails, sheet metal, concrete plaster, and asbestos tiles. There is also a packrat nest and a tremendous amount of dung in the recess. Feature 4 once supported a small metal building (see Appendix B, Figure B-9). The only artifact associated is a partially buried segment of steel guy-wire on the west edge of the mound.

Feature 5 is another subterranean recess built into a gravel mound that is situated at the top of the southeast-facing ridge slope and overlooks a defunct access road. The construction of this feature is identical to that of Feature 4, which is 135 feet northwest. The gravel mound is 50 feet in diameter, and the recess is seven feet long and six feet wide and four feet deep and filled with debris. Materials in the interior of the recess include roofing tiles, lumber, metal scraps, and concrete plaster. A partially buried segment of ½-inch-diameter steel guy wire is on the northeast edge of the mound, and a vertical stub of an eight-inch-diameter pole is built into the southeast edge. Like Feature 4, Feature 5 probably supported a small metal building (see Appendix B, Figure B-9)



Figure 6-75. LA 185034, Feature 3 gravel pad, view northeast.



Figure 6-76. LA 185034, can associated with Feature 3 gravel pad.



Figure 6-77. LA 185034, Feature 4 overview, view north-northeast.



Figure 6-78. LA 185034, Feature 4 recess, view north.

Feature 6 is a gravel pad/mound 60 feet southeast of the Control Center foundation (Feature 1). The pad/mound is situated on the west-facing ridge slope adjacent and west of the Range Control access road. The feature functioned as a support for antenna or other technical equipment associated with missile practice. Feature 6 is 30 feet in diameter and has a maximum height of about three feet. The pad/mound is surrounded by at least eight anchors arranged in a rectangular pattern. The central anchors are set on either end of the pad and the remaining six are set on the exterior. A mound of gray silt lies between this pad and the Feature 1 foundation.

Feature 7 is a 35-foot-long alignment of boulders northeast of the Feature 3 pad on the northfacing ridge slope. The feature consists of single-coursed limestone boulders that are aligned northeast to southwest. A light scar on the south side of the alignment suggests that the rocks were mechanically pushed to the edge of the ridge to form a barrier along an access road between Features 3 and 4 (see Figure 6-71).

Feature 8 consists of a series of 21 concrete stands or pylons that are the remains of the Red Canyon Range Control Communications Building/Commo Shack (see Appendix B, Figures B-8, B-9, and B-10). Each of the square stands is 2×2 feet and contains embedded anchor bolts or straps. The main entry area, is defined by a low, stepped, rectangular, concrete pad on the northeast elevation (Feature 2). The majority of the feature elements remain in their original position, although the western series of at least six have been mechanically pushed/dragged to the west and south (**Figure 6-79**).



Figure 6-79. LA 185034, Feature 8 (Feature 2 rock-lined gravel pad is in background), view south.

Most of the central and eastern stands are set on concrete pedestals with foundations of soil, limestone cobbles/boulders, and concrete. The height (4–6 feet) of the stands increases from west to east in order to form a level support on the slope. The eastern row of concrete stands have steel straps and are set low to the ground (about 2 inches high) at the edge of the ridge top bedrock. The several different types of concrete used in the feature indicates upgrading of the pedestals. Feature 2, the rock-lined pad, abuts Feature 8 to the south and formed a patio/access pad for the communications shack that the stands/pylons once supported. Associated artifacts include a few pieces of clear bottle glass and fragments of a white glass "Ponds Cold Cream" jar. The sheet metal with transferred text mentioned in the context of Feature 2 (see Figure 6-74) is most likely a scrap of the metal sheathing that once covered the Communications Building/Commo Shack (Moore 1998:46; see Appendix B, Figure B-10).

In addition to the features described above, remaining elements of the Range Control Center site include: at least five utility poles (standing, cut, and one that has been partially shattered in place); a series of rock alignments in the northern portion of the site are suspected to be either a pathway, or possibly, for erosion control; at least three, vertical, two-inch-diameter pipes on the south and west exterior of the Control Center remains (Feature 1) that are suspected to be the remains of flag poles; two small trenches that form a "V" on the west side of the Communications Building (Commo Shack) remnants (Feature 8); horizontally laid poles and lumber north of Feature 1 that were likely for erosion control; four fence posts arranged in a square west of Feature 8 (the southwestern post has an antennae attached); and two closed roads on the eastern ridge slope. According to Alan Graham (personal communication 2016), the defunct road that forms a loop in the northern portion of the site was the main access to the site until 1958, when an improved road was constructed (see Figure 6-71).

Construction materials such as wood, asbestos tiles, metal, bolts, washers, concrete, nails, wood, and roofing paper comprise the majority of the artifact assemblage at LA 185034. Historic artifacts not related to construction materials include: a few pieces of a white glass "Ponds Cold Cream" jar; ceramic insulator fragments; shards of clear "Pepsi-Cola" bottle glass; a few crown-type bottle caps; a lightbulb; a piece of sheet metal with transferred instructions (see Figure 6-74); and an unusual copper or brass can (see Figure 6-76). The paucity of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.14.2 Summary and NRHP Eligibility Recommendation

LA 185034 is a large, historic property known to be the location of Red Canyon Range Control. The site represents the remains of activities associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Eight features were documented in an area covering 61,418 sq feet (5,706 sq m) and relate to activities associated communications and monitoring Nike Ajax missiles and targets during practice and training.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960.

Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a contingent remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185034 represents the only site of its type recorded during the current project and although unique, does not appear to retain a great deal of integrity and does not embody the Cold War, Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185034 is recommended not eligible for inclusion in the NRHP.

6.15 SITE LA 185035

LA 185035 is a Cold War-era site of unknown function associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon, WSMR. The site measures 110×110 feet $(34 \times 34 \text{ m})$ and consists of a single feature (**Figure 6-80**). The feature is situated on an alluvial flat approximately 923 feet (281 m) northwest of Range Road 11. Red Canyon Range Control (LA 185034) is approximately 0.56 miles (0.89 km) to the south-southwest, and LA 110820 (missile assembly area) is 0.23 miles (0.37 km) to the south. Vegetation consists of grasses, four-wing saltbush, soaptree yucca, mesquite, and snakeweed; visibility averages about 50 percent. Surface soil is alluvial and consists of red-brown silty loam, although gray silt has also been imported to the location. The site is estimated to be less than 10 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.15.1 Features

Feature 1 is the remains of a three-sided enclosure constructed of a single course of wooden crates (**Figure 6-81**). The feature is approximately 70×70 feet in size and is open on the northeast. The open end of the enclosure abuts a gravel/gray silt access road that runs through the valley in a northwesterly direction. The individual crates are 11 feet long and three feet wide, with a depth or thickness of approximately two feet. Feature 1 was constructed by blading the area to a maximum depth of three feet (on the west) and arranging the crates end to end to form the enclosure. Within the enclosure, gray silt was dumped and leveled to form a pad. The feature is severely eroded and deteriorated and its function is unknown.

The only artifacts observed on the site are wooden crate fragments, lag bolts, lead anchors, nails, and metal crate braces associated with the enclosure. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.15.2 Summary and NRHP Eligibility Recommendation

LA 185035 is a Cold War-era site of unknown function associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. A single feature—a three-sided enclosure constructed of a single course of wooden crates—was documented in a 9,575-sq-foot (890-sq-m) area.



Figure 6-80. LA 185035 plan map.



Figure 6-81. LA 185035, northeast corner of Feature 1 three-sided enclosure, view east-northeast.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185035 is one of two sites (see LA 185033) recorded during the current investigation containing a single example of this feature type. The function of these features is unknown, and the example at LA 185035 is in poor condition, with the crates eroded and deteriorated. The physical remains do not retain integrity and do not embody the Cold War-Nike Ajax development/training/practice theme. Due to the lack of intact remains, the site cannot be considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185035 is recommended not eligible for inclusion in the NRHP.

6.16 SITE LA 185036

LA 185036 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon and is the remains of an IFC area. The site is located approximately 0.40 miles (0.64 km) west of Red Canyon Range Control (LA 185034) and 0.24 miles (0.39 km) east of Range Road 11. LA 185036 is situated on a south-sloping ridge that overlooks a southwest-flowing tributary of Red Canyon; the ridge slope also provides an unobstructed view of at least two launch complexes (LA 185029 and LA 185031). LA 185036 consists of three features, along with a series of rock alignments, rock-lined pathways, and a low-density artifact scatter in a 420 x 240-foot (128 x 73-m) area (**Figure 6-82**). Vegetation includes creosote, sumac, bear grass, banana yucca, prickly pear cactus, snakeweed, juniper (mostly dead), and grasses; visibility averages about 70 percent. Surface sediment consists of thin, silty,



Figure 6-82. LA 185036 plan map.

gravelly loam with limestone gravels and cobbles. As with the majority of the sites recorded during the current investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 20 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/ cleanup by the military.

6.16.1 Features

Three features include a rectangular-shaped series of wooden structural supports, a mechanical scrape/generator pad, and a series of cobbles/boulders forming numbers/letters. Additional site elements include an arc-shaped boulder alignment, a series of rock alignments and rock-lined pathways, a group of guy anchors, and a gray dirt/gravel turn-around (**Figure 6-83**).

Feature 1 consists of a rectangular arrangement of at least 16 wooden structural supports covering a 38 x 15-foot area (**Figure 6.84**). Identical supports were noted to the south at LA 185037, as well as other examples of IFC areas documented during this study (see Appendix A, page A-9). The feature is situated in the northwestern portion of the site west of the turnaround, and a south-trending, rock-lined pathway joins it on the southeast. A 21-foot-long series of rod-type anchors (rebar and bolts) are arranged intermittently in an east-trending line that parallels the east side of the walkway at the southwest edge of the turn-around (see Figure 6-82).



Figure 6-83. LA 185036, overview, view west.



Figure 6-84. LA 185036, Feature 1, view north.

The arrangement of the feature elements suggests edge supports and a central support, possibly for a temporary structure, although, remains of such are absent. The northern portion of the feature measures 23×15 feet, and the southern portion is 15×15 feet and open to the east. The octagon-shaped supports were constructed by nailing three 2×10 -inch boards, which are notched to form short timbers. Each support is 32 inches long and 10 inches wide at the top and six inches wide below the notch; the portion above the notch is 22 inches long and the portion below the notch is 10 inches long. Several of the supports retain evidence of having been joined together by boards along the unnotched end. Artifacts associated with Feature 1 include a one-pound coffee can, a "US" coffee cup, a red brick, and two emergency water cans (see Figure 6-20).

Feature 2 is a presumed generator pad located about 160 feet southeast of Feature 1. The feature is comprised of a 10×15 -foot blade cut with a push pile and boulder arc on the west (**Figure 6-85**)—the blade cut forms a level area or pad. Three heavy-gauge electrical wires and a rebar protrude from the south-central portion of the pad. The rebar has a six-foot-long, copper ground wire attached. A brass, radiator-manufacturing tag reading, "Modine MFG. Co. Racine, Wisc. USA" lies near the wires (**Figure 6-86**). In addition, approximately 40 pieces of clear window glass, four flat rocks, and a lead-acid battery cap are about 10 feet to the south of the pad.

