

United States Department of the Interior  
National Park Service

# National Register of Historic Places Registration Form

LISTED ON:	
VLR	12/15/2011
NRHP	6/27/2012

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).

### 1. Name of Property

historic name NASA Langley Research Center (LaRC) Historic District  
other names/site number 114-5313

### 2. Location

street & number Bordered roughly by Wythe Creek Road, Commander Shepard Boulevard, Brick Kiln Creek, Langley Air Force Base  not for publication  
city or town Hampton  vicinity  
state Virginia code VA county Independent City code 650 zip code 23681

### 3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this  nomination  request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property  meets  does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

national  statewide  local

See continuation sheet

Signature of certifying official \_\_\_\_\_ Date \_\_\_\_\_

Title \_\_\_\_\_ State or Federal agency/bureau or Tribal Government \_\_\_\_\_

In my opinion, the property  meets  does not meet the National Register criteria.

[Signature] \_\_\_\_\_ Date 2/28/12 \_\_\_\_\_  
Signature of commenting official \_\_\_\_\_

6th PD \_\_\_\_\_ Virginia Department of Historic Resources \_\_\_\_\_  
Title \_\_\_\_\_ State or Federal agency/bureau or Tribal Government \_\_\_\_\_

### 4. National Park Service Certification

I, hereby, certify that this property is:

- entered in the National Register  determined eligible for the National Register
- determined not eligible for the National Register  removed from the National Register
- other (explain:) \_\_\_\_\_

Signature of the Keeper \_\_\_\_\_ Date of Action \_\_\_\_\_

**5. Classification**

**Ownership of Property**  
 (Check as many boxes as apply)

**Category of Property**  
 (Check only **one** box)

**Number of Resources within Property**  
 (Do not include previously listed resources in the count.)

<input type="checkbox"/>	private
<input type="checkbox"/>	public - Local
<input type="checkbox"/>	public - State
<input checked="" type="checkbox"/>	public - Federal

<input type="checkbox"/>	building(s)
<input checked="" type="checkbox"/>	district
<input type="checkbox"/>	site
<input type="checkbox"/>	structure
<input type="checkbox"/>	object

<b>Contributing</b>	<b>Noncontributing</b>	
136	85	buildings
0	0	sites
13	12	structures
0	0	objects
149	97	<b>Total</b>

**Name of related multiple property listing**  
 (Enter "N/A" if property is not part of a multiple property listing)

**Number of contributing resources previously listed in the National Register**

N/A

3

**6. Function or Use**

**Historic Functions**

(Enter categories from instructions)

EDUCATION/research facility

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GOVERNMENT/government office

---

GOVERNMENT/public works

---

GOVERNMENT/fire station

---

INDUSTRY/communications facility

---

TRANSPORTATION/air related

---

DEFENSE/air facility

---

OTHER

---

**Current Functions**

(Enter categories from instructions)

EDUCATION/research facility

---

GOVERNMENT/government office

---

GOVERNMENT/public works

---

GOVERNMENT/fire station

---

INDUSTRY/communications facility

---

TRANSPORTATION/air related

---

DEFENSE/air facility

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## 7. Description

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### Architectural Classification

(Enter categories from instructions)

OTHER/Stripped Classicism, Industrial

MODERN MOVEMENT/International Style,  
Brutalism

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### Materials

(Enter categories from instructions)

foundation: CONCRETE; BRICK; METAL/steel

walls: BRICK; CONCRETE; METAL/steel,

aluminum

roof: OTHER/built-up; METAL/steel, aluminum

other: CONCRETE

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## Narrative Description

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(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with a **summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

### Summary Paragraph

See Continuation Sheets.

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## Narrative Description

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See Continuation Sheets.

**8. Statement of Significance**

**Applicable National Register Criteria**

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B Property is associated with the lives of persons significant in our past.
- C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D Property has yielded, or is likely to yield, information important in prehistory or history.

**Criteria Considerations**

(Mark "x" in all the boxes that apply)

Property is:

- A owned by a religious institution or used for religious purposes.
- B removed from its original location.
- C a birthplace or grave.
- D a cemetery.
- E a reconstructed building, object, or structure.
- F a commemorative property.
- G less than 50 years old or achieving significance within the past 50 years.

**Areas of Significance**

(Enter categories from instructions)

Science  
Engineering  
Military  
Communication  
Transportation

**Period of Significance**

1917-1972

**Significant Dates**

1939

**Significant Person**

(Complete only if Criterion B is marked above)

N/A

**Cultural Affiliation**

N/A

**Architect/Builder**

unknown

**Period of Significance (justification)**

The proposed period of significance for the NASA LaRC historic district encompasses the period from 1917 until 1972. This period includes resources located both in the East Area and in the West Area and begins with the establishment of the LMAL and the construction date of the earliest extant building in the East Area, and ends with the conclusion of the Apollo program in 1972.

**Criteria Considerations (explanation, if necessary)**

The proposed period of significance for the NASA LaRC Historic District ends at a date that is less than 50 years in order to include those resources at the installation that are associated with the establishment of Project Mercury and the Apollo program, thus invoking Criteria Consideration G.

**Statement of Significance Summary Paragraph** (provide a summary paragraph that includes level of significance and applicable criteria)

See Continuation Sheets.

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**Narrative Statement of Significance** (provide at least **one** paragraph for each area of significance)

See Continuation Sheets.

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**Developmental history/additional historic context information** (if appropriate)

See Continuation Sheets.

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### 9. Major Bibliographical References

**Bibliography** (Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets)

**Previous documentation on file (NPS):**

preliminary determination of individual listing (36 CFR 67 has been requested)  
 previously listed in the National Register  
 previously determined eligible by the National Register  
 designated a National Historic Landmark  
 recorded by Historic American Buildings Survey # \_\_\_\_\_

recorded by Historic American Engineering Record # \_\_\_\_\_

**Primary location of additional data:**

State Historic Preservation Office  
 Other State agency  
 Federal agency  
 Local government  
 University  
 Other

Name of repository: **Virginia Department of Historic Resources,  
Richmond, Virginia; NASA LaRC; City of  
Hampton; University of Virginia**

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Historic Resources Survey Number (if assigned): VDHR File # 114-5313

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## 10. Geographical Data

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**Acreage of Property** ~ 796  
(Do not include previously listed resource acreage)

**UTM References**  
(Place additional UTM references on a continuation sheet)

1	<u>18</u>	<u>0376182</u>	<u>4107575</u>	3	<u>18</u>	<u>0376738</u>	<u>4107222</u>
	Zone	Easting	Northing		Zone	Easting	Northing
2	<u>18</u>	<u>0376710</u>	<u>4107368</u>	4	<u>18</u>	<u>0376952</u>	<u>4107219</u>
	Zone	Easting	Northing		Zone	Easting	Northing

See continuation sheet.

**Verbal Boundary Description** (describe the boundaries of the property)

See Continuation Sheets.

**Boundary Justification** (explain why the boundaries were selected)

See Continuation Sheets.

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## 11. Form Prepared By

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name/title Robert J. Taylor, Jr.- Architectural Historian and Arthur Striker - Historian  
organization Dutton + Associates, LLC date March 2011  
street & number 812 Moorefield Park Drive telephone 804-644-8290  
city or town Richmond state VA zip code 23236  
e-mail rtaylor@dutton-associates.com

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## Additional Documentation

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Submit the following items with the completed form:

- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.  
A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Continuation Sheets**
- **Additional items:** (Check with the SHPO or FPO for any additional items)

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## Photographs:

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Submit clear and descriptive black and white photographs. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map.

**Name of Property:** NASA LaRC Historic District

**City or Vicinity:** Hampton

NASA Langley Research Center (LaRC) Historic District  
Name of Property

City of Hampton, VA  
County and State

**County:** Independent City

**State:** VA

**Photographer:** Robert J. Taylor, Jr., Brooke Shortridge

**Date Photographed:** April 2009-March 2011

**Description of Photograph(s) and number:**

See Continuation Sheets.

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**Property Owner:**

(Complete this item at the request of the SHPO or FPO.)

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name \_\_\_\_\_

street & number \_\_\_\_\_ telephone \_\_\_\_\_

city or town \_\_\_\_\_ state \_\_\_\_\_ zip code \_\_\_\_\_

**Paperwork Reduction Act Statement:** This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

**Estimated Burden Statement:** Public reporting burden for this form is estimated to average 18 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management. U.S. Dept. fo the Interior, 1849 C. Street, NW, Washington, DC.

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NASA Langley Research Center (LaRC)  
Historic District

Hampton, Virginia

N/A

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As the designated authority under the National Historic Preservation Act, as amended,

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In my opinion, the property  meets  does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

national  statewide  local

Signature of certifying official

Date

Title

State or Federal agency/bureau or Tribal Government

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NASA Langley Research Center (LaRC)  
Historic District

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Hampton, Virginia

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N/A

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**SUMMARY DESCRIPTION**

The NASA Langley Research Center (LaRC) is located on approximately 796 acres of government-owned land in the City of Hampton, Virginia. The installation is roughly bordered on the east by the adjacent Langley Air Force Base, the south by Virginia State Road 172, the west by Wythe Creek Road, and the north by Brick Kiln Creek, although three small discontinuous sections of the historic district are within the bounds of Langley Air Force Base. The boundaries of the historic district encompass all extant buildings that were historically associated with NASA LaRC.

Internally, the NASA LaRC is divided into two separate sections, the East Area and the West Area. The East Area of the NASA LaRC is the older of the two, initially developed in 1917, and occupies approximately 9 acres of land on three separate pieces of property under a United States Air Force (USAF) permit within Langley Air Force Base. The West Area consists of approximately 787 acres of land owned by the NASA LaRC, and was developed in the years during and after World War II.

The NASA LaRC originated in the East Area in 1917 when the US War Department procured the land for the joint use of the Army and the National Advisory Committee for Aeronautics (NACA), an independent government agency established in 1915 to advance American aeronautics. The land was designated as Langley Field, named for early flight pioneer Samuel Pierpont Langley.<sup>1</sup> At this site, the NACA established Langley Memorial Aeronautical Laboratory (LMAL, or the Langley Laboratory) as the first aeronautical laboratory nationwide and served as the only civilian aeronautical laboratory from 1918 until 1939, an extremely formative and revolutionary time for American aviation. In 1939, the federal government initiated an unprecedented expansion of aeronautical research facilities and authorized the purchase of a large plat of land for use by the LMAL. The acreage selected for the expansion site was located several miles from the original laboratory site, distant and separate from Langley Field. The expansion site is what would become known as the West Area, while the LMAL and Langley Field would become known as the East Area. In 1958, Congress passed the National Aeronautics and Space Act, which terminated the NACA and marked the beginning of the NASA. At that time, the NACA laboratories and facilities passed to the NASA, and the LMAL became the NASA LaRC.<sup>2</sup>

**LANDSCAPE OVERVIEW**

The East and West Areas of the NASA LaRC were built at different times, and therefore each has a unique development pattern. The East Area followed the gridded layout of Langley Field and has a very dense, urban character with lots of tightly packed buildings and little space in between them. The West Area was platted specifically for the NACA, and therefore has a more open layout with space for large facilities and future growth. Whereas all of the the NASA facilities within the East Area were constructed within a few years of its

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formation and therefore all have a very similar and uniform pattern, the West Area was developed over an extended time period and construction is still ongoing today. It therefore has several distinct sections with differing building styles, densities, and overall sense of place.

### **East Area**

The East Area is in the southeastern part of Langley Air Force Base and represents the earliest development of the NASA LaRC. The character of the East Area, located along the waterfront is generally urban/industrial and blends with the surrounding base. A large part of the land the East Area and Langley as a whole is built on was marshland prior to establishment in 1917.<sup>3</sup> Several inlets were backfilled, the ground level was raised, and a seawall was constructed to establish a dry area with a more uniform shoreline. Architect Albert Kahn designed the pie-shaped gridded street pattern at the field which centered on the waterfront. Kahn also designed many of the buildings and facilities at Langley using a variety of early-twentieth century architectural styles. Many of the buildings, particularly residences and administration buildings have a high degree of intricate brick-work, a characteristic Kahn was known for using. While Kahn designed buildings at Langley Air Force Base, these buildings were not used for NASA LaRC. Kahn did contribute the street and block layouts for NASA LaRC.

Historic photographs indicate that there was no real attempt to landscape the area until the mid 1930s, when landscaping was initiated by Depression era Public Works Administration projects.<sup>4</sup> Concrete walkways from building entrances to sidewalks with grassy strips between them and the road were established at this time. Large shade trees were planted in many of these medians and smaller ornamental trees and shrubs were planted along building facades. Street lights were added and other pedestrian-friendly design elements were incorporated giving the base a park-like neighborhood setting.

NASA resources in the East Area are set within the gridded street and block pattern as the rest of Langley, although they do not exhibit as much emphasis on landscaping and appearance. Those resources in the southern of the two sections do sit back from the roadway with grassy front lawns, although they have only minimal landscaping. They are set very close together, and several NASA buildings are located to the rear, accesible only by alleys. The northern section of the NASA resources in the East Area are void of any landscaping and are surrounded by paved parking lots with a very industrial feel.

### **West Area**

The West Area occupies a large amount of property, although the majority of the buildings and structures are clustered near the main gate at the southern end of the area. Three distinct sectors of development can be observed in the West Area; each with their own character, degree of density, landscaping, and design intent, roughly corresponding to the time period in which they were developed.

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The main sector in the West Area is located at the southern end of the district and contains the majority of buildings and structures. This area correlates to the original development in the 1930s and 1940s, and is considered the “downtown” of the NASA LaRC. This area contains a combination of administrative buildings, research facilities and wind tunnels, and assorted support buildings in close arrangement. The current NASA LaRC Headquarters is also located in this section. Buildings have relatively little set-back from the street, in keeping with the overall dense development. Despite its dense development pattern, most buildings do have small grassy lawns with some ornamental landscaping. Sidewalks are present throughout the area, and there are several small grassy park-like areas featuring paved walking paths and mature trees located amongst the administrative buildings. Trees also line some of the streets in this portion of the West Area, giving it a campus-like feel. The roads follow a definite gridded pattern and traffic control is accomplished by signs without the use of stoplights. Lighting is provided by street lights that are present at regular intervals throughout this section. Parking lots are located throughout the area, although most are small and fit behind and between buildings where space is available.

The middle section of the West Area extends to the north and west of the downtown area and was developed later than the downtown area. The buildings in this area are arranged with larger open spaces between them lending it an office park-like configuration. Greater attention is paid to open green space within this section, with large expanses of grass. Likewise, the presence of wooded area is more widespread, further indicating the office-park feel of this section. Most buildings are set back from the road with large grass lawns, although they appear uniform in their orientation. This area has less of a pedestrian-friendly nature to it and is much more vehicular oriented. Parking lots are easily accessible from the roadways and are typically larger than in the downtown area.

The third section, known as the North Quadrant, consists of widely spaced buildings and structures which are mostly specialized research facilities. The buildings are generally separated by either large open areas or by wooded parcels of land, and are frequently of larger scale as a result of their function. There is much less of a conscious design plan in this area, with no real development pattern present. The road system is not as clearly defined as in the lower areas and in many places do not have curbs, lane markings, or traffic signs. The use of sidewalks and pedestrian-oriented features are less prevalent as well. Buildings have varying setbacks and orientations and do not exhibit any formal landscaping.

## ARCHITECTURAL ANALYSIS

As is common at government installations, nearly every element of the built environment present is assigned a unique “Building Number” to identify the resource for agency records. At the NASA LaRC, a total of 249 numbered architectural resources are present as of March 2010. These resources represent nearly a century of

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growth and development at the NASA LaRC and include buildings and structures ranging from massive wind tunnels and specialized research facilities, to associated laboratory and office buildings, to small support buildings and structures.

Although building design within the LaRC varies significantly according to function, design themes for buildings constructed between 1921 and World War II generally include two and three story stripped-classicism style red brick buildings. The majority of buildings in the downtown area are constructed in this style giving the area a cohesive feel. As the twentieth century progressed and NASA's mission shifted to space-related research, the building construction shifted to more modern styles such as the International, Brutalism, and other Contemporary styles. These buildings are mostly sheathed with blond brick and poured concrete, although large expanses of plate glass are common as well. The majority of buildings from this time period are located in the middle section of the West Area, contributing to the office-park-like character of that section. Buildings constructed after the period of significance exhibit a range of various styles and influences. Many later buildings lack any style at all and are strictly functional in design. Some recall the stripped-classicism that dominated the early construction at the LaRC, although with a much simpler in ornamentation. Specialized resource construction also became less common in the post-period of significance era. Most research shifted to computer modeling, and the need for new specialized wind tunnels and laboratories declined.

### **East Area**

The East Area represents the earliest development of the NASA LaRC, and is located on land leased from Langley Air Force Base. The surviving buildings and structures were constructed between 1917 and 1979 and provided state-of-the art research facilities that allowed major advances in military and civilian aircraft design and function. As they are located within the confines of the earlier Langley AFB facilities, LaRC buildings within the East Area are set within a closely spaced and densely built environment, with limited open spaces consisting mostly of parking areas.

Buildings in the East Area are divided into three discrete sections, with the southern group representing the initial development. The East Area's oldest buildings are all constructed of red brick and exhibit classical features and attention to architectural details. Examples of typical embellishments include pedimented entrances with Doric columns, projecting cornices, and limestone door surrounds and watertables. Several of the buildings feature patterned brickwork at the frieze that is characteristic of Langley's early buildings designed by Albert Kahn. Brick buildings constructed for the LaRC from the late 1920s to the early 1940s are more utilitarian in appearance, although are often articulated with concrete window sills and bands at the cornice.

The first and southernmost section of the East Area includes the NACA's first laboratory building (1917, No. 587), the building constructed to house the NACA's first wind tunnel (1920, No. 580), the NACA's third

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generation Variable Density Tunnel (1940, No. 582A), and assorted service and support buildings. These buildings are all currently owned by the US Air Force.

