

Douglas Missile Test Facility, Solid Propellant Assembly Area  
East and West of Security Park Road  
Northeast corner of the Douglas Missile Test Facility  
Rancho Cordova  
Sacramento County  
California

HAER No. CA-2310-F

BLACK AND WHITE PHOTOGRAPHS  
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

U.S. Department of the Interior  
National Park Service  
Pacific West Regional Office  
San Francisco, California

## HISTORIC AMERICAN ENGINEERING RECORD

### DOUGLAS MISSILE TEST FACILITY, SOLID PROPELLANT ASSEMBLY AREA

HAER No. CA-2310-F

**Location:** Sacramento County, California

The Douglas Missile Test Facility is in the City of Rancho Cordova, Sacramento County, California, about twelve miles east of the City of Sacramento. The testing facilities are contained within 1,700-acres located south of White Rock Road, north of Douglas Road, east of Sunrise Boulevard, and west of Grant Line Road in eastern Sacramento County. The Solid Propellant Assembly Area is to the west of Security Park Road, about a mile north of the Alpha Test Complex, and a half-mile north of the Sigma Test Area.

Approximate center of Solid Propellant Assembly Area: Latitude 38°35'07.06"N; Longitude 121°12'52.82"W

USGS 7.5 minute quadrangles Carmichael and Buffalo Creek, California, Photorevised 1992

**Present Owner:** Elliott Homes and Easton Development Company, LLC

**Present Use:** Abandoned

**Significance:** The Douglas Missile Test Facility has been determined eligible for listing in the National Register of Historic Places. The Solid Propellant Assembly Area has been determined eligible under criterion A for its role in developing and testing propellant and missile launchers during the Cold War era. The remaining structures and landscape at the testing facility reflect architectural qualities unique to this facility, and reflect the specialized uses and development that occurred at the Assembly Area (Criterion C). The Solid Propellant Assembly Area is best considered and understood as an integral component of the larger Douglas Missile Test Facility District.

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January 2014

**Project****Information:**

Elliot Homes currently plans to demolish all facilities associated with the Douglas Missile Test Facility. As part of the permitting process, the Army Corps of Engineers determined that buildings and structures associated with this facility are considered potentially eligible for listing in the National Register of Historic Places, and recommended HAER photo documentation and recordation of this facility. Environmental Science Associates conducted the background historical research, assisted by previous studies of the facility<sup>1</sup>. Robert Hicks provided all HAER quality photographs. Alan Lawrie provided technical expertise.

For additional information, see:

Douglas Missile Test Facility, HAER-CA-2310

Douglas Missile Test Facility, Alpha Test Complex, HAER-CA-2310-A

Douglas Missile Test Facility, Alpha Test Complex, Control Center,  
HAER-CA-2310-A-1

Douglas Missile Test Facility, Alpha Test Complex, Test Stand No. 1,  
HAER CA-2310-A-2

Douglas Missile Test Facility, Alpha Test Complex, Test Stand No. 2,  
HAER CA-2310-A-3

Douglas Missile Test Facility, Beta Test Complex, HAER-CA-2310-B

Douglas Missile Test Facility, Beta Test Complex, Terminal Equipment Room,  
HAER-CA-2310-B-1

Douglas Missile Test Facility, Beta Test Complex, Test Stand No. 3,  
HAER-CA-2310-B-2

Douglas Missile Test Facility, Gamma Test Complex, HAER-CA-2310-C

Douglas Missile Test Facility, Gamma Test Complex, Test Structure,  
HAER CA-2310-C-1

Douglas Missile Test Facility, Kappa Test Complex, HAER CA-2310-D

Douglas Missile Test Facility, Sigma Test Complex, HAER CA-2310-E

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<sup>1</sup> Karen Weitze, Draft Historic Buildings and Structures Inventory Douglas Missile Test Facility Rio del Oro Specific Project Plan. Report to City of Rancho Cordova and U.S. Army Corps of Engineers, Sacramento District, from EDAW, Sacramento, and Weitze Research. (2005); Alan Lawrie, Return to Sacramento: a Review of Saturn Rocket Firings and Explosion. Paper presented at 43<sup>rd</sup> AIAA/ASME/SE/ASEE Joint Propulsion Conference and Exhibit, July, Cincinnati, Ohio. Published by the American Institute of Aeronautics and Astronautics, manuscript number AIAA 2007-5343. (2007); Rebecca Allen, National Register of Historic Places Evaluation of Structures Associated with the Douglas Missile Test Facility (P-34-4317), Rio del Oro, Rancho Cordova, California. Report to ECORP Consulting, Rocklin, and Elliot Homes, Folsom, from Past Forward, Inc., Garden Valley, California. (2011).

