SANDIA NATIONAL LABORATORIES
TONOPAH TEST RANGE, FIRE CONTROL BUNKER
(Building 09-51)
Area 9
Tonopah Test Range
Nye County
Nevada

HAER No. NV-XXXX

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
San Francisco, California 94107

HISTORIC AMERICAN ENGINEERING RECORD

SANDIA NATIONAL LABORATORIES, TONOPAH TEST RANGE FIRE CONTROL BUNKER (BUILDING 09-51)

Location: Area 9, Sandia National Laboratories' Tonopah Test Range, Nye County, Nevada

Date of Construction: 1964

Engineers/Architects: George S. Wright and Thomas A. Welby, Architects, Albuquerque, New Mexico

Builders: Reynolds Electrical & Engineering Company (REECo)

Present Owner: U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA)

Present Use: None. Building is unoccupied.

Significance: The Fire Control Bunker (Building 09-51) is a contributing element to the Sandia National Laboratories (SNL) Tonopah Test Range (TTR) Historic District. The SNL TTR Historic District played a significant role in U.S. Cold War history in the areas of stockpile surveillance and non-nuclear field testing of nuclear weapons design. The district covers approximately 179,200 acres and illustrates Cold War development testing of nuclear weapons components and systems.

Within the district, the Fire Control Bunker represents the fire control and data collection support activities associated with rocket launches for nuclear weapon design testing conducted in TTR's Area 9. It contributes to the district's representation of the established TTR Cold War theme of field testing.

The SNL TTR Historic District's period of significance is 1956-1989. The Fire Control Bunker retains integrity and is a contributing element for 1964-1989.

Part I. HISTORICAL INFORMATION

A. Physical History[1]

1. **Date of erection:**
   1964

2. **Architect:**
   George S. Wright and Thomas A. Welby, Architects, Albuquerque, New Mexico.

3. **Original and subsequent owners, occupants, uses:**
   The Fire Control Bunker was built as, and remains part of Tonopah Test Range. TTR was originally owned by the U.S. Atomic Energy Commission (AEC) with ownership passed to its successor agencies (the Energy Research and Development Agency (ERDA) and now DOE).

   The bunker housed equipment for controlling rocket launches from TTR's Area 9. An observation port on the building's south wall provides a view over the launch area.

4. **Builder, contractor, suppliers:**
   Reynolds Electrical & Engineering Company (REECo) undertook construction.

5. **Original plans and constructions:**
   The original building plans date from April 1964. They show an industrial design with a concrete foundation supporting a metal Armco arch. The arch is encompassed in reinforced concrete that forms the east, south, and west walls and roof. The north wall is a steel plate. The entrance is in the center of the north wall. An observation port extends through the south wall and there is an escape hatch installed through the north portion of the west wall. (Figures 4, 5, and 6)

   The interior room of Building 09-51 is formed from an Armco arch, produced and sold by Armco Steel Corporation, formerly The American Rolling Mill Company.[2] Armco produced rolled steel products used widely in American industry and found throughout the military and

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[1] The following building drawings were used to establish Building 09-51's construction chronology: "Title Sheet, Blockhouse Number 2 at Station 9, Tonopah Test Range, Nevada, Architectural, Tonopah, Bldg. 951," 86838, 1 of 10, 1964; "Plot Plan, Building Additions FY-64, Electrical, Building 951, Tonopah," 86838, 8 of 10, 1964.

[2] In 1978, Armco Steel Corporation became Armco Inc. In 1999, Armco Inc. merged with AK Steel Corporation. The company's products are ubiquitous in road barriers, culverts, and a multitude of different types of pre-fabricated, pre-painted steel panel buildings.

nuclear weapons complex test facilities built in the second half of the 20th century.

6. **Alterations and additions:**
The Fire Control Bunker has had no additions or significant alterations. At some point, most likely in the late 1970s or early1980s, the heat pump stand and ventilation panels were removed from the front of the building and a heating/cooling unit installed through the north wall next to the door (NV-XXXX-1 and -11).

B. Historical Context:

The Fire Control Bunker (Building 09-51) was built in 1964. It was part of the expansion of TTR's facilities to support increases in both numbers and types of tests conducted at the site (Figure 3). It took over fire control activities from Building 09-50, which had been built quickly and renovated significantly in the late 1950s and which became an observation bunker with the completion of 09-51. It was built in support of rocket testing in TTR's Area 9.

Early SNL History

SNL began as Z Division, the engineering group of Los Alamos National Laboratory (LANL).[3] LANL was established during World War II (WWII) as the scientific design entity within the Manhattan Engineer District (MED) tasked with the development of atomic weapons. LANL scientists successfully tested the first atomic device at Trinity Site near Alamogordo, New Mexico, on July 16, 1945. On August 6 and 9, 1945, the U.S. deployed the first two atomic bombs against Japan, ending WWII.[4]

In July 1945, around the time of the Trinity test, LANL director J. Robert Oppenheimer gathered up several engineering functions into Z Division. In September 1945, Z Division began moving to Sandia Base, a U.S. Army base just east of Kirtland Air Force Base (KAFB),[5] outside of Albuquerque. Oppenheimer

[3] Los Alamos National Laboratory (LANL) will be referred to throughout this report by its current name. Originally, LANL was identified as Los Alamos Scientific Laboratory. It became a national laboratory via legislation passed in 1979.

[4] The account of the Manhattan Project and SNL's early history is from Necah Stewart Furman, *Sandia National Laboratories: the Postwar Decade* (Albuquerque: New Mexico, 1990); Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War, 1945-1950* (New York: Alfred Knopf, 1980); Leland Johnson, *Sandia National Laboratories: A History of Exceptional Service in the National Interest* (Albuquerque: Sandia National Laboratories, 1997); Charles R. Loeber, *Building the Bombs: A History of the Nuclear Weapons Complex,* Second Edition (Albuquerque: Sandia National Laboratories, 2005); Rebecca Ullrich, Michael Anne Sullivan, Cynthia Martin, and Dick Gerdes, *Sandia in the Cold War and Post-Cold War Periods: A Statement of Historic Context for Sandia National Laboratories/New Mexico,* SAND2010-4971P (Albuquerque: Sandia National Laboratories, 2010); and Peter Westwick, *The National Labs: Science in an American System, 1947-1974* (Cambridge: Harvard University Press, 2003).

[5] Kirtland Air Force Base is referred to here by its current name. It was originally called the Albuquerque Army Air Base. It was renamed Kirtland Army Airfield in 1942 in honor of aviation pioneer Colonel Roy

moved Z Division from the main site to alleviate crowded conditions at LANL, to work more closely with the military, and to take advantage of the nearby KAFB airfield for testing.

Z Division originally designed, tested, and oversaw the production of all of the non-nuclear systems on a nuclear weapon. It also had responsibility for training the military in assembly and handling of the weapons, testing completed weapon designs at offsite testing facilities, and supporting full-scale nuclear tests.

In 1946, with passage of the Atomic Energy Act and President Truman's signature, Congress created the Atomic Energy Commission (AEC) to oversee the development and management of new nuclear weapons and atomic energy applications.

The AEC took over all MED activities and properties on January 1, 1947. Z Division continued to provide ordnance engineering for nuclear weapon designs. Plans included having Z Division function as the production and assembly site for the growing nuclear weapons complex. Z Division also participated in and supported all post-WWII nuclear tests.

On April 1, 1948, Z Division became Sandia Laboratory, a separate branch of LANL. The following year, on November 1, 1949, Sandia Corporation, a wholly owned subsidiary of Western Electric, took over management of the lab, which became a separate entity from LANL.[6] The core mission of ordnance engineering for nuclear weapons, including testing and production of non-nuclear components remained the same.