The second and northern section of the East Area is located approximately a block and a half north of the first section, and is more industrial in appearance. The facilities located in this section were constructed mostly during the 1930s and 1940s, as the LaRC had outgrown its original laboratory site by this time. They present a strictly functional appearance with design dependent almost entirely on the intended scientific purposes of these structures, and include the 8-foot High Speed Tunnel (Building No. 641), the Tow Tank office building (Building No. 720), Free Spinning Tunnel (Building No. 645), Transonic Dynamics Tunnel (Building No. 648), and the Rotor Aeroelastic Laboratory, as well as additional wind tunnels and associated support buildings. All buildings in this section are owned by NASA, except for buildings No. 641 and No. 720, which are currently owned by the Air Force.

The third and westernmost section of the East Area is located approximately one block to the northwest of the second section, and consists solely of Building No. 750. This aircraft hangar was constructed ca. 1932, and received a significant addition on its southeast side between 1939 and 1942. The building was used as a flight research laboratory by the NACA, and is currently owned by the Air Force.

### **West Area**

The West Area represents the core of development at the NASA LaRC, and was constructed after the NACA outgrew the facilities located in the East Area. The major period of construction activity in the West Area was the mid-1940s through the late-1960s and consisted of mostly specialized facilities. The resources present include research laboratories, wind tunnels, a hangar, office building, and numerous secondary and support facilities.

The first technical facilities constructed in the West Area included the Structures Research Laboratory (No. 1148, 1940); 16-Foot High-Speed Tunnel (No. 1146, 1941); Stability Tunnel (No. 1149, 1941); and Seaplane Impact Basin (No. 1192, 1942). Initial construction in the West Area also included a substation (No. 1147, 1940), generating plant (No. 1152, 1941), heating plant (No. 1153, 1941), and the West shop (No. 1194, 1942).

These buildings made up the initial development in what would become the downtown section of the NASA LaRC West Area. Most of the resources from this time period draw on the stripped-classicism style and are similar in design and appearance to resources in the East Area. There is also some more recent development interspersed in this section exhibiting various modern styles and influences, as well as simple utilitarian buildings.

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By the 1950s, the West Area began to grow to the north and west of the initial downtown development and new design patterns emerged. Buildings in this section of the West Area were mostly constructed in the 1950s to the 1970s in support of satellite development and space exploration. They are typically set further apart with more open space in between and exhibit modern movement styles. International and Brutalism styles are common and facades are typically constructed of blonde brick and poured concrete.

Further to the north is a section of the West Area called the North Quadrant. The buildings in this section are largely industrial in appearance, denoting their fundamentally experimental nature. Several large specialized resources are located in this section including the Lunar Landing Research Gantry (No. 1297, 1965) and the Landing Loads Track (No. 1257, 1956). Support buildings and structures located throughout the area consist of buildings constructed of brick, concrete block, and corrugated metal, and are typically void of any embellishment or ornamentation.

### Wind Tunnels

The most striking and apparent feature of the NASA LaRC is the numerous wind tunnel facilities interspersed throughout its boundaries. The wind tunnels are found in various shapes and sizes, although most are large and exposed, giving the appearance of huge, ungainly, wormlike creatures, washing ashore perhaps after a battle of primordial monsters in the nearby tidal river.<sup>5</sup> Many of the tubular wind tunnels are built as long, curved rectangular circuits attached to the rear of their associated laboratory buildings. Several tunnel circuits reach dimensions of over 100 feet by 400 feet. There are some tunnels encapsulated within buildings; the largest of which is the Full Scale Tunnel (No. 643, 1931), the only wind tunnel facility able to conduct tests on full size aircraft. Associated laboratory buildings range from the large stripped-classism buildings with decorative brickwork and cast plaques to simple concrete or metal buildings that only minimally differ in appearance from their associated wind tunnel.

Over the years, many of the wind tunnels at the NASA LaRC have been updated and retrofitted to keep up with advances in technology, although many have become obsolete and abandoned in recent years due to the shift to computer modeling. Those tunnels that remain represent a crucial element of the history and significance of the NASA LaRC and physically characterize the landscape of the center. The importance of the early wind tunnels at LaRC is memorialized through the use of the VDT as a prominently sited monument. The wind tunnel was moved from its original location within Building 582 in the East Area to an exposed setting in the front lawn of the LaRC Conference Center in the West Area in 1991.

### Administration/Office

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Various non-laboratory buildings are present throughout the NASA LaRC and include examples such as general offices, training and classrooms, communications facilities, workshops, and gatehouses. The majority are located within the downtown section of the West Area and therefore are mostly found in the stripped-classicism style, however they do exhibit the full range of sizes and architectural styles. An administration building of particular importance is the original LMAL headquarters and laboratory building (No. 587) built in 1917 in the East Area as the first building constructed for NACA.

Support Buildings/Structures

There are also numerous resources at the NASA LaRC necessary for employee safety and comfort, such as a gym and fitness center, cafeteria, child daycare, and fire station; as well as day-to-day operations and infrastructure such as general storage, water tanks, pumps, and steam exchanges, a refuse incineration and power generating plant, and other assorted electrical substations and distributors. These resources are spread throughout both the East and West Areas and therefore span the range of design as well. Most however are very utilitarian in form and lack any definable architectural style.

Contributing/Non-contributing Resources

At the NASA LaRC, a total of 249 numbered architectural resources are present as of March 2011, however three of the resources have already been listed in the NRHP and as National Historic Landmarks (NHL), and therefore the total number of resources being nominated is 246. Of these resources, 149 are considered contributing resources to the NASA LaRC Historic District, and 97 are considered non-contributing. Many of the contributing resources are major laboratory or research facilities that are associated with significant advances in aeronautical and aerospace research or feature significant aspects or works of engineering, while others include a variety of resource types that are associated with advances in aeronautical and aerospace research that have taken place at the NASA LaRC during the period of significance. The majority of non-contributing resources are secondary and support facilities such as office space, administration buildings, storage facilities, or substations that were either constructed after the period of significance for the district, or have such compromised physical integrity that they can no longer convey their historic character or association.

**NASA HISTORIC DISTRICT INVENTORY REPORT**

A complete inventory of resources with narrative descriptions is provided and arranged numerically by street address. Because of the NASA numbering system and assignment of street addresses, there are often several different resources located at the same address. Therefore, a table listing all of the resources arranged by NASA Building Number is also provided for convenience.

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**AMES STREET, EAST**

**2 Ames Street, East** 114-5313-0324 *Other DHR-ID:*

*Primary Resource Information:* **Administration Bldg., Stories 1.00, Style: International Style, 1968**

This one-story International style influenced building was constructed in 1968 and serves as a combination of office and garage space. It has an L-shaped form with a full-width office building appended to the front of a slightly taller, L-shaped garage building. The masonry structural system is clad with a combination of concrete block and blond brick laid in a common bond. The building rests on a continuous concrete foundation and is topped by a flat roof with metal coping and a corduroy metal parapet. The main entrance is located centrally on the front façade in an inset nook. Fenestration includes single-pane fixed metal windows and three-pane metal awning windows. The front block of the building which is more elaborate features smooth metal panels above and below the windows which are set in recessed panels. The rear portion of the building is much simpler in appearance, and has numerous garage bays.

*Individual Resource Status:* **Administration Bldg. Contributing Total: 1**

**3 Ames Street, East** 114-5313-0320 *Other DHR-ID:*

*Primary Resource Information:* **Workshop, Stories 1.00, Style: No Discernable Style, 1993**

This one-story building was constructed in 1993 and serves as a maintenance shop. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. It has several doors and garage bays on the front façade.

*Individual Resource Status:* **Workshop Non-Contributing Total: 1**

**3A Ames Street, East** 114-5313-0321 *Other DHR-ID:*

*Primary Resource Information:* **Workshop, Stories 1.00, Style: No Discernable Style, 1993**

This one-story building was constructed in 1993 and serves as a general support facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. It has two garage bays on the front façade and a secondary entrance on the rear.

*Individual Resource Status:* **Workshop Non-Contributing Total: 1**

**3B Ames Street, East** 114-5313-0322 *Other DHR-ID:*

*Primary Resource Information:* **Workshop, Stories 1.00, Style: No Discernable Style, 1993**

This one-story building was constructed in 1993 and serves as a general support facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. It has a set of double doors and a garage bay on the front façade.

*Individual Resource Status:* **Workshop Non-Contributing Total: 1**

**4 Ames Street, East** 114-5313-0323 *Other DHR-ID:*

*Primary Resource Information:* **Workshop, Stories 1.00, Style: No Discernable Style, 1989**

This one-story building was constructed in 1989 and serves as a vehicle shop. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. It has a single door and garage bay on the front façade.

*Individual Resource Status:* **Workshop Non-Contributing Total: 1**

**8F Ames Street, East** 114-5313-0386 *Other DHR-ID:*



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**Primary Resource Information: Research Facility/Laboratory, Stories 4.00, Style: No Discernable Style, 1990**

This four-story building was constructed in 1990 and serves as research space for the 1299 Complex. It has an irregular form composed of several blocks of varying heights. The steel frame structural system is clad with corrugated metal and rests on a poured concrete slab foundation. The building is topped by a flat roof with metal coping. The main mass of the building is roughly four stories tall and has a garage bay on the south side. A partial-width two-story stair shaft is appended to the south side next to the garage bay. A full-width one-story mass is attached to the west side and a two-story mass is attached to the north side. There is also a one-story gable-roof mass on the north end with a garage bay. The building has no windows and the only ornamentation is the tile clad stair shaft with rough stone banding.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*

**ANDREWS STREET**

**103 Andrews Street**

**114-5313-0406**

*Other DHR-ID:*

**Primary Resource Information: Aviation-Related, Stories 5.00, Style: Other, ca 1941**

Constructed in 1941, Building 645 is a five story, twelve-sided structure set on a concrete base and clad with corrugated metal panels. A steel superstructure encloses the corrugated metal panels. Steel I-beams are located at the breaks of the corners, secondary steel angles span horizontally between the I-beams dividing each vertical plane into thirteen sections. Diagonal steel channels reinforce the structure unifying three of the horizontal steel angles. The diagonals are welded to steel plates at the junctures with the horizontal steel angles. There is a single leaf steel door with a single light in the northeast face that is approached by a concrete stoop with four steps and a pipe rail. The stoop is protected by a metal canopy supported by four square metal posts. In the two sections flanking the door are a series of steel louvers and semi-circular hoppers at the upper levels.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**103 Andrews Street**

**114-5313-0407**

**Primary Resource Information: Research Facility/Laboratory, Stories 4.00, Style: Other, 1979**

Building 645A is a four-story, two-bay building constructed of pressed brick laid in a stretcher bond pattern. There are two, one-over-two anodized aluminum windows on each floor. The upper light is fixed and the lower sash appears to be a slider type. The windows all have soldier course headers and sills. There are triangulated vents below each window. The building has a flat roof with a parapet with a metal coping. On the west side of the building is a one-story, one-bay shed roofed projection. In the facade there is a single-leaf metal and anodized glass door. Above the door there is a concrete canopy that is attached to the building with tie backs. The area below the canopy has been infilled with a glass and aluminum storefront system.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*

**108 Andrews Street**

**114-5313-0424**

*Other DHR-ID:*

**Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Stripped Classicism, 1931**

This two-story building was constructed c.1931 and currently serves as general admin space. It has a rectangular form and the masonry structural system rests on a continuous raised concrete foundation and is topped by a flat roof. A continuous concrete stringcourse delineates the parapet. The main entrance is located centrally on the front facade and consists of a set of double doors with a transom. A concrete frieze panel above the door is embossed with "Bank No. 1". Fenestration consists of industrial style metal windows with casement sashes surrounded by fixed panes and sit on concrete sills. A one-story brick addition has been appended to the rear.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**644 Andrews Street**

**114-5313-0405**

*Other DHR-ID:*

**Primary Resource Information: Aviation-Related, Stories 3.00, Style: Other, ca 1939**

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Constructed in 1939, Building 644 is a three-story, three bay metal panel clad building. The western bay is organized by stacked ribbon windows composed of four, 2-light steel awning type windows. The walls are clad with vertical interlocking metal panels. The center bay is at the third story and is a connector between the building and the spherical wind tunnel. The first and second bays are unified by a shallow gable roof. The third bay at the east end is the spherical wind tunnel. The three story sphere is clad with steel plates and is supported by steel bents on a concrete pad.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**646 Andrews Street** **114-5313-0408** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 3.00, Style: Other, ca 1934*

Constructed in 1934, Building 646 is a three-story, five bay steel building clad with vertical standing seam metal siding. The building is set on a concrete base with a raised concrete curb and has a shallow side gable roof. The Hunting Avenue facade is organized into three sections by vertical metal channels. The flanking outer bays are composed of paired, two-light awning type aluminum windows on the first story and fixed six-light aluminum windows on the third story. The center section of the building has double-leaf, metal doors with upper lights at the first story. The second story is dominated by a coiling over head door that extends the full width of the center section of the facade. At the third story is a centered fixed, six-light window that is flanked by two small square louvers. The centered double leaf doors are approached by a metal stoop with five metal steps and a pipe railing.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**BUSH ROAD, EAST**

**3 Bush Road, East** **114-5313-0295** *Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, 1992*

This two-story building was constructed in 1992 and serves as office space. It has an irregular form and the masonry structural system is clad with stucco. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The main entrance which consists of a single door is located within in an inset nook supported by a stuccoed column. Fenestration is limited to a band of three metal windows with a fixed pane over an awning sash, also located in the inset nook. The building features a scored band near the roofline to delineate a parapet and a second scored band to give the appearance of a watertable. An exterior staircase is located on the west side of the building.

*Individual Resource Status: Office/Office Building, Non-Contributing Total: 1*

**BUSH ROAD, WEST**

**1A Bush Road, West** **114-5313-0352** *Other DHR-ID:*

*Primary Resource Information: Energy Facility, Style: No Discernable Style, 1970*

This substation consists of five steel transformer boxes set side-by-side.

*Individual Resource Status: Energy Facility Contributing Total: 1*

**2 Bush Road, West** **114-5313-0054** *Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 1.00, Style: Other, ca 1956*

Building 1262 is a Stripped Classicism-styled, one-story, eleven-bay building constructed of pressed brick laid in a five-course American bond pattern. The building is set on a concrete plinth with concrete coping at the roof parapet. The centered entrance has a wide cast concrete architrave that is slightly canted to the door plane. The architrave is topped with a plane frieze and cornice. There are double-leaf, metal and glass doors with a transom within the architrave. There are five, four-light fixed anodized aluminum windows on either side of the centered entrance. There are brick pilasters between the windows that are organized within a cast

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concrete frame. The concrete frame is articulated where it intersects the brick pilasters between the windows. The concrete window frame abuts the architrave at the centered entrance.

*Individual Resource Status: Office/Office Building, Contributing Total: 1*

**3 Bush Road, West** **114-5313-0351** *Other DHR-ID:*

*Primary Resource Information: Energy Facility, Stories 1.00, Style: No Discernable Style, 1967*

This one-story building was constructed in 1967 and serves as a support building for an electric substation. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a shed roof covered with corrugated metal. The building only has a single door on the west side. There are two metal electric transformer units to the west of the building.

*Individual Resource Status: Energy Facility Contributing Total: 1*

**12 Bush Road, West** **114-5313-0389** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, ca 1965*

This one-story pre-fabricated building was constructed in 1965 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with corrugated metal paneling. The building rests on a wood rail foundation and is topped by a gable roof covered with corrugated metal paneling. The main entrance consists of a set of double doors on the front façade and there is a single plexi-glass window on the south side.

*Individual Resource Status: Storage Contributing Total: 1*

**12 Bush Road, West** **114-5313-0135** *Other DHR-ID:*

*Primary Resource Information: Other, Style: No Discernable Style, ca 1965*

The structure is composed of three, one-story sections. At the north end is the lift itself, which is a metal plate flat roof structure that is approached by a flight of steel stairs. The elevator car moves up the leg of the gantry. To the south of the lift is a one-story, shed roof building with standing seam metal siding and a single-leaf, flush metal door set on the south side of the facade. To the south of this building is a one-story, corrugated metal shed.

*Individual Resource Status: Other Contributing Total: 1*

**12 Bush Road, West** **114-5313-0290** *Other DHR-ID: 114-0140*

*Primary Resource Information: Research Facility/Laboratory, Style: No Discernable Style, ca 1965*

This resource consists of both the Lunar Landing Facility control room and the Gantry structure itself. It is now part of the Impact Dynamics Research Facility. The control room is sited adjacent to the road and located underneath the gantry structure.

The control room was constructed in 1965, and is a one-story, 494 square-foot building constructed of corrugated metal. The building rests on a poured concrete foundation and is topped by a shallow-pitched gable roof. Fenestration on the building consists of a large roll-up garage bay on the front façade flanked by a single metal door.

*Individual Resource Status: Research Facility/Laboratory Contributing/NRHP/NHL Total: 1*

**12 Bush Road, West** **114-5313-0287** *Other DHR-ID:*

*Primary Resource Information: Storage, Style: No Discernable Style, ca 1965*

This 1969, one-story, 494 square-foot building constructed of corrugated metal panels set on a concrete slab. The shallow, front gable roof is also clad with corrugated metal. There are no windows visible. The entrance consists of two overhead garage doors, centered on the north facade.

*Individual Resource Status: Storage Contributing Total: 1*

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**12A Bush Road, West**

**114-5313-0379**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1972*

This one-story building was constructed in 1972 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. A single garage bay is located on the north façade of the building and fixed metal windows with four lights are located on the west side.

*Individual Resource Status: Storage Contributing Total: 1*

**12D Bush Road, West**

**114-5313-0381**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1977*

This one-story building was constructed in 1977 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. A wide garage bay is located on the front façade of the building.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**15 Bush Road, West**

**114-5313-0382**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1991*

This one-story pre-fabricated building was constructed in 1991 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. The only fenestration on this building is a single garage bay on the east façade.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**17C Bush Road, West**

**114-5313-0380**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1978*

This one-story pre-fabricated building was constructed in 1978 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. The only fenestration on this building is two garage bays on the front façade.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**DODD BOULEVARD**

**190 Dodd Avenue**

**114-5313-0423**

*Other DHR-ID:*

*Primary Resource Information: Administration Bldg., Stories 2.00, Style: Stripped Classicism, 1918*

This two-story building was constructed in 1917 and currently serves as office space. It has an H-shaped form and the masonry structural system rests on a continuous raised concrete foundation and is topped by a flat roof. A continuous molded concrete stringcourse delineates the parapet. The two wings to the sides of the building were later additions appended in 1941. As the primary headquarters, laboratory, and administration space for Langley, the building features an elaborate main entrance located centrally on the front façade. The entrance consists of double doors with a transom light, embellished with a cast concrete pedimented portico supported by Doric columns. The frieze retains the original "NACA" concrete embossed sign and the words "Research Laboratory". The central three bays project slightly from the front façade and are capped by a stepped parapet. Additional entrances are located centrally on the side of each wing and feature simpler gabled porticos. Fenestration consists of paired metal windows set on continuous

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concrete sills and is topped by soldier course lintels. The windows on the wing additions are set in nearly full-height recessed panels capped by corbelled brick lintels.