Feature 3 is located near the northeastern site perimeter on a steep west-facing slope. The feature is comprised of a series of letters and numbers formed from a single course of cobbles and boulders. The rocks appear to spell out "84MY", but the "Y" is the only clearly defined element. The feature covers about a 23×10 -foot area, each letter averages about 7×2 feet in size, and the limestone elements average 8×8 inches in size. No artifacts were not found in association with Feature 3.



Figure 6-85. LA 185036, Feature 2 generator pad, view northwest.



Figure 6-86. LA 185036, radiator tag associated with Feature 2.

In addition to the features described above, LA 185036 also includes: a gray dirt/gravel turn-around or parking area with an arc-shaped boulder alignment on the eastern perimeter; a 260-foot-long, single-course, rock-lined pathway (**Figure 6-87**); a few single-course rock alignments extending west, northwest, and east from the pathway; and a linear series of guy anchors along the southwest of the turn-around and arc-shaped boulder alignment.



Figure 6-87. LA 185036, rock-lined pathway (note wooden structural support), view south from Feature 1.

Construction materials comprise the majority of the artifact assemblage at LA 185036. Historic artifacts not related to construction materials include a few pieces of clear window and bottle glass, clear glass graduated jar fragments, a brass manufacturing tag, a coffee cup, a coffee can, a C-ration can, a red brick, an elbow fitting, anchor bolts, a 10-foot-long section of ½-inch pipe, and rebar. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.16.2 Summary and NRHP Eligibility Recommendation

LA 185036 is an example of an IFC area associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. It is related to activities associated with communications and monitoring Nike Ajax missiles and targets during practice and training. The site consists of three features, rock alignments, a rock-lined pathway, a turn-around, an array of guy anchors, and a low-density artifact scatter in a 73,577-sq-foot (6,835-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960.

Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a contingent remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185036 does not retain a great deal of integrity and does not embody the Cold War, Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185036 is recommended not eligible for inclusion in the NRHP.

6.17 SITE LA 185037

LA 185037 is a Cold War era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. One feature, rock alignments, rock-lined pathways, rock enclosures, anchors, and a low-density artifact scatter comprise the remains of this 502 x 304-foot (153 x 93-m) IFC area (**Figure 6-88**). The site is located approximately 0.77 miles (1.24 km) southwest of Red Canyon Range Control (LA 185034) and 0.31 miles (0.51 km) east of Range Road 11. LA 185037 is situated on a southwest-facing ridge slope and saddle overlooking a southwest-flowing tributary of Red Canyon. The ridge slope provides an unobstructed view of at least three (LA 185022, LA 185023, and LA 185029) launch complex sites to the west (**Figure 6-89**). Vegetation includes creosote, sumac, Mormon tea, banana yucca, prickly pear cactus, snakeweed, a few dead juniper, and grasses; visibility averages about 85 percent. Surface sediment is thin, silty, gravelly loam with limestone gravels and cobbles. As with the majority of the sites recorded during the current investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 20 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.17.1 Features

Feature 1 is situated in a gray dirt and gravel turn-around in the south-central portion of the site. The feature consists of a 16×16 -foot, dry-laid, square foundation of form-poured concrete blocks, siltstone and limestone blocks, and travertine-like bedrock boulders (**Figure 6-90**). The absence of rock and concrete on the southeast corner of the foundation indicates that an entryway was likely in this area. While the majority of the foundation is single-course, on the west (downslope) side, the blocks are stacked two high and reach a height of about 20 inches.

The feature elements and their arrangement indicates that a structure was once present at this location. Historic photographs do, in fact, show a small building with a pitched roof at this location (see Appendix B, Figures B-11 and B-12). Seven wooden structural supports identical to those recorded at another IFC area to the north (LA 185036) are present, and three of the supports are along the interior corners, suggesting that they functioned as struts or stands. The octagon-shaped wooden supports were constructed by nailing three 2 x 10-inch boards together to form short timbers that are notched (see Appendix A for example, page A-9).



Figure 6-88. LA 185037 plan map.



Figure 6-89. LA 185037, overview to west.



Figure 6-90. LA 185037, Feature 1 rock foundation and structural supports, view south.

Each support is 32 inches long and 10 inches wide at the top. Several of the supports retain evidence of having been joined together by boards along their unnotched end. An eight-in-high rebar along the northern exterior of the foundation may have functioned as a grounding stake. Many of the artifacts associated with Feature 1 support the assertion that a structure was present. These artifacts include rebar; red bricks; clear glass; a six-inch-diameter, galvanized stove pipe; a glazed ceramic pipe fragment; and porcelain insulator fragments similar to lightbulb base rings. Based on personal communications with J.P. Moore, the remnant structural remains functioned as a break shack during training/practice exercises.

In addition to the features described above, additional elements at LA 185037 include: a gray dirt/gravel turn-around/parking area and access paths; a crescent-shaped boulder enclosure on the southern perimeter of the turn-around; rock-lined pathways marking access and cable paths; an L-shaped rock alignment (**Figure 6-91**); an arc-shaped alignment; a 30 x 20-foot area containing five anchors, grounding rods, about six 20-inch-long wooden ladder rungs with nails on either end, ¹/₄-inch bolts, machine screw, pipe segments, and flare-nut fittings; a series of at least seven guy anchors in the east-central portion of the site; three square chunks of concrete identical to those found at generator areas on other sites; a torch-cut flag pole remnant; and an upright pipe with three guy anchors arranged in a triangular pattern. Historic photographs indicate the some of the anchors may have been used to help stabilize the acquisition radar (see Appendix B, Figure B-12). Additional photographs show the arrangement of this IFC along with an RCAT on display (see Appendix B, Figure B-13) and a modern comparison showing the current site condition (see Appendix B, Figure B-14).



Figure 6-91. LA 185037, L-shaped rock alignment, view north-northwest.

Approximately 40 artifacts, the majority of which are construction materials (red bricks, wood, nails, glazed ceramic pipe, concrete, stove pipe, etc.), were documented on LA 185037. Historic artifacts not related to construction include: a 1959 penny; a 6-inch diameter vent stack with a louvered cap and metal flashing; a segment of stove pipe; a few crown-type bottle caps; enamel coffee cup fragments; a steel clamp collar; 15 pieces of clear bottle glass (one large base fragment); six emergency water cans (see Figure 6-20) with tabbed seams (knife-and church-key-opened). Although LA 185037 has a higher density of artifacts compared to other sites in the project area, all of the sites recorded during the current investigation have low artifact counts. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.17.2 Summary and NRHP Eligibility Recommendation

LA 185037 is a historic property representing the remains of an IFC area associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon and is related to activities associated with communications and monitoring Nike Ajax missiles and targets during practice and training. One foundation feature, numerous rock alignments/enclosures/pathways, a turn-around/parking area, guy anchors, concrete blocks, and a low-density artifact scatter were documented in a 126,920-sq-foot (11,791-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185037 does not retain a great deal of integrity and does not embody the Cold War-Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185037 is recommended not eligible for inclusion in the NRHP.

6.18 SITE LA 185038

LA 185038 is a Cold War-era site of unknown function that is associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. The site is located approximately 0.71 miles (1.48 km) north of Red Canyon Range Control (LA 185034), along the same southeast-trending ridgeline. Range Road 11 is 0.50 miles (0.81 km) to the south, and a gray dirt/gravel road which arcs through the drainage valley is adjacent and to the east. LA 185038 is situated on an east-facing, lower ridge slope, adjacent to a southeast-flowing drainage that ultimately empties into Taylor Canyon. Two features, including a large earthen berm and a series of four wooden crate and earth berms, and a few military artifacts were documented in a 162×142 -foot (50×43 -m) (**Figure 6-92**) area. Vegetation includes creosote, four-wing saltbush, sumac, soaptree yucca, prickly pear cactus, snakeweed, mesquite, juniper on the surrounding slopes, and grasses; visibility averages about 40 percent. Surface sediment is thin alluvial loam with



Figure 6-92. LA 185038 plan map.

limestone gravels and cobbles. As with the majority of the sites recorded during the current investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 30 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.18.1 Features

Feature 1 is a large, mechanically constructed, L-shaped, earthen berm (**Figure 6-93**). The berm is adjacent and west of the arcing access road that runs through the drainage valley. Feature 1, which is open on the south and east, is approximately 60 feet north/south and 150 feet east/west and has a maximum height of about eight feet—Feature 2 is south and within the space created by the berm. The north/south arm of the berm abuts and takes advantage of the south-facing landform, and the west end of Feature 2 lies at the base of this portion of Feature 1. The function of the berm is unknown, and no associated artifacts were found.

Feature 2 consists of an array of berms situated south of, and within the area created by Feature 1. The feature is comprised of an east/west berm on the south and four, parallel, north/ south berms that form three "bays" or stalls (**Figure 6-94**). The overall dimensions of the feature are approximately 55 feet north/south and 93 feet east/west. The two, central, north/ south berms are constructed of double-width rows of dirt-filled, wooden, rocket-booster crates (each crate is 14 feet long and 20 inches wide) arranged in parallel rows approximately three feet apart and covered by dirt to a height of about six feet. The two exterior berms appear to have been constructed with dirt-filled crates and laid end to end to form rows. Associated artifacts include a mangled machine gun and two coaxial cables that run north along the access road.

Construction materials (wooden crates, nails, metal straps) comprise the majority of the artifact assemblage, and coaxial cables and a mangled machine gun fragment were also documented. Low artifact counts were noted at all of the sites recorded during the current investigation. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.18.2 Summary and NRHP Eligibility Recommendation

LA 185038 is a historic property suspected to be associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. The site covers an area measuring 19,572 sq feet (1,818 sq m) and consists of two berm features of unknown function and a few artifacts. Based on the presence of Feature 1 (the large berm), activities carried out at this site may have included fueling, or possibly, attaching warheads to missiles. Conversely, the area may have simply functioned as storage. It should be noted that there does not appear to be enough space between Feature 1 and Feature 2 to maneuver large vehicles, and ultimately, the site function proposed above is speculative.



Figure 6-93. LA 185038, Feature 1 berm, view west.



Figure 6-94. LA 185038, Feature 2 berm array, view south-southwest.
Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185038 does not retain integrity and does not embody the Cold War-Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185038 is recommended not eligible for inclusion in the NRHP.

6.19 SITE LA 185041

LA 185041 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Although the function is unknown, the site may have been used as a location for electronics vans. The site is located approximately 0.33 miles (0.53 km) west of Range Road 11 and 0.28 miles (0.45 km) southeast of launch complex LA 185026. LA 185041 and LA 185026 are connected by a cable path or trench visible on aerial imagery. Two features, a three-sided rock alignment and a rock-lined path, and a few historic artifacts comprise the 220 x 165-feet (67 x 50-m) site (**Figure 6-95**). LA 185041 is situated on the top of a low east-facing ridge overlooking a southeast-trending drainage. Vegetation consists of creosote, snakeweed, prickly pear cactus, and grasses; visibility averages about 90 percent. Surface sediment consists of fine, brown, gravelly loam with limestone cobbles. The site is estimated to be about 40 percent intact; disturbances include wind and water erosion, bioturbation, and demolition/cleanup by the military. Although the access road leading to LA 185026 is just outside the southern boundary, it does not appear to have impacted the site.

6.19.1 Features

Feature 1 is a 100 x 75-foot, single-course rock alignment that may have defined the perimeter of a flat area used to station support vehicles during launches. The alignment is roughly rectangular and open to the southwest along the access road leading to LA 185026 (launch complex). Associated artifacts are minimal and include a piece of a wooden crate and communication wire.