As part of its design efforts, SNL conducted environmental tests on each component, weapon sub-system, and final weapon design. Over time, testing was done in off-the-shelf environmental test equipment in SNL/NM buildings, in large test facilities built to the south of the main SNL/NM Tech Area, and at remote sites with space and facilities for drop-testing components and prototypes.

Establishing Tonopah Test Range

SNL's early testing activities included ballistic studies of weapon shapes—dropping test devices from aircraft to determine how and where they fell. Drop tests were also used to test the operation of weapon subsystems in flight. In its first months as Z Division, the lab established a practice bombing range west of Los Lunas, New Mexico. By December 1945, the Z Division field test group was setting up equipment at the Los Lunas test range.

C. Kirtland. It, Sandia Army Base, and Manzano Army Base merged into Kirtland Air Force Base (KAFB) in 1971.

[6] Sandia Corporation became Sandia National Laboratories (SNL) via legislation passed in 1979. It will be referred to as SNL throughout the remainder of this report.

While arrangements were underway at the Los Lunas range, the MED received permission to let Z Division use the Salton Sea Test Base as well. The U.S. Navy established a test range at the Salton Sea in southern California during WWII.[7] In June 1946, the U.S. Navy's buildings at the site were transferred to the U.S. Army for use as a bombing range by Z Division.

Sitting approximately 200 feet below sea level and offering excellent testing weather for most of the year, the Salton Sea site allowed Z Division to test ballistic performance in dense, sea-level atmospheric conditions unavailable in New Mexico. It had a water impact area and, later, a land target. SNL used the site until 1960.

By the mid-1950s, the Salton Sea Test Base experienced tension between a growing number of weapon programs requiring testing and general population growth in the area. Increased population to the west blew in additional haze in the air, limiting visibility for instruments and cameras. The growing population in the nearby Imperial Valley filled in previously open land, restricting opportunities to place tracking stations further out from the target points. Finally, bombing approaches became more complicated as commercial airways increased in the area.

The AEC and SNL launched a search for a new test site. A variety of sites were considered. Potential sites near Salton Sea were small and posed similar problems to the Sea itself. A temporary site was established in 1954 on the bed of Yucca Lake, within the AEC's Nevada Test Site, while scouting continued for an area that could accommodate low-altitude as well as high-altitude approaches. Multiple sites in Arizona, Virginia, Texas, and Colorado were reviewed and excluded.

An area known as Cactus Flats in the northwestern section of the Las Vegas Bombing and Gunnery Range (now Nellis Air Force Base) presented a series of dry lake beds stretching north-south in a long valley between the Cactus Range to the west and the Kawich Range to the east. Used as a practice bombing range during WWII, the site offered a set of potential impact points in the dry lake beds and good flying weather. The Air Force authorized AEC use of the property for SNL for five years beginning November 9, 1956. Approximately 35 miles southeast of Tonopah, Nevada, the site was named Tonopah Test Range.

In the fall of 1956, SNL selected Pork Lake, the northernmost in the string of lake beds, as the primary impact point for drop tests and began construction of

[7] This was the Naval Auxiliary Air Station at Salton Sea. During WWII, the MED also occasionally used the site as a low-altitude bombing range.

facilities. SNL's Plant Engineering Department was responsible for design and the Reynolds Electrical & Engineering Company (REECo) undertook construction work. The AEC had an existing contract with REECo to provide maintenance for the Nevada Test Site and extended that to cover TTR construction . In 1958, a contract was placed with REECo for TTR operation and maintenance activities.

In addition to lights and night-camera stations installed around the target area, construction in the first months included four instrument stations for tracking test items and data collection. Among these was the main Control Point for operations, identified as Area 3 within TTR. Located six miles south of the target, the Area 3 included a generator, offices, a weather station, control consoles, photographic facilities (including a darkroom), and an Askania phototheodolite station.

Testing began on February 4, 1957, with drop tests done both during the day and at night. By the summer, testing included rocket launches. Rocket testing was added to the site as part of the preparation for the Operation Hardtack series of nuclear test shots in the Pacific, scheduled for 1958.

SNL was new to rocket development and testing. The lab tested its first rocket system from a B-36 over White Sands Missile Range (WSMR) in June 1957. Additional air-releases took place at WSMR and TTR throughout 1957 and 1958.

For Hardtack, SNL developed the Doorknob rocket system to carry diagnostic instrumentation and to gather radiochemical samples during the high-altitude nuclear test shots (the Teak and Orange events). Six SNL-developed radiochemical samplers and nine diagnostic Doorknob payloads were launched from Johnston Atoll during Hardtack. The systems captured weapon effects data, atmospheric physics data, and meteorological data.

Referred to as Operation Doorknob, SNL's development activities included both air releases and ground launches to test systems. Testing encompassed both rocket systems and payloads, including recovery systems.

To support ground-launched tests, SNL created a rocket launch capability in Area 9, northeast of the main target at TTR (Figures 1 and 2). The facilities constructed by REECo during the summer of 1957 included two rocket launchers (Launcher 1 and Launcher 2), an air-building for assembly activities, and the Observation Bunker (Building 09-50), identified as the Blockhouse in early drawings and documents.

With the initial testing completed for Doorknob, rocket research and development continued in 1959, with a new high-altitude sampler rocket system introduced in

1960. The new system was not used in nuclear testing right away due to the moratorium the U.S. and USSR established in 1958. The test moratorium remained in effect until 1961. The new SNL-developed rocket system was used in the 1962 Fishbowl high-altitude shots of the Operation Dominic nuclear test series. The system provided recoverable payloads for weapon diagnostics, nuclear debris sampling, and meteorological data.

As rocket research continued at TTR, the site expanded its capabilities in support of both rocket and drop testing. The AEC approved an expansion and improvement program for the site in early 1959. The USAF also extended the permit for SNL's operations until March 31, 1969. The permit has been continuously extended since, with some changes in the site's boundaries over time. On September 1, 1960, TTR was named Sandia's permanent test range and the Salton Sea Test Base was closed.

Additional tracking and data capture stations were added along the line of flight to the target, support facilities at the Control Point were expanded, the weather station at the Control Point was moved to the west side of the range, the Askania phototheodolite stations were replaced with Contraves cinetheodolite stations, a Control Tower was added, and a concrete hard target was added near the impact area on Pork Lake.

In Area 9, the General Contracting Company of Salt Lake City, Utah, was engaged to install a prefabricated steel-framed assembly building, two smaller Butler-type buildings, and a storage igloo. This round of construction in Area 9 was completed in the fall of 1960.

In addition to rocket system and payload development work, SNL used the rockets for acceleration testing of nuclear weapon components. Parachutes, for example, could be propelled to greater speeds and altitudes than could be achieved in drop tests, providing evidence of how they (and the materials of which they were made) would behave under extreme conditions. This increased the demand on the test facilities, increasing the number of tests conducted annually.

The Area 9 capabilities continued to expand to support additional tests—facilities were added to prepare test units, launch them, track them, and capture data about them (Figure 3). By 1964, there were five rocket launchers in place. In that year, an additional Fire Control Bunker (Building 09-51) was added on the west side of the Observation Bunker (Building 09-50) to accommodate additional equipment and personnel. Similar, although less ad hoc, in design to Building 09-50, 09-51 took over the main control activities for rocket launches in the area and 09-50 was used primarily for observation and supplemental data collection from this point forward.

Construction at TTR continued at a slower pace in later years to add new capabilities—for example, in 1971, another control bunker was added to Area 9 to support testing using large (155 mm) guns. In the late 1970s, TTR management made an argument to refurbish many of the facilities, particularly in Area 3 in support of the overall test control and observation activities.

Although the Fire Control Bunker did not undergo significant renovation at any point, it appears that its heating and cooling equipment was modified in the late 1970s or early 1980s when other facilities at the range were improved. The heating pump stand and ventilation panels on the exterior of the building were removed and a heating/cooling unit was installed through the north wall. This work did not significantly alter the building's design or affect its integrity.