**226 Dodd Boulevard** **114-5313-0410** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 3.00, Style: Other, ca 1938*

Constructed in 1938, Building 648 is a three-story, twenty-one-bay Flemish bond brick building set on a concrete base with a flat roof with a metal coping. The facade is organized by three-story brick piers that frame recessed stuccoed panels that contain the windows. There is a three-course brick-corbel at the head of each of the stuccoed panels that steps out to the wall plane. Between the window heads and the metal coping at the parapet edge is a cast stone belt course that encircles the building. The windows are paired, fixed-light steel windows with a heavy mullion between and cast concrete sills. A few of the original windows remain on the first and second stories at the north end of the building. The original windows have paired three-vertical light pivoting sashes in steel frames. The pattern of vertically arranged windows is broken at the first story in the ninth, tenth and fifteenth bays. In the ninth bay there is a set of double leaf steel doors topped by a transom and approached by a concrete stoop with four concrete steps enclosed by cheek walls with pipe rails. In the next bay to the south is a coiling over head door with bumpers at floor height and a concrete driveway to the street. The primary entrance in the fifteenth bay is framed by a slightly projected brick frame that rises above the roof line and is topped by a shallow gable. The double-leaf steel and glass doors and transom are slightly recessed into the wall plane. The entrance is protected by a metal canopy the area below which has been enclosed with a steel and glass vestibule and accessed by double-leaf steel and glass doors. Above the canopy is a recessed stuccoed panel with no windows centered in the projected surround at the entrance. At the south end of the building is a recessed stair tower.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**226 Dodd Boulevard** **114-5313-0413** *Other DHR-ID:*

*Primary Resource Information: Energy Facility, Style: Other, ca 1938*

Building 650 is a small, 384 square foot electrical substation that provides electricity to the complex. This substation was constructed in 1938. The structure consists of a metal clad box protecting the electrical components inside. The structure is elevated off the ground on a 2 foot high poured concrete footer with a chain link fence surrounding the footer. A gate in the fence provides access to the concrete steps on the western elevation that provide access to the door on the northern elevation.

*Individual Resource Status: Energy Facility Non-Contributing Total: 1*

**226A Dodd Boulevard** **114-5313-0411** *Other DHR ID:*

*Primary Resource Information: Other, Style: Other, 1979*

Building 648A is a pressed brick clad structure with four panels on the east and west elevations and three panels on the north and south elevations. The structure is elevated in cast concrete supports with paved parking underneath. There are canted concrete structures at the first story on the east and west elevations.

*Individual Resource Status: Other Non-Contributing Total: 1*

**226B Dodd Boulevard** **114-5313-0412** *Other DHR ID:*

*Primary Resource Information: Other, Style: Other, 1979*

Building 648B is a one-story, one-bay concrete block building set on an elevated concrete base that is approached by four concrete steps. There are double-leaf flush metal doors on the facade. The building has a flat roof with a metal coping at the edge.

*Individual Resource Status: Other Non-Contributing Total: 1*

**DOOLITTLE ROAD**

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**5 Doolittle Road**

**114-5313-0215**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, ca 1970*

Constructed circa 1970, Building 1214 is a one-story, three-part, eight-bay building constructed of white brick laid in a stretcher bond pattern. The building is set at grade with a projecting metal fascia and aluminum coping at the edge of the flat roof. There is a recessed two-story block to the west with a projecting metal fascia. The east (Doolittle Road) elevation is organized into three parts by the juxtaposition of the wall planes and changes in material. The two outer parts are constructed of white brick with two, vertical anodized aluminum windows in each. The top and bottom panels of the windows are opaque. The center portion of the building is recessed from the adjacent wall planes and clad with vertical aluminum siding and fenestrated with four vertical windows like those in the outer two blocks.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**15 Doolittle Road**

**114-5313-0319**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1992*

This one-story building was constructed in 1992 and serves as a storage facility. It has a basically rectangular form and the steel frame structural system is clad with raised-seam metal paneling and rests on a poured concrete slab foundation. The building is topped by a gable roof covered with raised-seam metal. It has two garage bays and three doors on the front façade.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**15 Doolittle Road**

**114-5313-0197**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1991*

Building 1197 is a one-story, four-bay steel building clad with vertical, standing metal panels. The shallow gable roof is clad with the same material. There are two flush metal doors on the facade in the first and third bays from the north end that alternate with metal overhead garage doors.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**DRYDEN STREET, NORTH**

**1 Dryden Street, North**

**114-5313-0333**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 1.00, Style: No Discernable Style, 1976*

This one-story building was constructed in 1976 and serves as office space. It has a rectangular form and the masonry structural system is clad with blond brick laid in a common bond. The building rests on a continuous concrete foundation and is topped by a flat roof with metal coping. The main entrance is located centrally on the front façade and consists of a set of double doors in an inset nook. Fenestration includes numerous single-pane fixed metal windows on all sides. The building features recessed brick panels laid in a stack bond below the brick window sills.

*Individual Resource Status: Office/Office Building, Non-Contributing Total: 1*

**2 Dryden Street, North**

**114-5313-0331**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Other, 1972*

This two-story Brutalism building was constructed in 1972 and serves as research space. It has an irregular form composed of one-story and three-story wings with a two-story central mass set on a 45 degree angle between them. The concrete structural system is both exposed and clad with brick, and rests on a continuous concrete foundation. The building is topped by a flat roof with a cast concrete parapet and metal coping. The main entrance is located at the north end of the central mass and consists of a set of double doors flanked by a full-height plate glass atrium. Fenestration includes single and three-pane fixed metal windows. The central mass of this building exhibits the strongest Brutalism influences with its inverted tapered concrete curtain walls and pilasters, concrete parapet,

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wing walls with integral planters, and gridded façade. The east wing is clad with blond brick and features tapered concrete pilasters and a heavy cast concrete exterior stair shaft. A metal wind tunnel structure is located on the roof of the east wing as well.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**2A Dryden Street, North**

**114-5313-0332**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: Other, 1991*

This one-story Brutalism building was constructed in 1991 and serves as office space. It has a rectangular form and the masonry structural system is clad with blond brick laid in a common bond. The building rests on a continuous concrete foundation and is topped by a flat roof with a heavy concrete parapet and metal coping. Fenestration includes tall and narrow fixed metal windows found in pairs. The building generally blends into Building 1208 and features brick window sills and cast concrete pilasters that extend into the heavy cast concrete parapet around the roofline.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*

**5 Dryden Street, North**

**114-5313-0326**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: International Style, 1965*

This two-story International style building was constructed in 1965 and serves as research space. It has a basically rectangular form and is attached to the south side of Building 1202A. The masonry structural system is clad with blond brick laid in a common bond and rests on a continuous concrete foundation. The building is topped by a flat roof with metal coping. The main entrance is located centrally on the front façade in a recessed bay and consists of a set of double doors flanked by plate glass windows. Fenestration includes single-pane fixed metal windows that are tall and narrow on the first floor, and single-pane fixed metal windows in recessed panels with smooth metal panels above and below on the second floor. The second floor of this building project beyond the first and is delineated by a heavy gravel fascia around the bottom edge. A large open loading bay is located underneath a portion of the second floor on the rear of the building. The building features metal pilasters set within full-height recessed panels on the first floor, concrete window sills, notched corners, and smooth metal panels above and below the second floor windows.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**5A Dryden Street, North**

**114-5313-0327**

*Other DHR-ID:*

*Primary Resource Information: Auditorium, Stories 1.00, Style: International Style, 1965*

This one-story International style building was constructed in 1965 and initially functioned as a visitors' center, but now serves as a conference center. It has an L-shaped form that is appended to the northeast corner of Building 1202. The masonry structural system is clad with blond brick laid in a common bond and rests on a continuous brick foundation. The building is topped by a flat roof with metal coping. The main mass to the building is located in a projecting bay set on 45 degree angle from the northeast corner. It consists of two sets of double doors in an inset nook that are approached by a staircase and ramp flanked by brick cheek walls. The large block to the rear of the entrance block occupies the majority of the building and extends slightly wider. Fenestration includes single-pane fixed metal windows that are tall and narrow. The building features metal pilasters set within full-height recessed panels, concrete window sills, and notched corners. Metal letters spell out, "Pearl I Young Theatre" above the main entrance.

*Individual Resource Status: Auditorium Contributing Total: 1*

**6 Dryden Street, North**

**114-5313-0383**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: International Style, 1965*

This two-story International style building was constructed in 1965 and serves as office space. It has an irregular form composed of a one-story main mass with small two-story blocks at the north and south ends of the building. The masonry structural system is clad with blond brick laid in a common bond and rests on a continuous concrete foundation. The building is topped by a flat roof with metal coping. The main entrance is offset on the front facade and consists of a set of double doors sheltered by a cantilevered canopy.

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Fenestration includes single-pane fixed metal windows in recessed panels with smooth metal panels above and below. The building features heavy metal coping around the roofline, smooth metal panels above and below the recessed windows, and full-height pilasters on the northern two-story block.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**8 Dryden Street, North**

**114-5313-0390**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: International Style, 1965*

This two-story International style building was constructed in 1965 and serves as a Flight Electronics and Electromagnetics laboratory. It has an irregular form composed of a two story office front block with one and three story projections on the rear. The steel skeleton structural system is clad with smooth aluminum paneling on the front façade and blond bricks laid in a common bond on the side walls. The building rests on a raised continuous concrete foundation and is topped by a flat roof with metal coping. The main entrance is located centrally on the front façade and is sheltered by a metal canopy. Fenestration includes ribbons of single-pane fixed metal windows. The aluminum panel curtain wall front façade is interrupted by continuous horizontal bands of windows and divided by vertical aluminum ribbing. The front canopy of the building is the most elaborate feature and consists of an oval shaped flat roof and is supported by two large round columns. The building façade above and below the roof of the canopy is clad with vertically ribbed aluminum.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**9 Dryden Street, North**

**114-5313-0334**

*Other DHR-ID:*

*Primary Resource Information: Communications Facility, Stories 1.00, Style: No Discernable Style, 1989*

This one-story building was constructed in 1989 and serves as a communications facility. It has a rectangular form and the masonry structural system is clad with blond brick laid in common bond. The building rests on a poured concrete slab foundation and is topped by a flat roof. The building has only a single door on the front façade with a recessed metal panel above that extends up to a metal parapet set on top of a course of soldier bricks at the roofline.

*Individual Resource Status: Communications Facility Non-Contributing Total: 1*

**12 Dryden Street, North**

**114-5313-0296**

*Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1968*

This one-story building was constructed in 1968 and serves as a pump house. It has a rectangular form and the concrete block structural system is exposed. The building rests on a continuous concrete foundation and is topped by a flat roof with metal coping. The front façade has two single doorways and a set of double doors. The two single doors are sheltered by a cantilevered metal canopy. Fenestration includes metal awning windows with three sashes and feature concrete sills. A raised pipeline connects to the rear of the building and extends to other buildings to the north.

*Individual Resource Status: Pump House Contributing Total: 1*

**DURAND STREET, NORTH**

**1 Durand Street, East**

**114-5313-0234**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, ca 1975*

This 1975, two-story, flat roof, 11,743 square-foot building is red, common-bond brick and rests on below grade concrete footers with a poured concrete slab at grade. The roof is not visible. No windows are visible. The entrance on the façade is not visible. Additions and alterations: There is a 1978, 7,542 square-foot addition attached to the east elevation.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*



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**1A Durand Street, East**

**114-5313-0235**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1978*

This 1978, two-story, one-bay, 7,542 square-foot building is red, stretcher-bond brick and rests on below grade concrete footers with a poured concrete slab at grade. There is a concrete coping at the edge of the flat roof. The double leaf glass and aluminum doors with a transom are located on the west side of a glazed area that in addition to the doors contains sixteen, three-part anodized aluminum windows. The glazed area extends from the foundation to a three-course corbelled lintel that extends beyond the glazing and wraps the corners of the adjacent buildings.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**3 Durand Street, East**

**114-5313-0345**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1978*

This one-story building was constructed in 1978 and serves as research space. It has an L-shaped form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a continuous brick foundation and is topped by a flat roof with metal coping. The main entrance to the building is located centrally on the front façade. It consists of double doors with a transom and sidelights in an inset nook flanked by ribbon windows. Several garage bays are located on the rear of the building. Fenestration on the building includes a ribbon of metal windows with a fixed pane over an awning sash atop of an aluminum panel that sits on an at-grade brick sill. The building has predominantly blank facades except for the ribbon of windows on the front and a shorter ribbon on the east side. It features a three-course corbelled brick string course that wraps around the building at the top edge of the window openings.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*

**5 Durand Street, East**

**114-5313-0044**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1952*

This, 1952, one-story, front-gable, 16,160 square-foot building is clad in metal and rests on a poured concrete slab at grade. The roof is covered in metal. Fixed, three-light, metal-frame windows are typical. The entrance on the façade is an oversized sliding door.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**7 Durand Street, East**

**114-5313-0027**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1952*

Constructed in 1945, Building 1225 is a two-story, nine-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with concrete coping at the edge of the parapet. Double-leaf glass and aluminum doors with an opaque transom are centered in the facade and surrounded by a molded concrete architrave. The entrance is approached by stacked granite platforms that form a stoop and one step. On each side of the entrance are two-part, four-light windows. Flanking these windows are three, six-light anodized aluminum windows. The fenestration pattern on the second story is similar with a three-part, six-light window centered over the entrance. The windows all have a large fixed upper light and a narrow operable sash on the bottom. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. The lintels extend beyond the edge of the windows and wrap the outside corners of the building at the second story. To either side of the entry block are recessed wings that are glazed by large banks of windows and opaque panels. The lower band consists of ten, two-light windows and the upper two bands consist of ten opaque panels. The window bands are separated by anodized aluminum panels and the composition is divided vertically by similar anodized aluminum panels into vertical groupings of three, fifteen and twelve windows or opaque panels.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**7 Durand Street, East**

**114-5313-0043**

*Other DHR-ID:*

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**Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1952**

This, 1952, one-story, front-gable, 20,570 square-foot building is clad in metal and rests on a poured concrete slab at grade. The roof is covered in metal. No windows are visible. The entrance on the façade is an oversized, single, metal door. There is a small area surrounded by chain link fence adjacent to the entrance for outdoor storage. There is a metal, shed roof addition attached to the north elevation.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**9 Durand Street, East**

**114-5313-0072**

*Other DHR-ID:*

**Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, ca 1975**

This 1975, one-story, gable roof, 344 square-foot building is concrete block and sits partially below grade. The roof is covered in metal. No windows are present. There is no entrance on the facade.

*Individual Resource Status: Pump House Non-Contributing Total: 1*

**9 Durand Street, East**

**114-5313-0308**

*Other DHR-ID:*

**Primary Resource Information: Office/Office Building, Stories 1.00, Style: No Discernable Style, 1978**

This one-story building was constructed in 1978 and serves as office space. It has a rectangular form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The main entrance to the building is located offset on the front façade. It consists of double doors with a sidelight in an inset nook bordered by a four-course soldier brick surround. A second entrance is located offset on the rear façade and basically matches the main entrance except the surround projects out from the façade and features a full-height soldier course pediment above. Fenestration on the building includes metal windows with a fixed pane over an awning sash. The windows are set in recessed panels with aluminum panels below that sit on at-grade brick sills. A three-course corbelled brick string course wraps around the building at the top edge of the window and door panels. The top edge of the roof parapet also features a three-course corbelled brick treatment.

*Individual Resource Status: Office/Office Building, Non-Contributing Total: 1*

**DURAND STREET, WEST**

**2 Durand Street, West**

**114-5313-0191**

*Other DHR-ID:*

**Primary Resource Information: Office/Office Building, Stories 2.00, Style: Other, ca 1977**

Constructed in 1977, Building 1194A is a two-story, three-bay Modern Movement-style building constructed of brick laid in a stretcher bond pattern. The building is set on a concrete water table with an aluminum coping at the edge of the flat roof. The building is connected to Building 1194 on the south side by a two-story glazed connector. The first story of the connector is organized by a pair of aluminum and glass doors and a pair of three light windows the center sash of which is operable and the lower light has an opaque panel behind. There is a stucco panel between the head of the first story fenestration and the sill of the second story fenestration. The second story is fully glazed with four, four-light windows. The larger top and bottom sections have opaque panels, the third light is fixed and the second light is operable. The brick portion of the building is set in front of the connector and there is a steel stair from a flush steel door on the second story in the south elevation of the building. The stair leads to a paved area between the connected buildings. The facade of the two-bay projected brick box is organized by two vertical panels composed of a pair of two-light windows that are set on the concrete water table. Above the windows are a glazed aluminum panel, another pair of windows, and another glazed aluminum panel that meets the metal coping at the roof line. The windows have a larger fixed light with a smaller operable sash at the bottom.

*Individual Resource Status: Office/Office Building, Non-Contributing Total: 1*

**2 Durand Street, West**

**114-5313-0017**

*Other DHR-ID:*

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**Primary Resource Information: Office/Office Building, Stories 3.00, Style: Other, 1942**

This one-story building was constructed in 1978 and serves as office space. It has a rectangular form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The main entrance to the building is located offset on the front façade. It consists of double doors with a sidelight in an inset nook bordered by a four-course soldier brick surround. A second entrance is located offset on the rear façade and basically matches the main entrance except the surround projects out from the façade and features a full-height soldier course pediment above. Fenestration on the building includes metal windows with a fixed pane over an awning sash. The windows are set in recessed panels with aluminum panels below that sit on at-grade brick sills. A three-course corbelled brick string course wraps around the building at the top edge of the window and door panels. The top edge of the roof parapet also features a three-course corbelled brick treatment.

