
**SURVEY AND EVALUATION OF
NASA FACILITIES WITHIN THE
CAPE CANAVERAL AIR FORCE STATION**

Prepared for

**National Aeronautics and Space Administration
Kennedy Space Center, Florida**

In association with

**DYNAMAC Corporation
Kennedy Space Center, Florida
Contract No. KSC011189**

by

**Archaeological Consultants, Inc.
2345 Bee Ridge Road, Suite 6
Sarasota, Florida 34239**

December 2001



ARCHAEOLOGICAL CONSULTANTS INCORPORATED

SARASOTA, FLORIDA

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1.0 INTRODUCTION

1.1 Project Summary and Objectives

In 1996, Archaeological Consultants, Inc. (ACI) entered into contract with the National Aeronautics and Space Administration (NASA) to provide cultural resource management services as part of NASA's KSC-Wide Archaeological and Historic Facility Survey. Proposed professional services included both basic contract work, as well as contract option tasks. The purposes of the basic contract were two-fold: (1) to complete an archaeological survey within a portion of the John F. Kennedy Space Center (KSC), and (2) to reassess the existing National Register of Historic Places (NRHP) Launch Complex 39 (LC-39) Site. Contract option tasks included assessing the NRHP eligibility of all remaining NASA-controlled facilities as located within the Industrial, Launch Complex 39, Vehicle Assembly Building (VAB), and Shuttle Landing Facility (SLF) Areas.

In 1973, Launch Complex 39 (LC-39) of the John F. Kennedy Space Center was listed as a site in the National Register of Historic Places (NRHP). The LC-39 area was the first NASA site chosen for historic recognition and honors the Apollo lunar landing program. The 1973 NRHP site encompassed an area measuring approximately 7000 acres in areal extent. Due to the ongoing mission of the Shuttle program, many of the original resources were altered or dismantled and new facilities had been added. As a result, approximately 262 facilities under the operational control of KSC existed within the original district boundaries. Because the NRHP listing as a site was impractical for current preservation and compliance needs, ACI prepared a NRHP nomination following a multiple property format in which the Multiple Property Documentation Form would provide a historical context for KSC under which individual properties and districts could be nominated for listing in the NRHP. As a result of these efforts, ACI evaluated 812 properties at KSC for NRHP eligibility of which eight individual buildings and two districts were nominated for NRHP listing. These nominations for the Vehicle Assembly Building (VAB) - High and Low Bays, Launch Control Center (LCC), Headquarters Building, Operations and Checkout (O&C), Central Instrumentation Facility (CIF), Crawlerway, Press Site: Clock and Flag Pole, Missile Crawler Transporter Facilities (Crawlers), Launch Complex 39: Pad A, and Launch Complex 39: Pad B were listed in the NRHP in 2000 and supercede the previous NRHP listing as a site.

In 2001, ACI entered into contract with DYNAMAC Corporation to provide as-needed cultural resource management services on behalf of NASA, including an inventory and assessment of NASA-owned facilities within the Cape Canaveral Air Force Station (CCAFS). The following report presents ACI's approach and methodology in performing the historic facilities survey and NRHP assessment, including a discussion of evaluation criteria and recommendations. Appended to this summary report are the 1984 National Historic Landmark (NHL) Federal Agency Nomination for the Cape Canaveral Air Force

Station (Appendix A) and a list of NASA facilities within the Cape Canaveral Air Force Station (Appendix B).

1.2 Cape Canaveral Air Force Station and National Aeronautics and Space Administration

In 1949, President Harry S Truman signed legislation which officially established the Joint Long Range Proving Ground at Cape Canaveral with Patrick Air Force Base selected as the support base. Construction of the first missile launching pads and support facilities at Cape Canaveral started in 1950 with the first missile launched from the Cape on July 24, 1950. Although the entire facility was initially under the cooperative management of the Army, Navy, and Air Force, the Air Force soon assumed control of operations at Cape Canaveral by directive of the Department of Defense. From World War II until the early 1950s, activities at Patrick Air Force Base and Cape Canaveral focused on winged missile research and development as a deterrent force in the weapons race between the United States and the USSR. After the Soviets detonated their first atomic device in 1949, the United States government pursued ballistic missile research and development. Because the three branches of the armed forces were responsible for the research and development of missiles to fulfill their particular roles in national defense, each branch maintained facilities and launched rockets at Cape Canaveral.

When the Soviets launched Sputnik I in 1957, the attention of the United States government and the public turned to space exploration. With the launch of Explorer I on January 31, 1958, the United States entered the space race. The President's Science Advisory Committee urged that a centralized agency be created to oversee the scientific exploration of space. The new agency, the National Aeronautics and Space Administration (established October 1, 1958), was to be separate from the Department of Defense, yet would benefit from the advances of the military. The Launch Operations Directorate which managed overall integration, testing, and the launch operations of NASA was established at Cape Canaveral. Consequently, some Air Force facilities were transferred to NASA, some were leased to NASA, and new structures were built by NASA to fulfill their mission. Despite the establishment of KSC in 1965, NASA continues to own and operate facilities at CCAFS.

1.3 Agency Needs and Compliance Issues

In carrying out its responsibilities pursuant to the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act of 1966, as amended, NASA must consider the effects of its actions on the historic values embodied in the objects, structures, and facilities within its control. A total of 106 NASA-controlled facilities are located within CCAFS (Appendix B). Consistent with NASA's leadership role in the stewardship of its historic properties, this survey and reassessment aims to identify those

resources of exceptional importance to the nation, thus facilitating the agency's Section 106 compliance process.

In 1983, a National Historic Landmark Federal Agency Nomination was prepared for the Cape Canaveral Air Force Station at the direction of the Secretary of the Interior's Advisory Board to reflect an agreement between the National Park Service, the United States Air Force and the Board as to what facilities were nationally significant and could be designated at that time. The Cape Canaveral Air Force Station was listed as a National Historic Landmark on April 16, 1984. The nomination, which highlighted the national significance of those principal facilities associated with the manned and unmanned space program of the United States, found that Launch Pads 5, 6, 13, 14, 19, 26, 34, and the original Mission Control Center warranted National Historic Landmark designation. These properties were evaluated as nationally significant in the areas of communications, engineering, science, and space exploration. A copy of the nomination is appended to this report (Appendix A). Twenty-eight NASA-controlled facilities at CCAFS are included in the resources enumerated as part of the 1984 National Historic Landmark District (Appendix B).

As the National Historic Landmark nomination stated, "the omission of other facilities at Cape Canaveral Air Force Station [in the nomination] does not preclude their being designated as nationally significant at some future time" (History Division of the National Park Service/United States Air Force Section 7). Therefore, a subsequent survey by Resource Analysts, Inc., completed in 1984, evaluated the historical significance of the 1,325 facilities at CCAFS. Resource Analysts, Inc. identified 21 of the CCAFS launch complexes as well as Hangar S, the Mission Control Center, and the Cape Canaveral Lighthouse as potentially eligible for listing in the NRHP. The surveyors made the following comments regarding other facilities at CCAFS:

In evaluating the facilities lying outside the launch complexes it became clear that buildings... lacked architectural uniqueness and that much of the specialized technology that had once given these buildings importance to engineering had long since been removed. Many of these buildings have had extensive interior remodelling [sic] in conjunction with their adaptation to new uses. The interiors of the hangars, for example, were remodelled a number of times as project needs required changes.

We therefore conclude that structures and buildings outside of the launch complexes lack 'engineering significance' due to their loss of integrity. Important historical events associated with Mission Control and Hangar S give these buildings 'historical significance'. Other buildings and structures outside the launch complexes lack both 'engineering significance' and 'historic significance' associated with CCAFS (Resource Analysts, Inc. 1984:58).

A subsequent survey by the U.S. Army Construction Engineering Research Laboratory in 1994 recommended that Complexes 1/2, 3/4, 17, 21/22, 25, 31/32, be considered eligible for the NRHP under Criteria A and/or C. Other properties were not considered eligible for the NRHP at that time. Of these properties considered eligible for the NRHP, only two, Launch Silo 31-B (17750) and Launch Silo 32-B (17751), are in NASA ownership (Appendix B).

Due to the primary focus on launch complexes, many NASA-controlled properties have never been examined for their NRHP eligibility. These facilities, located primarily in the Industrial Area, were the focus of the current study.

2.0 APPROACH AND METHODS

2.1 National Register Criteria for Evaluation

All NASA-controlled facilities within the CCAFS were assessed in accordance with the NRHP criteria for evaluation, as described in the *Code of Federal Regulations*, 36 CFR Part 60.4. The significance of historic structures is usually evaluated under Criterion A (association with historic events); Criterion B (association with important persons); or Criterion C (distinctive design or distinguishing characteristics as a whole). Often, more than one criterion applies. Ordinarily, properties that have achieved significance within the past 50 years are not considered eligible for the NRHP. However, a number of facilities at KSC and CCAFS do qualify since they meet special Criteria Consideration G: “*A property achieving significance within the past 50 years is eligible if it is of exceptional importance.*”

All NASA properties were evaluated for NRHP eligibility based upon their exceptional importance to the Nation. Guidance in applying the criteria is provided in the U.S. Department of the Interior, National Park Service (NPS) publication *Guidelines for Evaluating and Nominating Properties that Have Achieved Significance within the Last Fifty Years* (NR Bulletin 22). Also used were the NPS publications *Guidelines for Applying the National Register Criteria for Evaluation* (NR Bulletin 15), *Guidelines for Completing National Register of Historic Places Forms: How to Complete the National Register Registration Form* (NR Bulletin 16A), and *Guidelines for Completing National Register of Historic Places Forms: How to Complete the National Register Multiple Property Documentation Form* (NR Bulletin 16B).

2.2 Research Methods and Sources of Information

Methods used to prepare this NRHP assessment included background research at KSC and on the Internet, field inspection and evaluation of all NASA-controlled facilities located at CCAFS, examination of historic photographs on file at KSC, and informant interviews. ACI utilized a number of documents including the property records from the KSC Real Property Office, the *Man in Space Theme Study* completed in 1984 by the National Park Service, the *Technical Facilities Catalog Volume II* completed in 1967 and revised in 1974, and the 1992 and 1995 *Master Plans*. ACI contacted the following individuals for assistance: Mario Busacca, Environmental Management; Elaine Liston and Barbara Green, InDyne, Inc., KSC Library Archives; Jim Butts, EG&G, KSC Master Planning; Bill Stoeckel, SGS, KSC Real Property; Marilee Tewksbury, KSC Records Manager; Leila Taylor, KSC Real Property; John Shaffer, KSC Environmental Program Office; Chris Herpich, Dynamac; Dennis Dudzinski, Hangar S Facility Manager; Clay Gordin, PAFB Environmental Planning; Mike Camardese, CCAFS Engineering; Don George, PAFB; and Mark Cleary, 45th Space Wing Historian.