Feature 2 is a rock-lined path that abuts the southwest end of Feature 1 (**Figure 6-96**). The path is approximately 145 feet long and runs in a northwesterly direction toward launch complex LA 185026. The path is constructed of two parallel lines of cobbles set about five feet apart. Each alignment is single-coursed and made up of siltstone and limestone cobbles. Feature 2 likely functioned to delineate a cable or communication wire path. No artifacts were found in association, although, a shallow pit filled with communication wire is about 30 feet from the west end of the path.

The artifact assemblage at LA 185041 is limited to a piece of a wooden crate, a few nails, and communication wire. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-95. LA 185041 plan map.



Figure 6-96. LA 185041, Feature 2 rock-lined path, view west.

6.19.2 Summary and NRHP Eligibility Recommendation

LA 185041 is a small, historic property associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Two features consist of a rectangular rock alignments and a rocklined pathway. The site covers a 27,218 sq. foot (2,529 sq. m) area and, although specific site function is unknown, likely relates to activities associated with communications during Nike Ajax Missile launch practice and training exercises.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185041 does not retain integrity and does not embody the Cold War, Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at White Sands Missile Range. LA 185041 is recommended not eligible for inclusion in the NRHP.

6.20 SITE LA 185068

LA 185068 is a Cold War-era launch complex associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon at WSMR. The site consists of four features in a 180×170 -foot (55 x 52-m) area (**Figure 6-97**). LA 185068 is located approximately 0.03 miles (0.40 km) west of an unnamed range road north of the Red Rio Bombing Range gate. Cultural materials occupy the top and east-facing slope of a low south-trending ridge overlooking a south-flowing tributary drainage of Red Canyon 0.63 miles (1.02 km) to the west. Vegetation includes



Figure 6-97. LA 185068 plan map.

mesquite, creosote, four-wing saltbush, snakeweed, sumac, and grasses; visibility averages about 90 percent. Surface sediment is residual, red-brown, silty loam with siltstone and limestone gravels and cobbles. As with the majority of the sites recorded during the current investigation, gravels and gray silt with selenite crystals have been imported to the location. The site is estimated to be only 10 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/ cleanup by the military. Although it does not appear to have impacted any of the features, at least six piles of gravel have been dumped along the southwest site perimeter in recent times.

6.20.1 Features

The four site features include three launch pads and the remains of a semi-subterranean bunker. Features 1, 2, and 3 are concrete launch pads oriented in a northwest/southeast direction on the west side of the bunker. Based on the orientation of the pads, and the number of boosters and tail fin segments visible in the distance, launch direction was to the southwest.

Features 1 and 2 are both 21×30 feet in size and rectangular shaped (see Appendix A for examples). They both have a lipped east edge, an access port/recess in their west-central portion, and a series of holes where anchor bolts have been removed. Feature 1 no longer has any of the three steel anchor plates, the blast plate, the external access box, or any of the anchoring studs characteristic of this feature type. The only hardware remaining on the pad is the angle-iron collar on the interior access port. A seven-inch-diameter pipe in the base of this port runs in a southerly direction underneath the concrete pad. With one exception, Feature 2 is identical to Feature 1—on Feature 2, the pipe in the base of the interior access port runs north toward Feature 1.

Feature 3 is typical of the wedge-shaped launch pads found on many of the sites included in this investigation (see Appendix A for example, page A-3). The 13×14 -foot concrete pad is cracked and deteriorating and the pointed portion, or apex is broken off. The arc-shaped portion of the pad is 17 feet long and has a lipped edge, but there is no visible evidence of the anchors or plates. The presence of imprints of 2×4 -inch and 2×6 -inch lumber on the pad surface, and a rise along the south edge, may indicate that the pad was not finished. Further evidence that the launch pad was not finished includes two-foot-diameter concrete pad with no visible evidence of anchor bolts. Based on the location and similarity to other features of this type, this pad was probably intended to be used as a remote anchor.

Feature 4 consists of the demolished/mechanically buried remains of an earth-covered semisubterranean bunker. The eight-foot-tall mound of earth and rock is approximately 80 x 50 feet in size, and although a 55-gallon drum protrudes from the upper half of the mound on the east side, there are no clear indications of entryways. There is a 25-foot-wide flat area east of the mound that may have been a generator pad, or possibly, a push area related to sealing of the bunker. An aluminum rocket fuel bottle is about 10 feet southeast of the feature, and a piece of a wedge-shaped launch pad is on its western slope. In addition to the features, a three-foot-diameter concentration of nails, clear glass, melted aluminum, burned rock, and charcoal is on the northeast edge of the bunker mound. This debris likely represents a hearth area, although, the burned rocks are not arranged and may not have been intentionally included. A flat-strap anchoring hook was noted just west of the burned area.

Few artifacts beyond construction materials were observed—these artifacts include clear bottle glass from a one-gallon jug, a sanitary can, and an aluminum rocket fuel bottle. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.20.2 Summary and NRHP Eligibility Recommendation

LA 185068 is a Cold War Era launch complex associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. The site consists of four features, including three launch pads and a demolished bunker, in a 24,506-sq-foot (2,277-sq-m) area. A suspected hearth area was also mapped on the northeast edge of the Feature 4 bunker mound.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185068 represents one of 11 launch complexes recorded during the current project and, as such, shares similar feature types such as launch pads, bunkers, generator barricade areas, and rock alignments. Although the launch pads are intact, the majority of the associated hardware has been removed and the bunker has been completely demolished/covered. The physical remains at this location do not retain the level of integrity necessary to exemplify the Cold War-Nike Ajax development/training/practice theme and the site, therefore, is not considered under the important events (Criterion A) criteria. LA 185068 is recommended not eligible for inclusion in the NRHP.

6.21 SITE LA 185069

LA 185069 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Three features, including an earthen berm, a concrete pad, and structural remains comprise this 360 x 318-foot (110 x 97-m) site which may have functioned as a missile fueling or warhead installation area (**Figure 6-98**). The site is located approximately 0.43 miles (0.69 km) north of Range Road 11 and 0.54 miles (0.87 km) northwest of Red Canyon Range Control (LA 185034), and LA 185032, a VIP missile viewing area, is 0.19 miles (0.31 km) to the south-southwest. Cultural materials are situated on an east-facing slope at the head of a southwest-flowing tributary of Red Canyon, with low ridges to the west and steep ridges to the east. Vegetation includes grasses, sagebrush, cholla and prickly pear cactus, yucca (soaptree and banana), sumac, and scattered juniper trees; visibility averages about 70 percent. Surface sediment consists of fine, tan, alluvial loam with gravels. As with the majority of the



Figure 6-98. LA 185069 plan map.

sites recorded during the current investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 40 percent intact; disturbance includes wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.

6.21.1 Features

Feature 1 is a 570-foot-long and 225-foot-wide, U-shaped, earthen berm that reaches a maximum height of eight feet at the northeast edge (**Figure 6-99**). The feature is open to the south, and the entire western half of the space within it is covered with gray silt. Residual gravels atop and adjacent to the berm indicate that these materials were used to stabilize the feature against erosion. The enormous size of the berm suggests that it may have functioned as a blast deflection construction.

Feature 2 is a T-shaped, concrete pad that is centered within the Feature 1 berm; the structural remains (Feature 3) are at the north-central portion of the pad. The east/west portion, or top of the "T" is 80 feet long and 16 feet wide and the north/south portion is about 80 x 16 feet (**Figure 6-100**). Portions of the pad are covered with sediment and vegetation. A four-foot-long vertical segment of pipe is affixed within the west-central portion of the pad; the terminal end has an upward-facing elbow. Another pipe extends four inches in the southern portion of the studs is adjacent to the top of the "T" and one is centered along the north/south segment. Finally, possible base boards along the north/south segment of the pad may indicate that low walls were once present in this area. Alternatively, these may represent the remains of makeshift wooden walkways. Moore (1998) indicates that Feature 2 may have functioned as a pad for radar, fire control, and maintenance vans.

Feature 3 is situated along the north-central edge and partially atop Feature 2. The feature consists of the remains of a structure that was constructed of wood, concrete, and sheet metal (**Figure 6-101**). The remains cover an area measuring 18×15 feet and the south wall has collapsed onto the north end Feature 2. The structure appears to have been framed with 2×4 -inch and 2×6 -inch boards covered in green asphalt roof sheeting; fragments of roofing material on an exterior wall section demonstrate that at least some of the walls were covered with this material. The presence of a truss with a screened vent shaft along the south end of the ruin indicates that the structure had a pitched roof. The collapsed south wall of the structure is approximately 6 inches thick and extends about one foot above the height of the roof truss; the wall bears an imprint of the truss. A sheet-metal doorway and rectangular opening (also sheet-metal), both of which measure 9×3.5 feet, are set within the collapsed concrete wall. This wall and the southern portion of at least one adjacent wall (east) have been plated on the interior with large, asbestos tiles.

Other than construction materials (nails, lumber, concrete, and metal flashing), a single 55-gallon drum is the only artifact associated with Feature 3. According to Moore (1998), this feature functioned as a parts and supply building. It appears to have been intentionally demolished, but unlike many of the other sites documented during this investigation, the construction materials were not fully removed.



Figure 6-99. LA 185069, overview with Feature 1 berm in background (note gray dirt), view north.



Figure 6-100. LA 185069, overview of Feature 2, view east.



Figure 6-101. LA 185069, Feature 3 structural remains with Feature 1 berm in background, view northwest.

Few historic artifacts beyond construction materials such as wood, metal, concrete, nails, asbestos tile fragments, and roofing paper were observed on LA 185069. Historic artifacts not related to construction include: a large, concrete-lined, sheet-metal disc of unknown function; a cone-shaped, galvanized, metal bucket with "FIRE" stenciled on it; a few shards of bottle glass (clear and brown); metal strapping; and one crushed coffee can (**Figure 6-102**). Many of these items were found in a 30-m diameter area in the southwest portion of the site. The lack of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.

6.21.2 Summary and NRHP Eligibility Recommendation

LA 185069 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Three features, including an earthen berm, a concrete pad, and structural remains comprise this 85,900-sq-foot (7,980-sq-m) possible missile fueling or warhead installation area. The sheer size of the earthen berm (Feature 1) indicates that dangerous activities took place within the confines of this site and that the berm may have functioned as a blast deflector.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960.



Figure 6-102. LA 185069, concrete-lined metal disc (left) and galvanized bucket (right) found on site.

Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. Although unique among the sites evaluated during this investigation, the physical remains at LA 185069 do not retain a great deal of integrity and do not embody the Cold War-Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events (Criterion A) associated with Cold War readiness missions at WSMR. LA 185069 is recommended not eligible for inclusion in the NRHP.

6.22 SITE LA 185070

LA 185070 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon is the remains of an IFC area. Three features, a series of rock alignments, rock-lined pathways, and other remains comprise this IFC area. The site is located approximately 0.22 miles (0.36 km) west of Red Canyon Range Control (LA 185034) and 0.10 miles (0.17 km) south of Range Road 11. Cultural materials occupy a 329 x 246-foot (120 x 87-m) area on a west-sloping saddle and series of low ridges (**Figure 6-103**). Overlooking a southwest-flowing tributary of Red Canyon, the low ridgetops provide an unobstructed view of at least three launch complexes (LA 185029, LA 185030, and LA 185031). Vegetation consists of creosote, cholla cactus, juniper, scattered sumac, and grasses; visibility averages about 70 percent. Surface sediment consists of fine, brown, gravelly loam with limestone cobbles. As with the majority of the sites recorded during the current investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 30 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/cleanup by the military.