Rocket testing continued through the end of the Cold War and sporadically in the following decade. The Fire Control Bunker has not been used in at least twenty years and SNL has no plans for its use in the future. Related facilities in Area 9, including the Observation Bunker (Building 09-50) are also unused and scheduled for demolition.

Part II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character:

Building 09-51 is a one-story Fire Control Bunker. Its core is a corrugated metal Armco Arch with its floor below grade. The arch rests on a concrete slab foundation and is encased in a reinforced concrete shell that forms the roof and east, south, and west sides of the building. The east and west sides of the building angle in with a sharper tilt toward the top that forms up into a roof pitch running north south. (NV-XXXX-1, -3, -7, -8)

The north wall is a steel plate with a pedestrian door in the center (NX-XXXX-8). There is an observation port of thick protective glass on the south side, overlooking the rocket firing area in TTR's Area 9 (NV-XXXX-3). An escape hatch is built into the north portion of the west side (NV-XXXX-5).

2. Condition of fabric:

Fair.

B. Description of Exterior:

1. Overall dimensions:

The exterior of the building is 26' wide x 24' 4" long. The areaway extends another 10' to the north from the front (north) wall. The top of the roof pitch is 16' from the interior floor level (157" from ground level to the top of the roof ridge). The finished floor of the interior sits 3' below grade on a 6" concrete slab. (Figures 5 and 6)

The areaway is approximately 20' wide and extends approximately 10' from the front (north) wall with the pedestrian door. Concrete stairs extend from grade level down to 3" below the interior floor level. A 6" poured concrete slab forms the floor of the areaway and its walls are 6" thick concrete. (NV-XXXX-1)

The interior of the building is a single room formed from an Armco Arch, with the east and west walls curving up in a semicircle to form the room's ceiling (NV-XXXX-9). The arch is approximately 18' wide x 20' 2" long x 9' high.

2. Foundation:

Below the interior of the building the foundation is a 6" thick poured concrete slab on compacted earth. The concrete walls of the building's north, east, and west sides extend 8" below the finished floor level.

3. **Walls:**
The building's north wall is a ½" steel plate arched to match the arch of the interior walls and ceiling. The east, south and west walls are concrete. The east and west walls are 4' thick at their bases and rise 6' (3' above grade) where they begin sloping inward. At 10' 6" above grade, the walls angle in further and rise to form the roof pitch. On the interior, they are curving above and protecting the Armco arch that forms the interior room of the building. The south wall is 4' thick. (Figures 5 and 6)

4. **Structural system, framing:**
Building is formed from a steel Armco arch, with a large steel panel serving as the north wall and steel-reinforced concrete forming the east, south, and west walls and roof (Figures 5 and 6).

5. **Porches, stoops, balconies, porticoes, bulkheads**:
Building is accessed via concrete stairs descending to an areaway in front of the entrance. A 6" poured concrete pad forms the floor of the areaway.

6. **Stairways:**
There is one external concrete stairway on the north side of the building extending 3' 6" down from ground level to the areaway in front of the pedestrian entrance.

7. **Chimneys:**
There are none

8. **Openings:**
   a. **Doorways and doors:**
   There is one pedestrian door on the building's north side. It is solid wood sheathed in metal. (NV-XXXX-1)

   b. **Windows and shutters:**
   The building has an observation window on the south wall, overlooking the Area 9 rocket launch area. The window opening's lower edge is approximately 3' above the ground and the window is centered between the east and west walls. The outer opening is approximately 72" wide with the inner opening approximately 42" wide. There are six anchor bolts approximately 6" from the opening—three above and three below. The opening extends through to the inner wall; the lower side of the opening is flat, while the upper side slopes down until it reaches the glass. The window is flush with the interior wall and is recessed from the exterior wall. The glass is 3' long x 6" high and is approximately 5" thick in a steel frame; it is bullet-resistant

to resist shocks from the testing in Area 9. (NV-XXXX-2, -3, and -4; Figure 5)

c. Escape Hatch:
There is a 2' 6" x 2' 6" opening for emergency egress on the west side of the building. The opening is lined with metal and extends through the 4' concrete wall to the interior. The window is 2" bullet-resistant glass in a steel frame in the opening near the interior side. There is a thin metal panel on the interior wall, covering the opening for the hatch. The panel is held in place with two metal pin hinges at the bottom. (NV-XXXX-6; Figure 6)

9. Roof:
The building's roof is formed from the reinforced concrete east and west walls turning in and covering the top of the building. They form a roof peak running north-south above the building's center. (NV-XXXX-1 and -3)

C. Description of Interior:
The floor plan of the Fire Control Bunker is attached as Figure 7. The building has one room approximately 18' x 19' with one pedestrian door, an observation window, and an escape hatchway.

1. Stairways:
There are no interior stairways in Building 09-51.

2. Flooring:
The room floor is 10" x 10" industrial vinyl tile over concrete (NV-XXXX-8 and 11).

3. Wall and ceiling finish:
The east and west walls and ceiling of the room are formed by the corrugated metal panels of the arch bolted together (NV-XXXX-8 and -9). The interior wall of the north end is painted plywood. The south wall is concrete. The interior is painted white.

There are panels of unfinished plywood attached to the lower portion of the south, east, and west walls of the interior (NV-XXXX-10).

4. Openings:

a. Doorways and doors:
There are no interior doors.

b. Windows:
There are no interior windows in Building 09-51.

5. **Decorative features and trim:**
Building 09-51 is utilitarian in design and does not include any decorative features.

6. **Hardware:**
The single leaf pedestrian door on the north wall has four rectangular flap hinges in a left-hand reverse hinge installation. The door knob is metal with a cylinder lock. The interior has a pneumatic door close at the top and a metal door knob. (NV-XXXX-1)

The observation window in the south wall does not open; no hardware is installed.

The escape hatch window opens outward, with two rectangular hinges on the left side with the knuckle on the exterior. The window is held in place with two magnetic latches. (Figures 5 and 6)

7. **Mechanical Equipment:**
   a. **Heating, air conditioning, ventilation:**
   The building originally had a metal stand in the areaway on the building's north side. It stood west of the door and held a heat pump that fed into the ductwork into the building. There were vents over the door on the exterior. (Figures 4 and 5)

   That heating/cooling arrangement was removed at an unknown point, most likely during the renovations at the site in the late 1970s and early 1980s. A heating/cooling unit is now installed through the wall to the west of the door (NV-XXXX-1 and -11). The ventilation panels above the door were replaced with solid metal plates. Ductwork extends from above the door into the room with a single vent over the control workstations (NV-XXXX-9).

   b. **Lighting:**
   The interior is lit with tubular fluorescent lights in metal troffer fixtures suspended from the ceiling. The lower sides of the fixtures have no cover. (NV-XXXX-8 and -9)

   c. **Plumbing:**
   Building 09-51 does not have bathrooms, boilers, or water access of any kind.

   d. **Lightning Warning System**

The building is connected to the lightning threat warning system for Area 9. A large red warning light and the system connector box are attached to the north wall of the building's interior (NV-XXXX-8 and -9).

8. **Original Furnishings:**
The console holding the controls and display racks appear to be original, as do some of the chairs (one of the chairs retains a 1960 property sticker). The equipment has been upgraded with new screens, but is largely intact.

D. Site:

1. **Historic landscape design:**
There is no historic landscape design associated with the test facilities at TTR in general or Building 09-51 specifically. The area around the building is cleared and partially paved (NV-XXXX-1, -2, -5, and -6).

2. **Outbuildings:**
There are no outbuildings associated with Building 09-51. It is located next to (west of) the Observation Bunker (Building 09-50) and just south of Assembly Building 9A (Building 09-52). They are all part of the Area 9 rocket firing capability at TTR. (Figures 3, 8, and 9)

Part III. SOURCES OF INFORMATION

A. Architectural Drawings:

Architectural drawings are held in the SNL/NM Facilities Library, with copies at TTR.