The list of NASA structures and facilities provided by Leila Taylor with the KSC Real Property Office served as the basis for field investigation and evaluation. Appendix B provides an inventory of properties included in this study, listed by facility number, current facility name, historic use (if known), year built, and NRHP eligibility. Because the facilities at the launch complexes and the original Mission Control Center previously were evaluated, and many are already designated NHL or considered potentially eligible for the NRHP, ACI focused research on NASA facilities located in the Industrial Area and the Fuel Farms and Processing Areas. ACI relied on telephone interviews and information gathered during one on-site visit (prior to September 11) of facilities and records. Although some of the facilities in the Fuel Farms and Processing Area were built during the historic period, no historical information other than the date of construction was available. Based on this lack of information, these buildings did not appear historically significant. Therefore, ACI focused research primarily on the NASA facilities in the Industrial Area of CCAFS.

ACI found that many properties at CCAFS have changed ownership between the Air Force and NASA since the conclusion of the Apollo era. As a result, several of the buildings currently owned by NASA were historically constructed and operated by the Air Force. Consequently, KSC does not have any record of the historical function of the facility and research at CCAFS was considered necessary. However, due to the events of September 11, 2001, individuals and facilities were not accessible due to heightened security thereby making research difficult and inconclusive.

3.0 EVALUATION

3.1 Historic Context

The first step in evaluating the NASA facilities was to establish and describe the applicable historic context(s). Research focused on exceptionally significant Cold War programs including missile research and development and the American military and civilian space programs. The missile research and development program provided the United States with an operational nuclear missile force for defense in the arms race. The military space program provided critical information to military and political leaders during the Cold War. Since the establishment of NASA in 1958, the civilian space program has supported the military space program by sharing critical scientific information and technology. The civilian space program also has expanded greatly our knowledge of science and the universe. This knowledge is of significant value. The period researched extended from the founding of CCAFS in 1949 to the end of the Apollo era in 1975. As research focused on the Industrial Area, ACI assembled information on the general development of CCAFS and the role that the Industrial Area played in fulfilling the mission of CCAFS.

The Air Force originally intended to purchase missile components from vendors under contract who would deliver the completed parts to Patrick Air Force Base. At Patrick, the government would assemble the missiles and haul them by truck approximately 15 miles north to the launch sites at Cape Canaveral. However, the Air Force quickly discovered that the bumpy ride to the Cape caused problems for the delicate missile components. This required prolonged check out time on the launch pad to prepare the missiles for launching.

In the early 1950s, the Air Force made a decision to assemble the missiles at the Cape to reduce the distance needed to carry the rockets and the time spent on the launch pad. Hangar C, built in 1953, was the first assembly hangar constructed at CCAFS and was soon followed by Hangar O. Located near the tip of the Cape, the Air Force soon discovered that these hangars were too close to the launch pads in terms of safety considerations. The dangers of explosive hazards, overflight, and maintaining a line of sight showed the wisdom of locating a pad in an area where there were no permanent facilities immediately downrange. As the Department of Defense greatly expanded the missile development efforts at the Cape in the mid-1950s for national defense, the Department created an Industrial Area on the western portion of the island as the major support area. Construction of the missile assembly buildings in the Industrial Area started in 1955 with Hangar I. The various missiles had certain similar operational requirements with each needing an assembly and checkout building, transport from assembly area to launch complex, and a launch pad with a variety of facilities (Benson and Faherty 2001:8-10).

The Industrial Area grew to include missile assembly buildings, shops, chemical storage areas, standards laboratories, heating plants, a cafeteria, a fire station, operational

buildings, emergency power plants, and miscellaneous utilities, structures, and systems. Various portions of the missiles were assembled at the Missile Assembly Buildings in the Industrial Area and the completed stages were carried to the launch complexes by truck or rail for final assembly and check out. Since the mid-1950s, the majority of missiles and rockets fired from the Cape were assembled in the hangars at the CCAFS Industrial Area (Resource Analysts, Inc. 1994:6).

Twenty-one missile assembly buildings were built to meet the constantly expanding needs of the many missile groups. Constructed under the supervision of the Corps of Engineers at a cost of about \$1.5 million each, the missile assembly buildings were patterned after Marine Corps hangars at El Toro, California. According to the *History of Canaveral District 1950-1971*,

Fundamentally, a missile assembly building is seen as a hangar, receiving its missile as a child of parts (usually via air arrival at the “skid strip”), and re-birthing it whole for launch. However, a missile assembly building makes salient departures from a normal hangar. Floors of the main bays, as well as the ground-floor shops, are liberally laced with covered trenches through which run instrumentation and power circuits, the means of connecting laboratory equipment to the missile to test and read-out component adequacies within the rocket prior to its transfer to the launch area. Such checkouts invariably demanded direct current power, 400-cycle alternating current, highly compressed air and other gasses....

A feature common to Missile Assembly Buildings is their overhead cranes for handling missiles, missile stages and heavy components....the cranes themselves were a novel departure from normal industrial practice (US Army Corps of Engineers 1971:17-18).

Each Missile Assembly Building was built to assemble and check out a particular missile but was often modified to serve other missiles as new missile groups were designed. Additionally, many of the early missiles were later used as rockets to propel Gemini, Mercury, and Apollo missions into space. Each missile assembly building as well as other support buildings in the Industrial Area could have housed the research, development, assembling, and testing of several missile groups as well as the orbiters for the unmanned and manned space missions. Thus, the Missile Assembly Buildings and the other facilities in the Industrial Area played a vital role in daily operations and fulfilling the mission of CCAFS.

3.2 NRHP Eligibility

In applying the NRHP criteria for evaluation, the facilities in the Industrial Area, both NASA and Air Force-owned, need to be addressed as a unit and not divided according to current ownership. As previously discussed, many of the facilities have changed ownership

since the Apollo era. NASA currently owns buildings which were originally owned by the Air Force, and the Air Force currently owns buildings which were originally NASA owned. According to National Register guidelines,

A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development (U.S. Department of the Interior, National Park Service (NPS) *Guidelines for Completing National Register of Historic Places Forms: How to Complete the National Register Registration Form* [NR Bulletin 16A:15]).

Because the facilities in the Industrial Area served similar purposes as check out, assembly, and testing facilities, share the same developmental period (roughly from 1955 to the end of the Apollo era in 1975), and had the same stylistic influences, the facilities should be addressed as a district.

In order to nominate a district to the NRHP, a physical description and a statement of the significance of the district must be provided. Relative information about each individual resource, such as date of construction, physical characteristics including style and historic machinery, historical and current functions, and associations are described. Although books, reports, and historic records at KSC provided an overall description of the development of the Industrial Area, KSC records provided limited information about buildings which were originally Air Force facilities. ACI was not granted access to historical Air Force records. Therefore, limited information was available concerning buildings originally owned by the Air Force. As a result, it was not possible to compile a detailed physical and historical description of all of the properties presently owned by NASA in the CCAFS Industrial Area.

Although the NRHP typically requires that nominated resources have relatively few alterations (i.e., must retain integrity), the NRHP takes into account that highly scientific and technical properties will undergo change in order to meet mission requirements. The NPS publication *Guidelines for Applying the National Register Criteria for Evaluation* (NR Bulletin 15), states that integrity, as applied to historic properties, has seven aspects: location, design, setting, materials, workmanship, feeling, and association. In order to retain sufficient integrity to be considered eligible for listing in the NRHP, a historic structure must normally demonstrate integrity in at least two of these qualities.

Retention of integrity does not necessarily mean that a property must be in an unchanged state. This is particularly true when the significance of a property derives from its function rather than its physical design, as is often the case with historic Cold War properties. Most Cold War military programs, and certainly the ballistic missile and space programs, were characterized by constantly changing and advancing technology. Consequently, the properties that supported these programs often underwent numerous

modifications reflecting those technological advances. Many of the exceptionally important Cold War properties have experienced numerous physical changes and modifications. However, a significant percentage of these properties qualify for NRHP listing based on their historic function rather than their architectural or engineering design. In these cases, integrity of function becomes more important than integrity of the original design. As long as such properties retain an ability to convey a sense of their historic function, then the properties retain their integrity, regardless of modifications or changes. A classic example would be the launch complex that has been constantly modified over the years to accommodate new generations of space vehicles. It obviously would not retain integrity of original design, but if it retained an ability to convey a sense of its historic function as a launch site it would continue to retain its integrity of function and would meet the NRHP integrity requirement (Advisory Council on Historic Preservation, *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities*, 1991). Based on the initial exterior visual examination, historic photographs, and records from the KSC Real Property Office, the NASA-owned buildings in the Industrial Area appear to retain integrity. An interior investigation of each property was not possible due to the events of September 11, 2001.

Based upon the lack of historical information and interior investigation, ACI could not make a case for exceptional significance. National Register Criteria Consideration G requires that a property achieving significance within the last 50 years is eligible only if it is of exceptional importance (*Guidelines for Applying the National Register Criteria for Evaluation* [NR Bulletin 15]). Architecturally, the resources would not be exceptionally significant. The significance of these properties lies primarily in their historical association with the exceptionally significant Cold War era programs of missile testing and the military and civilian space program. However, ACI was not able to determine the exact role of several of the NASA buildings due to a lack of available information. ACI was not able to verify the integrity of the interior machinery, design, and unique characteristics of the buildings due to a lack of access and historical information to compare with the existing condition. Furthermore, some properties, such as a launch complex, directly supported operational missions, while other properties supported operational missions in a secondary or complementary capacity. The facilities in the Industrial Area were certainly important and played a vital role in mating and testing the missile and rocket components, but their role is considered complementary. Therefore, no additional NASA facilities at CCAFS appear to meet the NRHP eligibility requirements at this time.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Of the 106 facilities which NASA continues to operate at CCAFS, 28 are included in the resources enumerated as part of the 1984 National Historic Landmark District and two are considered eligible for the NRHP (Appendix B). The 76 remaining properties are not considered eligible for the NRHP at the present time. Of the 72 facilities with a known date of construction, 51 were constructed during the period of significance from 1955 to the end of the Apollo era in 1975 while 21 were built after 1975. Although many of these now serve as storage and fuel processing facilities, several operated as missile assembly buildings and laboratories used to mate and test the stages and equipment for missiles and rockets. These facilities include Hangars S, N, L, M, AE, and AF as well as the E&O Building and the Emergency Breathing Equipment Maintenance Building.

Although the facilities in the Industrial Area do not currently meet NRHP eligibility criteria, they were certainly important and played a vital role in mating and testing the missile and rocket components in the exceptionally significant Cold War era programs of missile testing and the military and civilian space program. Therefore, ACI recommends that all of the facilities, both Air Force and NASA-owned, located in the CCAFS Industrial Area, be reevaluated as a district when the majority attain 50 years of age.

5.0 SOURCES CONSULTED

Archaeological Consultants, Inc. (ACI)

1998 *Survey and Evaluation of the Historic Facilities Within the Industrial, Launch Complex 39 (LC-39), Vehicle Assembly Building (VAB), and Shuttle Landing Facility (SLF) Areas of the John F. Kennedy Space Center (KSC), Brevard County, Florida, Including a Reassessment of the Existing National Register of Historic Places Launch Complex 39 Site (8BR 172)*. April 1997, Revised August 1998.