Figure 6-103. LA 185070 plan map.

6.22.1 Features

The three features include a rock-lined platform, a gravel mound, and a hearth. Feature 1 is a 42×8 -foot, cobble, gravel, and siltstone slab platform. The platform appears to be constructed of a single course of dry-laid slabs with concrete used to fill gaps in some areas (particularly in the north portion). Several of the upright slabs on the northeastern portion of the pad are held together with concrete mortar (**Figure 6-104**). The western portion of the pad rises about two feet above the surrounding surface and the eastern portion is flush with the slope. The interior of the platform is filled with dirt and gravel. A portion of a partially buried 55-gallon drum that is set in a wooden box extends about three inches above the surface of the pad in the southeast corner.



Figure 6-104. LA 185070, Feature 1 slabs in north portion, view south toward upright post.

Scattered around Feature 1 are scraps of 4x4-inch and 2x6-inch lumber—an upright example on the southeast corner rises to a height of 3.5 feet, while an upright post on the northwest is 4 feet high. In addition, several one-inch-thick framing boards are laid horizontally along the eastern portion of the pad and extend several inches above the platform surface.

The feature is in fair to poor condition; siltstone elements are displaced and the dirt and gravel pad is overgrown with vegetation. Although the function of the feature is unknown, lumber and concrete chunks east of the platform may indicate that the pad supported a temporary structure of some sort. A ³/₄-inch electrical conduit and a mop head are associated with Feature 1.

Feature 2 is a rectangular, gravel and cobble mound of unknown function about 125 feet northwest of Feature 1. The feature is 12×10 feet in size, rises to a height of 1.5 feet, and is bordered on the east by a single-course rock alignment (**Figure 6-105**). A remnant of a 4×4 -inch post protrudes about six inches from the surface outside the southwest corner, and a $\frac{1}{2}$ -inch-diameter metal rod or pipe protrudes 26 inches at the northern end of the mound. Associated materials include sparse lumber fragments and one wire nail. A single-hinge "Prince Albert" tobacco tin and a clear glass insulator were also noted about 10 feet to the south.



Figure 6-105. LA 185070, Feature 2 gravel and cobble mound, view north.

Feature 3 is a hearth near the southeastern site perimeter, adjacent and west of a rock alignment. The hearth is six feet in diameter and is comprised of burned rock, charcoal, and a scatter of historic artifacts (**Figure 6-106**). The associated artifacts include: a potted meat can; a sanitary can fragment; a commemorative spoon; several tarp grommets; a metal pant or jacket button embossed with "SCOVILL" and a star; melted clear glass; and wire nails (**Figure 6-107**).

In addition to the features described above, LA 185070 includes: two boulder alignments; two rock alignments; three rock-lined paths; a gravel pad; an upright slab marker; and a series anchors/ ground rods/pipes. Historic photographs indicate that missile tracking radars were situated atop each of the low hills (see Appendix B, Figure B-15). The boulder/rock alignments and paths run throughout the site and range from 50 feet to over 200 feet in length (**Figure 6-108**). Two of these paths ascend both of the low ridge slopes (see Appendix B, Figure B-16), while a third runs north-south along the east-facing slope of the southern ridge.



Figure 6-106. LA 185070, Feature 3 hearth, view north.



Figure 6-107. LA 185070, example of artifacts associated with Feature 3.

The gravel pad is 35×25 feet in size and is situated at the end of a rock-lined path, at the top of the low, southern ridge. The upright slab marker had paint at one time, although now it is currently illegible; it is located on the north-facing slope of the southern ridge. Finally, the anchors/ground rods/pipes are in the site center and at the northwest site perimeter atop the northern ridge.

Construction materials such as wood, concrete, nails, and a 55-gallon drum comprise the majority of the artifact assemblage at LA 185070. Historic artifacts not related to construction materials include: a few pieces of clear bottle glass; a clear glass insulator; white glass "Fire King" cookware fragments; a mop head; a spoon; tarp grommets; a meat can; a sanitary-can fragment; and a rivet/button. The paucity of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-108. LA 185070, example of rock-lined path.

6.22.2 Summary and NRHP Eligibility Recommendation

LA 185070 is a large, historic, military site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. This IFC area is related to activities associated with communications and monitoring Nike Ajax missiles and targets during practice and training. The site consists of three features, rock alignments, rock-lined paths, a gravel pad, anchors, a slab marker, and a low-density artifact scatter in a 105,456-sq-foot (9,797-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185070 does not retain a great deal of integrity and does not embody the Cold War-Nike Ajax development/training/practice theme. Due to the poor condition, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185070 is recommended not eligible for inclusion in the NRHP.

6.23 SITE LA 185071

LA 185071 is a Cold War-era site associated with the Nike Ajax Missile, Annual Service Practice at Red Canyon. Five features and a low-density artifact scatter constitute the remains

of a combined IFC area and missile launch viewing area. The site is located approximately 0.22 miles (0.36 km) west of Red Canyon Range Control (LA 185034) and 0.10 miles (0.17 km) south of Range Road 11. An unrecorded site consisting of rock alignments, wooden structural supports, and sparse artifacts is located less than 200 m to the south and likely represents what remains of another IFC area. Cultural materials occupy a 505 x 190-foot (154 x 58-m) area on the top and east-facing slope of a steep limestone ridge (**Figure 6-109**). The site overlooks a southwest-flowing tributary of Red Canyon, and the low ridgetops provide an unobstructed view of at least four launch complexes (LA 185022, LA 185029, LA 185030, and LA 185031). Vegetation consists of creosote, sage, yucca (soaptree and banana), sumac, and grasses; visibility averages about 80 percent. Surface sediment consists of residual gravelly loam with limestone bedrock exposed along the ridge top. As with the majority of the sites recorded during the current investigation, gravels and gray silt have been imported to this location. The site is estimated to be about 20 percent intact; disturbances include wind and water erosion, bioturbation, mechanical excavation/blading associated with site construction, and demolition/ cleanup by the military.

6.23.1 Features

The five features include: two gravel pads/platforms with wooden supports, two trenches, and a safety barricade and missile viewing area. Feature 1 is a 20×20 -foot gravel pad or platform situated along the southern site boundary (**Figure 6-110**). The pad is bordered by a low berm (6–12 inches high) on the east, south, and west sides, and the interior space is leveled with dirt and gravel. Notched wooden supports identical to those found on other IFC-area sites lie at the northeast, southeast, and southwest corners. The octagon-shaped supports consist of three 2×10 -inch boards which are nailed together and notched to form short timbers. Each support is between 30 and 32 inches long and 10 inches wide at the top and six inches wide below the notch; the portion above the notch is 22 inches long and the portion below the notch is 10 inches long (see Appendix A for example, page A-9). Associated artifacts include: additional lumber/timber pieces; a strand of insulated wire; multi-strand jumper wire with five- and sixpin, screw-on pigtails; clear glass "Pepsi-Cola" bottle fragments; about 30 pieces of window glass; a rusty church-key can/bottle opener; and a double-gang electrical box. The feature is in fair condition and may have functioned as a pad for a small structure, or possibly, an instrument or generator.

Feature 2 is a rectangular trench that is excavated into the modified/leveled east slope of the ridge about 100 feet northeast of Feature 1 and east of a graveled access road (**Figure 6-111**). The feature is 16×6 feet in size and its original depth is estimated at five feet. Three beams (perforated utility-pole arms) are partially buried on the east end of the trench, a shorter example is buried on the south side, another beam is buried within the trench, and others are scattered in the general area. An 18-foot-long and 22-inch-wide board and runner structure that may have functioned as a cover lies near the trench. A $\frac{1}{2}$ -inch pipe runs from just north of the trench for 20 feet in a northerly direction, and a large, 125-150-gallon, steel, boiler tank is downslope to the east of the trench. The tank is lacking the stand and has a metal tag attached reading "KEWANEE $127\frac{1}{2}$ LB W.P. KB1704." Feature 2 may have functioned as a privy.



Figure 6-109. LA 185071 plan map.



Figure 6-110. LA 185071, Feature 1 gravel pad with wooden stand remnants, view east.



Figure 6-111. LA 185071, Feature 2 trench, view east.

Feature 3, which is located 100 feet northwest of Feature 2 and east of a graveled access road, is also a rectangular trench excavated into the modified/leveled east slope of the ridge. The trench is approximately 16 x 6 feet in size and about four feet deep. Two timbers span the south end and a third extends from the southeast corner of the trench. An 18-foot-long and 22-inchwide board and runner structure that lies near the trench may have functioned as a cover. Feature 3 may have also functioned as an outhouse. An intact, screw-in, porcelain insulator is located about 10 feet south of Feature 3.

Feature 4 is a cable safety barrier and missile-viewing area situated along the west edge of the steep ridge (**Figure 6-112**). The safety barrier is 76 feet long and 3–3.5 feet tall and is constructed of perforated posts (recycled utility pole cross beams/arms) and one-inch braided cable. Eleven vertical posts are braced by an equal number of angled posts on the downslope/ west side of the barrier and two parallel runs of cable are threaded through the ½-inch bungs in the posts. A series of 10×12 -foot timbers and 2×4 -inch stringers lie parallel and east of the cable barrier. Based on historic photographs (Moore 1998), these timbers are presumed to be stands that functioned as supports for viewing bleachers, and rebar protruding from the surface indicates the seating area was anchored (see Figure 4-6). Feature 4 functioned as a safety barrier, presumably to prevent visitors from falling off the steep cliff while viewing of missile launches (see Appendix B, Figure B-17); as noted earlier, the elevated location provides unobstructed views of at least four launch complexes.

Feature 5 is a pad/platform identical in construction to Feature 1 that is situated at the northern site boundary. The 15×5 -foot pad/platform is oriented northeast/southwest, is bordered by a low berm (6–12 inches high), and the interior space is leveled with dirt and gravel. Three notched wooden supports (see Appendix A for example, page A-9) identical to those found on other IFC area sites lie on the north edge of the pad, and a few boulders have been placed around the perimeter. The octagon-shaped supports consist of three 2×10 -inch boards which are nailed together and notched to form short timbers. Each support is between 30 and 32 inches long and 10 inches wide at the top and 6 inches wide below the notch; the portion above the notch is 22 inches long and the portion below the notch is 10 inches long (see Appendix A for example, page A-9). Associated artifacts include additional lumber/timber pieces; a single strand of communication wire; one concrete block; a red brick; wire nails; and asbestos tile fragments. The feature is in fair condition and may have functioned as a pad for a small structure or, possibly, as an instrument or generator pad.

Construction materials such as wood, concrete, nails, asbestos tiles, braided cable, and a red brick comprise the majority of the artifact assemblage at LA 185071. Historic artifacts not related to construction materials include: a few pieces of clear bottle glass; a porcelain insulator; communication wire; an electrical box; a boiler tank; a church-key bottle/can opener; and a fiberglass drone fragment. The scarcity of artifacts, which was noted at all of the sites recorded during the current investigation, is due to the limited activities that were carried out at these locations and organized cleanup of the sites by the military.



Figure 6-112. LA 185071, Feature 4 safety barrier and remains of seating area, view west.