*Individual Resource Status: Office/Office Building, Contributing Total: 1*

**2 Durand Street, West**

**114-5313-0217**

*Other DHR-ID:*

**Primary Resource Information: Office/Office Building, Stories 2.00, Style: Modern Movement, 1977**

Constructed in 1977, Building 1194A is a two-story, three-bay Modern Movement-style building constructed of brick laid in a stretcher bond pattern. The building is set on a concrete water table with an aluminum coping at the edge of the flat roof. The building is connected to Building 1194 on the south side by a two-story glazed connector. The first story of the connector is organized by a pair of aluminum and glass doors and a pair of three light windows the center sash of which is operable and the lower light has an opaque panel behind. There is a stucco panel between the head of the first story fenestration and the sill of the second story fenestration. The second story is fully glazed with four, four-light windows. The larger top and bottom sections have opaque panels, the third light is fixed and the second light is operable. The brick portion of the building is set in front of the connector and there is a steel stair from a flush steel door on the second story in the south elevation of the building. The stair leads to a paved area between the connected buildings. The facade of the two-bay projected brick box is organized by two vertical panels composed of a pair of two-light windows that are set on the concrete water table. Above the windows are a glazed aluminum panel, another pair of windows, and another glazed aluminum panel that meets the metal coping at the roof line. The windows have a larger fixed light with a smaller operable sash at the bottom.

*Individual Resource Status: Office/Office Building, Non-Contributing Total: 1*

**FLIGHTLINE ROAD, EAST**

**230 East Flightline Road**

**114-5313-0425**

*Other DHR-ID:*

**Primary Resource Information: Hangar, Stories 2.00, Style: Stripped Classicism, 1932**

This large structure was built in several phases beginning circa 1932 with a single hangar. A second parallel hangar with an associated office building was appended circa 1941. The steel frame double hangars sit on a concrete slab foundation and feature large gabled parapets on the front and rear and heavy brick columns adorn the corners. Only the front of the original hangar still contains a large sliding aircraft door, while the front of the later hangar and the rear of both have been enclosed with corrugated metal. The two story office portion is located at the front edge of the east side of the later hangar. This building has a rectangular form with a masonry structural system on a continuous raised concrete foundation and is topped by a flat roof. The main entrance is offset on the east side and consists of a replaced metal door in a recessed panel. A cast concrete plaque with the NACA emblem is featured above the doorway. The entry bay projects slightly from the façade and is capped by a gabled parapet. Fenestration consists of paired metal windows set on concrete sills with soldier course lintels and are set in nearly full-height recessed panels. These recessed panels are topped by corbelled brick lintels capped by a continuous concrete stringcourse that delineates the parapet.

*Individual Resource Status: Hangar Contributing Total: 1*

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**3 Hunsaker Loop**

**114-5313-0053**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1953**

This 1953, one-story, side-gable, 6,383 square-foot building is clad in corrugated metal and rests on a poured, concrete slab at grade. The roof is covered in metal. Fixed, nine-light, metal-frame windows are typical. The entrance on the façade is a single, metal door with two lights adjacent to a metal, roll up door.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**11 Hunsaker Loop**

**114-5313-0305**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1979**

This one-story building was constructed in 1979 and serves as a storage facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a shallow pitch shed roof with metal coping. The only entrance to the building is located on the north façade and consists of double doors sheltered by a metal canopy supported by diagonal up-braces. Fenestration consists of metal double-hung sash windows with one-over-one light configurations. The building is simple and unadorned.

*Individual Resource Status:* **Storage Non-Contributing Total: 1**

**13 Hunsaker Loop**

**114-5313-0306**

*Other DHR-ID:*

*Primary Resource Information:* **Warehouse, Stories 1.00, Style: No Discernable Style, 1991**

This one-story building was constructed in 1991 and serves as a warehouse. It has a rectangular form and the concrete block structural system is exposed. The building rests on a raised concrete foundation and is topped by a shallow pitch gable roof covered with raised-seam metal paneling. A full-width shed-roof porch supported by metal posts is located on the front façade and shelters a loading dock and garage bay. The raised floor is approached by a staircase and U-shaped ramp on the south side. The building is simple and unadorned.

*Individual Resource Status:* **Warehouse Non-Contributing Total: 1**

**13 Hunsaker Loop**

**114-5313-0307**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1991**

This one-story building was constructed in 1991 and serves as a storage facility. The building has a rectangular form and the metal frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. The front façade of the building features a doorway and a garage bay. Fenestration consists of metal double-hung sash windows with one-over-one light configurations. The building is simple and unadorned.

*Individual Resource Status:* **Storage Non-Contributing Total: 1**

**15A Hunsaker Loop**

**114-5313-0317**

*Other DHR-ID:*

*Primary Resource Information:* **Warehouse, Stories 1.00, Style: No Discernable Style, 1995**

This one-story building was constructed in 1991 and serves as a warehouse. The building has a rectangular form and the masonry structural system is clad with stucco. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The front façade of the building features two doorways and two garage bays. A full-width shed roofed porch is located across the rear and shelters another garage bay. Fenestration consists of single-pane fixed metal windows. The building features a recessed horizontal band near the roofline to delineate the parapet and a similar recessed band to delineate the foundation.

*Individual Resource Status:* **Warehouse Non-Contributing Total: 1**

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**16 Hunsaker Loop**

**114-5313-0300**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 3.00, Style: No Discernable Style, 1968**

This three-story building was constructed in 1968 and serves as a research/lab facility. It has a basically rectangular form consisting of several blocks of varying heights. The main block is two stories tall and has a one-story wing projecting from the west side. A three-story full-width block is located to the rear. A concrete wall is located between the front and rear blocks and extends slightly beyond the walls and roof of the rear block. The section above the roof of the front block is reinforced with buttress supports. The steel frame structural system of the rest of the building is clad with flat metal panels and rests on a poured concrete slab foundation. The building is topped by a flat roof with metal coping, and a metal railing encircles the roof over the main block. Four doorways are located on the front façade of the building, although the easternmost appears to be the main entrance. Fenestration includes two and three-pane fixed metal windows, and is only present on the front facade. A grid of raised metal pipelines on wood support posts are attached to this building and extend south across Hunsaker Loop connecting to several other buildings and structures in the vicinity.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**17 Hunsaker Loop**

**114-5313-0298**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1968**

This one-story building was constructed in 1968 and serves as a storage facility. It has a rectangular form consisting of two blocks of varying heights. The concrete block structural system is exposed and rests on a poured concrete slab foundation. The building is topped by a flat roof with metal coping. The building has numerous doors on all facades including two single doors on the north side, a garage bay and four tall double-doors on the west side, and a garage bay and four tall double-doors on the east side. The garage bays are located on the northern block of the building which has a higher roof than the southern block. A raised metal pipeline on wood support posts is attached to this building and connects to several other buildings and structures in the vicinity.

*Individual Resource Status:* **Storage Contributing Total: 1**

**17A Hunsaker Loop**

**114-5313-0299**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1968**

This one-story building was constructed in 1968 and serves as a storage facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a shed roof covered with corrugated sheet metal. The building has only one entrance which is located on south side of the building and is sheltered by a full-width, shed roof porch with wood post supports. A low concrete block knee wall surrounds the poured concrete porch floor. Two small vents are located on the north façade of the building, and no other fenestration or elaboration is present.

*Individual Resource Status:* **Storage Contributing Total: 1**

**HUNTING AVENUE**

**224 Hunting Avenue**

**114-5313-0005**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Style: No Discernable Style, 1929**

The Full Scale Tunnel is in Building 643 in the East Area of Langley Research Center. The tunnel is a double return flow type with an open throat having a horizontal dimension of 60 feet and a vertical dimension of 30 feet. On either side of the test chamber is a return passage 50 feet wide, with a height varying from 46 to 72 feet. The entire equipment is housed in the structure, the outside walls of which serve as the outer walls of the return passages. The over-all length of the tunnel is 434 feet by 222 feet and the maximum height is 97 feet. The framework is on structural steel and the walls and roof are of 5/16-inch corrugated cement asbestos sheets. The entrance and exit cones are constructed of 2-inch wood planking, attached to a steel frame and covered on the inside with galvanized sheet metal as protection against fire.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

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**227 Hunting Avenue**

**114-5313-0409**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 3.00, Style: Other, ca 1939*

Constructed in 1939, Building 647 is a three-story, three-bay building constructed of brick laid in a five-course American bond pattern. In the first bay at the south end of the building at the first story is a coiling overhead door with a ribbon of fourteen windows separated from the second bay by a brick pier. On the second and third stories this bay have ribbons of eighteen windows. The two-part windows have a fixed lower glass light and a smaller upper opaque panel. There is a continuous concrete sill at all of the windows that forms a belt course across the façade. The second bay on the first story is organized around the entrance with a centered single-leaf glass and aluminum door. The concrete belt course (window sill line) abuts the aluminum door frame. Above the belt course, the door is topped by a two-panel transom and flanked by two, two light windows. Above the entrance on the second and third stories are fixed six light windows. The third bay on all stories has a ribbon of twenty-five, two-part windows. All of these windows are glazed with opaque panels. The tops of the third story windows on the facade form the op to the wall and abut the underside of the side gable roof.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**LANGLEY BOULEVARD**

**1 Langley Boulevard**

**114-5313-0028**

*Other DHR-ID:*

*Primary Resource Information: Gatehouse/Guard House, Stories 1.00, Style: No Discernable Style, ca 1948*

This 1948, one-story, flat roof, 1,653 square-foot building is red, common-bond brick and rests on below grade concrete footers with a poured concrete slab at grade. The roof is not visible; however, a brick chimney protrudes from the center of the roofline. Fixed, six-light, metal-frame windows are typical. The entrance on the façade is a glass, metal-frame door.

*Individual Resource Status: Gatehouse/Guard House Contributing Total: 1*

**2 Langley Boulevard**

**114-5313-0391**

*Other DHR-ID:*

*Primary Resource Information: Administration Bldg., Stories 1.00, Style: No Discernable Style, 2005*

This one-story building was constructed in 2005 and serves as Badge and Pass Office for all base visitors. It has a rectangular form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a continuous brick foundation and is topped by a hipped roof covered with raised-seam metal paneling. The cornice is covered with matching raised-seam metal. The main entrance is located centrally on the front façade and is sheltered by a hipped roof portico supported by two columns. Fenestration includes single-pane fixed metal windows that are arranged to resemble wings flanking the central entrance.

*Individual Resource Status: Administration Bldg. Non-Contributing Total: 1*

**3 Langley Boulevard**

**114-5313-0029**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: Other, ca 1945*

Constructed in 1945, Building 1229 is a two-story, three-part, thirteen-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. The facade is dominated by a central, two-story, eleven bay mass. Centered in the facade are double-leaf glass and steel doors with sidelights and a three-light transom. Above the transom is a stainless steel canopy and above the canopy is a six-light window. The door, canopy, and window composition is organized by a molded concrete architrave that cants back to the slightly recessed plane of the doors. The entrance is approached by granite stoop and five steps enclosed by cheek walls. On each side of the entrance are five, three-part, six-light windows. There are ten similar windows on the second story. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. At the second story, the lintels extend beyond the edge of the windows and wrap the outside corners of the building. Each window part has a large fixed upper light and a narrow, operable bottom sash. At the northeast and southwest ends of the building are recessed, two-story, one-

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bay blocks with centered three-part, six-light windows with concrete sills and rusticated brick lintels that wrap the corners of the building at the second story.

*Individual Resource Status: Office/Office Building, Contributing Total: 1*

**3A Langley Boulevard** **114-5313-0098** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 2000*

The Building 1229B is a single story rectangular storage facility with vertical corrugated siding and a flat roof. There are no windows and a single solid metal panel door on the west gable end.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**4 Langley Boulevard** **114-5313-0030** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 3.00, Style: No Discernable Style, ca 1946*

Constructed in 1946, Building 1230 is a T-plan, three-story, thirteen-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. The facade is dominated by a central, two-story, one-bay entry block. Double-leaf glass and steel doors with fixed glass side panels and a three-part transom are centered in this mass. Above the door are a stainless steel canopy and a six-part, fixed light window. The doors, canopy and window are surrounded by a molded concrete architrave with a curved projecting entablature. The entrance is approached by a granite stoop and five steps that are contained within granite cheek walls. On each side of the entrance are six, three-part, six-light anodized aluminum windows. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. At the second story, the lintels extend beyond the edge of the windows and wrap the outside corners of the building. Each window unit has a large fixed upper light and a narrow, operable bottom sash. The third floor is set back from the facade and is minimally visible from Langley Boulevard. On the north side of Building 1230, facing East Walcott Street is a seventeen-bay addition that forms an elongated arm to the original T-plan.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**6A Langley Boulevard** **114-5313-0101** *Other DHR-ID:*

*Primary Resource Information: Aviation Related, Stories 2.00, Style: Other, 1946*

Constructed in 1946, Building 1232A is a two-story, nine-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with concrete coping at the edge of the flat roof. Double-leaf glass and bronze aluminum doors with a transom are centered in this mass and surrounded by a molded concrete architrave with a projecting, curved entablature. The entrance is approached by a granite step and stoop. Over the entrance is a three-part, six-light window. There are four windows on each side of the entrance -- a two-part, four-light window and three, three-part, six-light windows. There are similar anodized aluminum windows on the second story. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. On the second story, the lintels extend beyond the edge of the windows and wrap the outside corners of the building. Each window part has a large fixed upper light and a narrow, operable bottom sash, recessed behind this block is a higher mass set on a concrete plinth with a concrete coping at the edge of the flat roof. Centered in the south part of this block is a set of one/one windows arranged three high by four wide. The north side has a single-leaf, flush metal door.

*Individual Resource Status: Aviation Related Contributing Total: 1*

**8 Langley Boulevard** **114-5313-0032** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Other, ca 1946*

Constructed in 1946, Building 1232 is a three-story, seven-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. Double-leaf

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glass and steel doors with an opaque transom are centered in this mass and surrounded by a molded concrete architrave with a curved, projecting entablature. The entrance is approached by two concrete steps and a concrete stoop. On each side of the entrance are three windows -- two, two-part, four-light windows flanking a center three-part, six-light window. There are stacked three-part, six-light windows over the entrance. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. At the third story, lintels extend beyond the edge of the windows and wrap the outside corners of the building. Each window part has a large fixed upper light and a narrow, operable bottom sash.

To the east is a three-story, five-bay Stripped Classicism-style addition constructed of brick laid in a five-course American bond pattern set on a concrete plinth with a metal coping at the edge of the flat roof. There are five windows on each story with a pattern of three-part, six-light windows alternating with two-part, four-light windows. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. At the third story, lintels extend beyond the edge of the windows and wrap the outside corners of the building. Each window part has a large fixed upper light and a narrow, operable bottom sash. Connected to the east end is a recessed, two-story, one-bay with double-leaf, aluminum and glass doors with a transom and a four-light fixed panel above. The connector is clad with vertical metal panels. To the east is a two-story, three-bay block constructed of pressed brick laid in a five-course American bond pattern.

There is a centered single-leaf glass and aluminum door with a metal canopy above. Flanking the entrance are two, one/one windows. On the second story there are three, one/one windows.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**9 Langley Boulevard**

**114-5313-0192**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, 1966*

Constructed in 1966, Building 1195 is a two-story, seven-bay, Modern Movement-style building constructed of pressed brick laid in a stretcher bond pattern. The building is of slab on grade construction with a metal coping at the edge of the flat roof. The facade is organized by two massing blocks. To the south is a projecting block with a double-leaf anodized aluminum and glass door with a transom above. There is a concrete pad and sidewalk at the entrance. Center over the entrance doors is a two-part anodized aluminum window. This composition is set to the north side of the projected facade. The recessed wing to the north is two-stories high, six-bays wide and vertically defined by recessed panels that organize the windows and the secondary entrance. The recessed panels extend from grade to the metal coping at the roof line. The secondary entrance is located at the first story in the third bay from the south and is composed of a flush metal door with a vertical light and a transom. The other bays are filled with stacked two-part anodized aluminum windows that have a large fixed upper light and a smaller operable lower sash. There is a soldier belt course between the first and second story windows. Building 1195 is connected to Building 1195A to the east.

*Individual Resource Status: Office/Office Building Contributing Total: 1*

**9A Langley Boulevard**

**114-5313-0193**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, 1966*

Constructed in 1966, Building 1195A is a two-story, five-bay, Modern Movement-style building constructed of pressed brick laid in a stretcher bond pattern with stucco panels at the second story. The slab-on-grade building has a metal coping at the edge of the flat roof. Building 1195A is attached to Building 1195 to the west and Building 1195B on the east. The first-story has three, two-light fixed aluminum windows that are protected by the second story that projects beyond the first story wall plane. There is an engaged brick pier at the first story that aligns with the eastern edge of the second story and defines the eastern end of Building 1195A. Aligned with the west end of the projecting second story is a slightly project brick plane that contains the building entrance that consists of a double-leaf, glass and aluminum door with a transom with a two-light fixed aluminum window above. To the west of the entrance is a recessed plane that has a single fixed window at the second story. The projecting second story is clad with stucco panels that are divided into 20



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panels by vertical aluminum strips. The fenestration is organized by single and paired fixed light windows with two blank panels between and blank panels at the ends.

*Individual Resource Status: Office/Office Building Contributing Total: 1*

**9B Langley Boulevard**

**114-5313-0194**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, 1972*

Constructed in 1966, Building 1195A is a two-story, five-bay, Modern Movement-style building constructed of pressed brick laid in a stretcher bond pattern with stucco panels at the second story. The slab-on-grade building has a metal coping at the edge of the flat roof. Building 1195A is attached to Building 1195 to the west and Building 1195B on the east. The first-story has three, two-light fixed aluminum windows that are protected by the second story that projects beyond the first story wall plane. There is an engaged brick pier at the first story that aligns with the eastern edge of the second story and defines the eastern end of Building 1195A. Aligned with the west end of the projecting second story is a slightly project brick plane that contains the building entrance that consists of a double-leaf, glass and aluminum door with a transom with a two-light fixed aluminum window above. To the west of the entrance is a recessed plane that has a single fixed window at the second story. The projecting second story is clad with stucco panels that are divided into 20 panels by vertical aluminum strips. The fenestration is organized by single and paired fixed light windows with two blank panels between and blank panels at the ends.