Advisory Council on Historic Preservation

1991 *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities*. Washington, D.C. February.

Anonymous

1994 *Facts: John F. Kennedy Space Center*.

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2001 *Moon Launch! A History of the Saturn-Apollo Launch Operations*. First paperback printing, University Press of Florida, Gainesville. First cloth printing 1978, as second half of *Moonport: A History of Apollo Launch Facilities and Operations* by NASA, Scientific and Technical Information Office.

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1981 *Reconnaissance Survey: Man in Space*. U.S. Department of the Interior, National Park Service, Washington, D.C. November.

1984a *Man in Space National Historic Landmark Theme Study*. U.S. Department of the Interior, National Park Service, Washington, D.C. May.

1984b *Man in Space National Historic Landmark Theme Study, Phase II*. U.S. Department of the Interior, National Park Service, Washington, D.C. August.

Heppenheimer, T.A.

1997 *Countdown: A History of Space Flight*. John Wiley & Sons, Inc., New York.

National Aeronautics and Space Administration (NASA)

n.d. *America's Spaceport: John F. Kennedy Space Center*.

National Aeronautics and Space Administration (NASA) cont.

- n.d. KSC Facilities Photos, Notebook 2 of KSC/ETR.
- 1965 *Master Plan: John F. Kennedy Space Center, Florida.*
- 1965 *Space Control Document: Cape Area.* October 15.
- 1967 *Technical Facilities Catalog Volume II* [NHB 8800.5 (II)]. March.
- 1973 *A Summary of Major NASA Launchings: October 1, 1958 - September 30, 1973.* KSC Historical Report No. 1 (KHR-1, Revised 1973). October.
- 1974 *Technical Facilities Catalog Volume II* [NHB 8800.5A (II)]. October.
- 1979 *Real Property Use Plan.*
- 1984 *Master Plan: John F. Kennedy Space Center.* April.
- 1992 *Master Plan: John F. Kennedy Space Center (Volume I).* October.
- 2000 *CCAFS Basic Information Guide: Facilities at CCAFS and KSC.* KSC GP-14-2. October.
- 2001 *Real Property Building Records.* KSC Real Property Office.

National Park Service

- 1991a *Guidelines for Completing National Register of Historic Places Forms: How to Complete the National Register Registration Form.* National Register Bulletin 16A. U.S. Department of the Interior.
- 1991b *Guidelines for Completing National Register of Historic Places Forms: How to Complete the National Register Multiple Property Documentation Form.* National Register Bulletin 16B. U.S. Department of the Interior.
- 1991c *How to Apply the National Register Criteria for Evaluation.* National Register Bulletin 15. U.S. Department of the Interior.

National Park Service, History Division, and United States Air Force

- 1984 *National Historic Landmark Federal Agency Nomination: Cape Canaveral Air Force Station.* Prepared 1 September 1983, accepted 16 April 1984.

New South Associates

1996 *45th Space Wing Cultural Resource Management Plan: Patrick Air Force Base and Cape Canaveral Air Station, Brevard County, Florida.* November 6.

Resource Analysts, Inc.

1984 *An Architectural and Engineering Survey and Evaluation of Facilities at Cape Canaveral Air Force Station, Brevard County, Florida.* March 16.

Sherfy, Marcella and W. Ray Luce

n.d. *Guidelines for Evaluating and Nominating Properties that have Achieved Significance Within the Last Fifty Years.* National Register Bulletin 22. U.S. Department of the Interior, National Park Service, Washington, D.C.

United States Air Force

1960 *Cape Canaveral Missile Test Annex, Atlantic Missile Range, Air Force Missile Test Center, Florida, Master Plan.* December 15. Files of KSC Library Archives.

1965 *Cape Kennedy Air Force Station Master Plan.* June 18. Files of KSC Library Archives.

United States Army Construction Engineering Research Laboratory

1994 *Historical and Architectural Documentation Reports of Patrick Air Force Base, Cocoa Beach, Florida.* May. Champaign, Illinois.

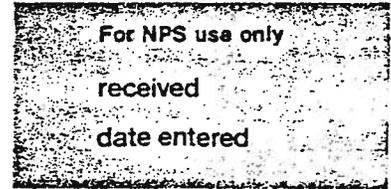
United States Army Corps of Engineers, South Atlantic Division

1971 *History of Canaveral District.*

**APPENDIX A: 1984 National Historic Landmark
Federal Agency Nomination: Cape Canaveral Air Force Station
(prepared by the History Division of the National Park Service
and the United States Air Force)**

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form



See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic Cape Canaveral Air Force Station

and/or common Cape Canaveral

2. Location

street & number Cape Canaveral Air Force Station _____ not for publication

city, town _____ vicinity of _____ congressional district City of Cape Canaveral

state Florida code _____ county Brevard code _____

3. Classification

Category	Ownership	Status	Present Use	
<input checked="" type="checkbox"/> district	<input checked="" type="checkbox"/> public	<input checked="" type="checkbox"/> occupied	<input type="checkbox"/> agriculture	<input checked="" type="checkbox"/> museum
<input type="checkbox"/> building(s)	<input type="checkbox"/> private	<input type="checkbox"/> unoccupied	<input type="checkbox"/> commercial	<input type="checkbox"/> park
<input type="checkbox"/> structure	<input type="checkbox"/> both	<input type="checkbox"/> work in progress	<input type="checkbox"/> educational	<input type="checkbox"/> private residence
<input type="checkbox"/> site	Public Acquisition	Accessible	<input type="checkbox"/> entertainment	<input type="checkbox"/> religious
<input type="checkbox"/> object	<input type="checkbox"/> in process	<input checked="" type="checkbox"/> yes: restricted	<input checked="" type="checkbox"/> government	<input type="checkbox"/> scientific
	<input type="checkbox"/> being considered	<input type="checkbox"/> yes: unrestricted	<input type="checkbox"/> industrial	<input type="checkbox"/> transportation
		<input type="checkbox"/> no	<input checked="" type="checkbox"/> military	<input type="checkbox"/> other:

4. Owner of Property

name U.S. Government

street & number HQ ESMC/ETR Patrick Air Force Base

city, town Cocoa Beach _____ vicinity of _____ state Florida

5. Location of Legal Description

courthouse, registry of deeds, etc. Brevard County Courthouse

street & number

city, town Titusville _____ state Florida

6. Representation in Existing Surveys

title NONE has this property been determined eligible? _____ yes _____ no

date _____ federal _____ state _____ county _____ local

depository for survey records

city, town _____ state _____

7. Description

Condition		Check one	Check one
<input checked="" type="checkbox"/> excellent	<input checked="" type="checkbox"/> deteriorated	<input checked="" type="checkbox"/> unaltered	<input checked="" type="checkbox"/> original site
<input checked="" type="checkbox"/> good	<input checked="" type="checkbox"/> ruins	<input checked="" type="checkbox"/> altered	<input type="checkbox"/> moved date _____
<input checked="" type="checkbox"/> fair	<input type="checkbox"/> unexposed		

Detailed description of nominated pads is given below.

Describe the present and original (if known) physical appearance

This National Historic Landmark Nomination is a revised form prepared at the direction of the Secretary of the Interior's Advisory Board to reflect an agreement between the National Park Service, the United States Air Force and the Board as to what facilities are nationally significant and can be designated at the present time. The omission of other facilities at Cape Canaveral Air Force Station does not preclude their being designated as nationally significant at some future time. The National Historic Landmark District encompasses a series of discontinuous properties immediately surrounding each designated launch pad. The enclosed map prepared by the United States Air Force indicates the boundaries of these properties. It was the consensus of the Board that the designation of these facilities should not interfere with the mission of the United States Air Force at Cape Canaveral Air Force Station. At the direction of the United States Air Force only properties being nominated for National Historic Landmark status are described.

Photographs and additional maps can be found in the original Cape Canaveral Air Force Station National Historic Landmark Study.

Cape Canaveral Air Force Station (CCAFS) is on the east coast of Florida, in Brevard County, about 155 miles south of Jacksonville. The station occupies 15,804 acres of land, of which 15,375 acres are owned in fee and the balance acquired through leases, licenses, permits, and rights-of-way easements.

In 1947, CCAFS was elected as the site for a U.S. Missile Testing Range and construction began in 1950. The first missile, a German V-2 rocket with an Army WAC, Corporal second stage, was launched from the Cape on July 24, 1950.

Continuous advancement in technology made possible the launching of the NASA Saturn IB in 1961, the Air Force Titan III in 1974, and the Navy Trident missile which began testing in 1977.

The Cape has 73 miles of paved roads connecting the various launch and support facilities with the centralized Industrial Area. Thirty-three launch complexes have been constructed on the Cape, but only 7 are still active missile launch sites.

A 10,000-foot long skid strip was built in 1952 to support aerodynamic missile recovery operations, but is now primarily used as an airstrip for logistic and test support purposes.

The development of this station as a missile test center has produced an installation that is unique with respect to other Air Force installations. The operation areas, launch facilities, instrumentation, utility, and communications systems which have evolved are as distinctive and almost as numerous as the programs they were developed to support.¹

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At the present there are hundreds of existing facilities at Cape Canaveral Air Force Station: Many of these facilities were associated with now completed missile testing and space exploration programs and are abandoned. A list of facilities still in use by the Air Force and NASA is given below:

COMMON NAME

Cafeteria (1748)
Central Computer Complex (49639)
Central Heating Plant (55055)
Command Control (81585)
Communications Receiver (1102)

DASO Data Support Bldg (90302)
Delta Spin Test (67900)
Defense Prop Disp Office (DPDO)
Dispensary (49635)
East Cable Terminal Bldg (1532)

Fire Station (1608)
Fuel Storage Area #1 (Liquids)
Fuel Storage Area #2 (Solids)
Fuel Storage Area #3 (Solids)
Headquarters CCAFS (1733)

Heliport (49620)
Industrial Area
JPL Explosive Safe Facility
Launch Complex 16
Launch Complex 17 (1270)

Launch Complex 25 (1114)
Launch Complex 29 (1131)
Launch Complex 36 (5500)
Launch Complex 40 (47100)
Launch Complex 41 (29100)

Launch Complex 43 (300)
Liq. Propellant Disposal (80700)
Museum (AF Space Museum) (1275)
Museum (NASA Space Museum) (1207)
North Cable Terminal Bldg (1664)

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North Cape Substation (60602)
Physical Standards Lab (1724)
Polaris/Poseidon/Trident Areas
Port Area
Press Site, Complex 34 BH (29100A)

Range Communications (X-Y) Bldg (1641)
Range Control Center (1645)
Sanitary Landfill (23600)
Satellite Assembly Bldg (49904)
Security Police Bldg (1638)

Sewage Treatment Plant (1798)
Skid Strip (50305)
South Cable Terminal Bldg (1307)
South Cape Substation (1002)
South Port Cable Terminal Bldg (89002)

SW Cable Terminal Bldg (78150)
TV Operations Bldg (1663)
Timing Tower UHF (54710)
Titan III Area
Waste Hydrocarbon Disp. Fac. (18410)

Water Pump Station #1 (40906)
Water Pump Station #4 (1660)
Water Pump Station #6 (70520)
Water Pump Station #7 (29150)
Weather Station (1383) ²

A list of all existing facilities with accompanying maps can be found in Appendix A at the rear of the original report.³

A list of all launch sites at Cape Canaveral Air Force Station including their historical use and current status can be found in Appendix B at the rear of the original report.⁴

Cape Canaveral Air Force Station is unique for its contribution to both the manned and unmanned Space Program of the United States.