## Part I. Historical Information

### A. Physical History

**1. Date of Construction:** 1956

**2. Architect/Engineer:** Douglas Aircraft

**3. Builder:** Douglas Aircraft

**4. Original Plans and Construction:** The Solid Propellant Assembly Area is a small complex of buildings north of the Alpha Test and Sigma Test complexes, and closely related to the function of those areas. Three buildings (Storage, Assembly, and Motor Storage) were constructed in 1956. A small paint shed was also built behind the assembly building. As its name implies, the area's purpose was to store and assembly solid propellants.

**5. Alterations and Additions:** In 1962, Douglas began to conduct Saturn test firings using liquid hydrogen at these facilities. Additional buildings were constructed from 1964-1966, including a Quonset hut and a taller variety of Quonset hut known as the Aero-Thermodynamic Structural Test Vehicle Building.

**B. Historical Context:** The Solid Propellant Assembly Area was a small complex of buildings north of the Alpha Test and Sigma Test complexes, whose purpose was to store and assembly solid propellants. Three buildings (Storage, Assembly, and Motor Storage) were constructed in 1956, and initial activities at the Douglas Missile Test Facility are interpreted as supporting tests of solid-propellant rocket booster engines for the Nike Hercules interceptor missile at the Solid Propellant Assembly Area and the Sigma Test Area. Work on the developmental Nike Hercules at the Solid Propellant Assembly Area was likely underway by 1957.

In 1961, Douglas conducted more developmental tests for the third generation of the Nike weapons system, the Nike Zeus (DM-15), at the Solid Propellant Test Area and the Sigma Test Area. During 1962, Douglas continued tests of the Nike Zeus at the two locations, and also added tests for the Skybolt air-launched ICBM (DM-20). Also in 1962, Douglas began to conduct Saturn test firings using liquid hydrogen at the Solid Propellant Assembly Area and Sigma Test Area. Additional buildings were constructed in the Solid Propellant Assembly Area from 1964-66, including two Quonset huts. The construction date of the concrete bunker is unknown, as it was not recorded by Weitze.

As a part of the Douglas Missile Test Facility in Rancho Cordova, the Solid Propellant Assembly Area was actively involved in developing and testing propellant and missile launchers during the Cold War era.

## Part II. Structural/Design/Equipment Information

### A. General Statement:

**1. Character:** The structures and landscape (including large earthen berms) reflect architectural and engineering characteristics unique to this facility, as they were specifically designed for developmental testing of the Nike Hercules interceptor missile. The majority of the buildings are prefabricated metal structures. The Aero-Thermodynamic Structural Test Vehicle Building, effectively a tall Quonset hut, is a more specialized structure. The facility reflects the specialized uses and development that occurred at the Douglas Missile Test Facility. The Solid Propellant Assembly Area was one of seven grouping of facilities within the larger complex.

**2. Condition of fabric:** Extant facilities at the Solid Propellant Assembly Area are generally in good to fair condition (further described below). A few structures are no longer extant (see table below).

### B. Description of Facility:

**1. Solid Propellant Assembly Area:** Primary extant features of the Solid Propellant Assembly Area are a series of prefabricated buildings along an east-west trending roadway. Hidden behind a large earthen berm, one structure, noted here as a concrete bunker, was not previously recorded. It was discovered during the HAER photography field visits in March 2013. The table summarizes these structures (which are further described below). It also notes ancillary structures that are no longer present, as described by Weitze.<sup>2</sup>

Date of Construction	Common name	Description	Condition
1956	Storage Building	One-story prefabricated metal	exterior in good condition; interior in fair condition
Before October 1956	Assembly Building	One-story prefabricated metal	exterior and interior in good condition
October 1956	Motor Storage Building	One-story prefabricated metal	exterior and interior in good condition
1964	Quonset Hut	Prefabricated metal	exterior and interior in fair condition
1966	Aero-Thermodynamic Structural Test Vehicle Building	Self-supporting steel arch	exterior and interior in good condition
1956	Paint Shed	One-story prefabricated metal	exterior and interior in good condition
unknown	Concrete bunker	Concrete structure built into tall earthen berm	exterior and interior in good condition
<i>No Longer Extant</i>			
	Guard station	Coupled with clock station	n/a
	Clock station	At entrance gate west of the	n/a

<sup>2</sup> Weitze 2005, p. 31.