6.23.2 Summary and NRHP Eligibility Recommendation

LA 185071 is a historic property suspected to be a combined IFC area and missile launch viewing location associated with the Nike Ajax Missile, Annual Service Practice and Operation Understanding at Red Canyon. The site is associated with communications, monitoring, and tracking Nike Ajax missiles and targets during practice and training and providing safety to visitors viewing missile launches. LA 185071 consists of five features (two leveled pads with wooden supports, two trenches, and a safety barrier) and a low-density artifact scatter in a 49,135-sq-foot (4,565-sq-m) area.

Red Canyon Range Camp (LA 110819), along with the supporting training facilities associated with the Nike Ajax Missile program, was active at Red Canyon between 1953 and 1960. Although the camp was officially closed in 1959 when the mission was moved to McGregor Range at Fort Bliss, a group remained until 1960 to police/cleanup the camp and the supporting facilities and to remove structures. LA 185071 does not retain integrity and does not embody the Cold War-Nike Ajax development/training/practice theme. Due to the poor integrity, the site is not considered under the important events criteria (Criterion A) associated with Cold War readiness missions at WSMR. LA 185071 is recommended not eligible for inclusion in the NRHP.

CHAPTER 7

DISCUSSION AND SUMMARY OF RESULTS

The following discussion focuses on the remaining physical attributes and the functional aspects of the investigated sites. In many cases, the function of sites, or groups of sites was made evident by the physical remains, historic documentation, or personal communications with those whom had served at Red Canyon—basic information on what is known/published on these locations is included. In other instances, no pertinent information was available, and the physical remains did not clearly indicate the site function. As a result, the specific purpose or role of several locations remains unknown. Discussion of this small group follows that of the sites that were more readily interpreted. Where appropriate, any shared attributes of these sites are reviewed and functional inferences are made.

7.1 RANGE CONTROL

Although the function of multiple sites documented during this investigation remains uncertain, the function of many can be determined. The location of Range Control of Range Operations (LA 185034) for instance, was made evident in extant accounts, and several of the remaining structural elements could be readily correlated with historic photos. The function of, and facilities at, this location were unique in terms of the Red Canyon training grounds. A partial list of its numerous functions includes: coordination with activities at WSPG and McGregor Range; overseeing missile launches; fire lookout; and controlling access through roadblocks. The commanding view from Range Control made it a natural observation platform for visitors to watch missile launches and witness the coordination and control workings within the Range Operations building (see Appendix B, Figures B-18 and B-19). J.P. Moore (1998:48) has described the Range Control building as "a very busy place" and stated that "about 13,000 visitors came to this spot in less than six years."

The Communication building (The Switch or Commo Shack) located next door handled a master telephone switchboard 24 hours a day, enabling communication with the outside world. Reflecting on his nearly two years (1957–1958) of work at the switchboard, Alan Graham recalls:

An often boring duty, this switchboard could be as quiet as a tomb or as frantic as a hot day at the stock market. It was unpredictable except when they were on missile firing watch—then it was a nightmare—never-ending calls doubled and tripled over each other. You could handle it for 20 minutes and be burned out so the next guy would slide into the seat and be ready to take over immediately.

It's something to think about—and wonder at—that every bit of communication, both in and out of Red Canyon Range Camp, passed through this little shack at the top of Commo Hill. The a/c wasn't adequate in summer, nor the heater in winter... (Graham 1999:59, 96)

Don Bogges, who also manned the Commo Shack (1957–59), estimated that "there were as many as 5,000 calls per week! Always busy, it was cramped too. The Provost Marshal, shared one half of the small building" (Moore 1998:46).

7.2 LAUNCH COMPLEXES

Eleven launch complexes, all of which lie west of the other Red Canyon Nike training sites, were documented. As the launch complexes were strategically placed and readily visible on aerial imagery, all of the existing launch complexes associated with the Red Canyon training program were probably documented during this investigation (see Tables 1-1 and 8-1).

Little information was discovered regarding the launch complexes and the activities conducted there. It has been ascertained that multiple launchers were anchored to concrete pads, and missile loading rails extended perpendicularly from the launchers (see Appendix B, Figure B-20). Nike Ajax missiles were carried to the launchers and placed on the loading rails. After affixing two of the stabilizing fins (which had been left detached to ease transport), each missile was pushed into place on the launcher and, presumably, connected to a power source for ignition. The launcher would then be raised hydraulically to a near-vertical position, and crews would evacuate into a bunker for each launch. Ajax launches reportedly occurred 50 weeks a year, and each visiting ASP crew would be responsible for three launches, including one nighttime firing. According to Moore:

The Launcher Section crew arrived one week before the IFC crews, enjoying Red Canyon for two weeks... Launcher crews were responsible for removing their three missiles from shipping containers and the boosters from crates. They would mate the missiles and boosters on a launch rail, install three warheads in each missile, then transport them by trailer to the Fueling Section.

From the Fueling Section the missiles were transported to a holding area and stored until Monday of the following week. Then the Launcher crews would transport them to their firing site, transfer all three missiles to the launchers, and finish the preparatory and testing work. If all went as scheduled, two of the missiles would be launched Wednesday afternoon and the third would be launched that night. (1998:58)

Based on physical evidence and historic accounts (Moore 1998:82), launchers were set to fire missiles leaning slightly west from a vertical position. This position sent the missiles away from the launch complex and other facilities, minimizing the chance that spent boosters and/or debris from detonated warheads would fall on personnel or valuable equipment.

Earth- or sandbag-covered bunkers (revetments) at Red Canyon Launch Complexes have also received cursory mention, as well as photographic documentation, in extant literature (Stump

and Bodine 1956; Eichenlaub 2007; Nike Historical Society 2016). The use of protective barricades for electrical generators is also depicted in published imagery though it is not discussed in the documents examined during this investigation.

Moore (personal communication 2016) also mentioned the use of a Launch Control van at launch complexes, although, little mention of these was found elsewhere. On his website, Thelen (1996) lists the Launch Control Trailer (LCT) among the components of the Nike launcher area, and states that it, "has the test transponder and launch control box," although he provides no additional details (Thelen 1996). Another reference provides a clearer description of the LCT:

The launch control trailer contained the necessary equipment to function as the control center between the battery control trailer and the launching sections. Similar in appearance to the battery control and radar trailers in the Battery Control Area, the launch control trailer contained the launching control panel, the launching control switchboard, and test responder. Included within the launching control panel were the controls, displays, and communications equipment that were needed to supervise and monitor the launching sections, and to act as a relay station between the launching sections and the Battery Control Area (Military Standard 2016).

Information regarding the placement of the LCTs in relation to the launch complexes is also scarce. The single bit of information comes from Eichenlaub (2007), while recalling his experiences at Red Canyon—he states that: "The LCT was across the road from the missile bunker and up the hillside several hundred feet" (Thelen 1996). This assertion indicates that these vans (or trailers) were situated a safe distance from the launch areas, most likely positioned to the east.

7.2.1 Characteristics of Documented Launch Complexes

The launch complexes documented during this study were readily identified, based on the presence of concrete launch pads and earth-covered bunkers. While these facilities all included such features, there was considerable variation in the group.

Launch Pads

Three types of concrete launch pads were documented: rectangular, wedge-shaped, and hexagonal (**Table 7-1**; see Appendix A). The rectangular- and wedge-shaped types occurred most frequently and both these forms were present at three locations. In contrast, hexagonal launch pads were present at only one location (LA 185029). These major variations in features with similar functions suggests an evolution of styles through time. Given the centralized and readily accessible location of LA 185029, it is suspected that the hexagonal launch pads may represent the initial form, or prototype. If this is the case, then a simpler type (probably the rectangular) soon replaced the more complicated hexagonal form.

51 5				
LA Number	Rectangular Launch Pads	Wedge-Shaped Launch Pads	Hexagonal Launch Pads	
185021	-	3	-	
185022	3	_	-	
185023	2	1	_	
185025	3	_	_	
185026	2	_	_	
185027	2	1	_	
185028	2	_	_	
185029	_	_	4	
185030	2	1	_	
185031	2	_	-	
185068	2	1	_	
Total Inventoried	20	7	4	

Table 7-1. Frequency of Concrete Launch
Pad Types by Site Number.

Rectangular forms are inferred to have been the mainstay of launch pad types (n = 20), as they occur nearly three times as frequently as wedge-shaped examples (n = 7). The wedge-shaped forms occur exclusively at only LA 185021 (n = 3). In the remaining four instances, wedge-shaped forms accompany paired rectangular types and may have been installed to supplement rectangular forms. Once determined adequate, the wedge-shaped launch pads would have proven more cost-effective than the rectangular versions, as they required considerably less concrete and ground preparation.

In addition to the three styles of concrete launch pads described above, a more rudimentary example was documented at LA 185028. This launch location has two, small, round concrete pads (\approx 23 inches) for the rear launcher 'feet.' One improvised steel pin marks the front 'foot' location, and other pins suggest loading rail positions and, perhaps, a blast plate (see Appendix A, page A-6). A section of transport rail was anchored in position to deflect blast forces upwards, having a similar function as the raised lips noted on all the concrete launch pads. In the absence of a more substantial concrete slab, this launch locus may be best described as a dirt launch pad. While the reasoning and/or necessity behind this unique feature remains unclear, its intended function as a launcher site is unmistakable.

A range of variation was noted within the rectangular-shaped launch pad group, potentially indicating the evolution of construction details (**Table 7-2**). While half of this group included only anchor studs for the three launcher feet and a blast plate, the remaining half included parallel sets of smaller anchors located near the blast plate (see Appendix A). Only two of the sites with rectangular launch pads lacked examples with these secondary, or ancillary anchors, and only two included ancillary anchors on all the rectangular pads.

The rectangular launch pads all included a hole, or access port located just forward of the blast plate location. Where visible, these ports included a horizontal pipe that extended beyond the slab to accommodate wiring/hoses connected to the launcher. While most of the access

ports were square, rectangular examples were also noted. Four of the sites also included concrete boxes situated just beyond the launch pad slab and rising to about the height of the corresponding slab. These boxes were connected to the access ports via the above-mentioned horizontal pipe and added security for the cables/hoses connecting to the launcher.

LA Number	Rectangular Pads with Ancillary Anchors	Rectangular Pads With Remote Access Boxes	Rectangular Pads with Ancillary Anchors and Access Boxes
185021	-	-	-
185022	2	2	2
185023	1	_	_
185025	2	_	_
185026	1	_	_
185027	2	2	2
185028	-	2	_
185029	-	_	_
185030	2	2	2
185031	_	_	_
185068	-	_	_
Total inventoried	10	8	6

Table 7-2. Attributes of Rectangular Launch Pads.

In several instances, the access port within the launch pad included a recess along the interior perimeter that accommodated a welded steel cap. At two locations (LA 185022 and LA 185028), a steel collar that fit the recess remained, along with the steel cap. Although only these two steel caps were observed, they included a short vertical pipe to accommodate the cables/hoses connecting to the launcher. Although it is possible that all access ports once included a steel cover, the more formalized version (with cap and collar) correlated with the launch pads that also included a concrete access box. This association may indicate that the access boxes were a refinement to rectangular launch pads that was adopted late in the production series. All but two of the eight rectangular launch pads with access boxes included ancillary anchors, suggesting that use of the anchors increased through time.