*Individual Resource Status: Office/Office Building Contributing Total: 1*

**9C Langley Boulevard**

**114-5313-0195**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, 1977*

Building 1195C is a two-story, five-bay, Modern Movement-style building constructed of pressed brick laid in a stretcher bond pattern. The slab-on-grade building has a metal coping at the edge of the flat roof. The central entrance, which consists of a double-leaf, glass and aluminum door, is recessed into the building with no architrave at the wall plane. Flanking the entrance there are eight, two-light windows (four on each side) that are vertically organized within a recessed panel. The recessed panel extends from the grade to the underside of a recessed soldier course, which forms the heads of the second story windows and encircles the building. The two-light windows have a large fixed upper light and smaller operable lower sash. At the west end is a recessed two-story, one-bay connector between Building 1195C and 1195B.

*Individual Resource Status: Office/Office Building Non-Contributing Total: 1*

**10 Langley Boulevard**

**114-5313-0350**

*Other DHR-ID:*

*Primary Resource Information: Fire Station, Stories 1.00, Style: No Discernable Style, 1967*

This one-story building was constructed in 1967 and serves as a fire station. It has an irregular form comprised of a three-bay pass through garage mass appended to a roughly L-shaped block. The masonry structural system is clad with red brick laid in a common bond. The building rests on a poured concrete slab foundation and is topped by a flat roof. Fenestration includes metal double-hung sash windows with one-over-one light configurations set in full-height recessed panels with smooth metal panels above and below. The building features a tapered metal parapet with coping set on a recessed base around the roofline.

*Individual Resource Status: Fire Station Contributing Total: 1*

**11 Langley Boulevard**

**114-5313-0022**

*Other DHR-ID:*

*Primary Resource Information: Administration Bldg., Stories 3.00, Style: Other, ca 1945*

Constructed in 1945, Building 1219 is a two-story, eleven-bay, Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. The entrance is centered in the facade and organized by a two-story molded concrete architrave with a curved entablature. The architrave is canted slightly to the door plane. There are double-leaf glass and steel doors with wide sidelights and a three part transom. The doors

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are topped by a metal canopy above which are three opaque panels that are separated by steel dividers and bear the NASA logo. Above the logo is a three-part, seven light anodized aluminum window. The upper three lights of which are large fixed panes and the lower six sash are operable. There are five windows on both sides of the entrance. Set closest to the entrance are single, two-part, four-light windows. The remaining eight windows are three-part, six light windows. Each window part is composed of a large fixed upper light and a narrow operable sash at the bottom. The windows units are separated by rusticated piers and are unified by a continuous molded concrete sill and a three-course rusticated lintel. To the northeast is a slightly recessed, two-story, six-bay, stretcher bond brick addition with metal coping at the edge of the flat roof. The elevation is horizontally organized by projecting brick panels that form the heads of the first story windows and the sills of the second story windows. There is a similar panel between the heads of the second story windows and the roof line. The windows are three-part, four light anodized aluminum units that consist of large fixed lights flanking a two-part section consisting of a large fixed upper light and an operable lower sash.

*Individual Resource Status: Administration Bldg. Contributing Total: 1*

**12 Langley Boulevard**

**114-5313-0024**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1946*

Constructed in 1946, Building 1221 is a one-story, seven-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a concrete coping at the top of the parapet. The double-leaf glass and anodized aluminum doors are surrounded by a molded concrete architrave that cants back to the slightly recessed door plane. On each side of the entrance are three windows. There is a paired one/one window on each side set near the entrance and two, tripled one/one windows. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. Each window part has a large fixed upper light and a narrow, operable bottom sash.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**12 Langley Boulevard**

**114-5313-0093**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1945*

Constructed in 1945, Building 1221B is a two-story, two-bay building constructed of pressed brick laid in a five course American bond pattern. The primary (east) elevation is organized into two masses defined by the juxtaposition of the wall planes. The building is set on a slab at grade and has a concrete coping at the edge of the parapet. The first mass of the building (south end) is organized into three parts that are defined by slightly recessed, unfenestrated planes that flank a slightly projected central plane. The first story of the projected plane has a four part sliding door above the door is a ribbon of twelve louvers with a continuous concrete sill and a four course corbelled lintel. The second massing of the building is set back from the facade of the first block. There is a large opening on the first story that has been infilled with brick and now contains centered, double-leaf, flush metal doors with lights. On the second story twelve-light steel windows flank a ribbon of five, six-light steel windows. The center, top four lights of the windows pivot. The window units are separated by brick pilasters. The units are unified by a continuous molded concrete sill and a four course corbelled brick lintel.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**12 Langley Boulevard**

**114-5313-0094**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1946*

Constructed in 1946, Building 1221C is a two-story, two bay building constructed of pressed brick laid in a five-course American bond pattern. The build is set on a slab at grade and has a metal coping at the edge of the flat roof. On the first story there are a single-leaf, flush metal door on the west side and a double-leaf, flush metal door on the east side of the north elevation. There is no fenestration on the second story.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

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**12 Langley Boulevard** **114-5313-0095** *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1946**

Constructed in 1946, Building 1221D is a two-story, four-bay cast concrete building set on a slab with a flat roof. On the north and south ends of the east elevation are two concrete, "break-out" panels with pulley systems at the top and on both sides. Between the panels are a fixed, two-light aluminum window and a single-leaf, flush metal door with a light. Centered in the second story is a fixed, two-light window. Above the windows, near the roofline are three metal louvers.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**12 Langley Boulevard** **114-5313-0096** *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1946**

Constructed in 1946, Building 1221E is a one-story, one-bay concrete block building set at grade on a slab with metal coping at the edge of the flat roof. There is a double-leaf, flush metal door at the north end of the facade (east elevation).

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**12A Langley Boulevard** **114-5313-0337** *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1965**

This two-story building was constructed in 1965 and serves as the High Intensity Noise research facility. It has an irregular form consisting of a roughly L-shaped poured concrete mass with a smaller roughly L-shaped steel frame mass in the corner. A steel wind tunnel structure extends off the north side. The building rests on a poured concrete slab foundation and is topped by a flat roof. Fenestration includes metal windows with a fixed pane over an awning sash, as well as three-light awning windows. The corner of the poured concrete mass has a tall square tower with a gable roof covered in raised-seam metal paneling and the western end of the concrete mass has a shorter square tower with a pyramidal roof and large integral vents. The doors and windows on this building are located only on the corrugated metal covered mass. There are lots of pipes and mechanical equipment on the roof of the entire building.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**13 Langley Boulevard** **114-5313-0356** *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: International Style, 1979**

This two-story International style building was constructed in 1979 and serves as research space. It has a rectangular form and the masonry structural system is clad with a combination of red brick laid in a common bond and stucco. The building rests on a raised continuous brick foundation and is topped by a flat roof with metal coping. The main entrance is offset and consists of a single door with a plate-glass sidelight set in an inset nook. Fenestration includes a continuous horizontal band of metal windows with a fixed pane over an awning sash. The central portion of the front façade features a rough-stucco finish set on a brick sill atop the raised foundation. The continuous bands of windows are set within this panel which is flanked by full-height brick pilasters. The inset entrance nook is located at the eastern edge of this panel. Large blank brick panels flank each side of the stuccoed central panel. The east side of the building has a similar appearance with a much narrower stucco section.

*Individual Resource Status:* **Research Facility/Laboratory Non-Contributing Total: 1**

**14 Langley Boulevard** **114-5313-0025** *Other DHR-ID:*

*Primary Resource Information:* **Other, Stories 1.00, Style: No Discernable Style, 1946**

This 1946, one-story, flat roof, 19,370 square-foot building is red, common-bond brick and rests on below grade concrete footers with a partial basement and a poured concrete slab at grade. The roof is not visible. There are two, one-story porches supported by brick

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columns with a metal covered walkway connecting them. Fixed, 1/1, metal-frame windows are typical. The two entrances on the facade are glass, metal-frame.

*Individual Resource Status: Other Contributing Total: 1*

**14 Langley Boulevard**

**114-5313-0006**

*Other DHR-ID: 114-0143*

*Primary Resource Information: Research Facility/Laboratory, Stories Other, Style: No Discernable Style, 1921*

The Variable Density Tunnel (VDT) was constructed during the period from 1921-1923 at the direction of the National Advisory Committee for Aeronautics (NACA). The tank of the VDT was built by the Newport News Shipbuilding & Dry Dock Co., of Newport News, Virginia. It is capable of withstanding a working pressure of 21 atmospheres. It is built of steel plates lapped and riveted according to the usual practice in steam boiler construction, although, because of the size of the tank and the high working pressure, the construction is unusually heavy. By the 1940s the tunnel was obsolete and declared unsafe in 1978. The basic structure of the tunnel remains intact. It was relocated from its associated laboratory building in the East Area to a small park in the West Area recently.

*Individual Resource Status: Other Contributing/NRHP/NHL Total: 1*

**14B Langley Boulevard**

**114-5313-0338**

*Other DHR-ID:*

*Primary Resource Information: Gymnasium, Stories 2.00, Style: No Discernable Style, 1986*

This two-story building was constructed in 1986 and serves as a gym and fitness center. It has a rectangular form and the steel frame structural system is clad with a combination of red brick laid in common bond and corrugated metal. The building rests on a poured concrete slab foundation and is topped by a lot pitch gable roof covered with raised-seam metal paneling. The main entrance is offset on the front facade and consists of a set of simple metal doors. Fenestration includes a ribbon of single-pane, fixed metal clerestory windows just below the roofline on the rear of the building. The front and west sides of the building feature brick walls halfway up the facade with corrugated metal above, while the rear and east sides of the building are clad with only corrugated metal. The building features an overhanging corrugated metal parapet on the front and west sides as well.

*Individual Resource Status: Gymnasium Non-Contributing Total: 1*

**15 Langley Boulevard**

**114-5313-0060**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Post Modern, ca 1960*

Building 1268 is a two-story, three-bay brick and stucco building set on a raised concrete base with metal coping at the edge of the flat roof. The corners of the building are defined by pylons constructed of brick laid in a five-course American bond pattern. The fenestration pattern on the second story is a continuous ribbon of fixed lights in anodized aluminum frames. On the first story continuous ribbon windows flank the centered entrance. There are anodized panels between each set of four windows on the first and second story. There are stucco panels below the windows to the concrete base, between the first and second story windows and above the second story windows to the metal coping. The centered entrance is defined by a green travertine marble architrave. Within the marble surround are double-leaf anodized aluminum and glass doors with sidelights and a three-part transom. The entrance is approached by a granite stoop with a projecting marble planter on the west side. There are six granite steps enclosed by granite cheek walls. The stoop is covered by an aluminum canopy that is supported by tapered aluminum columns. There are glass panels in the west side of the canopy roof. A ramp with aluminum rails extends from the porch to the west.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**17 Langley Boulevard**

**114-5313-0336**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, 1992*

This two-story building was constructed in 1992 and serves as office space. It has a basically T-shaped form with a symmetrical front facade and small one-bay wings projecting from each side. The masonry structural system is clad with red brick laid in common bond. The building rests on a continuous brick foundation and is topped by a flat roof with metal coping. The central three bays of the front

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façade projects slightly from the outer bays and an inset entrance is located at both corners of this mass. These entrances consist of single doors flanked by plate-glass sidelights. Fenestration is found in pairs and includes metal windows with a fixed pane over an awning sash. The building features brick window sills, a four-course soldier brick string course that delineates the first and second floors, and a six-course soldier brick string course that delineates the parapet from the second floor.

*Individual Resource Status: Office/Office Building, Non-Contributing Total: 1*

**18 Langley Boulevard**

**114-5313-0200**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Post Modern, ca 1965*

Constructed in 1965, Building 1200 is a two-story, one-bay, Modern Movement-style building constructed of concrete block. The slab-on-grade building has a three-part metal coping at the edge of the flat roof. The entrance, centered in the facade, consists of double-leaf, bronze anodized aluminum and glass doors that are protected by a bronze anodized canopy. Above the canopy is a frontispiece that extends to the underside of the coping. The decorative element is set in a recessed panel that is divided in half vertically by a bronze anodized aluminum mullion. Horizontal muntins divide the panel into eight sections. The un-fenestrated walls that flank the entrance are divided into four horizontal sections by reveals between block courses.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**18 Langley Boulevard**

**114-5313-0201**

*Other DHR-ID:*

*Primary Resource Information: Other, Stories 2.00, Style: No Discernable Style, 1965*

Building 1200A is a two-story, three-bay, side gable roofed building clad with vertical standing seam metal wall panels. The roof is covered with corrugated metal and there are turbine vents on the roof. There is a coiling, overhead garage door centered in the facade with an adjacent single leaf, flush metal door with an upper light to the north. There is a louver at the south end of the facade near the eave line.

*Individual Resource Status: Other Contributing Total: 1*

**19 Langley Boulevard**

**114-5313-0339**

*Other DHR-ID:*

*Primary Resource Information: Energy Facility, Style: No Discernable Style, 1967*

This substation has a large steel transformer box and a long gable roof steel structure with a door on each end.

*Individual Resource Status: Energy Facility Non-Contributing Total: 1*

**21 Langley Boulevard,**

**114-5313-0138**

*Other DHR-ID:*

*Primary Resource Information: Power Plant, Style: No Discernable Style, ca 1979*

This 1979 open, flat roof, 300 square-foot structure is supported by four, concrete columns that rest on a poured concrete slab at grade. The roof is not visible. The electrical components are encased in a thick, steel box with grates on the north elevation. A steel ladder and small landing is located on the west elevation and provides access to the roof. Steel rails surround the roof. An open concrete block wall with concrete pillars and top rails encloses the south, east, and west elevations with the north elevation open.

*Individual Resource Status: Power Plant Non-Contributing Total: 1*

**21 Langley Boulevard,**

**114-5313-0136**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1968*

This 1968, two-story, flat roof, 83,902 square-foot building is white, common-bond brick on the facade and east elevation and clad in metal on the west elevation. The foundation is not visible. The roof is not visible; however, this is a metal cap along the edge of the roofline. Two flights of metal stairs lead to the roof. A small porch provides shelter over the stairs and landing. Fixed, oversized, 2/2, metal-frame windows with metal panel inserts are typical. No windows are present on the metal-clad west elevation. The entrances on the facade are oversized garage doors. There is also a single entry door. There is a three-story ell addition clad in metal on the

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southeast elevation. There is a 1968, two-story, 4,300 square-foot, white, common-bond addition attached to the northwest elevation by a hyphen.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**23A Langley Boulevard, 114-5313-0137 Other DHR-ID:**

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1967*

Constructed in 1967, Building 1250A is a two-story, two-part, four-bay Modern Movement-style constructed of white brick laid in a stretcher bond pattern. The building is set on grade with a metal coping at the edge of the flat roof. The entrance is located in a bay recessed from the adjacent wall planes. There are double-leaf, glass and aluminum doors with a transom above. The entrance is protected by a roof structure with a folded aluminum fascia that is tied to the adjacent wall planes. There is no fenestration on the second story. The west end of the building is projected in front of the entry bay and organized into three bays by vertically organized, two-light windows visually united by a folded metal panel in between. The anodized aluminum windows have a large fixed upper light and a narrow awning window at the bottom, and a row lock sill.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**29 Langley Boulevard 114-5313-0134 Other DHR-ID:**

*Primary Resource Information: Gatehouse/Guard House, Stories 1.00, Style: No Discernable Style, 1979*

This one-story building was constructed in 1979 and serves as the gatehouse/guard house for the western entrance into NASA LaRC from Wythe Creek Road. It has a rectangular form and rests on a poured concrete slab foundation. The building is topped by a flat roof with wide overhangs supported by square metal posts on the front facade. The rear portion of the building is clad with brick laid in a common bond while the front portion of the building is clad with full-height plate glass panels set on a brick knee wall.

*Individual Resource Status: Gatehouse/Guard House Non-Contributing Total: 1*

**LEWIS LOOP**

**1 Lewis Loop 114-5313-0363 Other DHR-ID:**

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1958*

This one-story building was constructed in 1958 and initially functioned as the Test Cell and Radiation Laboratory, although is now vacant. The building has a complex irregular form consisting of several blocks constructed at different dates. The concrete block structural system is both exposed and clad with stucco on some portions and rests on a poured concrete slab foundation. The building is topped by a flat roof, and a dome-roofed structure projects from the rear of the building. The façade of the southern block of the building, which is likely the original portion, consists of a series of recessed full-height panels divided by narrow concrete block pilasters. A former doorway sheltered by a cantilevered cast concrete canopy has been enclosed on the front façade of this portion. The main entrance to the building is located on the northern portion of the building which has a flat façade. Fenestration is limited to the northern portion of the building and consists of fixed metal windows with one-over-one light configurations set in a recessed panel.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**5 Lewis Loop 114-5313-0238 Other DHR-ID:**

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1994*

This one-story building was constructed in 1994 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation. It is topped by a low-pitched front-gabled roof covered with raised-seam metal paneling. The main entrance to the building is a garage bay with a roll-up door on the front façade. Pedestrian doorways are also located on the front and north side of the building, and there is no other fenestration. The building is simple and unadorned.

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*Individual Resource Status: Storage Non-Contributing Total: 1*

**7 Lewis Loop** **114-5313-0275** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1995*

This one-story building was constructed in 1995 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation. It is topped by a low-pitched front-gabled roof covered with raised-seam metal paneling. The main entrance to the building is a garage bay with a roll-up door on the front façade. A second garage bay is located on the south façade and leads out onto the adjacent parking/staging area. Pedestrian doorways are also located on both sides of the building and there is no other fenestration. The building is simple and unadorned.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**20 Lewis Loop** **114-5313-0361** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1969*

This one-story building was constructed in 1969 and serves as a wind tunnel research facility. The building has an irregular form composed of several blocks of varying heights. The concrete block structural system is exposed and rests on a poured concrete slab foundation. The building is topped by flat roofs covered with numerous vents, flues, and other equipment. The building is set at-grade and has numerous doors and garage bays on all facades. The doorways feature cast concrete hoods above them. Fenestration includes fixed metal windows with a two-over-two light configuration which are likely replacements, and cast concrete sills. The building has no other elaboration or ornamentation. Three large vacuum sphere structures are located to the rear of the building and are connected with a system of piping.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**22B Lewis Loop** **114-5313-0360** *Other DHR-ID:*

*Primary Resource Information: Water Tower, Style: No Discernable Style, 1969*

This structure was constructed in 1969 and functions as a water storage tank. It has a cylindrical form and the steel frame structural system is clad with welded metal paneling. The tank rests on a poured concrete slab foundation and is topped by a domed roof.