"Title Sheet, Blockhouse Number 2 at Station 9, Tonopah Test Range, Nevada, Architectural; Tonopah, Bldg. 951," Drawing 86838, Sheet 1 of 10, 1964.

"Area Map—Station 9, Location Map, Vicinity Map, Blockhouse Number 2 at Station 9, Tonopah Test Range, Nevada, Architectural, Tonopah Bldg. 951," Drawing 83838, Sheet 2 of 10, 1964.

"Plot Plan, Blockhouse Number 2 at Station 9, Tonopah Test Range, Nevada, Architectural, Tonopah, Bldg. 950, 51, 52," Drawing 86838, Sheet 3 of 10, 1964.

"Block house No. 2 at Station 9, Plans, Section, Elevations, Tonopah Test Range, Nevada, Architectural, Tonopah, Bldg. 951," Drawing 86838, Sheet 4 of 10, 1964.

"Blockhouse No. 2 at Station 9, Sections, Tonopah Test Range, Nevada, Architectural, Tonopah Bldg. 951," Drawing 86838, Sheet 5 of 10, 1964.

"Blockhouse #2 at Station 9, Details, Tonopah Test Range, Nevada, Architectural, Tonopah, Bldg. 951," Drawing 86838, Sheet 6 of 10, 1964.

"Plot Plant, Building Additions FY-64, Electrical, Building 951, Tonopah," Drawing 86838, Sheet 8 of 10, 1964.

B. Early Views:

Early photographs of Building 09-51 are included in the Figures for this report.

C. Interviews:

Although there were several discussions with current TTR staff regarding the rocket launch activities at the site, no formal interviews were recorded.

D. Bibliography:

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Ullrich, Rebecca A., Michael Anne Sullivan, Cynthia Martin, and Dick Gerdes. *Sandia in the Cold War and Post-Cold War Periods: A Statement of Historic Context for Sandia National Laboratories/New Mexico.* SAND2010-4971P. Albuquerque: Sandia National Laboratories, 2010.

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E. Likely Sources Not Yet Investigated:
None.

F. Supplemental Material:
None.

Part IV. PROJECT INFORMATION

This report was prepared by Rebecca Ullrich of the SNL[8] Corporate Archives and History Program.

In 2005, DOE/NNSA/SSO completed consultation with the Nevada State Historic Preservation Officer (SHPO) regarding the historic significance and eligibility of the Sandia National Laboratories Tonopah Test Range Historic District for the National Register of Historic Places. DOE determined that fifty buildings located at SNL's Tonopah Test Range were eligible as a district based on the Secretary of the Interior's Criteria for Eligibility. Building 09-51 was one of the buildings identified as part of the district and is a contributing element to it. SNL has not used the Fire Control Bunker (Building 09-51) for several years and is planning to demolish it.

Large- and medium-format photographs of the contributing elements within the district were taken by SNL photographers Jim Galli, Joseph M. Bonaguidi, and William Suderman. Claire Blackburn and Jerry Elliston provided information about facilities design and maintenance. Myra O'Canna, SNL Corporate Archivist, provided research advice, access to relevant collections, and copies of historical photographs. Joe Bonaguidi and Joanna Eckstein of the SNL NEPA Program oversaw the project.

[8] Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia, LLC., a wholly owned subsidiary of Honeywell International, Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Figure 1 USGS 1:100,000 Topo Map.
USGS TOPO MAP MARKED TO INDICATE CONTRIBUTING ELEMENTS WITHIN THE SANDIA NATIONAL LABORATORIES TONOPAH TEST RANGE HISTORIC DISTRICT, INCLUDING AREAS 3 AND 9

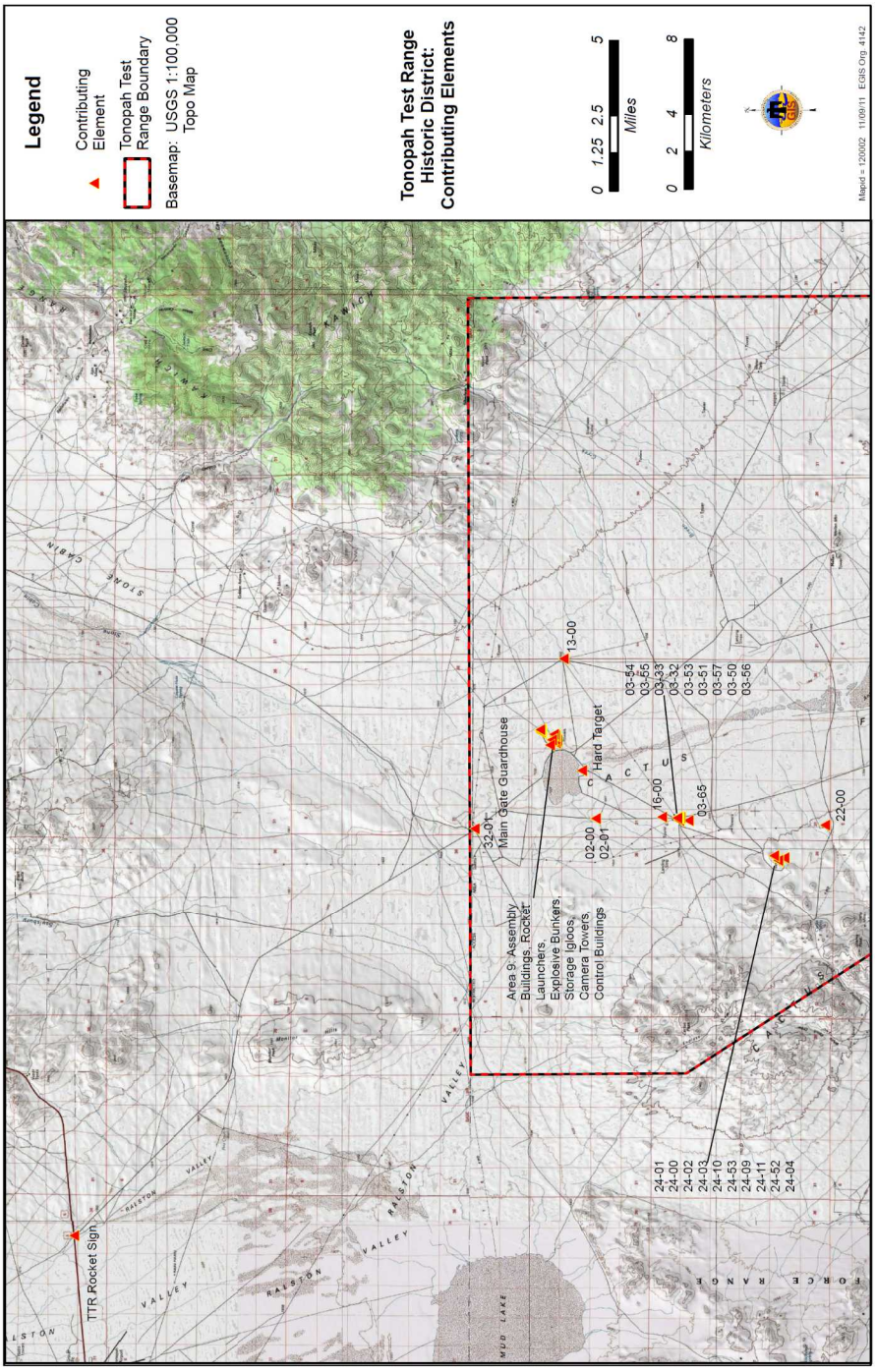

Figure 2 USGS 1:24,000 Topo Map.
USGS TOPO MAP MARKED TO INDICATE CONTRIBUTING ELEMENTS WITHIN THE SANDIA NATIONAL LABORATORIES TONOPAH TEST RANGE HISTORIC DISTRICT; NORTH PORTION OF TONOPAH TEST RANGE; INCLUDING AREA 9, WITH BUILDING 09-51