Bunkers

All of the launch complexes included earth-covered bunkers (a.k.a. revetments), most of which appeared as low mounds with both a large and a much-smaller, ancillary entryway. These features were typically situated to the east or northeast of the launch pads, which were oriented to the west or southwest. In cases where the topography provided the opportunity, the bunkers were built in trenches cut into hill slopes. In other cases, they were constructed on open terrain. The bunker interiors are best represented in a photo that accompanied a 1956 magazine article on Red Canyon ASP exercises (see Appendix B, Figure B-21). The article also clearly states that launch personnel reported readiness back to the Battery Control van from within the bunker (Stump and Bodine 1956:21).

The diameter of the bunkers (at the base) ranges from about 30–60 ft, and the maximum height reached approximately 12 ft. Construction materials typically included stacked, earth-filled, 55-gallon drums topped with steel transport rails (see Appendix B, Figure B-22), recycled metal roofing, and finally, local soil and rocks. Various sizes of transport rail, railroad ties, utility poles, lumber, and pipes were used as construction elements—no two bunkers were identical. A layer of concrete roofing is visible at LA 185025 and LA 185026, and sections of interlocking steel deck plate, or landing mat were observed at several locations. Ventilation/ stove pipes extended from the bunkers at several locations, and at LA 185026, a vertical shaft with an integrated ladder served as secondary access. Electrical cables and communication wires were traced to the bunkers in several instances, indicating that they also included lights and radios.

The main entryways were frequently framed with large beams, or sections of utility poles and sheathed in corrugated roofing. Currently, these entries average only about four feet tall and three feet wide. The smaller entries are generally less than two feet wide and around two feet tall, which would require crawling to enter or exit. These small access-ways are inferred to have been included in case the primary entry caved in, as well as to allow air circulation and release pressure. At one location (LA 185022), earth-filled sandbags were used to insulate/ cover the secondary entryway in place of an earth covering.

In general, the larger entryways were oriented to the east or northeast away from the launch pads, and the smaller, or secondary entrances were most-often oriented to the north. Substantial variation was noted among the entryway orientations, however, and in several cases, they were intentionally covered or otherwise obliterated.

Although the bunker interiors were not fully investigated (due to a demonstrated tendency to harbor rattlesnakes), most appeared to contain one or more chambers offset from the entryway. An extremely long, excavated room at LA 185021 appears to have incorporated a unique form of linear bunker on its south end. This bunker has a gabled roof, and earth-filled wooden crates were used to line the entryway and north wall, where it meets a larger room. The typical, earth-filled, 55-gallon drums were used as wall/roof supports, and heavy steel trusses would have supported an earth covering. Although the function of the large (16 x 20 feet) adjacent room is unknown, its sheet-metal roof lacks clear indications of an earth covering, and the excavated walls appear unstabilized. LA 185021 is the only site documented during this project that contains only wedge-shaped launch pads, and—if our interpretation is correct—may have been the last launch complex that was constructed.

The bunkers are situated within about 150 feet of the launch pads and were evidently used to shield soldiers during missile launches. As noted by one radar repairman: "…when a Nike missile fail-safed at Red Canyon the debris from it sometimes fell back on the launching area" (Moore 1998:89).

Generator Barricades

Although not identified at all locations, C-shaped, generator barricades were identified at more than half (n = 7) of the 11 launch complexes. The barricades (for lack of a more applicable term) were usually situated east or northeast of the bunkers, evidently taking advantage of the added blast deflection provided by the adjacent mound of earth. Openings in the barricades faced a similar direction, clearly indicating their intended use as protection from launch blasts. The association of a fuel-line segment, concrete block supports, grounding rods, and power cables and related pathways suggests that these protective barriers housed generators that provided power to launchers and bunkers.

Most of the barricades were constructed of stacked, earth-filled sandbags, and in general, they measured about 15 feet across the opening and 8–15 feet in depth (see Appendix B, Figure B-23). The more intact examples indicate that the original height probably exceeded five feet in some cases. Two of the barricades deviated from the sandbag construction trend: at LA 185021, the barricade was constructed of earth-filled wooden crates, and at LA 185027 it was excavated into a hillside and the displaced tabular rock was stacked to form the upper walls.

7.3 IFC (INTEGRATED FIRE CONTROL) SITES

A total of five IFCs were documented during this investigation, although, their function was not clear until after completion of the field work. Once J.P. Moore (personal communication 2016), a former Radar Operator at Red Canyon, conveyed that one IFC was assigned to each of the 11 individual Launch Complexes, the interpretation of these sites became much easier. As more details about the locations were transmitted and photographs were obtained, many of the mysterious remains identified during fieldwork became interpretable.

The role of IFCs and how they functioned has been the subject of a considerable amount of literature that is not available to the public. Ed Thelen, an IFC Technician who once trained at Red Canyon, has created a website that contains substantial historical, technical, and operation information on Nike missiles, as well as stories of interesting events told by participants (http:// www.ed-thelen.org/). Although rhis information is focused on Nike Hercules, most of the IFC and radar operations facts apply to the Nike Ajax.

While the workings of IFCs can be readily gleaned from Thelen's website and other sources, little specific information has been published regarding IFC facilities at Red Canyon. Along with a few other sources, knowledge shared by Moore (personal communication 2016) has provided sufficient details to generate a background picture of the Red Canyon IFCs.

The most conspicuous elements of Red Canyon's IFCs were three vans (or trailers) and three radars. The vans were most often situated in close proximity to one another, sometimes sharing a platform. The maintenance van contained spare parts and supplies to help keep the systems operational. The battery control van housed the target-acquisition radar equipment and operator, along with the computer and operator, an Event Recorder operator, and the Battery Commander. Finally, the radar-control van (with four operators) manned both the target- and

missile-tracking radars, the former of which locked on the target with the aid of data from the acquisition radar. The target-tracking radar fed information on speed, distance, and direction to an analogue computer in the battery control van. Once the Ajax was fired, the missile-tracking radar relayed information to the computer, which determined an intercept point and guided the missile to its target using radio signals. As the missile reached its target, the burst command was transmitted via radar pulses, and the warheads are detonated (Thelen 1996).

The radars at Red Canyon IFCs included one large, trailer-mounted dish for target tracking(TTR), a similar-looking example for missile tracking (MTR), and a loaf- or mailbox-shaped unit anchored to the ground and used for target acquisition (see Figures B-11 and B-12). The tracking dishes required an unobstructed view of the assigned launch complex, as tracking was initiated before missile launch. To provide line-of-site to the launchers, radars were typically situated on hill, or ridge tops overlooking Launch Complexes. The vans, however, were often parked at lower-lying, more-level areas nearby and were linked to the radars with electrical cables (**Figure 7-1**, Moore 1998, personal communication 2016).



Figure 7-1. Simplified relationship between typical IFC and Launch Complex (reprinted from Thelen 1996, with permission). Note: Elevator and Assembly and Service Area do not apply to Red Canyon.

In order for the radar to track a missile during its rapid ascent, there were two locational requirements: 1) radars required positioning at least 1,000 yards (approximately 0.6 mile) from the launchers; and 2) the launcher area had to be high enough for the missiles to be seen by the tracking radar. As Thelen (1996) explains:

The interesting fact is that the Nike accelerates so fast that the missile tracking radar (MTR) can't keep up with it if the two are too close....So backing the radar (or human) away from the missile gives the radar (or human eyeball) a chance to track the missile. ...There is another placement limitation. The tracking antennas can only depress (point down) about 10 degrees from the horizontal. So the launcher area must be high enough for the missiles, when erect, to be seen directly by the missile tracking radar no more than 10 degrees down from the horizontal. (Thelen 1996)

Basically, the distance and line-of-site criteria mandate that the IFCs be placed uphill—but not too high above— and just over one-half mile from launch facilities. Given that the Red Canyon Launch Complexes are located along the edge of a north-south trending valley and firing basically westward, their corresponding IFCs should be situated to the east and upslope in visible positions just over half a mile distant. While the distance may be greater than 1,000 yards, the necessity of an interconnecting control cable between the IFCs and launchers (Thelen 1996) would discourage significant further extension.

Other components associated with IFC locations include: generators, antennas, a collimator mast, and, presumably, an outhouse or privy. These components are visible in some available photos, but have not received much discussion in extant literature. Moore (personal communication 2016) also mentioned a "break shack" at IFCs, and when shown a picture of a Red Canyon IFC (LA 185037) with a structure present, confirmed its identification (see Appendix B, Figure B-11).

7.3.1 Characteristics of Documented IFC Sites

The physical evidence remaining at the IFC sites investigated during the current study can only be described as severely limited. Parallel, semi-enclosed, and sometimes arching rock alignments comprise the most obvious features. The alignments often occur in relatively flat-lying areas, and occasionally extend up hillslopes ending abruptly. Leveled soil platforms that were stabilized with stacked rock along the downslope side accompanied alignments at two locations (LA 185032 and LA 185070), while scattered wooden supports formed roughly square arrangements at the other three sites interpreted as IFCs (LA 185036, LA 185037, and LA 185071).

Smaller flattened areas, guy stakes (a.k.a. deadman anchors), occasional square-shaped chunks of concrete, and a few bits of lumber, or refuse are also visible clues to IFC identity. Even though these remnants alone minimally hint at former function, when viewed in context with historic photographs and other background information, they begin to illustrate a more complete picture. The rock alignments forming enclosures or semi-enclosures presumably surrounded van locations. Some of the parallel alignments in the vicinity marked walkways, while those

ascending adjacent hill slopes delineate cable paths to radar placements. The purpose of rock alignments at IFCs is twofold; first, loose rocks prevalent in these areas create trip hazards, particularly during night launches. Secondly, rock alignments look appealing. Based on his first-hand experience at Red Canyon, Moore expounds:

One of the most popular make-work programs is called "Site Beautification", and it is on-going *ad nauseam*, no matter how beautiful the site. Its possibilities are endless here in this rocky desert, because there is an endless supply of rocks. Rocks were put on earth for the sole purpose of being rearranged in an infinite array of patterns, designs, borders, and walls.

Rocks are used throughout the sites as fences, walkway borders, parking lot markers, and to make a circle around trees or, in our case, an exceptional cactus plant. There is a beautiful rock lined trail to the outhouse, another to each of the radars. The three vans and the trailer area are all well delineated by rock borders. One can't over emphasize the importance of white washed rocks in our daily routine. (1998:89–90)

The leveled platforms and wooden support arrangements are inferred to represent the location of portable buildings identified as break shacks by Moore (personal communication 2016). Where the ground might be leveled with a reasonable amount of shovel work, the stacked-rock stabilized platforms were constructed to support the break shack. In other instances, wooden supports provided a solid footing. Rocks, scraps of lumber, bricks, and concrete chunks were sometimes added (i.e., LA 185037) to fill the space below the portable building, probably to discourage encroachment by snakes and other native wildlife. Not all of the IFCs used portable buildings for their break shacks, however:

We have a small trailer parked a short distance from the Fire Control area, and we stay in it most of the time, studying technical manuals or maybe repairing some piece of equipment. There really isn't much for us to do until the tactical unit does their thing. It's their show. They don't want us interfering and we don't want to get in their way. After all, they're here to train and prove they can operate the equipment and successfully shoot down the target. (Moore 1998:89)

This statement does not provide any information on the nature of any features or items that may have been used to facilitate placement of break trailers, or the frequency of their occurrence. It does indicate, however, that some form of accommodations were necessary at each IFC to house Red Canyon staff during training and ASP exercises. If problems were encountered by the temporary operators, more permanent staff would be on hand to readily provide assistance.