At the direction of the Secretary of the Interior's Advisory Board the following facilities at Cape Canaveral Air Force Station have been found to be nationally significant because of their contribution to the manned and unmanned space program of the United States of America:

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Launch Complex 5/6

Complex 5/6 is a dual-pad facility with a shared blockhouse. It was constructed in 1955 for the Redstone missile testing program and was subsequently used to launch the Jupiter C, Juno I, Juno II, and Mercury/Redstone missiles. Explorers 3, 4, 5, and 7 were launched from pad 5 by Juno II vehicles. All of the Mercury/Redstone suborbital flights, both manned and unmanned, were launched from complex 5/6, the most famous being the launch of Alan Shepard in "Freedom 7" on May 5, 1961, and the launch of Gus Grissom in "Liberty Bell 7" on July 21, 1961. These launches were under the control of a NASA team headed by Dr. Kurt H. Debus.

During the Apollo program, the complex was programmed to be the launch site of the Little Joe II rocket, however, it was never modified for this purpose. The blockhouse now houses a small NASA Space Museum.⁷

The Redstone Service Tower used at 5/6 evolved out of efforts to provide a more economical and versatile structure than the gantries used by the Germans in V-2 experiments in World War II. A reclining type single-mast structure with cantilevered access platforms capable of encircling the missile was determined to be the most advantageous device for Redstone. An "A" frame mast, as the backbone supporting the cantilevered access work platforms, towered 140 feet above the launch pad. The mast was supported by a large structural steel base, mounted on railway tracks and capable of moving under its own power to and from the missile.

Elevators traveled up and down the mast, with stops at various work-levels, to a 15-ton hammerhead crane mounted at the top of the structure. Modeled on the open-faced masts used in oil fields, the Redstone service tower was built by Noble Company of Oakland, California, transported to Cape Canaveral in 14 railway cars, and reassembled at the launch site (by seven Noble men, within five days after delivery) and made immediately available to service Redstone's maiden voyage.⁸

Originally, Complex 5/6 had a segment of railroad track on which its gantry rode from pad 5 to pad 6, which was interconnected with Complex 26 so that the gantries could be interchanged as needed. Only the Complex 26 gantry remains, and the tracks and roadbed of both complexes have been torn up for use elsewhere.

The principal structure at Complex 5/6 is the blockhouse which served both launch pads and has two rooms facing diagonally northeast and southeast. Being of extremely thick, hardened and reinforced concrete, with two thick safety glass windows, there is little corrosion aside from possible rusting of the blast doors. The other structures are built similarly of concrete and have heavy steel fittings.

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The rooms adjacent and connected to the blockhouse by a breezeway roof were originally used as "ready rooms," plus kitchen and office space. They are within a concrete block wall and have a built-up tar and gravel roof. This structure is in good condition and is used, for a briefing room, records storage, and office space.⁹

Complex 5/6 and the NASA Space Museum are now grouped with launch complex 26 and the Air Force Space Museum.¹⁰

The Air Force Space Museum at complex 26, including the blockhouse, an exhibit hall, and an outdoor rocket exhibit area, is part of the Kennedy Space Center tour. The museum collection contains old and modern missiles, including the Atlas, Thor, Titan, Jupiter, and many others. More than 70 missiles representing all stages of rocket development are on display. The displays have been prepared by the Air Force, NASA, companies, and individual volunteers.

Launch Complex 26

Associated with complex 5/6 is launch complex 26. This complex is a dual-pad, single blockhouse complex that was constructed for the Redstone research and development program. It was later used for Jupiter research and development and was then modified for the launching of the Juno I and II missiles. Explorer I, the first U.S. satellite, was launched by a Juno I rocket from pad 26B on January 31, 1958, and many other early NASA launches in the Explorer series were launched there. Pad 26A was the site of the launch of primates Ham, Gordo, Able, and Baker in tests that paved the way for Alan Shepard's Mercury suborbital flight. Pad 26B still contains the original service structure, blockhouse, and most of the equipment used in the early launches. Launch complex 26 was used until 1963 as part of the NATO training program for Italian and Turkish missile crews deploying the Jupiter missile.¹¹

The Service Structure at launch pad 5/6 was demolished sometime ago. The existing service structure at launch pad 26B is identical to that used at 5/6. The blockhouses at 5/6 and 26 are identical reinforced-concrete structures shaped like arrows facing their pads. Blockhouse 26 is the only known blockhouse to have had an abortive launch fall on it (there was some minor damage but no injuries). Both blockhouses have some launch equipment in the firing rooms and displays in their outer passages.

The service structure at 26B was painted approximately 10 years ago. It currently is fenced off to keep people from accidentally being hit by pieces of flying metal that periodically blow off the structure during high winds. These pieces of metal are separated from the structure by corrosion of the floor members, grating, and railings. The main structural members of the service

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structure are in reasonable shape but will need attention soon, especially at connection points. The most severe problem is the rusting out of secondary members for flooring and railings and the floor grating itself. In addition, equipment room walls, floor, and roof made up of steel plate are corroded through in places. If corrective measures are not undertaken soon, the extent of secondary member loss coupled with primary member connection risk will make the structure unsafe.¹²

Launch Complex 26 was constructed in 1957. By mutual Air Force/NASA agreement all structures on both complexes are painted blue. The Armed Services and NASA have donated artifacts to the museum which are obsolete. Many of the displays were prepared by volunteers. One final note, the Explorer I satellite in front of the Air Force Space Museum is the original backup satellite for America's first satellite. It is not a model but a working satellite designed to orbit the earth.

Launch Complexes 5/6 and 26 retain much of their integrity and configuration and give the visitor a good understanding of facilities associated with the early space program at Cape Canaveral Air Force Station.

Launch Complexes 13 and 14

These launch complexes were constructed from 1956 to 1958 to support the Atlas research and development program. The Atlas was developed by the Air Force as the nation's first intercontinental ballistic missile. Several models of the Atlas evolved in the course of the program, designated "A" through "F." The first Atlas was launched from complex 11 on June 11, 1957.

The Atlas scored a number of firsts. On November 28, 1958, it became the first U.S. ICBM to reach full ICBM range of 5,000 nautical miles. (The Thor-Able, designed as an IRBM, flew 5,000 nautical miles on July 9, 1958.) In May 1960, the Atlas flew 9,039 statute miles into the Indian Ocean, a first for this distance.

On December 18, 1958, the Atlas demonstrated its ability and versatility as a space launch vehicle. On this date, an entire Atlas vehicle, PROJECT SCORE, was placed into orbit carrying a tape recorded Christmas message from President Dwight D. Eisenhower to the world. On command from the ground stations, the Christmas message was relayed from the orbiting vehicle. Although not a communications satellite in the sense of the later TELSTAR or Relay programs, this was another first for the United States.

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In addition to its ballistic missile role, the Atlas, combined with a second stage Agena, has performed a variety of other missions ranging from low earth orbits to deep space missions. Missions have included the Ranger Moon-probe spacecraft, Mariner interplanetary spacecraft used for Venus and Mars flyby missions, as well as the lunar explorations and lunar soft landings of the Surveyor. The Atlas-Agena combination has been launched from all four Atlas Complexes--11, 12, 13, and 14.¹³

Launch Complexes 11, 15, and 20 were sold for scrap June 13, 1967, for the sum of \$40,250,000. Although the launch tower at complex 11 is now gone the launch stand, ramp, and blockhouse remain. Although no manned or unmanned scientific payloads were flown from complex 11 it is significant because of its development of the Atlas which contributed to the manned and unmanned program. Launch complex 11 was the site where the operational status of the nation's first ICMB was proven. Architectural drawings of the approach ramp and blockhouse are included in Appendix D of this report. Although the launch tower was salvaged in 1967 and much of the original equipment was removed from the blockhouse and launch ramp area, the blockhouse, ramp, and pad still remain and preserve much of the original integrity of the site.

Launch Complex 12 was designed to support Atlas "D" operations. Between 1958 and 1967 there were 37 Atlas launches from Complex 12. The first launch in 1958 was for an Air Force Atlas Research and Development Atlas vehicle. Complex 12 has launched many historic payloads. These include the first Ranger spacecraft. In all nine Rangers were flown from the complex, and the spacecraft returned to earth the first closeup photographs of the lunar surface.

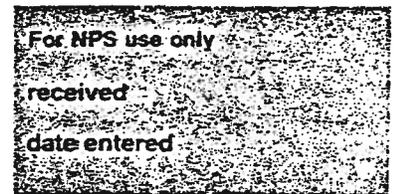
Four Mariner interplanetary missions were launched at Pad 12. These included the highly successful flybys of the planets Venus, in 1962 and 1967, and of Mars, in 1965.

Other NASA flights at the complex have included two Orbiting Geophysical Observatories, one Orbiting Astronomical Observatory, two Project Fire (reentry) shots, and three ATS satellites.

The description of the physical facilities at Complex 12 is basically the same as those of Complex 14 given below. These facilities include a launcher with ramp; umbilical tower; service structure, first, second and third stage fuel storage and loading area; blockhouse and launch contractor ready room; range contractor shop and an operations support building. A diagram of complex 12 is included in Appendix E at the rear of this report. This diagram is that of a typical Atlas launch complex at Cape Canaveral. The physical difference between complexes 11, 12, 13, and 14 were very slight usually involving the configuration of the umbilical tower. Complex 12 was salvaged in 1976. The umbilical tower and much of the original equipment were removed. The other facilities were abandoned in place and still remain at the site.

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Launch Complex 13, the third site constructed for the Atlas research and development program, was later modified to launch the Atlas/Agena rocket and was assigned to NASA. The complex was used for five lunar orbiter missions and the Mariner 3 mission. When the Atlas/Centaur rocket was developed, complex 13 was returned to the Air Force; it was deactivated in 1978.

The most relevant feature of this complex is the fact that it resembles complex 14 (where all manned orbital Mercury-Atlas missions were launched). The mobile service structure at 14 was trapizoidal in shape while it is box shaped at 13. This service structure is the only one standing associated with the manned space program other than Complex 39. Launch complex 13 is the one remaining facility which fully illustrates the support facilities required in the Mercury-Atlas flights.