Date of Construction	Common name	Description	Condition
		north-south road	
	Small water tank	Southwestern corner of assembly building	n/a
	Pair of storage sheds	South of ASV building (Unit 106)	n/a
	Large storage shed	Location not described	n/a
	Improved storage facility	East of Quonset hut (Unit 105)	n/a

**2. Storage Building:** This large prefabricated metal structure with rigid-frame construction and covered in corrugated siding. It is approximately 80' long (north-south) x 50' wide, and was constructed in 1956. The building features center-opening, track-mounted front and side doors, a gable roof, occasional fenestration, and exterior roofline-mounted security lights. It is placed on a concrete slab, which provides the floor of the structure. The shed-roof addition is open. The exterior of the building is in overall good condition. The open interior has original fixtures and is in fair condition; interior walls are showing signs of deterioration. The interior "office" is small, and may be a storage area.

**3. Assembly Building:** Very similar to the Storage Building, and also constructed in 1956, this too is a prefabricated metal structure with rigid-frame construction and covered in corrugated siding. It too is 80' long x 50' wide, placed on a concrete slab, and surrounded by graveled areas and overgrown vegetation. An enclosed lean-to room (probably original) is placed along the rear two-thirds of the west facade. In addition to the large track-mounted north and south doors, a series of four single doors are placed along the east facade. Ventilator and exhaust fan are found on the gable roof, along with exterior roofline-mounted security lights. Overall the exterior of the building is in good condition, as is the interior. Several shed-roof one-story rooms line the interior western wall, including an office. Some of the interior furnishings have been removed; metal cabinets, barrels, etc. are found in the area north of the building. Large earthen berms surround the building on its east and west sides.

**4. Motor Storage Building:** Similar in appearance and fabrication, this is another prefabricated metal gable roof structure with rigid-frame construction covered in corrugated siding, and built in 1956. It is 100' long x 45' wide, placed on a concrete slab. The building is windowless, with center-opening, track-mounted front and rear doors. Original light fixtures are on the south and north facades of the building. The exterior of the building is in good condition. The interior is a large open room, and many of original interior features remain (small rooms, lighting). The interior has fared less well than the exterior, but is still in fair to good condition. Large earthen berms surround two sides of the structure.

**5. Quonset Hut:** This prefabricated metal storage structure was placed in the facility circa 1964. The structure is approximately 130' long (north-south) x 36'

wide. There are large track-mounted sliding doors on the wood-framed north and south facades. Large vents are placed on the top of the structure. There is no foundation for the structure; it is directly placed on the ground. Overall the exterior of the structure is in fair condition. There is much rust, and the door on the south facade is in dilapidated condition. A small office is in the northwest corner. The interior has fared less well.

**6. Aero Thermodynamic Structural Test Vehicle Building:** Known as a “Wonder Building,” this tall but relatively small structure is approximately 16' long (east-west) x 10' wide.<sup>3</sup> It is constructed on a concrete perimeter foundation. No flooring was installed; the ground serves as the floor. Wood framing sheathed in corrugated metal encloses the west and east facades; each has a door entry. A single round ventilator fan appears at the top of the west facade. The structure is in good condition, despite some surface rusting. The interior of the structure also is in good condition. The tall, parabolic framing of the structure allowed for storage of tall missiles.

**7. Paint Shed:** This small one-story wood-framed structure is approximately 12' x 9'. It is covered with corrugated siding, with a flat, sloped shed roof. The building is windowless, with a single door entry. The modern security fence runs directly behind the building. Overall, the building is in good condition despite some of the shed roof missing.

**8. Concrete Bunker:** South of the Motor Storage Building, built into a large earthen berm, there is a previously unrecorded concrete bunker, of unknown date, and use. The structure is approximately 60' long, with an opening into the hillside berm of 20' x 20'. The interior is divided into bays. A shed roof with corrugated plastic roofing extends from the front.

**C. Mechanicals/Operation:** The Solid Propellant Assembly Area is a small complex of buildings north of the Alpha Test and Sigma Test complexes, and closely related to the function of those areas. Three buildings (Storage, Assembly, and Motor Storage) were constructed in 1956 (a small paint shed was also built behind the assembly building). As its name implies, the area's purpose was to store and assembly solid propellants. In 1962, Douglas began to conduct Saturn test firings using liquid hydrogen at these facilities. Additional buildings were constructed from 1964-1966, including a Quonset hut and a taller variety of Quonset hut known as the Aero-Thermodynamic Structural Test Vehicle Building, primarily used for storage.