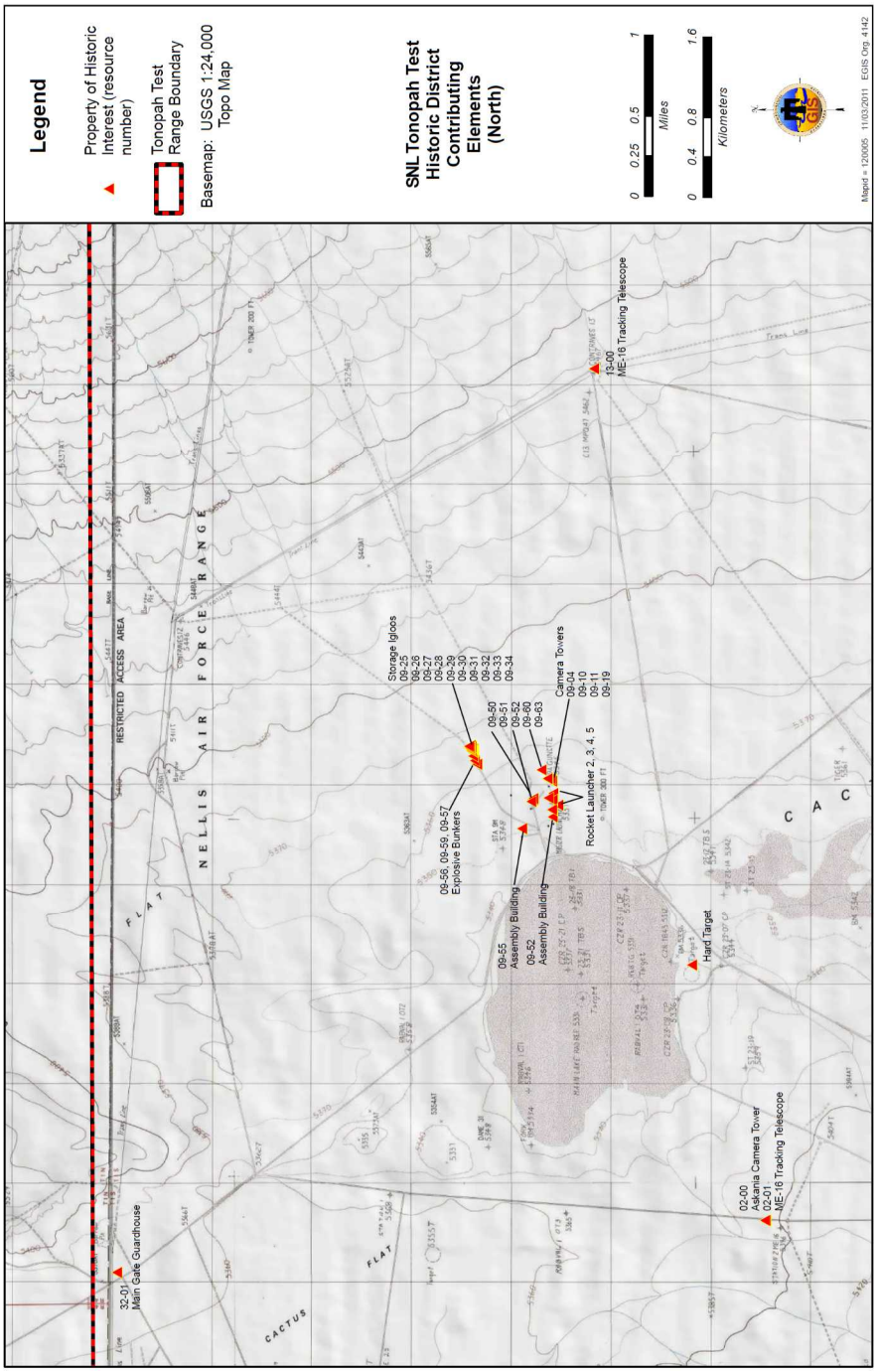

Figure 3 "Building Additions FY-64, Plot Plant, Electrical, Building 951, Tonopah," Drawing 86838, Sheet 8 of 10, April 6, 1964.
PLOT PLAN, NEW BLOCKHOUSE LOCATION, BUILDING 09-51.

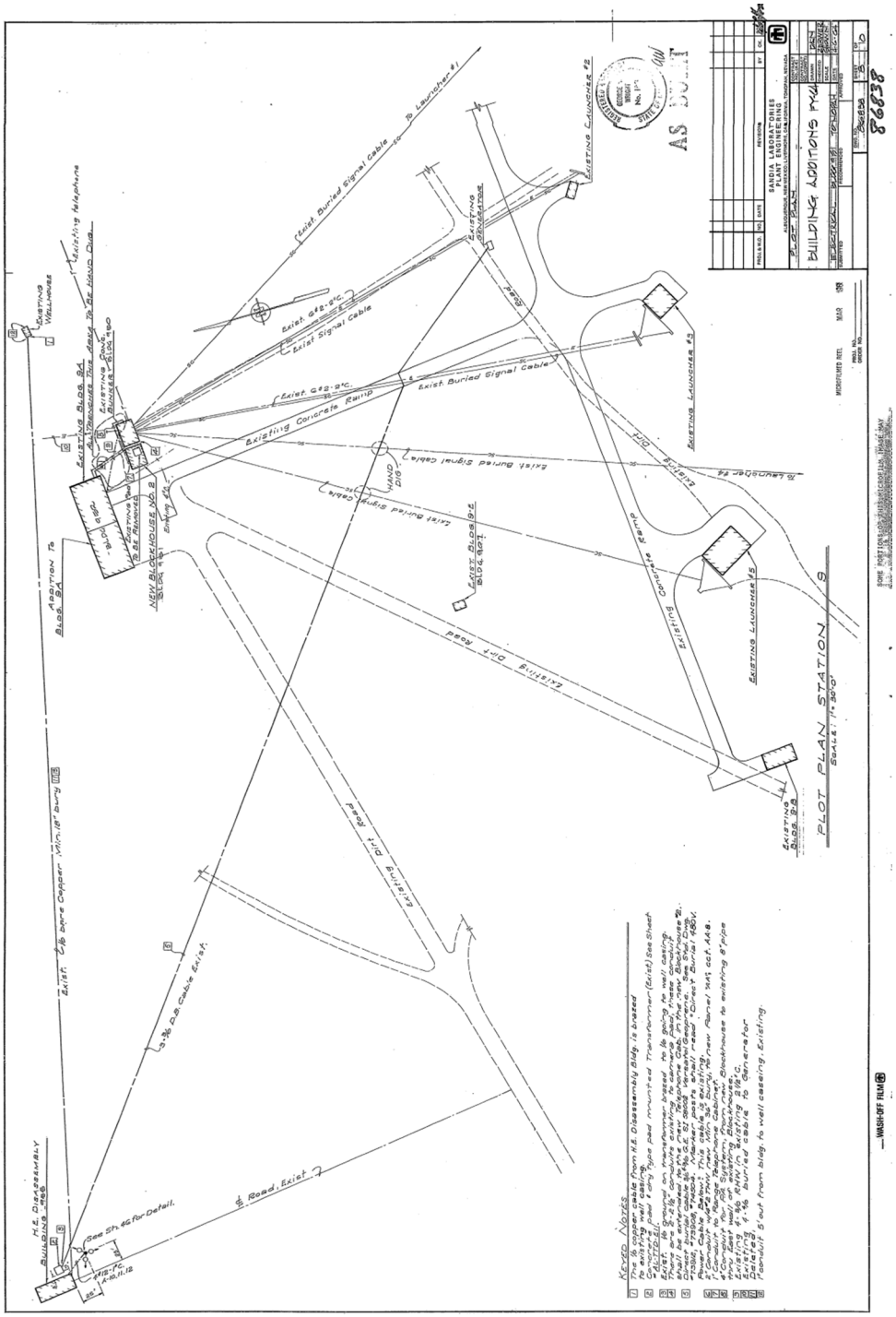

Figure 4 Thomas A. Welby, "Block House No. 2 AT Station 9, Plans, Sections, Elevations, Tonopah Test Range, Nevada, Architectural, Tonopah, Bldg. 951," Drawing 86838, Sheet 4 of 10, April 6, 1964.
FIRE CONTROL BUNKER, BUILDING 09-51; ORIGINAL DRAWING OF ELEVATIONS AND SECTIONS