The major components of this complex are: a launcher with ramp; umbilical tower (still intact); service structure; first, second, and third stage fuel storage and loading area; and blockhouse and launch contractor ready room. At the present, no maintenance work is being done the umbilical tower. Rust is beginning to accumulate at the base of the gantry and at the principal connecting members of the structure. There has been some cannibalization of the ramp and gantry by the Air Force. Unless some maintenance is soon given to the umbilical tower, the structure will be lost through excessive rust.

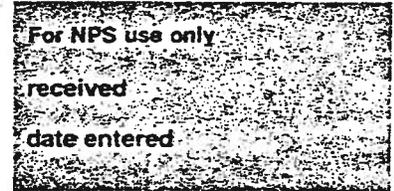
The blockhouse and other structures remain intact although the original equipment has largely been removed. At the present the Air Force plans to remove two large LOX (Liquid Oxygen) Storage tanks from the site.

Launch Complex 14 is the most significant and important of the Atlas Complexes. Launch Complex 14 was constructed in 1956 and 1957 to support the Atlas research and development program. It was subsequently modified to launch the Atlas-Able rocket and was the site of the NASA Pioneer lunar launch in November 1959. The pad was then assigned to NASA for use in the Project Mercury program. The Atlas-Big Joe flight, and all Mercury-Atlas manned and unmanned missions were launched from this site. After the completion of the Mercury program in 1964, Complex 14 was again modified to the Atlas-Agena configuration and served as the launch site for the Gemini-Agena target vehicles used in the Gemini program.

Complex 14 was basically designed to support Atlas "D" operations. Since the "D" model was used in Project Mercury, very minor modifications were necessary for this first man-in-space program. Modifications consisted of installation of the "white room" to house the spacecraft atop the service tower, inclusion of an egress tower, and changes to the internal configuration of the top of the gantry to accommodate the escape rocket tower. The environment of the "white room" was controled to minimize the effects of humidity and dust on the

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spacecraft components. The Emergency egress tower had an extending platform reaching to the door of the spacecraft as a means for astronauts to evacuate the spacecraft without external aid. In case of an incapacitated astronaut the external egress crew could use the tower.

Upon the successful completion of the Mercury program. Complex 14 was once again programmed for modifications, this time to support Atlas/Agna launches. Work in support of this program consisted of \$1.1 million in alterations which included dismantling the egress tower used in the John Glenn, Scott Carpenter, Wally Schirra, and Gordon Cooper flights and erecting a new 101-foot umbilical tower to handle Agna requirements. Also included in the work were modifications to the existing service tower; installation of a new liquid oxygen storage tank; and construction of launch pad facilities (an enclosure for a propellant transfer unit, additional cable trenches for Agna; Lockheed, and McDonnell equipment room; and a mechanical shop). The white room was modified to house Agna fuel and pressure servicing units for pre-launch checks of the spacecraft.

The complex consisted of a blockhouse, fuel and liquid oxygen storage, electrical power supplies, service tower, and the launch pad. All equipment necessary to check out each complex and launch vehicle system was in these facilities and all systems were validated before each launch operation.

The igloo-shaped blockhouse, about 750 feet from the launch pad, was "floated" in sand for structural protection against blasts. In construction, a large excavation was filled with sand and the reinforced concrete flooring and walls of the blockhouse were poured in two layers with a layer of sand between them. The sand was expected to absorb the shock if a launch vehicle should go awry and impact on or near the blockhouse. The inside walls of the 12-sided building were 10-1/2-feet thick at the base, with 40-feet of sand around them. At the apex of the dome the inside wall was 5-1/2 feet thick, with 10 feet of sand over it. The layer of sand was covered with a thin sheet of concrete to hold it in place. A retaining wall around the base also helped in holding the sand at this point. The inside diameter of the floor is 60-feet.

Liquid Oxygen (LOX) was stored in a 28,000-gallon steel tank which had an aluminum inner liner. To fuel the vehicle, the LOX flowed through stainless steel lines at 1600 gallons per minute -- flow control was maintained by 150 pounds per square inch air pressure. Fuel was stored in a 28,000 gallon tank which has an aluminum liner. To fuel the vehicle, the LOX flowed through stainless steel lines at 1600 gallons per minute. The flow control was maintained by 150 pounds per square inch air pressure and transferred by two pumps of 500 gallons per minute capacity.

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The service tower, a 145-foot-high steel structure with 14 movable decks, allowed maintenance access to the launch vehicle. The tower was mounted on rails which moved it to a rail-mounted transfer table which carried the structure to an area approximately 300 feet from the launch pad.

The launch pad was constructed of concrete and steel with a 20-foot ramp to the top. Inside were two levels containing hydraulic and pneumatic pressure units, electrical junctions and power supplies, equipment for pre-launch checkouts, landline instrumentation room, air-conditioning equipment, and shops. The launch pad had a hold-down capability -- two steel arms attached to the base of the vehicle were released through air pressure when sufficient thrust had been built up. Water deluge and spray systems were mounted at strategic locations for cooling purposes during launch. A water-cooled flame bucket used approximately 30,000 gallons of water per minute during engine operation. Complex 14 was deactivated in February 1967.¹⁴

The Blockhouse at Launch Complex 14 is abandoned and is in relatively good shape. The service structure was razed in December 1976 due to excessive rust and general deterioration. The launch stand was also demolished at the same time. Only a few steel skeleton support members remain intact. The concrete foundations of the pad are intact in good condition.

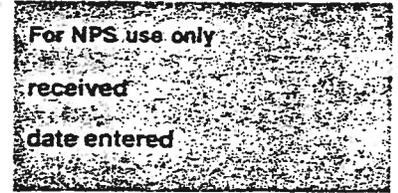
Launch Complex 19

Launch Complex 19 was constructed in 1959 to support the development and testing of America's large liquid fueled missiles and launch vehicles. On February 2, 1960, a Titan I ICBM flew off of complex 19 to mark the beginning of the Titan test program. Complex 19 later became the launch site for the Gemini Program. The Gemini Program marked the beginning of sophisticated, manned space flight--it was the intermediate step between the earlier Mercury flights and the manned Apollo missions to the moon. The invaluable experience of Project Mercury had shown that man could survive a rocket ride into space, that he could survive orbital flight, and that he could serve a useful function in space. Gemini expanded and refined these scientific and technological endeavors, adding a second crew member and a maneuverable spacecraft. With Project Gemini, whole new vistas opened for man.¹⁷

A total of 10 Gemini launches were flown from Complex 19 in 1965 and 1966. The complex consisted of a blockhouse, propellant farms, astronaut recovery area, water flumeway, and a launch stand containing the umbilical tower and erector/service tower. The stand was 65 feet wide, 450 feet long, and three stories high. The umbilical tower stood 102 feet tall.

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All electrical equipment has been salvaged from the pad. With the exception of the removal of the umbilical tower and launch stand the remainder of the complex retains much of its integrity. Near complex 14 is the Project Mercury Monument. This 13 foot high astronomical symbol for the Planet Mercury made of stainless steel stands to honor those astronauts who took the initial steps that led to man's first footsteps on the moon. The monument was dedicated in 1964. There is a time capsule buried beneath the monument which is to be opened in the year 2464. It contains reports, photographs, motion pictures and other memorabilia.

At the entrance way to the launch ramp at complex 14 is a monument to John Glenn, the first American to orbit the Earth on February 20, 1962.

The service tower at Complex 19 was simply laid down as if on a gigantic hinge. After each launch, maintenance men converged en masse to repair burned facilities.

Repairs were needed in spite of a built-in cooling system which sent 23,500 gallons of water per minute through the flame bucket. During launch, 32,000 gallons per minute came from 80 water nozzles for fire safety purposes. A "skimming basin" near the base of the stand was able to hold half a million gallons of water. The two-story blockhouse is 156 feet in diameter, 50 feet tall, and has 20-foot thick walls. There is a cableway tunnel 650 feet long between the blockhouse and the launch stand. A fuel storage area is 440 feet northeast of the test stand and an oxidizer farm is 330 feet south of the thrust mounts. A decontamination building is 545 feet southwest of the test stand. Site plans and maps for Launch Complex 19 can be found in Appendix G at the rear of this report.

The blockhouse at Complex 19 is in good shape. The launch stand shows heavy corrosion on the support structures and is probably beyond the point of repair. The launch ramp is also heavily rusted and essentially unsafe. The erector service tower is currently laying on its side and also suffers from heavy rust and corrosion and is probably beyond repair. The umbilical tower was salvaged in 1977. Electrical equipment and fuel tanks have been removed. All other facilities are largely intact. Because of the preservation of many of the support buildings and the pad and blockhouse, the integrity of Complex 19 is largely intact.

Launch Complex 34

Launch Complex 34 was constructed in 1959 to support the flight testing program for the Saturn I and Saturn IB launch vehicles. Launch Complex 37 was constructed in 1961 for the same purpose. A total of 15 Saturn vehicles (I and IB) were successfully launched from these two complexes.

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To accomplish the manned moon landing mission, NASA, of necessity, incorporated a "steppingstone" approach leading to the development, testing, and ultimate accomplishment of manned lunar landings. The Saturn Program was divided into two "blocks" with interrelated phases: Block I--launch, abort, suborbital, and earth orbital phases; Block II--earth orbital and lunar orbital phases.

Three vehicles were developed as part of the steppingstone approach--the two-stage Saturn I, the intermediate two-stage Saturn IB, and the advanced three-stage Saturn V. Saturns I and IB were flight tested from Complexes 34 and 37. Saturn V was launched from Complex 39.¹⁸

Launch Complex 34 was the site of the fire that took the lives of astronauts Gus Grissom, Edward White, and Roger Chaffee on January 27, 1967. Complex 34 was a major facility designed to service the Saturn I vehicle. A description of the complex is given below. Site plans and drawing of the complex can be found in Appendix H at the rear of this report.

Launch Complex 34 facilities include the following:

LAUNCH CONTROL CENTER

The launch control center has approximately 10,000 square feet of protected floor space on two levels and an additional 2,150 square feet of unprotected space in an equipment room which is not occupied during launchings. It is a domed building, 120 feet in diameter. The inner dome is of reinforced concrete, five feet thick.

On top of the inner dome is an earth fill which varies from seven feet in the center to 14 feet at the edges. The final layer is four inches of concrete. The main entrance door weighs 23 tons. The building was designed to withstand a blast pressure equivalent to the explosion of 50 kilotons of TNT at a distance of 50 feet.

The first floor of the building was used by booster and upper stage contractor personnel involved in tracking and telemetry.

Launch supervision and various monitoring and recording panels are on the second floor. A small observation room is separated by glass from the operating area. Pre-launch activities in the area can be viewed from an observation balcony on top of the control building.

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SERVICE STRUCTURE

The service structure was used to erect and check out the vehicle on the launch pedestal. The structure was 310 feet high and weighed 2,900 tons. The center opening in which the vehicle was situated was 56 feet wide.