*Individual Resource Status: Water Tower Contributing Total: 1*

**23A Lewis Loop** **114-5313-0359** *Other DHR-ID:*

*Primary Resource Information: Energy Facility, Stories 1.00, Style: No Discernable Style, ca 1960*

This substation consists of four steel transformer boxes. Each unit has several doors with vents and is covered with a tilted flat roof.

*Individual Resource Status: Energy Facility Non-Contributing Total: 1*

**28 Lewis Loop** **114-5313-0068** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: Other, 1960*

This 1960, one-story, flat roof, 1,474 square-foot prefabricated building is clad in monolithic panels and rests on a poured concrete slab. The roof is not visible. There is a paneled metal fascia below the metal coping at the roof line. Fixed, three-light, metal-frame windows are typical. The two entrances on the facade are single, metal doors, one with a window and one with a steel overhang. There is also an oversized roll up garage door.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**29 Lewis Loop** **114-5313-0367** *Other DHR-ID:*

*Primary Resource Information: Shed, Vehicle/Equipment, Stories 1.00, Style: No Discernable Style, 1972*

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This one-story building was constructed in 1972 and serves as an equipment shed. It has a rectangular form and the steel frame structural system is clad with corrugated sheet metal. The building rests on a poured concrete slab foundation and is topped by a front-gabled room covered with corrugated sheet metal. The main entrance to the building is a large garage bay with a roll-up door that appears to have replaced an earlier pair of hanging-track doors. Pedestrian entrances are located adjacent to the garage bay and on the rear façade. There is no other fenestration on the building and there is no other elaboration or ornamentation.

*Individual Resource Status: Shed, Vehicle/Equipment Contributing Total: 1*

**31A Lewis Loop**

**114-5313-0133**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: Other, 1960*

This is a one-story, six-bay concrete block building set on a concrete curb with a metal fascia at the edge of the flat roof. The facade is organized into four masses by the juxtaposition of the wall planes. The first block at the north end of the building is deeply recessed from the other three masses of the building and is composed of a single bay with a centered overhead garage door. The next three masses to the south function as a more organized unit with a slight projected three-bay center mass with slightly recessed flanking wings. The center mass is three-bays wide with centered double-leaf metal doors with blind panels at the top. To the north of these doors is a large opening infilled with steel plates with a single-leaf, flush metal door with two-lights on the left side. The bay to the south of the central double doors is similarly occupied by an infilled opening with a single leaf door on the right side. Flanking this three bay mass are two recessed one-bay masses. The facade of the recessed block to the north is almost entirely made up of a large opening that has been infilled with steel panels. The slightly recessed block to the south of the three bay center mass has a centered single-leaf flush metal door that is topped by a cast concrete canopy.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**31B Lewis Loop**

**114-5313-0365**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: Other, 1966*

This one-story building was constructed in 1966 and initially functioned as a Propellant Mixing Facility, however is now general research space. The building has a rectangular form and is topped by a flat roof. The concrete structural system is clad in cast concrete panels and rests on a poured concrete slab foundation. The main entrance to the building is on the south façade and consists of double doors sheltered by a metal canopy. A garage bay is located on the south façade sheltered by the integral roof. A hanging track is suspended from the roof in this covered area and leads from the driveway into the garage door. Two more entrances are located on the rear under a full-width, shed-roofed porch. The building has no windows, elaboration, or ornamentation. What appears to be a concrete block addition is appended to the east side.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**31D Lewis Loop**

**114-5313-0364**

*Other DHR-ID:*

*Primary Resource Information: Energy Facility, Stories 1.00, Style: Other, 1968*

This substation consists of two steel transformer boxes. Each unit has several doors with vents and is covered with a tilted flat roof.

*Individual Resource Status: Energy Facility Contributing Total: 1*

**LINDBERGH WAY**

**8 Lindbergh Way**

**114-5313-0031**

*Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, ca 1946*

Constructed in 1946, Building 1231 is a one-story, three-bay building constructed on concrete block. There is a pair of aluminum and glass doors centered in the facade with one/one, metal windows on either side. There is a vertical metal fascia around the perimeter at the roof line. At the entrance there is a projected metal roof supported by square metal posts.



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*Individual Resource Status: Other Non-Contributing Total: 1*

**8B Lindbergh Way** **114-5313-0340** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1992*

This one-story building was constructed in 1992 and serves as a daycare facility. It has a rectangular form and the concrete block structural system is clad with aluminum siding. The building rests on a continuous concrete block foundation and is topped by a flat roof with an overhanging corduroy metal parapet. The main entrance is on the south side of the building in a narrow corridor between it and Building 1231C. Fenestration includes metal sliding windows with two panes. The majority of this building is obscured by the chain link fence with screening that encloses the grassy area to the north.

*Individual Resource Status: Other Non-Contributing Total: 1*

**8B Lindbergh Way** **114-5313-0341** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1991*

This one-story building was constructed in 1991 and serves as a daycare facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a continuous concrete block foundation and is topped by a flat roof with metal coping. It is composed of three blocks with the central block being slightly recessed from the outer blocks. The main entrance to the building is located on the central block and consists of a set of double doors with sidelights sheltered by a canvas canopy. Fenestration includes metal windows with two awning sashes over two fixed panes.

*Individual Resource Status: Other Non-Contributing Total: 1*

**10A Lindbergh Way** **114-5313-0100** *Other DHR-ID:*

*Primary Resource Information: Observatory, Stories 1.00, Style: No Discernable Style, ca 1946*

Constructed in 1946, Building 1231A, is an octagonal building constructed of vertical metal panels set on a circular concrete pad. There are double-leaf metal doors with lights on the west elevation. On the east elevation there is a one-bay projection with single-leaf, flush metal doors on either side. On the four, sloped sides of the building there are three-light metal windows flanking six-light metal windows. On two of the flat sides there are single-leaf flush metal doors with lights. The doors and windows have been covered with wire mesh grills. There is a metal coping at the edge of the flat roof and a circular room projecting above the roof line. To the north of the building is a pyramidal tower with a metal stair and walk way that connects to the roof of the observatory.

*Individual Resource Status: Observatory Contributing Total: 1*

**MARVIN STREET, EAST**

**2H Marvin Street, East** **114-5313-0348** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1967*

This one-story building was constructed in 1967 and serves as research space. It has a rectangular form and the concrete structural system is clad with stucco. The building rests on a continuous concrete foundation and is topped by a flat roof. The main entrance is located on the north side and consists of a single doorway next to a garage bay. Fenestration includes sixteen-pane fixed metal windows. Several window openings have been enclosed with concrete blocks. The building features a scored stucco band that aligns with the top edge of the garage bay and wraps around the building.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**4F Marvin Street, East** **114-5313-0111** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: Other, ca 1952*

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Constructed in 1952, Building 1247C is a one-story, one-bay Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The building is set at grade and there is a concrete coping at the edge of the flat roof. Offset on the east side of the façade is a single-leaf flush metal door with a light in the top and a louver in the bottom.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**6C Marvin Street, East** **114-5313-0108** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 2.00, Style: Other, ca 1952*

This 1952, two-story, flat roof, 4,050 square-foot building is clad in metal panels. The foundation is not visible. The roof is not visible; however, the roofline is surrounded by a railing and there are three large, metal vents across the roof. There are stairs on the side elevation surrounded by metal railings that lead from the ground to the roof. No windows are visible; however, the bottom story is open on the façade. There is no entrance on the façade.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**10J Marvin Street, East** **114-5313-0349** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1991*

This one-story building was constructed in 1991 and serves as a pump house for a nearby vacuum sphere. It has a rectangular form and the concrete block structural system is clad with stucco. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The building is simple and unadorned and has only a single door and garage bay on the west side. A metal ladder is attached to the front façade of the building provides access to the roof.

*Individual Resource Status: Pump House Non-Contributing Total: 1*

**MARVIN STREET, NORTH**

**6 Marvin Street, North** **114-5313-0038** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1951*

This 1951, one-story, front-gable, 6,246 square-foot building is clad in metal and rests on below grade concrete footers with a poured concrete slab at grade. The roof is covered in metal. Fixed, nine-light, metal-frame windows are typical. The entrance on the façade is a metal-clad sliding door with a single, metal door with one light adjacent to the sliding door. The interior consists of one floor with a mezzanine.

*Individual Resource Status: Storage Contributing Total: 1*

**8 Marvin Street, North** **114-5313-0048** *Other DHR-ID:*

*Primary Resource Information: Administration Bldg., Stories 1.50, Style: No Discernable Style, ca 1958*

This 1958, one-and-a-half-story, flat roof, 8,442 square-foot building is clad in corrugated steel panels and rests on a concrete piling below grade with a poured concrete slab at grade. The roof is not visible. The building was constructed in three stages with a two-story stage on the east elevation and a one-story stage on the west elevation. No windows are visible; however, there are single, metal-frame louvered openings. The entrances on the façade are two, single, metal-frame roll up doors. There is a one-story, flat roof, addition clad in metal attached to the southwest elevation. This entrance to this addition is an oversized garage door with a three-light transom and a single, metal door with one light. There is a mezzanine on the interior.

*Individual Resource Status: Administration Bldg. Contributing Total: 1*

**8 Marvin Street, North** **114-5313-0118** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 3.00, Style: No Discernable Style, 1999*

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This 1999, three-story, flat roof, 8,442 square-foot building is clad in inter-locking steel panels and rests on a concrete piling below grade with a poured concrete slab at grade. There are two metal-frame louvered openings. The entrances on the facade are a single, metal-frame roll up door in the northern corner, and a single metal door to the left of the roll-up door.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**8 Marvin Street, North**

**114-5313-0119**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 2003*

This 2003, one-story, two-bay, building is constructed of standing seam steel panels and rests on a concrete piling below grade with a poured concrete slab at grade and a metal coping at the edge of the flat roof. There are two, coiling overhead doors on the southwest elevation.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**8A Marvin Street, North**

**114-5313-0117**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1958*

This 1958, one-story, flat roof, 8,442 square-foot building is clad in inter-locking steel panels and rests on a concrete piling below grade with a poured concrete slab at grade. The flat roof is edged with a metal fascia. There is a metal overhead door with two lights and a three-light transom in the center of the facade. At the north end is a single-leaf, metal door with one light. There are projected metal canopies over the garage door and the single-leaf door. There are paired two-light windows in the south end of the facade and two fixed light windows between the garage door and the single-leaf door and above the single-leaf door. There is a mezzanine on the interior.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**MARVIN STREET, SOUTH**

**1A Marvin Street, South**

**114-5313-0231**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1971*

This 1971, one-story, flat roof, 9,559 square-foot prefabricated building is clad in metal and rests on below grade concrete footers with a concrete slab at grade. The roof is covered in metal. No windows are visible. The entrance on the facade is a double, metal door. There is a 1971, flat roof, 5,084 square-foot, prefabricated addition clad in metal attached to the north elevation. There is a 1971, 2,660 square-foot, prefabricated addition clad in metal attached to the north elevation of the addition.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**1B Marvin Street, South**

**114-5313-0232**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1971*

This 1971, one-story, flat roof, 5,084 square-foot building is constructed of concrete block and rests on below grade concrete footers with a concrete slab at grade with a metal fascia at the edge of the flat roof. There are no windows on the west elevation (facade) and the entrance is a single-leaf metal door.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**1C Marvin Street, South**

**114-5313-0233**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1971*

This 1971, one-story, flat roof, 2,660 square-foot building is constructed of concrete block and rests on below grade concrete footers with a concrete slab at grade with a metal fascia at the edge of the flat roof. There is a one-story, one-bay concrete block projection at the south end of the west elevation (facade). The projecting bay has single, three-light, steel hopper windows in the south and west

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elevation. Attached on the north side of the projecting bay is a lean-to storage area with a corrugated metal roof. The entrance on the facade is a double, metal door.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**4 Marvin Street, South**

**114-5313-0330**

*Other DHR-ID:*

*Primary Resource Information: Warehouse, Stories 1.00, Style: No Discernable Style, 1966*

This one-story building was constructed in 1966 and serves as a distribution warehouse. It has an irregular form composed of a front-gabled main mass, a shed-roof wing on the north side, and a side-gabled wing on the south side. The building has a steel frame structural system clad with a combination of corrugated and raised-seam metal paneling that rests on a continuous concrete foundation. It appears that the main entrance is located on the front of the northern shed-roof wing. The south wing features a full-width loading dock sheltered by a shed roof with metal post supports and has three garage bays. Another garage bay is located on the south side of the main mass and is sheltered by extended roof overhang. Fenestration on the building includes three-pane fixed metal windows and metal windows with a fixed pane over an awning sash. A small metal, flat roofed garage outbuilding is located in the parking lot to the west of the building.

*Individual Resource Status: Warehouse Contributing Total: 1*

**6 Marvin Street, South**

**114-5313-0316**

*Other DHR-ID:*

*Primary Resource Information: Post Office, Stories 1.00, Style: No Discernable Style, 1992*

This one-story building was constructed in 1992 and serves as a post office. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. The south bay of the front façade projects slightly forward and is where the main entrance is located. Fenestration includes sliding metal windows with one-by-one light configurations. The front façade features two garage bays that open to an inset loading dock with a concrete floor, rubber bumpers, and two garage doors.

*Individual Resource Status: Post Office Non-Contributing Total: 1*

**8 Marvin Street, South**

**114-5313-0073**

*Other DHR-ID:*

*Primary Resource Information: Workshop, Stories 1.00, Style: No Discernable Style, 1960*

Building 1292 is a one-story, five-bay front-gable roofed building constructed of concrete block. The facade is organized around a central overhead door. To the north of the central overhead door is a single-leaf flush metal door with a single light. To the north of the single-leaf door is a metal framed three-light hopper window. To the south of the overhead door is a three-part aluminum window with a large upper fixed light and two small lights at the bottom. To the south of the three-part window is a single-leaf flush metal door with a single light. The windows have molded concrete sills. There is a wood fascia at the roof line and a triangular louver in the apex of the gable. The roof is clad with corrugated metal. There is an open shed on the south side of the building.

*Individual Resource Status: Workshop Contributing Total: 1*

**8 Marvin Street, South**

**114-5313-0314**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1988*

This one-story building was constructed in 1988 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with smooth metal paneling. The building rests on a continuous concrete foundation and is topped by a gable roof covered with raised-seam metal paneling. This simple building has only a single door and a garage bay on the front façade.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**8A Marvin Street, South**

**114-5313-0274**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1975*

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Constructed in 1975, Building 1292A is a one-story, one-bay concrete block building set at grade with a front gable roof. There is a wood fascia at the roof line and the roof is clad with corrugated metal. There is a metal over head door centered in the facade.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**8A Marvin Street, South** **114-5313-0370** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1975*

This one-story building was constructed in 1975 and serves as a storage facility. It has a rectangular form and the concrete block structural system is clad with corrugated metal paneling in some sections and left exposed in others. The building rests on a poured concrete slab foundation and is topped by a shed roof covered with corrugated metal paneling. The building consists of two blocks with an open area in between under an integral roof. Each of the two ends blocks has several garage bays on the front façade and the open area is enclosed with chain link gates. A full-width pent roof covered with composition shingles shelters the front façade.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**13 Marvin Street, South** **114-5313-0315** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: Other, 1991*

This one-story building was constructed in 1991 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. It has garage bays located centrally on the front and rear facades. Fenestration includes fixed metal windows with one-by-one light configurations.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**14 Marvin Street, South** **114-5313-0313** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1979*

This one-story building was constructed in 1979 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. It has a garage bay located centrally on the front facades and a single door located centrally on the rear. Fenestration includes three-light metal awning windows.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**16 Marvin Street, South** **114-5313-0309** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1974*

This one-story building was constructed in 1974 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. It has garage bays located centrally on the front and rear facades. Fenestration includes fixed metal windows with one-by-one light configurations.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**18 Marvin Street, South** **114-5313-0310** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1974*

This one-story building was constructed in 1974 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. It has garage bays located centrally on the front and rear facades. Fenestration includes fixed metal windows with one-by-one light configurations.

*Individual Resource Status: Storage Non-Contributing Total: 1*

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**20 Marvin Street, South** **114-5313-0311** *Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1974**

This one-story building was constructed in 1974 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal paneling. It has garage bays located centrally on the front and rear facades. A full-width open-sided storage area sheltered by a shed roof with metal post supports is appended to the north side. Fenestration includes fixed metal windows with one-by-one light configurations.

*Individual Resource Status:* **Storage Non-Contributing Total: 1**

**22 Marvin Street, South** **114-5313-0312** *Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1974**

This one-story building was constructed in 1974 and serves as a storage facility. It has a long and narrow rectangular form and the steel frame structural system is clad with welded metal paneling. The building rests on a poured concrete slab foundation and is topped by a shallow pitch gable roof. The building has single doors and garage bays on each end as well as a garage bay on the east side.

*Individual Resource Status:* **Storage Non-Contributing Total: 1**

**24 Marvin Street, South** **114-5313-0047** *Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, ca 1955**

This 1955, one-story, front-gable, 2,007 square-foot building is clad in metal and rests on a poured concrete slab at grade. The roof is covered in metal. Fixed, six-light, metal-frame windows are typical. The entrance on the façade is a metal, sliding, oversize door.

*Individual Resource Status:* **Storage Contributing Total: 1**

**26 Marvin Street, South** **114-5313-0046** *Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, ca 1954**

This 1954, one-story, shed roof, 304 square-foot building is concrete block and rests on a poured concrete slab at grade. The roof is metal. No windows are present. The entrance on the façade is a double, metal door.

*Individual Resource Status:* **Storage Contributing Total: 1**

**PLUMB STREET**

**113 Plumb Street** **114-5313-0421** *Other DHR-ID: 114-0165-0113*

*Primary Resource Information:* **Office Bldg., Stories 2.00, Style: Stripped Classicism, 1934**

This two-story building was constructed c.1934 and serves as office space. It has a rectangular form and the masonry structural system rests on a continuous raised concrete foundation and is topped by a low-pitch gable roof with a parapet. The main entrance is located centrally on the front façade and consists of a set of double doors with a transom light on a poured concrete stoop. Fenestration includes wood double-hung sash windows with three-over-three light configurations that are protected by modern storm panes. The facades on this building are divided by recessed panels that are topped by four-course corbelled brick lintels and bordered by brick pilasters. Each panel is two windows wide. The windows appear to be original to the building and are taller on the first floor than the second. The rear features several large industrial style metal casement windows and several additional entrances.