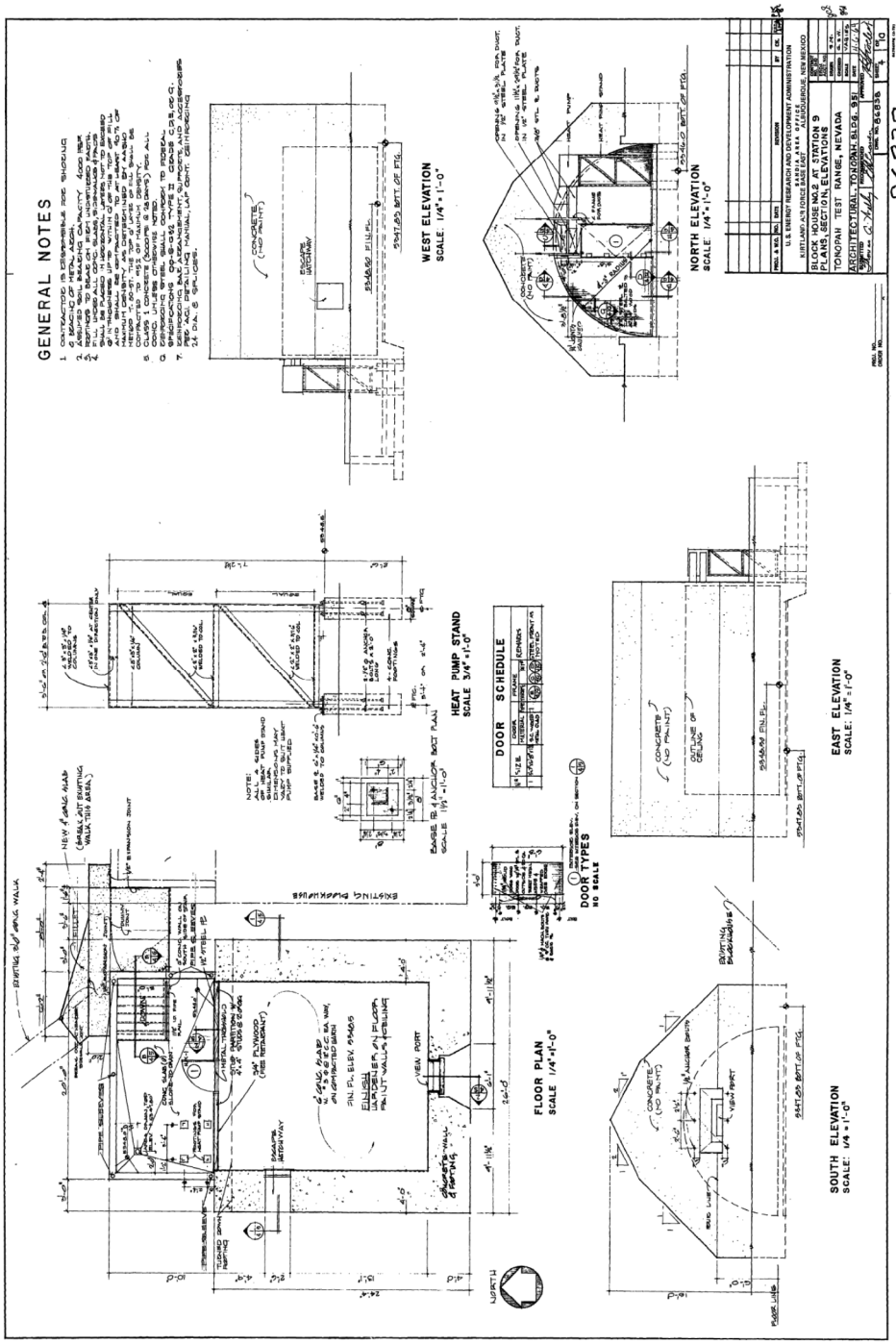

Figure 5 Thomas A. Welby, "Blockhouse No. 2 at Station 9, Sections, Tonopah Test Range, Nevada, Architectural, Tonopah Bldg. 951," Drawing 86838, Sheet 5 of 10, April 6, 1964.
FIRE CONTROL BUNKER, BUILDING 09-51; ORIGINAL DRAWING, SECTIONS SHOWING CONCRETE CONSTRUCTION