The smaller flattened areas noted during this investigation occasionally retained an accompanying grounding rod and/or concrete blocks, and one of these locations (LA 185036) even included a radiator manufacturer tag. These often-subtle features are interpreted as generator stations (or pads), at least one of which would be required to power each IFC. A vintage photograph of LA 185037 shows one generator at each of the vans, as well as three additional backup generators (Appendix B, Figure B-13).

A variety of pipes, rods, and rebar protruding from the ground surface at multiple locations most likely served as anchors for radio transmitters, the collimator mast, and/or the acquisition radar. In addition to showing a drawing of the collimator mast (a.k.a radar alignment mast) and its attendant guy lines, Thelen (1996) relates: "The IFC area had a radar alignment system for "boresighting the tracking radars. This was located about 200 yards away from the tracking antennas...The system included a cable for remote control and power, a tall mast with supporting lines" (Thelen 1996). This typical distance between the radars and collimator mast are repeated in another reference, which goes on to state: "Spatially, the mast assembly and two tracking radars formed a tall triangle" (Military Standard 2016).

Based on a photograph showing at least one guy line attached to an acquisition radar at Red Canyon (see Appendix B, Figures B-11, B-12), Moore (personal communication 2016) was asked about such anchoring practices. He replied: "Yes, they were tied down as well as weighted down with sandbags. That huge radome is a giant sail and the constant wind at RCRC could have blown them over". Any RCATs on display at IFCs would also require anchors of some kind, as illustrated in historic photos from LA 185037 (see Appendix B, Figure B-13).

In addition to the usual equipment, two IFC locations were outfitted to accommodate the viewing of missile launches by VIPs. LA 185032 contains parallel sets of iron frames anchored to wooden runners and situated near the western edge of a ridge top. The frames were identified as remnants of theater seats identical to those shown in a historic photograph taken inside the Red Canyon Range Camp movie theater. A photo showing these seats at the site was ultimately located, revealing that a tracking radar was positioned in close proximity to the seating area (see Appendix B, Figure B-4). A rock-veneered patio with an outdoor fireplace was also present near the IFC van positions at LA 185032. Although no mention or photographs of this facility were found in records searched during the current investigation, it was probably constructed to accommodate visitors attending Operation Understanding tours. The adjacent remains of what appears to have been a wooden structure are similarly unique to Red Canyon IFCs—these may be the remains of a shed for storage of supplies for outdoor grilling events. A catered opportunity to socialize and discuss the day's activities would certainly help to offset the long flights, hot bus rides, and dusty conditions endured to visit Red Canyon during in the late 1950s.

At LA 185071, a cable safety barrier was installed along a ridge top in front of wooden runners that are inferred to represent stabilizers for seating. The cables are positioned just above an escarpment, limiting access to the steep ledge (see Figure 4-7). The remaining wooden runners are suspected to have anchored and/or leveled bleachers depicted in a vintage photograph (see Figure 4-6). Two short trenches situated nearby likely represent outhouses, further supporting the visitor-seating area inference. A vintage photo depicting visitors with folding chairs (see Appendix B, Figure B-24) is suspected to represent the viewing area at LA 185071 before installation of the bleachers. If this inference is correct, a tracking radar was situated nearby.

A combination of physical remains, locational details, and historic photographs was required to confidently identify the IFCs included in this study. Based on the required correlation between these sites and Launch Complexes, at least six additional IFCs remain unrecorded in the area.

Any unrecorded IFCs were not targeted by the current investigation, largely due to limited visibility, as no concrete pads or other features are readily apparent on aerial imagery. Now that the subtleties, topographic requirements, and probable locations of these sites are better understood, the remaining IFCs should prove relatively easy to identify and document.

7.4 SITES OF UNKNOWN FUNCTION

Of the 23 sites documented, the function of six sites remains undefined. One of these sites (LA 185041) consists almost exclusively of rock alignments. LA 185024 consists of a roughly 10-foot-square room excavated into a small hill and topped with a pitched, sheet-metal roof. Its entrenched placement within a protective landform is reminiscent of a bunker, although no evidence that it was covered with earth could be discerned. This site is situated west of Range Road 11 and lies within about one-half mile of three Launch Complexes. The proximity to these sites, lack of associated features, and protective setting suggests that LA 185024 may represent a storage facility for hazardous materials.

LA 185041 is just more than 400 yards (388 m) east of a Launch Complex (LA 185026), which is connected by a cable path visible on aerial imagery. It is suspected that LA 185041 represents a Launch Control van location (see discussion above), though this inference remains unconfirmed.

Three of the unknown sites (LA 185033, LA 185035, and LA 185038) are evidently related, as they are all situated along a drainage northeast of Red Canyon Range Control and contain C-shaped enclosures, or bays constructed of missile-booster crates. Two of these sites (LA 185033 and LA 185035) are virtually identical and consist of a single enclosure comprised of earth-filled crates. LA 185038 is the largest site of this group and includes three contiguous bays defined by booster crates. In the latter case, the crates were used to help retain linear earthen berms. A more massive berm flanks this feature to the north and northeast. This berm rises abruptly within about 15 feet of the bays' open ends, which would severely limit approaching them with a motor vehicle. The massive berm suggests intentions to deflect a potential blast or explosion upwards.

A location noted while travelling to LA 185038 is suspected to have been identical to the two single-bay sites, but it is now degraded by erosion. Currently, this location consists primarily of crate strapping. It is marked by a rectangular area of gray soils identical to the other two sites, however, and it is similarly situated along the west side of a now-defunct roadway. The group of three sites are situated in a downslope, or southeastward direction and consistently situated at roughly 250-yard intervals from LA 185038.

The final site of unknown function (LA 185069) is situated approximately 800 yards west of the Assembly Area. It consists of an 80-foot-long, T-shaped, concrete slab with the remains of a wooden structure abutting it on the north. There is little evidence that Quonset huts or other buildings were once present, as only two anchoring studs were visible along the edges of the slab. Evidently, a concrete facing was poured against the wooden structure (from roof to floor) where it abutted the slab, as if to protect it from possible fire or blast. A metal-framed doorway

and large rectangular, window-like opening are present within the concrete facing wall. A tall berm surrounds the site on the east, north, and west sides, as if to direct a potential blast upwards.

Another large berm that encloses an area against a ridge slope was noted about 200 yards to the southeast of LA 185069 and is, undoubtedly, related, as they are connected by a defunct roadway. This location remains unrecorded, but appears to be limited to the massive berm and a few pieces of lumber. Like at LA 185038 and LA 185069, the presence of a massive berm is taken to imply handling of explosive materials.

7.5 Missile Fueling and Fitting

References to where the tasks of fueling and warhead installation actually took place are generally lacking among the chronicles of Red Canyon. Excerpts from the training manual state that:

The missile body of the Nike-Ajax missile (guided missile M6) is received in the assembly area completely assembled except for the installation of the warhead and fins. After uncrating, the fins are attached and functional tests are performed. The missile body is then transported to the service area for warhead installation and propellant fueling (Nike Historical Society 2016).

A booklet created by Western Electric and published by Thelen (1996) details tasks conducted within the Service Area on Nike installations. While no Service Area has been mentioned or identified at Red Canyon, the processes of fueling and warhead installation at such a designated location is reiterated:

Nike Ajax: This is the area that the Ajax was war-headed, electrically tested and fueled (concrete pad behind building) The fuel; consisted of; JP4 aviation fuel (kerosene) and UDMH (undiluted dimethylhydrazine), and, from a separate fuel stand, an oxidizer, IRFNA (inhibited red fuming nitric acid), was pumped into the missile into a separate tank. The Ajax was fueled after assembly and warheading were done. (Thelen 1996)

In the "Operating Procedure for Handling Guided Missile Explosives and Propellants for Nike 1" produced by the Army at Ft. Meade, Maryland in 1954, safety distances for temporary Nike sites are outlined (Thelen 1996). The minimum distances between activities are listed as:

- 1) Joining to fueling 170 feet
- 2) JP Fueling to nitric acid -20 feet
- 3) Fueling to warhead insertion 180 feet

Mitchell (2000) describes the warhead area as "riveted" and multifunctional, adding: "With the Ajax, it was fueling, warheading and booster/bird mating area" (Thelen 1996).

The use of berms is mentioned elsewhere by the statement that: "For safety in the event of explosion, the missile warheading operations were also performed at the acid fueling station, which was encircled by an earthen berm approximately eight to ten feet high (Military Standard 2016).

The combination of these documents illustrates that the more hazardous portions of Nike Ajax preparation were probably conducted at undefined locations away from inhabited buildings. Photographic and physical evidence, however, reveals that the caustic fuel oxidizer (IRFNA) was added within the Assembly Area (see Appendix B, Figures B-25 and B-26), and the starter fuel (UDMH) was added to missiles while on the launcher (see LA 185022 and LA 185025). The remaining fuel (JP-4 or jet fuel) is minimally hazardous (similar to kerosene) and requires few precautionary measures.

The warhead installation area(s) likely included large berms (referred to as blast barriers in Army manuals) to minimize the spread of potential blast forces. While it cannot presently be established exactly where this procedure was conducted at Red Canyon, any of the sites with large berms may be good candidates. Gradual expansion of the Nike Ajax program and evolution of the Red Canyon training facilities may have led to changes in safety procedures through time, along with changes in where the more hazardous tasks were conducted.

7.6 **Reflections**

It should be emphasized here that Nike Ajax training facilities at Red Canyon are unique in many ways from the more standardized Nike Batteries installed elsewhere. Real estate limitations—one reason behind constructing underground storage and elevators at batteries elsewhere—was not an issue in the early days of WSPG. Additionally, the infrastructure at Red Canyon was always intended to be of a temporary nature, as improved facilities at McGregor Range were being finalized. Variations in mission focus, frequency of training and/or practice events, and supporting funds meant that, physically, Red Canyon was continually changing and evolving. As observed during fieldwork for this study, most of the physical remains include evidence of using recycled materials and of improvisation. These conditions have, in many cases, resulted in the creation of relatively unique features and adaptive strategies that lack comparable correlates.

Fragments of published documents, personal photographs, and recollections of those who served at Red Canyon nearly 60 years ago have all contributed to the conclusions discussed above. Many of the details remain elusive, some of the inferences made are likely to be flawed, and the locations and/or functions of all the associated sites may never be known. This document should be viewed as simply the first step toward identification and documentation of the historic cultural properties associated with Nike Ajax training and practice exercises in the Red Canyon area.
CHAPTER 8

NRHP ELIGIBILITY RECOMMENDATIONS

Although all 23 sites documented during this investigation are associated with important events as defined under Criterion A of the NRHP, most lack integrity as a result of intentional dismantling (see Chapter 5.4). For Cold War-period sites, integrity has been defined as "the ability of a property to convey its significance" (Lavin 1998:116-117). Only five Launch Complex locations are considered to meet this integrity requirement, and are recommended as eligible for listing on the NRHP (**Table 8-1**). These properties should be protected from impacts during future undertakings that may involve ground alteration. The remaining 18 sites lack sufficient integrity to convey significance and therefore, are recommended not eligible for listing on the NRHP (see Table 8-1). No addition work is required at these locations.