*Individual Resource Status:* **Office Bldg. Contributing Total: 1**

**REID STREET, EAST**

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**1A Reid Street, East**

**114-5313-0106**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 3.00, Style: No Discernable Style, 1952*

Constructed in 1952, Building 1247A is a three-story, nine-bay Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a concrete coping at the edge of the flat roof. The bays of the building are defined by the vertical organization of the windows within recessed planes. The windows are paired, two-light anodized aluminum sash with a large fixed upper light and a smaller operable sash on the bottom. The windows have cast concrete sills. The first story windows have soldier course lintels while the second story windows have four course corbelled lintels that step out to the wall plane. The entrance, in the second bay from the west end of the building, is composed of double-leaf, glass and anodized-aluminum doors. Above the doors is a suspended metal canopy that is secured to the facade by two triangulated tie backs. There is a large fixed light over the canopy. The building is set on a concrete plinth that undulates with the wall plane. There is a cast concrete belt course above the second story windows and concrete coping at the parapet edge.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**1B Reid Street, East**

**114-5313-0107**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1952*

Constructed in 1952, Building 1247B is a one-story with a recessed second story, two-part, ten-bay, cast concrete, Modern Movement-style building. The sections of the building are defined by the juxtaposition of the wall planes. The building is set on a concrete plinth with a chamfered belt course above the window heads. The west section is slightly recessed from the adjacent wall plane and is organized by three bays. There is a three-light anodized aluminum window with two square, fixed lights at the top and a large single light on the bottom. To the east of the window is a coiling overhead door and in the last bay on the east is a flush metal door with a light and a transom above. The eastern block is projected in front of the adjacent block and is organized in seven bays. There are six, four-light steel windows that are organized by a projected concrete lintel. To the west of the windows is a single-leaf, flush metal door with two-lights.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**1D Reid Street, East**

**114-5313-0109**

*Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1952*

Constructed in 1952, Building 1247D is a one-story with a recessed second story, two-part, six-bay, cast concrete, Modern Movement-style building. The sections of the building are defined by the juxtaposition of the wall planes. The building is set on a concrete plinth with a chamfered belt course above the window heads. The west section is slightly projected in front of the adjacent wall plane and is organized by five bays. There are two, four-light steel windows and three altered openings that are organized by a projected concrete lintel. The windows are off set in the east end block. To the east is a recessed one-bay block. Tucked in at the eastern edge of the block is a coiling over head door with a single-leaf, flush metal door with three lights incorporated into the west side of the opening. To the east of the over head door is an exterior concrete stair to a lower level set in a concrete well with a pipe rail around the top.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**6 Reid Street, East**

**114-5313-0059**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1960*

Building 1267 is a one-story, six-bay building constructed of pressed brick laid in a stretcher bond pattern with a metal coping at the edge of the flat roof. The facade is organized into three blocks by the juxtaposition of the wall planes. The outer blocks are set slightly forward of the center massing block. The outer blocks have seven-light ribbon windows with anodized aluminum frames. The western block has been extended and is fenestrated with an eleven-light ribbon window. The center massing block is organized around a centered entrance with a cast concrete architrave that projects slightly above the roof line. Within the architrave are double-leaf,

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anodized aluminum and glass doors with a transom. The entrance is approached by granite steps enclosed by granite cheek walls with sloped caps. Flanking the entrance are fifteen-light ribbon windows with steel lintels and no elaboration at the sill line.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**6A Reid Street, East** **114-5313-0132** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Modern Movement Style, 1960*

Constructed in 1960, building 1267A is a two-story, thirteen-bay Modern Movement-style building constructed of pressed brick laid in a stretcher bond pattern and vertical aluminum panels. The building is set at grade with metal coping at the edge of the flat roof. Stretcher bond brick masses define the corners of the building and there is brick below the windows to grade. There are vertical metal panels between the windows and above the second story windows to the roof line. Each bay is defined by a three-part, six-light anodized aluminum window and the sets of windows are separated by an anodized aluminum pilaster. There are two, single-leaf, flush metal doors with lights and transoms near the south corner of the building and a large ventilator hood between the windows in the last bay to the south.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**7E Reid Street, East** **114-5313-0110** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, ca 1952*

Constructed in 1952, Building 1247E is a one-story, eight-bay Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The building is set on a raised concrete base and there is a concrete coping at the edge of the flat roof. There are entrances at both the east and west ends of the building. The entrances are reached by concrete steps enclosed by concrete cheek walls to a stoop. There is a cast concrete surround that organizes the double-leaf, glass and aluminum doors and transom. There is a suspended metal canopy over the doors. Between the two entrances are six, six-light anodized aluminum windows. The upper four lights of which are fixed and the lower two-lights are operable sash. Four of the windows are evenly spaced on the west side of the facade with an un-penetrated section of wall and two more windows set near the east entrance.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**8 Reid Street, East** **114-5313-0077** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, ca 1963*

This 1963, one-story, flat roof building is red, common-bond brick on the facade and concrete block on the other elevations. The foundation is not visible. The roof is not visible; however, there is a metal, cylindrical vent protruding from the side of the roofline. Fixed, one-light, metal-frame ribbon windows are typical. There is no entrance on the facade.

*Individual Resource Status: Other Contributing Total: 1*

**10 Reid Street, East** **114-5313-0057** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1960*

Building 1265 is a one-story, three-bay building constructed of pressed brick laid in a stretcher bond pattern. The building is set at grade with a metal coping at the edge of the flat roof. The entrance is centered in the facade and organized by a flat, cast concrete architrave that projects slightly above the roof line. Recessed within the architrave are double-leaf glass and aluminum doors with a transom. Flanking the entrance are fixed, twelve-light anodized aluminum ribbon windows. To the west is a one-story, one-bay addition with a similar twelve-light ribbon window. There is a ramp enclosed by a low brick wall with a concrete wash and pipe rail that extends across the facade from the centered entrance.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**10 Reid Street, East** **114-5313-0124** *Other DHR-ID:*



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**Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1960**

Building 1265A is a one-story, one-bay vertical metal panel building set on a concrete pad with a metal coping at the edge of the flat roof. There is a single-leaf, flush metal door with a square light offset on the facade. The door is set into what appears to have been a larger opening that has been infilled with metal panels.

*Individual Resource Status: Storage Contributing Total: 1*

**10 Reid Street, East**

**114-5313-0125**

*Other DHR-ID:*

**Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1960**

Building 1265B is a one-story, one-bay building set on a raised concrete foundation. The building is clad with vertical metal panels and there is a metal coping at the edge of the flat roof. There is an over head garage door off set in the facade.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**10 Reid Street, East**

**114-5313-0126**

*Other DHR-ID:*

**Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1960**

Building 1265C is a one-story, one-bay building clad with vertical metal siding and set on a concrete slab. There is a metal coping at the edge of the flat roof. There is a double-leaf, flush metal door with square lights centered in the west elevation and a single-leaf flush metal door with a square light off set in the north elevation.

*Individual Resource Status: Other Contributing Total: 1*

**10 Reid Street, East**

**114-5313-0127**

*Other DHR-ID:*

**Primary Resource Information: Shed, Stories 1.00, Style: No Discernable Style, 1960**

Building 1265D is a one-story, two-bay building clad with vertical metal panel siding. It is set on a concrete slab with a metal coping at the edge of the flat roof. There is single-leaf metal door with a panel at the bottom and a square light in the top set on the east side of the facade. There are double-leaf, metal doors with a panel at the bottom and square lights above set on the west side of the facade.

*Individual Resource Status: Shed Contributing Total: 1*

**10 Reid Street, East**

**114-5313-0128**

*Other DHR-ID:*

**Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1960**

Building 1265E is a one-story, six-bay concrete block building with a rear sloping shed roof set on a concrete slab. There are six, evenly placed, single-leaf flush metal doors on the facade. The doors have exterior mounted hinges. There is a square louver over each door.

*Individual Resource Status: Storage Contributing Total: 1*

**10 Reid Street, East**

**114-5313-0129**

*Other DHR-ID:*

**Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1960**

Building 1265F is a one-story, two-bay metal building clad with vertical, square channel standing seam metal siding. The building is set on a concrete slab with metal coping at the edge of the flat roof. Centered in the facade is a single-leaf, flush metal door. To the west is an overhead garage door. Evenly spaced across the facade near the roof line are three rectangular louvers.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**10 Reid Street, East**

**114-5313-0130**

*Other DHR-ID:*

**Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1960**

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Constructed in 1960, the building 1265G is a one-story, flat roof, 1,760 square-foot building clad in standing seam metal and rests on a poured concrete foundation. The roof is covered in corrugated metal. There are no windows on the building. The entrances on the facade are a metal door and metal garage door.

*Individual Resource Status: Storage Contributing Total: 1*

**10 Reid Street, East** **114-5313-0131** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1975*

This 1975, one-story, flat roof, 2,091 square-foot building is clad in standing seam metal and rests on a poured concrete foundation. The roof is covered in corrugated metal. Fixed, two-light, metal-frame windows are typical. The entrances on the facade are two metal garage doors and two single, metal doors.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**12 Reid Street, East** **114-5313-0058** *Other DHR-ID:*

*Primary Resource Information: Power Plant, Stories 1.00, Style: No Discernable Style, ca 1960*

This 1960, one-story, shed roof, 363 square-foot building is concrete block. The foundation is not visible. The roof is not visible. No windows are visible. The entrance on the facade is a single, metal door.

*Individual Resource Status: Power Plant Contributing Total: 1*

**14 Reid Street, East** **114-5313-0362** *Other DHR-ID:*

*Primary Resource Information: Pump, Stories 1.00, Style: No Discernable Style, 1974*

This one-story building was constructed in 1974 and serves as a pumping facility. It has a rectangular form and the steel frame structural system is clad with corrugated metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. The main entrance is on the west facade and is sheltered by a full-width, flat roof porch. Fenestration includes metal sliding windows with side-by-side light configurations.

*Individual Resource Status: Pump Non-Contributing Total: 1*

**REID STREET, WEST**

**1 Reid Street, West** **114-5313-0015** *Other DHR-ID:*

*Primary Resource Information: Classroom Building, Stories 2.00, Style: No Discernable Style, ca 1941*

This building has an irregular form that consists of a square original mass and additions to both the rear and west sides. A tall brick smoke stack that has since been demolished and removed was originally located adjacent to the west side. The fenestration on the building has also been altered as part of the several additions and renovations to the building. All of the windows have been replaced and several openings have been altered or enclosed. The main entrance to the building located on the south elevation was originally a window that has been converted into a recessed doorway. It is unknown where the original entrance was.

The building was originally constructed as the Heating Plant and has also operated as a Mechanical Maintenance Shop and Metal Finishing Shop. The building currently functions as office and classroom space for the Multimedia Education Center and Training Facility. As part of the conversion of the building to its current use, the interior was completely remodeled and the original floor plan obscured. The main entrance is located centrally on the original block of the building and leads into a central lobby area. A central hallway extends to the area within the rear addition of the building. The main stairwell is located off this hallway at the rear of the original block. The area to the left of the central hallway is occupied by a single room, while the area on the right side is divided to include a small room at the front of the building and two restrooms towards the rear. These spaces currently function as offices. The area within the rear addition of the building features a large open room that functions as classroom space. A hallway branches off of

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the central hallway at the rear of the original block and provides access to the area within the addition on the west side of the building. This addition houses an elevator shaft and a second stairway. A third stairway is located in the rear of the rear addition. The layout of the second floor of the building generally matches that of the first level except the area above the inset entrance houses two small closets. As part of the renovation of the building into office and classroom space, nearly all of the historic surfaces and elements have been replaced with modern materials. The floors throughout the building are covered with carpet, and the majority of walls are covered with drywall; however some exposed concrete block remains in the stairwells. Rubber baseboards are used throughout the building. Ceilings throughout the building are covered with acoustic drop tiles. All of the doorways consist of simple painted metal casings with flat metal doors. All lighting, HVAC equipment, and other fixtures are modern.

*Individual Resource Status: Classroom Building Contributing Total: 1*

**2 Reid Street, West**

**114-5313-0329**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1967*

This two-story building was constructed in 1967 and serves as research space. It has a rectangular form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a continuous concrete watertable foundation and is topped by a flat roof with metal coping. The main entrance to the building is located on the north façade and consists of double doors with a transom light on a concrete stoop with slate cheek walls sheltered by a cantilevered metal canopy. Fenestration on the building includes metal windows with two fixed-panes over two awnings sashes. The building is composed of two main blocks with slightly different embellishments. The western block which houses the main entrance, has wider windows set in full-height recessed panels with rough stucco, concrete sills, and four-course corbelled brick lintels. The eastern block has narrower windows set in full-height recessed brick panels with concrete sills. The first floor windows on this block have solder brick lintels and the second floor windows have four-course corbelled brick lintels. A soldier brick string course delineates the second floor and the parapet.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**3 Reid Street, West**

**114-5313-0014**

*Other DHR-ID:*

*Primary Resource Information: Office/Office Building, Stories 2.00, Style: No Discernable Style, ca 1941*

Constructed in 1941, Building 1152 is a two-story, nine-bay Stripped Classicism-style building constructed of pressed brick laid in a five course American bond pattern. The centered entrance is organized by a slightly projected bay. The entrance is composed of slightly recessed double-leaf glass and anodized aluminum doors. The entrance is approached by a concrete stoop with eight concrete steps enclosed by brick cheek walls with a cast concrete cap and an aluminum rail. To the west of the steps is a concrete ramp enclosed by a brick wall with a cast concrete cap. The entrance is protected by a suspended metal canopy. There is a paired, two-light window separated from the canopy by a stuccoed panel. The recessed blocks to either side of the entrance are four-bays each and set on a concrete water table, with a cast concrete belt course above the second story windows and a cast concrete coping at the parapet edge. The windows are vertically organized by a recessed plane with stuccoed panels below the first story windows and between the first and second story windows. The windows are paired, two-light anodized aluminum windows with a large fixed light and a narrow operable lower light. The windows have cast concrete sills and the second story windows have four course corbelled lintels that step out to the wall plane. There is a two-story, one-bay addition on the east end of the building.

The original two-story main mass of this building has a basically rectangular form. It is nine bays wide with a slightly projecting central bay. The flat roof over the rear portion of the building steps up several feet higher than over the front bay and has a row of vents along its front wall. One-story additions have been attached to both the east and west sides of the building. The west addition is one bay wide and set back one bay from the front. The east addition is two bays wide, and is flush with the front and extends beyond the rear of the original mass. The main entrance is located centrally on the front facade and consists of double doors sheltered by a cantilevered metal canopy. This entrance is located on a raised concrete stoop with brick cheek walls and concrete coping. A U-shaped ramp extends down from the west side of the stoop. A secondary entrance is located on the front of the east addition, and other

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entrances are located on the west side of the building near the joint with the addition, as well as on the rear near the east addition. There are two garage bays on the rear of the building as well. Fenestration consists of replacement metal windows that have a fixed pane over a tilting sash and are found in pairs. The first and second floor windows are aligned horizontally and set in recessed panels. The windows have concrete sills over stucco covered panels. The second floor windows have four-course corbelled brick lintels. The rear of the building only has windows on the second floor and the east side of the building has no windows. The openings on the rear of the building appear to be altered.

*Individual Resource Status: Office/Office Building. Contributing Total: 1*

**SIJAN ROAD**

**642 Sijan Road** **114-5313-0403** *Other DHR-ID:*

*Primary Resource Information: Energy Facility, Stories 1.00, Style: Other, ca 1941*

This structure was constructed in 1941 to provide electricity to power the east side structures. This support structure, 339 square feet, consists of a power station that sits on a poured concrete pad with the electrical components open and partially covered by thick plated metal. A concrete block wall separates the electrical components from the elements on the eastern and southern side. A chain link fence is set in the edge of the concrete pad and surrounds the structure on the western and northern sides.

*Individual Resource Status: Energy Facility Non-Contributing Total: 1*

**TAYLOR STREET, EAST**

**1A Taylor Street, East** **114-5313-0099** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Stripped Classicism Style, 1946*

Constructed in 1946, Building 1230A is a one and two-story, one-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with concrete coping at the edge of the flat roof. The building is composed of four blocks -- two story blocks at the north and south ends and two, one-story blocks in the center. The north and south ends telescope down from the third block from the south end that is the widest. A single-leaf, flush metal door is centered in the facade (south elevation). The entrance is approached by concrete stoop and step to the east. There is a metal pipe rail at the stoop and at the step. Centered above the door is a bricked in opening with a molded concrete sill and three course rusticated lintel.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**3B Taylor Street, East** **114-5313-0225** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 2.00, Style: Other, ca 1988*

Constructed in 1988, Building 1230B is a two-story, Stripped Classicism-style building constructed of pressed brick in a five-course American bond pattern and set on a concrete base. Corbelled brick lintel courses at the heads of the first and second story windows extend beyond the windows and wrap the corners of the building. The concrete sills at the first and second story windows also extend beyond the windows and wrap the corners of the building.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**4 Taylor Street, East** **114-5313-0037** *Other DHR-ID:*

*Primary Resource Information: Power Plant, Style: No Discernable Style, ca 1945*

This 1945, 3,357 square-foot substation with electrical components rests on a slightly raised, poured concrete slab at grade. There is a smaller substation and metal storage shed for gas bottles to the south of the structure but still within the chain link fence.