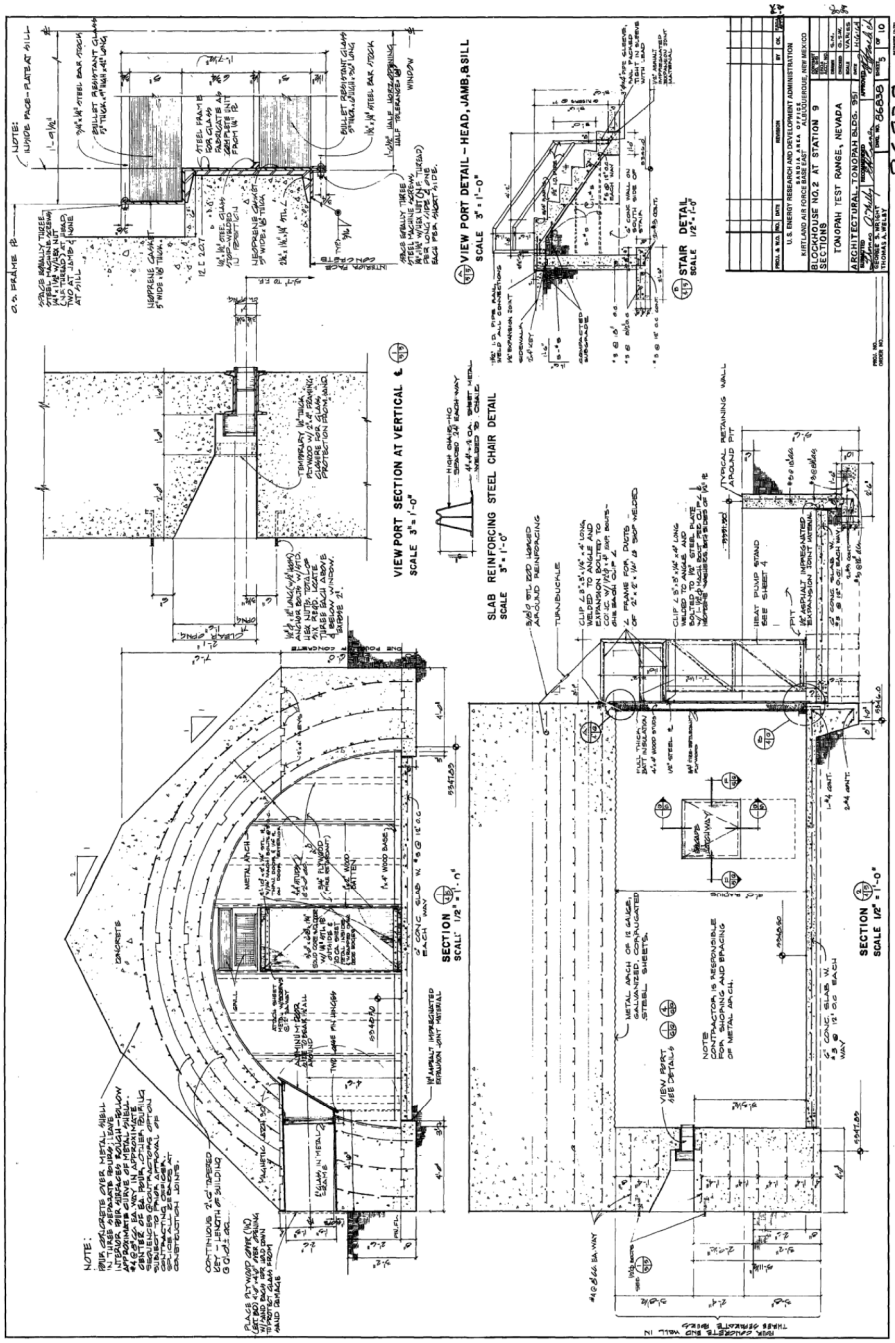

Figure 6 Thomas A. Welby, "Blockhouse #2 at Station 9, Details, Tonopah Test Range, Nevada, Architectural, Tonopah, Bldg. 951," Drawing 86838, Sheet 6 of 10, April 6, 1964.
FIRE CONTROL BUNKER, BUILDING 09-51; DETAILS OF ESCAPE HATCH CONSTRUCTION; ORIGINAL STAND FOR HEAT PUMP (NO LONGER EXTANT)

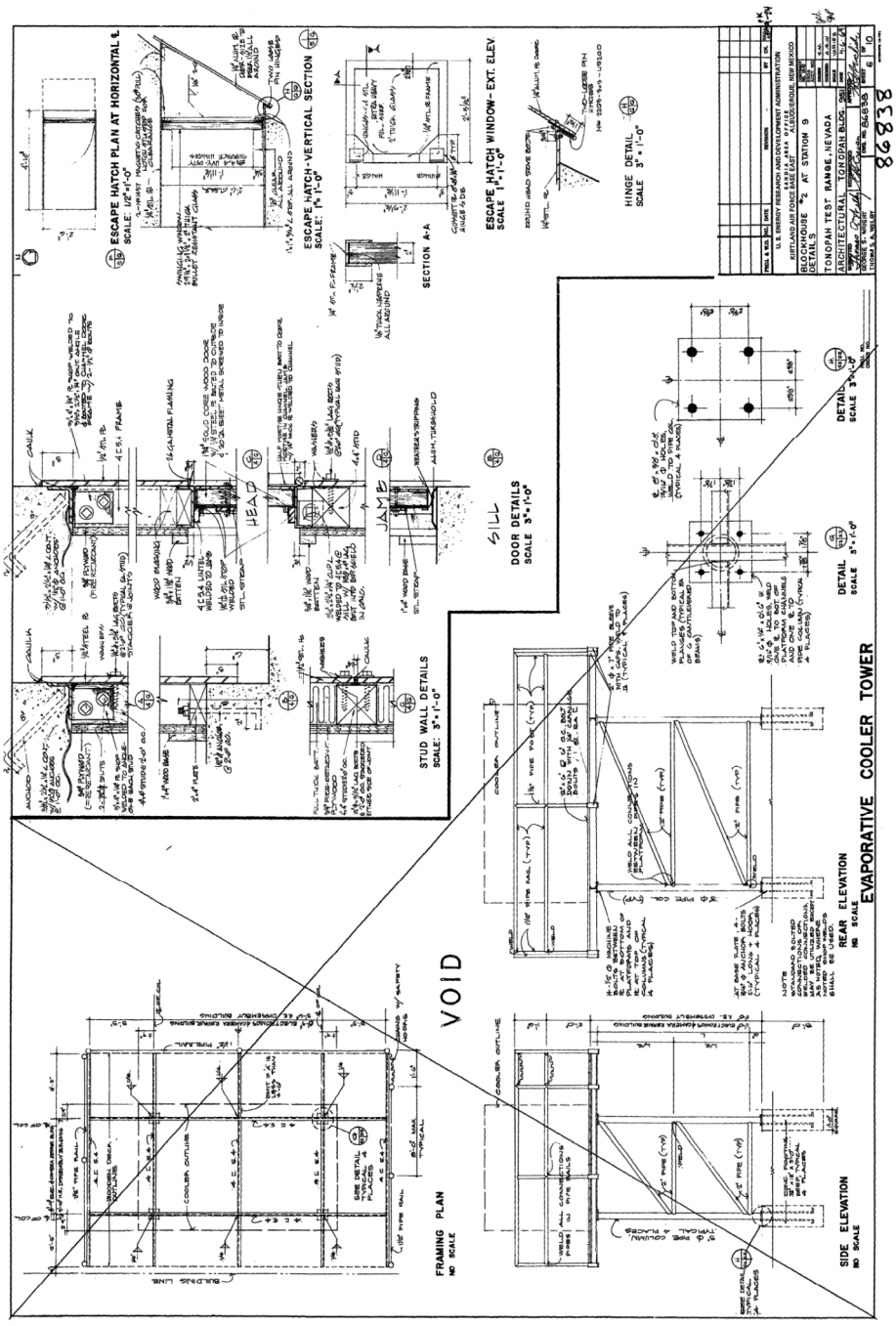

Figure 7 Clair Blackburn, "Floor Plan, 09-51, Rocket Control Bunker," May 10, 2004.
FIRE CONTROL BUNKER, BUILDING 09-51, CURRENT FLOOR PLAN.

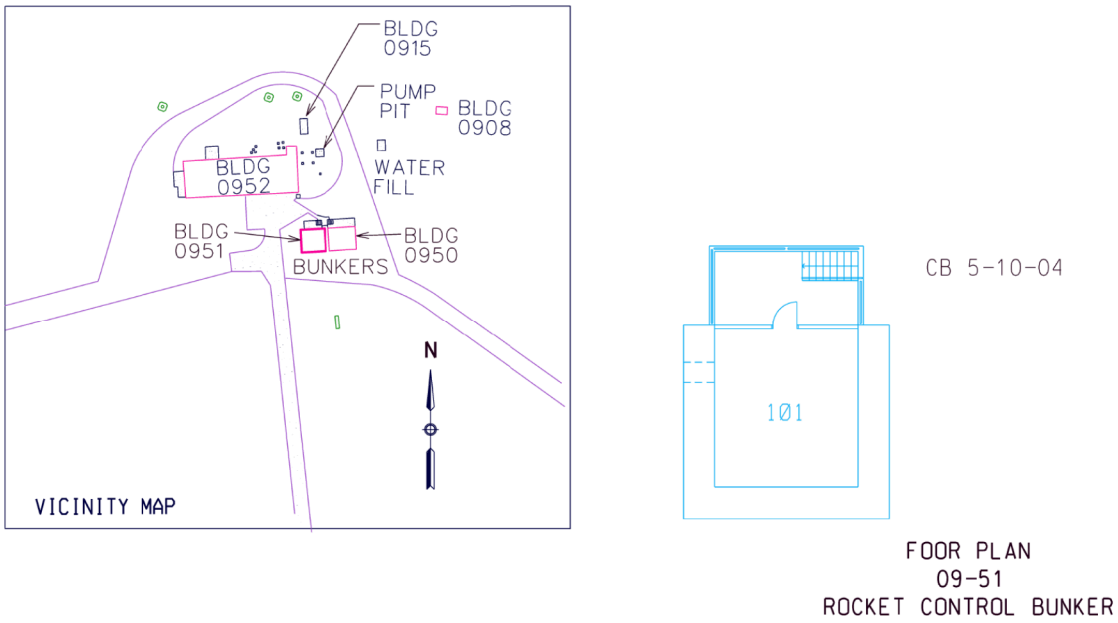

Figure 8 Unknown photographer. 1964.
FIRE CONTROL BUNKER (BUILDING 09-51); WEST AND SOUTH SIDES; RECESSED OBSERVATION WINDOW; NEWLY COMPLETED BUILDING; CONCRETE STILL APPEARS DAMP; VIEW FROM SOUTHWEST