Temporary Site Designation	LA Site No.	Function	NRHP Eligibility Recommendation
Red Canyon ASP site 1	LA 185021	Launch pad	Not eligible
Red Canyon ASP site 2	LA 185022	Launch pad	Eligible
Red Canyon ASP site 3	LA 185023	Launch pad	Eligible
Red Canyon ASP site 4	LA 185024	Unknown (possibly storage)	Not eligible
Red Canyon ASP site 5	LA 185025	Launch pad	Not eligible
Red Canyon ASP site 6	LA 185026	Launch pad	Eligible
Red Canyon ASP site 7	LA 185027	Launch pad	Not eligible
Red Canyon ASP site 8	LA 185028	Launch pad	Not eligible
Red Canyon ASP site 9	LA 185029	Launch pad	Eligible
Red Canyon ASP site 10	LA 185030	Launch pad	Eligible
Red Canyon ASP site 11	LA 185031	Launch pad	Not eligible
Red Canyon Assembly Area Aux site 2	LA 185032	Integrated Fire Control	Not eligible
Red Canyon Aux site 4	LA 185033	Unknown	Not eligible
Red Canyon Range Control	LA 185034	Range Control	Not eligible
Red Canyon RC Unknown Site 1	LA 185035	unknown	Not eligible
Red Canyon RC Unknown Site 3	LA 185036	Integrated Fire Control	Not eligible
Red Canyon RC Unknown Site 4	LA 185037	Integrated Fire Control	Not eligible
Red Canyon RC Unknown Site 5	LA 185038	Unknown	Not eligible
Unrecorded Site 1	LA 185041	Unknown (possibly launch control)	Not eligible
Unrecorded Site 2	LA 185068	Launch pad	Not eligible
Red Canyon In Flight Control (IFC) Area	LA 185069	Unknown	Not eligible
Red Canyon Unknown Site 1	LA 185070	Integrated Fire Control	Not eligible
Red Canyon Unknown Facility	LA 185071	Integrated Fire Control	Not eligible

Table 8-1. NRHP Eligibility Recommendations for 23 Sites Documented during this Investigation.

The entire complex of sites associated with Nike Ajax training and practice exercises at Red Canyon may be considered significant, as they represent the "important Cold War theme" of Early Missile Defenses (Lavin 1998:116-117). Although all of the associated locations are contributing elements of the overall group, only a few meet site-specific NRHP eligibility requirements. The area as a whole, however, appears to meet the NRHP criteria to be considered a historic district.

According to the National Register Bulletin 15, a district is defined as possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects that are united, either historically or aesthetically, by plan or physical development. Its importance comes from it being a "unified entity, even though it is often composed of a wide variety of resources," and its identity comes from "the interrelationship of its resources, which can convey a visual sense of the overall historic environment or be an arrangement of historically or functionally related properties." Finally, a district must also be significant in that it, "must be important for historical, architectural, archeological, engineering, or cultural values" (National Park Service 1995:5-6).

Under the National Register criteria, properties that are integral parts of a district do not have to be individually eligible for inclusion in the NRHP, as long as an explicit explanation is given as to how they qualify as integral parts (Sherfy and Luce 1998). Although a district is usually a single geographic area of contiguous historic properties, it can also be "discontiguous," in that it is composed of "two or more definable significant areas separated by nonsignificant areas," and "the deposits are related to each other through cultural affiliation, period of use, or site type" (Sherfy and Luce 1998).

The Red Canyon complex is the only representative of a Nike Ajax practice facility in the US. Between 1953 and 1959, anyone assigned to a Nike Ajax missile battery site in the country and its outliers practiced at Red Canyon. During its six years in service, the Red Canyon Range supported approximately 3,000 Nike Ajax firings, served as a temporary home for thousands of soldiers, and played a key role in public relations by hosting educational tours for hundreds of visitors. As a whole, the Red Canyon training area is considered to be potentially eligible for the NRHP under Criterion A: Events. The importance of the area's role in our nation's early missile defense system is readily demonstrable, and the combination of sites (or district) can be directly associated with a pattern of important Cold War events.

In addition, the district may also qualify for eligibility under NRHP Criterion C: Design/ Construction. The "distinctive characteristics" of architecture remaining at the Red Canyon Launch Complexes lack correlates elsewhere, and "embody distinctive methods of construction." Under Criterion C, a significant and distinguishable entity can be eligible even though its components may lack individual distinction (National Park Service 2002; King 2008).

Based on the preliminary assessment that the collection of Cold War sites associated with Nike Training at Red Canyon may meet the criteria discussed above, it is recommended that the area be evaluated as a historic district. Such an assessment will require further archival research, as

well as full documentation and NRHP evaluation of the known, but unrecorded, sites. In addition, any locations that are likely to contain associated sites should be inspected, documented, and evaluated, as appropriate. While intensive survey of the area may be inappropriate due to costs or other circumstances, reconnaissance-level effort may prove effective in locating additional sites. This level of investigation would be facilitated by the visibility of the material that was used to surface the access roads during the use of Red Canyon in the 1950s.

Four known locations (Aux Site 3, Range Camp Sewer Complex, Unknown Site 2, and Unknown Site 6) included on the site list provided by WSMR, but not documented during this investigation need to be included among those requiring visitation/documentation. Three additional locations observed during fieldwork for the current project should also be fully documented. Basic information for these sites is included in **Table 8-2. Figure 8-1** shows the multiple unrecorded sites, including the seven discussed here, as well as probable IFC locations identified via aerial imagery, that are not yet ground-truthed.

Training/Practice Exercises Encountered but Not Recorded.	

UTM Easting	UTM Northing	Description
392645	3728730	Massive berm enclosing area against hillslope near LA 185069
393052	3729275	Wooden crate enclosure near LA 185038 and LA 185035
391860	3728300	Rock alignments, wooden supports—probable IFC near LA 185071



Figure 8-1. Recorded and unrecorded sites in the Red Canyon Range Complex.

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Appendix A Illustrations of Extant Features















LA 185034 Feature 1 Range Control Center/Range Operations Building



Detail of Wooden Support Post



APPENDIX B HISTORIC PHOTOGRAPHS



Figure B-1. Launch Complex LA 185022 prior to construction of concrete launch pad, note bunker (recorded as Feature 2) and sandbag barricade (recorded as Feature 1) in background. Via *http://www.gettyimages.com/a gettyimages, accessed June 23, 2016.*



Figure B-2. Launch Complex LA 185022 prior to construction of concrete launch pad, note bunker (recorded as Feature 2) and sandbag barricade (recorded as Feature 1) in background. Via *http://www.gettyimages.com/a gettyimages, accessed June 23, 2016.*



Figure B-3. Launch Complex LA 185029 showing hexagonal launch pad. Courtesy of WSMR Archives.



Figure B-4. LA 185032 (combined IFC and VIP viewing area) showing theater seats (recorded as Feature 1), RCAT, and radar. Via *http://nikemissile.org/Humor/Humor.shtml, accessed May 25, 2016.*



Figure B-5. Nike Ajax missile shipping container (note lid similar to that found at LA 185033). Via *nikemissile.org/Ajax.shtml, accessed July 5, 2016.*



Figure B-6. Nike Ajax missile and shipping containers. Via *http://www.gettyimages.com/pictures/the-nike-rocket-at-red-canyon-proving-grounds-in-news-photo-50671937#, accessed June 18, 2016.*



Figure B-7. Red Canyon Range Control (LA 185034) showing Range Control Center (recorded as Feature 1), view south. *Courtesy of WSMR Archives.*



Figure B-8. Red Canyon Range Control (LA 185034) showing communications shack (note concrete footings/supports) and entry patio (recorded as Feature 2), view northwest. *Photo by Alan Graham via http://www.frontiernet.net/~w2hyn09/60.htm, accessed June 3, 2016.*



Figure B-9. Red Canyon Range Control (LA 185034) in 1958 showing communications shack (recorded as Feature 8) and small building (recorded as Feature 4), view southwest. *Photo by Alan Graham via http://www.frontiernet.net/~w2hyn09/62.htm, accessed June 3, 2016.*



Figure B-10. Red Canyon Range Control (LA 185034) in 1958 showing communications shack (recorded as Feature 8), view southeast. Note metal sheathing on building. (*Photo by Alan Graham via http://www.frontiernet.net/~w2hyn09/59.htm, accessed June 3, 2016.*)



Figure B-11. IFC site (LA 185037) in 1959, note break shack in center (recorded as Feature 1) along with tracking and acquisition radars, view east. *Photo by J.P. Moore via http://www.nikemissile.org/1959_IFC_at_RCRC.jpg, accessed June 22, 2016.*



Figure B-12. IFC site (LA 185037) in 1958, note break shack on right (recorded as Feature 1) along with tracking and acquisition radars, view west. *Photo by Bill Shaw via http://www.frontiernet.net/~w2hyn09/74.htm, accessed July 6, 2016.*



Figure B-13. IFC site (LA 185037) in 1958 showing electronics vans, RCAT display, white-washed rock alignments, generators, and tracking radar. *Photo by Bill Shaw via http://www.frontiernet.net/~w2hyn09/77.htm, accessed July 6, 2016.*



Figure B-14. Modern overview photograph of LA 185037, view south. Note tree on right, also visible in Figure B-13.



Figure B-15. Tracking radar set up at IFC site (LA 185070). Via *http:// ed-thelen.org/LifeAjaxTrack-.jpg, accessed July 6, 2016.*



Figure B-16. Modern overview photograph of LA 185070 showing same view as photo above (note rock alignments/pathways), view south.



Figure B-17. Historic photo showing visitors at LA 185071 (combined IFC and VIP viewing area) in front of cable barrier (recorded as Feature 4). *Courtesy of WSMR Archives.*



Figure B-18. View from Range Control Center (Feature 1). From the Baltimore Sun Sunday Magazine, September 30, 1956.



Figure B-19. View northwest from Range Control (LA 185034) to IFC site (LA 185032). *Photo courtesy of J.P. Moore, 2016.*



Figure B-20. Nike Ajax missiles on rectangular launch pad (suspected to be at LA 185022), with loading rail and launcher (note IFC site LA 185037 and unrecorded IFC site in background). *Courtesy of WSMR Archives.*



Figure B-21. Interior of bunker/revetment with electronics/communications equipment (note 55-gallon drums used in construction). *From the Baltimore Sun Sunday Magazine, September 30, 1956.*



Figure B-22. Photo from 1953 showing construction of a bunker/revetment. *Photo by Ron Pickinpaugh via http://nhsgallery.nikemissile.org/v/RCRC/Rons1953pix/ RedCanyonRangeCamp200.jpg.html, accessed June 2, 2016.*



Figure B-23. Historic photo showing sandbag generator barricade with generator operator Bill McCue. Via *http://aradcomsite37.com/images/mccue%2002.jpg, accessed July 6, 2016.*



Figure B-24. Historic photo of military brass at IFC/VIP viewing site suspected to be LA 185071 prior to installation of bleachers, note tracking radar in background. Via *http://nhsgallery.nikemissile.org/v/RCRC/1953-1959/RedCanyonRangeCamp136.jpg.html, accessed July 6, 2016.*



Figure B-25. Fueling a Nike Ajax with oxidizer (IRFNA) at Red Canyon. *Photo courtesy of J.P. Moore 2016.*



Figure B-26. View of the Red Canyon Assembly Area showing fueling stand on far right. *Photo courtesy of J.P. Moore 2016.*