Each leg of the service structure housed a two-floor building containing operating and checkout equipment. In addition, each leg had a work deck, seven fixed platforms at various elevations, and five movable horizontally-retracting platforms which could be adjusted to embrace the vehicle at any desired level.

It was mounted on four carriages which were powered by four, 100-horsepower electric motors. Anchored to steel piers by hydraulically operated steel pins, the structure and protected vehicle could withstand wind forces up to 125 miles per hour.

After completion of checkout, the structure was moved to a parking area approximately 600 feet from the launch pedestal. Its movement was controlled by a single operator situated in a cab at the 27-foot level. It was capable of moving from 1 1/2 to 40 feet per minute.

LAUNCH PAD

The launch pad, 430 feet in diameter, was constructed of reinforced concrete, eight inches thick. In the vicinity of the flame deflector the pad was paved with refractory brick to protect it from heat. The pad has a perimeter flume for drainage of surface water and possible propellant spillage.

PEDESTAL

In the center of the launch pad, the pedestal was used to support and retain the vehicle during checkout and firing. It is 42-foot square and 27 feet high. Bolted to the structure at the top of the pedestal were eight steel arms, four for support only, and four to support and restrain the vehicle until proper engine operation has been achieved. The arms were automatically controlled during the launch sequence.

The foundation of the pedestal is a concrete block 106 feet by 160 feet; four feet thick at the outer edges and eight feet thick at the center.

DEFLECTOR

The rail-mounted, two-way blast deflector was constructed of steel. During launch, it was used to deflect the engine flame into controlled directions. While not in use it was parked on rails adjacent to the pedestal.

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UMBILICAL TOWER

The umbilical tower adjacent to the launch pedestal was used to provide electrical, hydraulic, and pneumatic lines to the vehicle. It was 24 feet square at the base and 240 feet high. Hydraulically controlled swing arms connect the umbilical tower to the vehicle, and swing out of the way during launch.

AUTOMATIC GROUND CONTROL STATION

Beneath a large portion of the launch pad was the automatic ground control station which served as a distribution point for all measuring and checkout equipment, power, and high-pressure gas. It is 215 feet long and 38 feet wide. Cables from the automatic ground control station were fed to the launch control center through a roofed cableway.

FUEL FACILITY

The RP-I fueling facility consisted of storage and transfer equipment, protective revetments, foundation, and partial weather protection. In the event of a tank rupture, the revetments and wall retained the fuel.

Two 30,000-gallon cylindrical tanks were used for fuel storage. The transfer system and associated plumbing consisted of 1,000-gallon-per minute pumps, a circulation pump, filter-separator unit, eductor system, miscellaneous valves, piping, controls, and support pad. The transfer system was automated and was controlled from the launch control center.

LIQUID OXYGEN SYSTEM

There were two liquid oxygen (LOX) storage tanks approximately 650 feet from the launch pedestal and well-removed from the fuel facility. The main tank had an inner and outer sphere with an outside diameter of 43 feet. The spheres were separated by four feet of "perlite," a mineral insulating powder. A smaller liquid oxygen tank was used for replenishing the oxygen which boils off during the latter stages of launch preparation. Vacuum insulation insured low evaporation loss.

An earth revetment protects the LOX facility on the side facing the launch pedestal.

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LIQUID HYDROGEN FACILITY

The liquid hydrogen facility consisted of a vacuum jacketed spherical tank, pneumatic and electrical consoles, and necessary plumbing and valves. Liquid hydrogen with a very low boiling point and high flammability, required special handling and storage techniques.

HIGH PRESSURE GAS FACILITY

High-pressure helium and nitrogen gases were required for the vehicle. Helium was supplied at 3,000 pounds per square inch (p.s.i.) pressure and boosted to 6,000 p.s.i. Nitrogen was supplied in liquid form and was converted to gas before it entered the vehicle. Helium was used for bubbling the LOX tanks of the booster to keep the LOX from forming strata of different temperatures. Nitrogen was used for purging fuel and LOX lines, engine and instrument compartments, and operating certain pneumatic components.

SKIMMING BASIN:

The skimming basin, about 300 feet from the edge of the pad, is a concrete paved vat 104 feet by 180 feet. It was used to collect fluids spilled on the pad, thus preventing them from entering normal Cape drainage canals.

WATER SYSTEM:

Primarily as a safety measure, a water system was installed on the pad and throughout the service structure. Water was available at all work levels on the tower for fire protection. There was a pad flush system to wash away any spilled fuel. At the pedestal there was a quenching system for use in case fire occurred accidentally in the launch vehicle "boattail" or engine compartment. This system was also used to extinguish flame in the engine compartment if engines were cut off immediately after ignition and before lift-off. Four 3,500-gallon-per-minute nozzles are installed at the pad surrounding the vehicle as a general protection measure.

OPERATIONS SUPPORT BUILDING

The operations support building contains about 30,000 square feet of floor space. It was used for general shop and engineering activities in direct support of launch operations.

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CAMERA STATIONS

Camera stations were around the launch pedestal to permit remote controlled photographic coverage of launch operations.

COMMUNICATIONS SYSTEMS

A comprehensive voice communications network, consisting of approximately 200 stations, is installed throughout the 45-acre site. A closed circuit television loop is also used for monitoring, checkout, and observing launch.¹⁹

CURRENT CONDITION

The Service Structure and umbilical tower at Complex 34 were salvaged between 1970 and 1972. The Blockhouse is in good condition and contains some of its original electrical equipment. The launch stand is in place and in a good state of preservation. Most of the other permanent structures are in place. Complex 34 is abandoned and retains much of its integrity.

Original Mission Control Center

In addition to the above cited launch pads, the original Mission Control Center contributes to the National Significance of Cape Canaveral Air Force Station. This center at the Cape was used for all Mercury flights and the first three Gemini flights. The center took over flight control when the rocket left the pad, and followed through until splashdown. This function was transferred to the new mission control center at the Johnson Space Center in Houston, Texas, after Gemini III.

The mission control center supported checkout, launch control, tracking, and astronaut training for the Mercury and early flights in the Gemini program.

The TWA bus tour now includes a stop at the original mission control center. A narrative tape and lighted consoles are used to interpret the facility.

8. Significance

Period	Areas of Significance—Check and justify below			
<input type="checkbox"/> prehistoric	<input type="checkbox"/> archeology-prehistoric	<input type="checkbox"/> community planning	<input type="checkbox"/> landscape architecture	<input type="checkbox"/> religion
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> archeology-historic	<input type="checkbox"/> conservation	<input type="checkbox"/> law	<input checked="" type="checkbox"/> science
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> agriculture	<input type="checkbox"/> economics	<input type="checkbox"/> literature	<input type="checkbox"/> sculpture
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> architecture	<input type="checkbox"/> education	<input type="checkbox"/> military	<input type="checkbox"/> social/
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> art	<input checked="" type="checkbox"/> engineering	<input type="checkbox"/> music	<input type="checkbox"/> humanitarian
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> commerce	<input type="checkbox"/> exploration/settlement	<input type="checkbox"/> philosophy	<input type="checkbox"/> theater
<input checked="" type="checkbox"/> 1900-	<input checked="" type="checkbox"/> communications	<input type="checkbox"/> industry	<input type="checkbox"/> politics/government	<input type="checkbox"/> transportation
		<input type="checkbox"/> invention		<input checked="" type="checkbox"/> other (specify) Space Exploration
Specific dates	1949-Present	Builder/Architect	United States Air Force, NASA	

Statement of Significance (in one paragraph)

Cape Canaveral Air Force Station is nationally significant because of its association with the Space Program of the United States. Its association with the Space Program of the United States is divided into two areas. These are the unmanned scientific exploration of space and near-space and earth environment; and the manned space program that resulted in the landing of Americans on the surface of the moon in 1969. Tentatively, Canaveral is also nationally significant because of its association with the missile testing program of the United States. A final determination of Cape Canaveral's national significance in this area must be deferred until completion of a comprehensive space theme study is done because there are other missile testing facilities around the country that have not been evaluated. A brief history of Cape Canaveral Air Force Station and its association with the manned and unmanned space program follows:

During World War II the United States began to build upon the work of Dr. Robert Goddard and others to develop increasingly sophisticated rockets. The need for research in this area was made apparent to all Americans when in the closing months of World War II German V-2 missiles were launched against Great Britain. These rockets carried a warhead of 1,000 pounds of TNT and reached an altitude of 60 miles and a range of 200 miles. The V-2 held the promise of designing a rocket that could span the oceans and reach the United States.

In America, missile proving grounds were established at the artillery testing facilities at Dahlgren, Virginia, and Indian Head, Maryland. By 1944 these two facilities had been replaced by the Alleghany Ballistics Laboratory (ABL) at Pinto West Virginia. In the West, the military missile effort utilized the Mojave Antiaircraft Artillery Range at Camp Irwin, California, which was soon replaced by the more famous adjacent Goldstone Lake. The need for additional missile testing facilities led to the establishment of two new missile proving grounds in the summer of 1943 at the Marine reservation of Camp Pendleton, California, and the Naval Ordnance Test Station (NOTS) at Inyokern, California. Additional missile testing were also established at the White Sands Missile Test Range in New Mexico to take advantage of the area's good weather and low population.

When Operation Paperclip brought many of the German rocket scientists to the United States, the Peenemunde range instrumentation was also transferred. Yet, within a year of the war's end United States missile ranges had already modified, and gone beyond, the two World War II technologies.²⁵

On May 29, 1947, a V-2 went out of control, traveling only 47 miles, but landing near Juarez, Mexico. This flight together with the size constraints of America's largest missile range expedited the recommendations of the Committee on Long-Range

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Missile Proving Grounds of the Joint Research and Development Board of the War Department. Within a month the committee responded with four proposed locations to permanently solve the missile range size problem.

To avoid impringing on populated areas, a consideration which originally brought Goddard to New Mexico, the committee used the Peenemunde approach--sea ranges. The principal problem with sea ranges which would eventually extend for thousands of miles was the location of permanent tracking facilities. Although ships could be used in open seas, the committee preferred chains of islands and other land masses at this early point in range history. The other Goddard consideration, favourable weather, also played a decisive role.

The selection of a launch facility in Washington State with tracking facilities along the Aleutian chain was relegated to fourth choice because of its adverse climate, while the possibility of expanding the Naval Air Missile Test Center at Point Mugu, California, across the Pacific was relegated to third choice because of the lack of nearby land masses for tracking sites. This left the first choice, a launch site at the El Centro, California Naval Air Station, with tracking facilities on either side of the flight path down the Gulf of California to the South Pacific; and the second choice, a launch site on Cape Canaveral 18 miles north of the existing Banana River Naval Air Station with tracking facilities on the British owned Bahama Islands. The first choice was abandoned after negotiations with the President of Mexico in December 1947 failed to secure sovereignty rights for tracking stations. Great Britain was more cooperative, and the Florida choice became the first long-range proving ground. The range of the missiles being tested may have caused the selection of a sea range, but the need for tracking stations provided the specific key for its location.²⁶

Thus by 1947, Cape Canaveral was selected as the launch center and the Banana River Naval Air Station 16 miles to the south was selected as the support base. In the same year, the responsibility for developing the Range was given to the newly constituted Department of the Air Force and Brig. Gen. W.L. Richardson was named to direct the project.