Figure 9 Clair Blackburn, Photographer. May 30, 2002.
BUILDING 09-51 EXTERIOR; SOUTH SIDES OF BUILDINGS 09-51 (ON LEFT) AND 09-50; CONDITION OF EXTERIOR PAINT AND CONCRETE; CLEARED AND PACKED LANDSCAPE AROUND BUILDINGS

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SANDIA NATIONAL LABORATORIES
TONOPAH TEST RANGE
FIRE CONTROL BUNKERR
(BUILDING 09-50)
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NV-XXXX-1 Jim Galli, Photographer. June 23, 2004.
NORTH SIDE OF BUILDING 09-51 WITH SEMI-CIRCULAR STEEL PLATE FORMING EXTERIOR WALL; REINFORCED CONCRETE COVERING BUILDING AND FORMING ROOF; STAIRS ON LEFT DESCEND TO AREAWAY AND PEDESTRIAN ENTRANCE; REINFORCED CONCRETE ROOF; VIEW FROM NORTH; FIRE CONTROL BUNKER

NV-XXXX-2 Jim Galli, Photographer. June 23, 2004.
SOUTH AND EAST SIDES OF BUILDING 09-51; REINFORCED CONCRETE WALLS AND ROOF; OBSERVATION PORT IN CENTER OF SOUTH WALL; VIEW FROM SOUTHEAST

NV-XXXX-3 Jim Galli, Photographer. June 23, 2004.
SOUTH SIDE OF BUILDING 09-51; REINFORCED CONCRETE WALL; OBSERVATION PORT THROUGH WALL; VIEW FROM SOUTH

NV-XXXX-4 Jim Galli, Photographer. June 23, 2004.
VIEWING PORT ON SOUTH SIDE OF BUILDING 09-51, OVERLOOKING ROCKET LAUNCH AREA; OPENING TAPERS FROM EXTERIOR TO THE REINFORCED GLASS OF THE PORT ITSELF

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NV-XXXX-5 Jim Galli, Photographer. June 23, 2004.
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NV-XXXX-6 Jim Galli, Photographer. June 23, 2004.
ESCAPE HATCH ON WEST SIDE OF BUILDING 09-51; HATCH IS A STEEL BOX INSET THROUGH REINFORCED CONCRETE WALL OF THE BUILDING; HATCH DOOR IS A STEEL-FRAMED WINDOW ON HINGES; VIEW FROM WEST

NV-XXXX-7 Jim Galli, Photographer. June 23, 2004.
NORTH AND WEST SIDES, BUILDING 09-51; PEDESTRIAN DOOR AND AIR CONDITIONER ON NORTH SIDE; ESCAPE HATCH IN NORTH LOWER PORTION OF WEST SIDE; VIEW FROM NORTHWEST

NV-XXXX-8 Jim Galli, Photographer. June 23, 2004.
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NV-XXXX-9 Jim Galli, Photographer. June 23, 2004.
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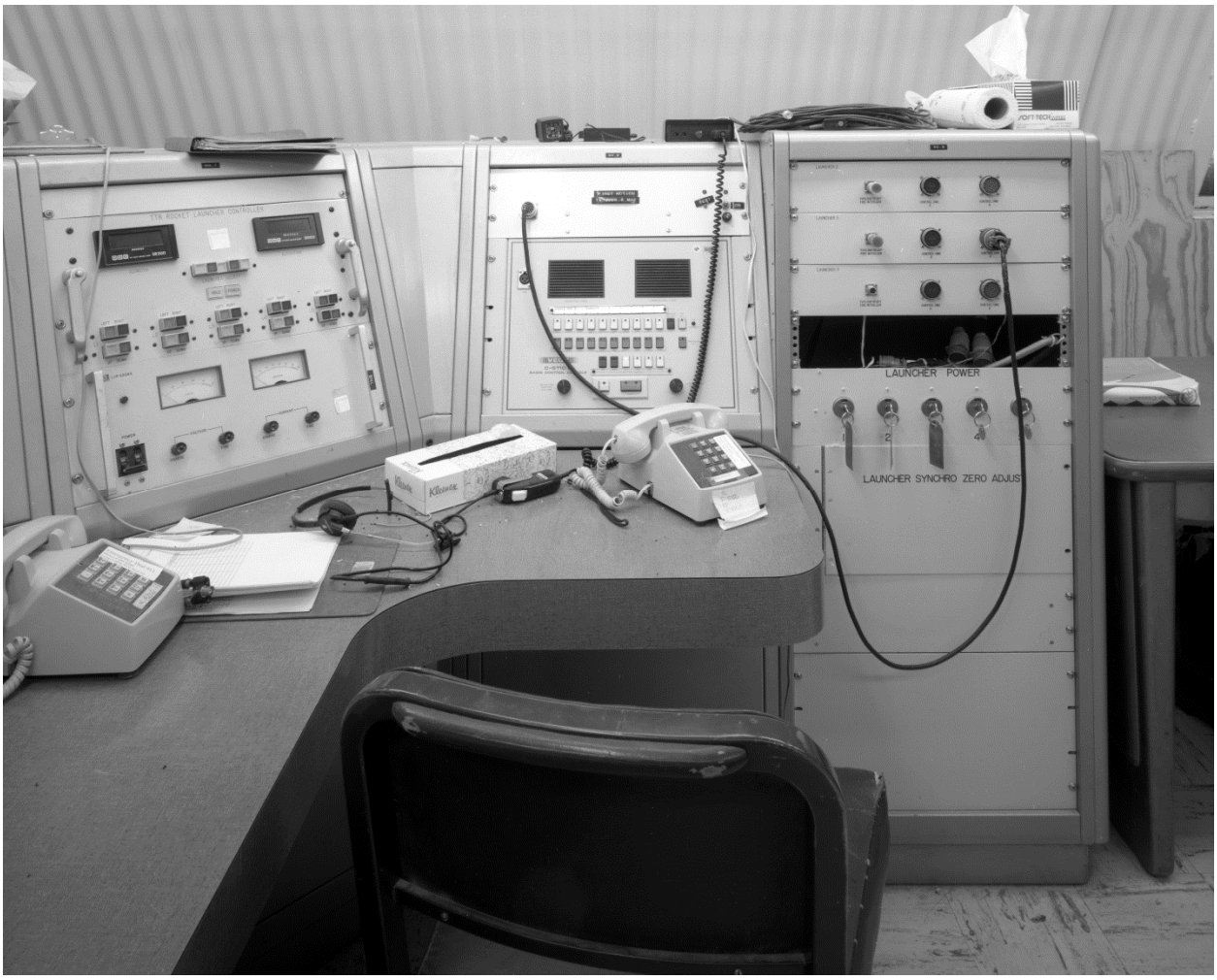
NV-XXXX-10 Jim Galli, Photographer. June 23, 2004.
INTERIOR, BUILDING 09-51; FIRE CONTROL AND LAUNCHER POWER PANELS IN CONSOLE IN SOUTH PORTION OF BUILDING; VIEW FROM EAST



NV-XXXX-11 Jim Galli, Photographer. June 23, 2004.
BUILDING 09-51 INTERIOR; NORTH PORTION OF ROOM; AIR CONDITIONER, PEDESTRIAN EXIT, AND UTILITY PANELS IN NORTH WALL; VIEW FROM SOUTH