**D. Site Information:** The Douglas Missile Test Facility was constructed on the outskirts of Sacramento, in a suburban area known as Rancho Cordova. The Facility was situated south of the main highway (today known as Highway 50), amongst the remains of large numbers of dredge tailings, which in part provided existing earthen berms integral to the testing and captive firings. Additional earthen berms were constructed for this facility. Although suburban shopping

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<sup>3</sup> Weitze 2005, p. 44.

areas and commercial development now exist in the area south of Highway 50, this development has not encroached upon the main Douglas Missile Test Facility.

### **Part III. Sources of Information**

#### **A. Primary Sources**

Douglas Missile & Space System Division, Saturn/Apollo and Manned Orbital Research Laboratory Congressional Record Presentation. Presentation to the Honorable Olin Teague, Chairman, Manned Space Flight Subcommittee, U.S. House of Representatives, Washington, D.C., February 11, 1966. Manuscript, in possession of D.R. Brincka, copy held by Alan Lawrie.

Douglas Missile & Space System Division, Sacramento Test Center Resources Handbook, Douglas Report No. SM 37538 R1, Approved by D.R. Brincka, Director, Technical Operations, December 1966. Manuscript, in possession of D.R. Brincka, copy held by Alan Lawrie.

Douglas Missile & Space System Division, Sacramento Test Center MSSD Beta Complex Facts, prepared by Logistics Support Services, Sacramento Test Center, approved by W.L. Duval, Director, Sacramento Test Center, no date given. Brochure in possession of D.R. Brincka, copy held by Alan Lawrie.

Douglas Missile and Space Systems Division, Saturn Operations Engineering Testing Summary. Sacramento Field Station, 1958-1962. McDonnell Douglas Corporate Records (accessed by Karen Weitze, 2005).

Douglas Missile and Space Systems Division, Sacramento Test Center Resources Handbook. Douglas Report No. SM 37538. Sacramento Test Center, August 1966. McDonnell Douglas Corporate Records (accessed by Karen Weitze, 2005).

#### **B. Secondary Sources**

Allen, Rebecca, National Register of Historic Places Evaluation of Structures Associated with the Douglas Missile Test Facility (P-34-4317), Rio del Oro, Rancho Cordova, California. Report to ECORP Consulting, Rocklin, and Elliot Homes, Folsom, from Past Forward, Inc., Garden Valley, California, 2011.

Green, Paul, Interim Guidance, Treatment of Cold War Historic Properties for U.S. Air Force Installations. U.S. Air Force, Washington, D.C. Available at <<http://www.afcee.af.mil/shared>>, 1993.

Lawrie, Alan, Return to Sacramento: a Review of Saturn Rocket Firings and Explosion. Published by the American Institute of Aeronautics and Astronautics, manuscript number AIAA 2007-5343, 2007.

Lawrie, Alan, *Saturn I/IB: The Complete Manufacturing and Test Records*. Apogee Books, Burlington, Ontario, Canada, 2008.

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Weitze, Karen, Draft Historic Buildings and Structures Inventory Douglas Missile Test Facility Rio del Oro Specific Project Plan. Report to City of Rancho Cordova and U.S. Army Corps of Engineers, Sacramento District, from EDAW, Sacramento, and Weitze Research, 2005.

### **C. Likely Sources Not Yet Investigated**

According to Alan Lawrie, he originally wrote the AIAA (2007) paper as part of his research on the Saturn rockets because the Douglas Missile Test Facility, Sacramento Test Operations, as well as events that took place at the Facility, that had not been previously documented. He noted that Don Brincka, retired Director of Technical Operations at the SACTO facility, had managed to retain some documentation, but more importantly was able to answer some of Lawrie's more obscure questions. Mr. Brincka passed all of his papers over to Mr. Lawrie. Mr. Lawrie also stated that he had researched primary source material at the National Archives and Record Administration in Atlanta, Georgia.

Rebecca Allen contacted Ralph H. Allen, Historic Preservation Officer, Marshall Space Flight Center, Huntsville, Alabama. Mr. Allen noted that sources of information on the SACTO facility held by Marshall were limited.

Several buildings associated with the Administrative Area were not recorded as part of this current project. These buildings remain standing, and are being actively used for other purposes.