During the next few years land was acquired at the Cape for launch operations and on islands in the Bahamas and West Indies for tracking sites. In May 1949, President Harry S. Truman had signed legislation which officially established the "Joint Long Range Proving Ground." In 1950, construction of the first missile launching pads and support facilities at the Cape, and tracking facilities at the downrange sites, was begun. In 1949, the Banana River Naval Station

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was reactivated as the headquarters and support base for the Proving Ground, and in August 1950 the installation was formally named Patrick Air Force Base. Between 1949 and 1974 the name of the launching areas was changed five times by either general or special orders:

- 1949 Cape Canaveral
- 1950 Operating Subdivision #1
- 1951 Cape Canaveral Auxiliary Air Force Base
- 1955 Cape Canaveral Missile Test Annex
- 1964 Cape Kennedy Air Force Station
- 1974 Cape Canaveral Air Force Station

During the same time period, the name of the Range was also redesignated three times:

- 1949 Long Range Proving Ground
- 1952 Florida Missile Test Range (unofficial)
- 1958 Atlantic Missile Range
- 1964 Eastern Test Range

The first facilities constructed at CCAFS were technologically austere in comparison to present day facilities. In many instances engineering followed or modified facility designs standardized for military installations which later proved limited in keeping up with the technical demands of rapidly moving and sometimes dynamic missile developments. By the early 1960s, launch and support facilities were developed with a greater degree of flexibility to support operational changes and follow-on-programs including the first manned orbital space flights.

The first missile, a German V-2 rocket with an Army WAC Corporal second stage, was launched from the Cape on July 24, 1950. During the next three years facilities were constructed for the testing of cruise-type missile weapons including the Matador, launched in 1951 and later the Snark and Bomarc. After 1953, facility construction was primarily limited to that needed to support the IRBM and ICBM missile programs. In August 1961, a large section of Merritt Island three miles west and across the Banana River from CCAFS, was officially selected as the launch center for the Manned Lunar Landing Program. During the land acquisition and development phase of the John F. Kennedy Space Center (KSC), NASA built and/or modified a number of existing Air Force launch and support facilities at CCAFS to carry out manned and unmanned space programs.

Two of the largest and most advanced launch facilities built at CCAFS by NASA were Saturn IB Complexes 34 and 37. The first launching of the Saturn space vehicle took place on October 27, 1961. In the following years, the complexes

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served to launch the first series of the three-man Apollo space flights. In 1972 these two complexes were declared excess by NASA and dismantling began the same year.

In 1962, CCAFS was selected to support the Air Force Titan III Program. Because of safety considerations and the size of the area required to satisfy operational concepts, the facilities could not be located on the station proper. As a result, the facilities were constructed on land pumped up in the Banana River about a mile from the west shoreline of the station.

The Titan III Program sparked a new and major era at the station in construction, missile handling technology, engineering, and launching techniques. The Titan III Integrate-Transfer-Launch (ITL) System involves a three-stage procedure which provides for off-pad assembly of the missile, integration of the boosters, payload and checkout, and, finally, rail transport to Complex 40 or 41 for launching. The Titan III facilities were completed in 1964 and in addition to two launch complexes and special assembly buildings, included the first rail line connection to CCAFS. Since then, construction projects have provided for modifications to various existing complexes and other facilities, additional storage, assembly and checkout buildings, and a new central heating plant in the Industrial Area. The most recent major construction consisted of a new deep draft turn basin and wharf facility for the Navy Trident Program.

By 1966, activities at the station had reached their apogee and the years following saw a gradual decline in most phases of operations. Launch complexes and support buildings which had served their purposes and were neither adaptable to other uses or economically maintainable were deactivated or put on standby. Similarly, facilities transferred to NASA during the early 1960s are gradually being returned to the Air Force.²⁷

The development of Cape Canaveral Air Force Station as a missile test center and space center has produced an installation that is unique with respect to other Air Force installations. It was at Cape Canaveral that man constructed the facilities that made possible the Mercury, Gemini, and Apollo manned space programs.

Launch complexes 5, 6, 14, 19, 26, 34, 37, and the original mission control room are directly linked to this aspect of the space program.

It was at Cape Canaveral that America developed the facilities to launch scientific payloads into space that have greatly accelerated the knowledge of the earth and its weather and resources, the sun and planets, and the universe in general. Such programs as the Voyager, Mariner, Ranger, Viking, Pioneer,

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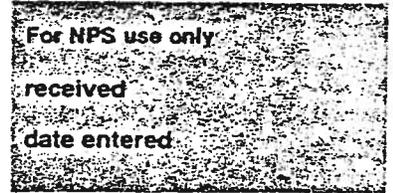
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Telstar, Tiros, Westar, and many others were launched from complexes, 5, 6, 11, 12, 13, 17, 18, 36, 37, 40, and 41. These satellites were launched almost exclusively from Cape Canaveral. As America's Spaceport, Cape Canaveral, is without qualification, of national significance.

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FOOTNOTES

¹Pan American World Airways, Inc., Basic Information Guide, Cape Canaveral (Patrick Air Force Base Florida: Aerospace Services Division, 1981). p. 1.

²Ibid., p. 7.

³Ibid., pp. 5-70.

⁴David L. Skinner, "United States Missile Ranges: Origin and History" Spaceflight, February, 1978, pp. 96-97.

⁵For a listing of other sites associated with the space program see Butowsky, et. al. Man in Space (Denver, National Park Service, 1981).

⁶Butowsky, p. 46.

⁷Butowsky, p. 46.

⁸U.S. Army Corps of Engineers, History of the Canaveral District 1950-1971 (South Atlantic Division, 1971), p. 11.

⁹State of Florida, Department of State, "Master Site File, Air Force Space Museum," Tallahassee, 1972, p. 5.

¹⁰For a complete listing of materials and artifacts located at the Air Force Space Museum see Appendix C at the rear of this report.

¹¹Butowsky, p. 46.

¹²Ibid., pp. 63-64.

¹³United States Air Force and Pan American World Airways, Inc. From Sand to Moondust. (Cape Kennedy, no date), p. 41.

¹⁴United States Air Force, Fact Sheet Complex 14 (Patrick AFB, Florida., Public Affairs, Eastern Space and Missile Center, no date).

¹⁵National Aeronautics and Space Administration, Technical Facilities Catalog Vol. 11 (Washington, D.C. 1974). p. 9-145.

¹⁶From Sand to Moondust, p. 35.

¹⁷Ibid., p. 45.

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¹⁸Ibid., p. 49.

¹⁹National Aeronautics and Space Administration, Launch Complex 34 (John F. Kennedy Space Center, no date), pp. 4-13.

²⁰Kennedy Space Center Historical Note, "Utilization of Cape Kennedy Launch Complexes" (Unpublished Report, Kennedy Space Center, 1972), pp. 9-10.

²¹Technical Facilities Catalog, 1974, p. 9-147.

²²National Aeronautics and Space Administration, Launch Complex 37 Facilities, (John F. Kennedy Space Center, 1968)

²³From Sand to Moondust, p. 54.

²⁴Butowsky, pp. 51-56.

²⁵Skinner, p. 91.

²⁶Ibid., p. 92.

²⁷U.S. Air Force, Cape Canaveral Air Force Station, Eastern Test Range, Comprehensive Plan Revision, (Brevard County, Florida: Pan American World Airways, 1977). pp. 1-2.

²⁸Skinner, pp. 96-97.

9. Major Bibliographical References

SEE CONTINUATION SHEET

10. Geographical Data

Acreeage of nominated property 132.5

Quadrangle name Cape Canaveral, False Cape

Quadrangle scale 1:24,000

UMT References

A

1	7	5	3	8	7	3	0	3	1	6	2	3	2	0
Zone			Easting				Northing							

B

1	7	5	4	2	1	4	0	3	1	6	0	0	8	0
Zone			Easting				Northing							

C

1	7	5	4	6	7	6	0	3	1	4	1	4	1	0
Zone			Easting				Northing							

D

1	7	5	4	0	0	0	6	3	1	4	2	1	6	0
Zone			Easting				Northing							

E

1	7	5	3	7	8	8	0	3	1	4	2	7	2	0
Zone			Easting				Northing							

F

1	7	5	4	0	3	6	0	3	1	5	4	4	6	0
Zone			Easting				Northing							

G

1	7	5	3	8	8	0	0	3	1	5	5	3	0	0
Zone			Easting				Northing							

H

Zone			Easting				Northing							

Verbal boundary description and justification

SEE CONTINUATION SHEET

List all states and counties for properties overlapping state or county boundaries

state code county code

state code county code

11. Form Prepared By

name/title History Division National Park Service/United States Air Force

organization National Park Service

date September 1, 1983

street & number Division of History

telephone 343-8168

city or town Washington, DC 20240

state

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

national state local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title

date

For NPS use only

I hereby certify that this property is included in the National Register

date

Keeper of the National Register

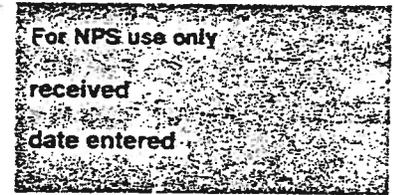
Attest:

date

Chief of Registration

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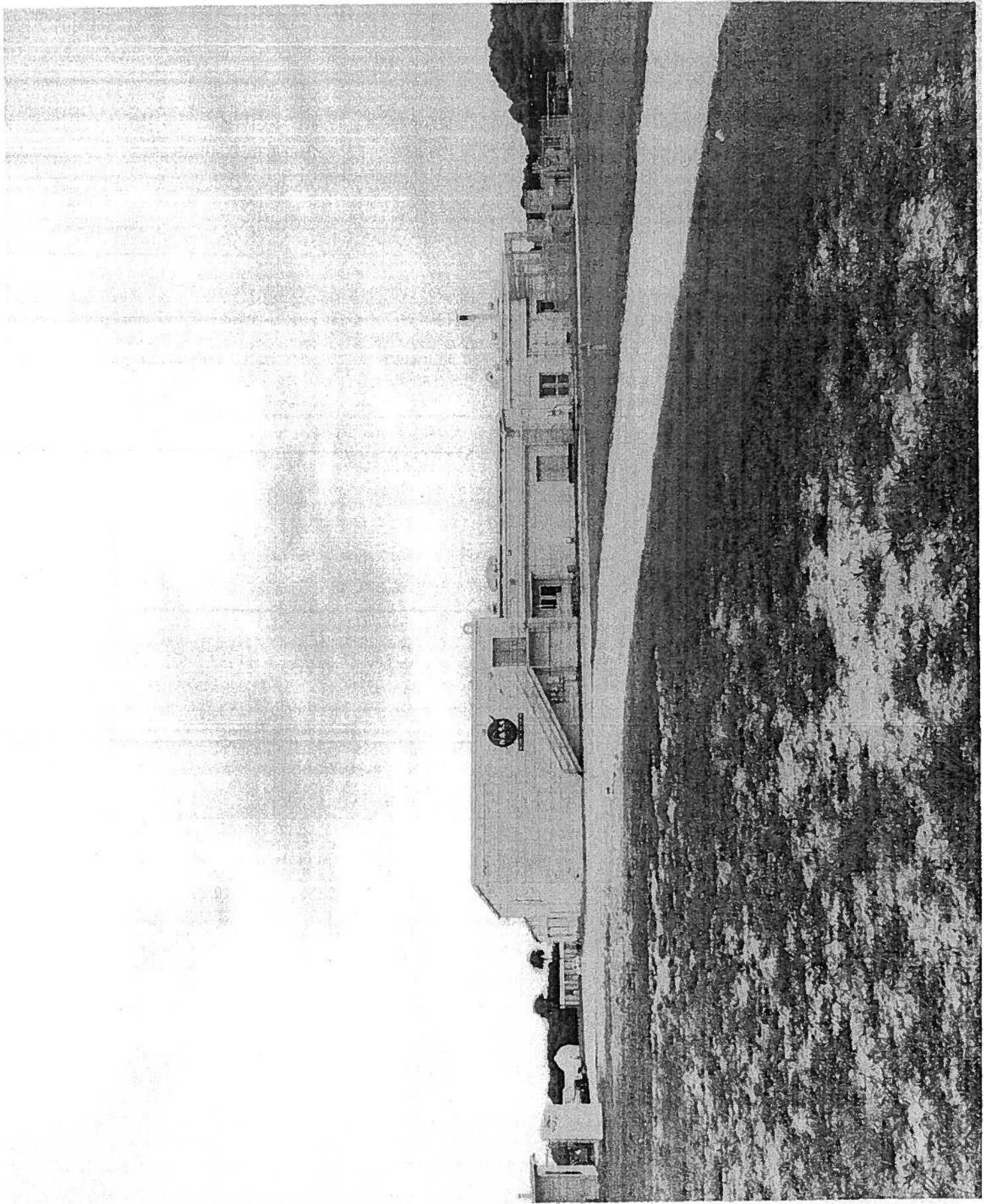
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At the direction of the Secretary of the Interior's Advisory Board the boundary of the National Historic Landmark District shall include only the area immediately surrounding Launch Pads 5, 6, 13, 14, 19, 26, 34, and the Original Mission Control Center. The exact location of these boundaries are shown on the map attached to the end of this report. The above site UTM coordinates are the general coordinates for Cape Canaveral Air Force Station.



**APPENDIX B: NASA Facilities Located Within the
Cape Canaveral Air Force Station**

FACILITY NO.	CURRENT USE	HISTORIC USE (if known)	YEAR	NRHP ELIGIBILITY
05603	GN2 Metering Building/LC-36B			Not Eligible
15530	Pond Contam. Liq./LC-20		1959	Not Eligible
15730	Storage Facility LC-19		1959	Designated NHL
15830	Pond Contam. Liq./LC-19		1959	Designated NHL
17750	Launch Silo 31-B		1960	Eligible
17751	Launch Silo 32-B		1960	Eligible
19015	Nitro Tube Bank Fill Stat/LC-19		1976	Designated NHL
29181	GN2 Metering Building/LC-41(?)			Not Eligible
33014	GN2 Metering Building/LC-37(?)			Not Eligible
41905	GN2 Metering Building/LC-40(?)			Not Eligible
1037	Non-Hazardous Storage		1956	Not Eligible
1039	Storage Building		1963	Not Eligible
1040A	Drum Equipment Storage		1955	Not Eligible
1040C	Drum Equipment Storage		1955	Not Eligible
1042	Equipment/K-Bottle Storage		1955	Not Eligible
1044	Fuel Storage Pump Station		1955	Not Eligible
1046	Hydrocarbon Fuel Storage area		1955	Not Eligible
1047	Administrative Control Bldg.		1955	Not Eligible
1050A	Chemical Waste Building		1955	Not Eligible
1050B	Chemical Waste Facility		1955	Not Eligible
1051	Passivation Building		1957	Not Eligible
1052	Hydrogen Peroxide Storage		1955	Not Eligible
73720	Hot Tanker Maintenance Facility		1996	Not Eligible
77602	Helium Bottle Shed		1992	Not Eligible

NASA Facilities Located Within the Cape Canaveral Air Force Station.



FACILITY NO.	CURRENT USE	HISTORIC USE (if known)	YEAR	NRHP ELIGIBILITY
77609	Sentry House		1964	Not Eligible
77610	Solvent Storage Facility		1958	Not Eligible
77611	Hypergolic Fuel Drum Storage Facility		1958	Not Eligible
77615	JP-5 Storage (Tank #5)		1955	Not Eligible
77616	JP-5 Storage (Tank #4)		1955	Not Eligible
77617	JP-5 Storage (Tank #3)		1955	Not Eligible
77618	RP-1 Storage (Tank #2)		1958	Not Eligible
77619	RP-1 Storage (Tank #1)		1958	Not Eligible
80520	Hypergolic Oxid Eqp Safing Bldg		1962	Not Eligible
80541A	Nitrogen Tank (South)		1973	Not Eligible
80541B	Nitrogen Tank		1973	Not Eligible
80541C	Nitrogen Tank		1973	Not Eligible
80541D	Nitrogen Tank (North)		1973	Not Eligible
80700	Hypergolic Fuel Eqp Safing Fac.		1962	Not Eligible
1207	Camera Pads/LC 5/6		1955	Designated NHL
1207	Secondary Overhead/LC 5/6		1955	Designated NHL
1207	Secondary Underground/LC 5/6		1955	Designated NHL
1207	Roads/LC 5/6		1955	Designated NHL
1207	Security Fence/LC 5/6		1955	Designated NHL
1207	Sewage Disposal System/LC 5/6		1955	Designated NHL
1207	Storm Drainage System/LC 5/6		1955	Designated NHL
1207	Vehicle Parking/LC 5/6		1955	Designated NHL
1207	Water Distribution System/LC 5/6		1955	Designated NHL
1207A	Blockhouse/LC 5/6		1955	Designated NHL

NASA Facilities Located Within the Cape Canaveral Air Force Station.



FACILITY NO.	CURRENT USE	HISTORIC USE (if known)	YEAR	NRHP ELIGIBILITY
1207B	Launch Pad 5		1955	Designated NHL
1207C	Launch Pad 6		1955	Designated NHL
1207E	Pad Service Building/LC 5/6		1955	Designated NHL
1207F	Electrical Distribution Bldg./LC 5/6		1955	Designated NHL
1207G	Ready Room/LC 5/6		1955	Designated NHL
1207H	High Pressure Air Bldg./LC 5/6		1955	Designated NHL
1207J	Generator Building/LC 5/6		1955	Designated NHL
1207M	Emergency Power Building/LC 5/6		1955	Designated NHL
1207S	Septic Tank/LC 5/6		1955	Designated NHL
1207W	Water Well N/Pot/LC 5/6		1955	Designated NHL
1385	Administrative Building	Mission Control Center	1958	Designated NHL
1726	Hangar "S"	Missile Assembly Building "S"	1958	Not Eligible
1728	Hangar "N"	Hangar "N"	1958	Not Eligible
1732	Hangar "L"	Hangar "L"	1956	Not Eligible
21900H	Engineering Support Building/LC-34		1961	Designated NHL
21917	Hazardous Waste Storage Shed/LC-34		1994	Designated NHL
21918	Hazardous Waste Storage Shed/LC-34		1994	Designated NHL
21919	Hazardous Waste Storage Shed/LC-34		1994	Designated NHL
49635	Dispensary		1965	Not Eligible
54905	Paint Storage Bldg. - Hangar "L"		1957	Not Eligible
54906	Boiler Building		1987	Not Eligible
54926	Waste Staging Building		1994	Not Eligible

NASA Facilities Located Within the Cape Canaveral Air Force Station.



FACILITY NO.	CURRENT USE	HISTORIC USE (if known)	YEAR	NRHP ELIGIBILITY
54928	Little "N" Storage Bldg.		1958	Not Eligible
54945	Hazardous Waste Stag. Shelter		1986	Not Eligible
55005	Hangar "M" Annex		1963	Not Eligible
60425	Pressure Proof Test Cell		1958	Not Eligible
60505	Operations Equipment Storage Bldg./ Little "L"		1956	Not Eligible
60540	Solar Array Test Building		1966	Not Eligible
60541	Motor Generator Shelter		1977	Not Eligible
60630	POL Facility		1983	Not Eligible
60640	Payload Cont. & GSE Stor. Bldg.		1985	Not Eligible
60650	Engineering & Operations (E & O) Building	E & O Building	1961	Not Eligible
60680	Missile Assembly Bldg. "AE"	Spacecraft Assembly and Checkout Building (AE)	1959	Not Eligible
60687	Ozone Treatment Facility		1994	Not Eligible
66200	Paint Storage Building		1957	Not Eligible
66220	Emergency Breathing Equip. Maint. Building	In 1966, Pyrotechnics/ H ₂ O ₂ Building; In 1974 Passivation Building/Scape Suit Maintenance Facility	1960	Not Eligible
66221	Life Supp. Equip. Storage Bldg.		1988	Not Eligible
66232	Range Contractor Shop		1986	Not Eligible
66235	NASA Support Office		1960	Not Eligible
66237	Hazardous Waste Stag. Shelter		1985	Not Eligible
66238	Hazardous Waste Stag. Shelter		1985	Not Eligible

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FACILITY NO.	CURRENT USE	HISTORIC USE (if known)	YEAR	NRHP ELIGIBILITY
66240	High Pressure Wash Bldg. (SRB)		1979	Not Eligible
66242	First Wash Building (SRB)		1979	Not Eligible
66244	SRB Recovery Slip		1979	Not Eligible
66249	Thrust Vector Con Desvc Bldg.		1985	Not Eligible
66250	SRB Recovery Bldg. Hangar "AF"	Hangar AF	1963	Not Eligible
66251	High Pressure Gas Building		1963	Not Eligible
66257	Boiler Building		1966	Not Eligible
66295	Barge Unloading Facility		1961	Not Eligible
66310	SRB Paint Building		1984	Not Eligible
66320	Robot High Pressure Wash Bldg.		1987	Not Eligible
66330	Warehouse		1963	Not Eligible
66336	Waste Storage Facility		1996	Not Eligible
66340	Multi-Media Blast Facility		1992	Not Eligible
90326	Admin. OFC, Non-AF		1964	Not Eligible
90327	Admin. OFC, Non-AF		1964	Not Eligible
90328	Theater, BSE		1964	Not Eligible
90329	Admin OFC, Non-AF		1964	Not Eligible

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