*Individual Resource Status: Power Plant Non-Contributing Total: 1*

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**6 Taylor Street, East**

**114-5313-0042**

*Other DHR-ID:*

*Primary Resource Information:* **Hangar, Stories 2.00, Style: No Discernable Style, ca 1951**

Constructed in 1951, Building 1244 is a large hangar structure on the east with an incorporated two-story brick office building on the west. The hangar, clad with vertical metal panels, has a modified gambrel roof with three shallow pitched slopes on each side of a center ridge. There are two-story doors center in the façade. The doors are made up of eight hanging panels that stack behind fixed end panels. The fixed end panels have double-leaf flush metal doors with six-lights each. All of the large door panels have three rows of four, six-light windows stacked above each other and separated by metal panels. The office block wraps around the west side of the hangar. The office block is a two-story, five-part, nine-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a concrete coping at the edge of the flat roof. There is an off set, projected block with a centered, articulated entrance. A two-story, molded concrete architrave organizes the entrance. The architrave bevels into double-leaf, glass and aluminum doors with side lights and a transom. A spandrel panel fills the area between the head of the transom and the concrete sill of the two-part, four-light window on the second story. On each side of the entrance block are two-story, one-bay recessed bays with stacked, three-part, six-light, windows. The western most two-story, one-bay block is stepped back from the adjacent plane and has stacked two-part, four-light windows. The eastern most, two-story, five-bay block is stepped back from the adjacent plane and has stacked two-part, four-light windows flanking three, three-part, six-light windows. The anodized aluminum windows have a large fixed upper light and a narrow operable sash on the bottom. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels.

*Individual Resource Status:* **Hangar Contributing Total: 1**

**6 Taylor Street, East**

**114-5313-0388**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 2.00, Style: No Discernable Style, 1968**

This two-story building was constructed in 1968 and serves as office space. It has a basically rectangular form with a one bay projection off the west end. The masonry and steel frame structural system is clad with a combination of red brick laid in a common bond and corrugated metal paneling. The building rests on a continuous brick foundation and is topped by a flat roof. The main entrance is located on the western projection and consists of a set of double doors with sidelights and a transom window. Fenestration includes fixed and awning metal windows with single panes. The majority of the front and rear facades of the building are clad with full-height corrugated metal paneling interrupted by continuous horizontal bands of windows. The ends of the building are clad with blank brick surfaces.

*Individual Resource Status:* **Office/Office Building Contributing Total: 1**

**6A Taylor Street, East**

**114-5313-0104**

*Other DHR-ID:*

*Primary Resource Information:* **Water Tank, Stories 1.00, Style: No Discernable Style, ca 1955**

This is a steel, dome roof, six-foot diameter, water tank.

*Individual Resource Status:* **Water Tank Contributing Total: 1**

**6B Taylor Street, East**

**114-5313-0105**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, ca 1955**

Constructed in 1955, Building 1244B is a one-story, two-bay gable-roofed building clad with vertical, square channel metal panel siding. The front gable roof is clad with corrugated metal and the building is set on a concrete slab. There is an over head metal garage door center in the façade with a single-leaf, flush metal door with two lights to the north. To the east of Building 1244B is a circular structure composed of steel I-beams set vertically in concrete bases. The I-beams are connected by trusses and x-bracing.

*Individual Resource Status:* **Storage Non-Contributing Total: 1**

**6D Taylor Street, East**

**114-5313-0347**

*Other DHR-ID:*

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**Primary Resource Information: Hangar, Stories 1.00, Style: No Discernable Style, 1974**

This building was constructed in 1974 and serves as an aircraft hangar storage facility. It has a rectangular form and the steel frame structural system is clad with corrugated metal paneling and rests on a poured concrete slab foundation. The building is topped by a compound roof that consists of a side gable with most of the front slope clipped to form a pent roof. Nearly the entire front façade of this building opens with full-height sliding stackable doors.

*Individual Resource Status: Hangar Non-Contributing Total: 1*

**TAYLOR STREET, WEST**

**4B Taylor Street, West**

**114-5313-0372**

*Other DHR-ID:*

**Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: International Style, 1963**

This two-story International style building was constructed in 1963 and serves as the Structural Dynamics Research facility. It has an irregular form composed of a two story office east block with a taller lab space west block. The steel skeleton structural system is clad with smooth aluminum paneling. The building rests on a raised continuous concrete foundation and is topped by a flat roof with metal coping. The main entrance is offset on the front façade and consists of a set of double doors flanked by a sidelight and is sheltered by a cantilevered metal canopy. Fenestration includes ribbons of two-pane fixed metal windows. The aluminum panel curtain wall front façade of the east block has full-width horizontal bands of windows divided by vertical aluminum ribbing and a brick pilaster near the south end. The taller west block of the building is clad with corrugated metal that appears to open into two garage bays. A narrow tower or shaft extends up several more stories from the roof of this block.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**4B Taylor Street, West**

**114-5313-0373**

*Other DHR-ID:*

**Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1986**

This two-story building was constructed in 1986 and serves as research space. It has an L-shaped form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a continuous brick foundation and is topped by a flat roof with metal coping. The main entrance is offset on the front façade and consists of a set of double doors in an inset nook with tiled walls. Fenestration includes ribbons of narrow single-pane fixed metal windows. Heavy bands of square red tiles laid in a stack bond delineate the first and second floors and the second floor and parapet.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*

**4B Taylor Street, West**

**114-5313-0374**

*Other DHR-ID:*

**Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1963**

This one-story building was constructed in 1963 and serves as research space. It has a rectangular form and the steel frame structural system is clad with corrugated metal paneling. The building rests on a poured concrete slab foundation and is topped by a flat roof. The building has a single garage bay on the front façade and a single doorway on the south side. A vacuum sphere is located within the building and the top of it protrudes through the roof.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**5 Taylor Street, West**

**114-5313-0036**

*Other DHR-ID:*

**Primary Resource Information: Aviation-Related, Stories 2.00, Style: No Discernable Style, ca 1947**

Constructed in 1947, Building 1236 is a two-story, four-part, eighteen-bay, building constructed of brick and metal panels. The two parts of the building at the south end of the elevation are constructed of vertical ribbed metal siding. These sections of the building are set on concrete curbs and the corners and roof lines are emphasized by corner pilasters and deep copings of a dark anodized aluminum. The facades of both of these parts are divided into three bays by vertical, flat metal pilasters. In each bay of the three-bay southern

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block are ribbons of four, four-part, eight-light anodized aluminum windows. The windows have large fixed upper lights and narrower operable lower sashes. The second three-bay block rises substantially higher than the adjacent block and the façade is unpenetrated. There is a small recessed bay between the two three-bay blocks with a square louver.

To the north of the metal blocks is a recessed two-story, seven-bay Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. There is an articulated center entrance with three bays on either side. There are two-part, four-light windows on each side of the entrance and two, three-part, six-light windows beyond on each side. The anodized aluminum windows have a large fixed upper light and a narrow operable sash on the bottom. There are identical windows stacked above on the second story. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. The central entrance is approached by a granite stoop and four granite steps enclosed by granite cheek walls. The entry is organized by a two-story molded concrete architrave with a curved, projected entablature. Recessed within the entablature on the first story are double-leaf, glass and steel doors with sidelights and a three-part transom. Above the doors is a stainless steel canopy that is tied back to the façade. Above the canopy is a cast concrete panel outlined with and divided into three sections by stainless steel mullions. The letters "NTF" are placed in the three sections. Above the signage is a sixteen-light (4x4) industrial steel sash window. To the north is a slightly recessed two-story, three-bay Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. There are three, three-part, six-light windows stacked on the first and second story. The anodized aluminum windows have a large fixed upper light and a narrow operable sash on the bottom. There are identical windows stacked above on the second story. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. At the northern most end of the building is a recessed two-story, two-bay block constructed of brick laid in a five-course American bond pattern. The block is set at grade with a metal coping at the edge of the flat roof. On the first story in the south bay there is a single-leaf aluminum and glass door with a sidelight on one side and a two-part transom. In the northern bay is a two-light anodized aluminum window. There is a three-part, six-light windows stacked on the second story. The anodized aluminum windows have a large fixed upper light and a narrow operable sash on the bottom. The windows have molded concrete sills and three-course rusticated lintels.

*Individual Resource Status: Other Contributing Total: 1*

**5 Taylor Street, West**

**114-5313-0103**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1947*

Constructed in 1947, Building 1236A is a one-story, two-part, five-bay Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The parts of the building are defined by the juxtaposition of the wall planes. The northern most part of the building is three-bays wide with windows set in recessed planes. The windows are three-part, fifteen-light industrial steel sash with cast concrete sills and four course corbelled lintels that step out to the wall plane. The façade of the southern block of the building is slightly recessed behind the adjacent wall plane. The north bay of this section has an identical window to the other bays. The entrance, located in the south bay, is composed of a louver and single-leaf, flush metal door with a light. The door and louver are organized by a steel panel above.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**5 Taylor Street, West**

**114-5313-0342**

*Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1979*

This one-story building was constructed in 1979 and serves as a support facility for the NTF Complex. It has a rectangular form and the steel frame structural system is clad with corrugated metal paneling. The building rests on a continuous concrete foundation and is topped by a flat roof. It has several garage bays on the front and rear facades and a tall smoke stack projects up from the roof.

*Individual Resource Status: Other Non-Contributing Total: 1*

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**5 Taylor Street, West** **114-5313-0343** *Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1981**

This one-story building was constructed in 1981 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with raised-seam metal paneling. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. There is a single garage bay on the front façade. Fenestration includes metal sliding windows with two panes.

*Individual Resource Status:* **Storage Non-Contributing Total: 1**

**5 Taylor Street, West** **114-5313-0344** *Other DHR-ID:*

*Primary Resource Information:* **Pump House, Stories 1.00, Style: No Discernable Style, 1997**

This one-story building was constructed in 1997 and serves as a pump house for the NTF Complex. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a flat roof with wide overhangs. The main entrance is a single door on the front façade and fenestration includes metal sliding windows with single panes. The windows have concrete sills and recessed panels below.

*Individual Resource Status:* **Pump House Non-Contributing Total: 1**

**6A Taylor Street, West** **114-5313-0371** *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: International Style, 1963**

This two-story International style building was constructed in 1963 and serves as the Structural Dynamics Research facility. It has an irregular form composed of a two story office front block with a taller lab space to the rear. The steel skeleton structural system is clad with smooth aluminum paneling on the front façade and red bricks laid in a common bond on the side wall. The building rests on a raised continuous concrete foundation and is topped by a flat roof with metal coping. The main entrance is offset on the front façade and consists of a set of double doors flanked by a sidelight and is sheltered by a cantilevered metal canopy. Fenestration includes ribbons of two-pane fixed metal windows. The aluminum panel curtain wall front façade has full-width horizontal bands of windows divided by vertical aluminum ribbing and a brick pilaster near the north end. The rear block of the building is tall and clad with corrugated metal. It has blank facades except for a single garage bay on the west side.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**7 Taylor Street, West** **114-5313-0035** *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1947**

Constructed in 1947, Building 1235 is a one-story, six-bay building clad with vertical, corrugated metal panels set on a poured concrete slab at grade. The slightly pitched, front gable roof is covered in metal. The facade is organized as follows from north to south. There is a pair of fifteen-light steel windows in the first bay. The windows are five-light high by three-lights wide and the center two lights one row up from the bottom pivot. Next to the windows is a coiling over head door. In the next bay is a ribbon window divided into three sections by steel pilasters. In the first section are a ten-light (5x2) steel window and a metal louver. In the second section are two, ten-light steel windows, a fifteen-light window, and ten-light window. In the third section are a louver and a fifteen-light steel window. In the fourth bay is an over head metal door. In the fifth bay are two, ten-light windows that flank a louver, and in the final bay is a small metal louver.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**7 Taylor Street, West** **114-5313-0040** *Other DHR-ID:*

*Primary Resource Information:* **Aviation-Related, Stories 2.00, Style: No Discernable Style, 1945**



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This, 1945, two-story, flat roof, 9,637 square-foot tunnel is concrete block. The foundation is not visible. The roof is not visible. Exterior stairs lead to the second story and a small, metal-clad building on the roof. No windows are visible. The entrance on the facade is a single, metal-frame door adjacent to a roll up door.

*Individual Resource Status: Aviation-Related Contributing Total: 1*

**7A Taylor Street, West**

**114-5313-0346**

*Other DHR-ID:*

*Primary Resource Information: Other, Style: No Discernable Style, 1974*

This one-story structure was constructed in 1974 and serves as a barrier around several liquid nitrogen storage tanks. It consists of three walls and has no roof and encloses two large metal tanks. The structural system consists of poured concrete columns with full-height geometric cast concrete screening in between. The central portion of the front is open.

*Individual Resource Status: Other Non-Contributing Total: 1*

**8 Taylor Street, West**

**114-5313-0012**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, ca 1940*

Constructed in 1940, Building 1148 is a two-story, nine-part, twenty-one-bay Stripped Classicism-style building constructed of pressed brick laid in a Flemish bond pattern. The building is set on a cast concrete plinth with a cast concrete belt course above the second story windows and a cast concrete coping at the parapet edge. The five parts of the facade are defined by their planar relationships and the bays are defined by the vertical organization of the windows within recessed planes. The windows are paired, three-light anodized aluminum sash with a large fixed center light with a smaller fixed light on top and a smaller operable sash on the bottom. The windows have cast concrete sills. The first story windows have soldier course lintels while the second story windows have four course corbelled lintels that step out to the wall plane. The primary entrance is centered in the facade and emphasized by a slightly projected plane that rises above the parapet edge and is topped by a shallow gable with a cast concrete coping. There is no belt course on the entry portion of the building. There are double-leaf glass and aluminum doors with narrow sidelights and a single unifying transom at the first story that are approached by a concrete stoop with four steps and a ramp to the south with an aluminum rail. The transom has a soldier course lintel with a recessed brick panel above the lintel to the under side of the cantilevered concrete canopy. Between the canopy and the second story windows is an applied signage panel. Flanking the entry bay are slightly recessed three-bay sections which are flanked by slightly recessed four-bay sections. The three-bay corner blocks are deeply recessed from the plane of the adjacent four-bay sections. Recessed one-bay to the east of the office block and rising above the roof of the office block is a three-story, eleven bay gambrel roofed section the corners of which are defined by engaged corner pylons set on concrete water tables and vertically organized by recessed glass block and stuccoed panels. There is a substation on the property.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**9 Taylor Street, West**

**114-5313-0039**

*Other DHR-ID:*

*Primary Resource Information: Power Plant, Stories 2.00, Style: No Discernable Style, 1951*

This 1951, two-story, flat roof, 25,868 square-foot building is red, common-bond brick and rests on a poured, concrete foundation. The roof is not visible. Filled-in windows are typical. There is no entrance on the facade. The interior consists of the basement, first floor, and mezzanine.

*Individual Resource Status: Power Plant Contributing Total: 1*

**9 Taylor Street, West**

**114-5313-0041**

*Other DHR-ID:*

*Primary Resource Information: Power Plant, Style: No Discernable Style, ca 1950*

This 1950, open substation rests on a poured concrete pad. The electrical components are uncovered.

*Individual Resource Status: Power Plant Non-Contributing Total: 1*

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**10 Taylor Street, West**

**114-5313-0013**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 2.00, Style: No Discernable Style, ca 1941**

Constructed in 1941, Building 1149 is a two-story, seven-bay building constructed of brick laid in a five-course American bond pattern. The bays of the building are defined by the vertical organization of the windows within recessed planes. The windows are paired, two-light anodized aluminum sash with a large fixed upper light and a smaller operable sash on the bottom. The windows have cast concrete sills. The first story windows have soldier course lintels while the second story windows have four course corbelled lintels that step out to the wall plane. The entrance, in the second bay from the west end of the building, is composed of double-leaf, glass and anodized-aluminum doors. Above the doors is a suspended metal canopy that is secured to the facade by two triangulated tie backs. There is a large fixed light over the canopy. The building is set on a concrete plinth that undulates with the wall plane. There is a cast concrete belt course above the second story windows and concrete coping at the parapet edge.

This building has a basically rectangular form that is composed of an original L-shaped mass interlocked with an L-shaped addition to the rear of roughly equal size. The addition was likely appended to the building soon after the Stability Tunnel structure was removed in 1958 and the building was converted into classroom space. The addition to the building is differentiated from the original mass by its shortened height. The concrete coping on the parapet of the addition meets the original mass at the level of its concrete string course. The addition does not have a string course to delineate its parapet. The addition is also differentiated by its fenestration which is much smaller in scale and simpler than on the original mass of the building. All fenestration on the entire building is set in recessed panels and all doors and windows appear to be replacements. The one-over-one metal frame windows have tall fixed panes set above shorter tilting sashes and are found in pairs and triples on the original mass and as single units on the addition. Additional entrances are located on both sides and the rear of the building. The rear entrance is located on a small enclosed projection.

*Individual Resource Status:* **Office/Office Building, Contributing Total: 1**

**11 Taylor Street, West**

**114-5313-0010**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: Stripped Classicism Style, 1941**

Constructed in 1941 with later additions, Building 1146 is a symmetrical, two-story, five-part, eleven-bay brick building constructed of brick laid in a five course American bond pattern. The flat roofed building is set on a raised concrete water table. The sections of the building are defined by their planar relationship to each other. The bays are defined by recessed planes that vertically organize the windows. The windows are paired, three-light anodized aluminum windows with a large fixed center light and smaller lights at the top and bottom. The lower light is an operable hopper sash and the upper light is glazed with an opaque panel. The first story windows have cast concrete sills and soldier course lintels. The second story windows also have cast concrete sills and four-course corbelled lintels that step out to the wall plane. Above the second story window heads is a cast concrete belt course and a cast concrete coping at the parapet edge. The facade is dominated by the centered projecting entrance bay that extends above the parapet edge and is topped with a shallow gable. The double-leaf glass and anodized aluminum doors are topped by a transom and flanked by full height sidelights. The door assembly is recessed within the wall plane. Above the recessed entry are a soldier course lintel and a decorative concrete plaque embossed with the N.A.C.A. insignia. Above the plaque is a recessed, blind panel that extends to the under side of the cast concrete belt course. Symmetrically placed on either side of the entry bay are recessed three-bay sections with recessed two-bay sections at the outer edges of the building.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**11 Taylor Street, West**

**114-5313-0078**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1958**

Building 1146A is a one-story, one-bay building clad in corrugated metal and resting on a raised concrete slab. At the north end a one-story shed roofed portion projects in front of the main facade. The shed roof is covered in corrugated metal. The entrance on the facade is a single, metal door with one light.

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*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0079** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, ca 1959*

Building 1146B is a one-story, one-bay clad with square channel metal panels. The building is set on a concrete slab foundation and has a deep metal fascia at the edge of the flat roof. There are flush metal panels at the corners. There is a centered flush metal door with a square light centered in the facade.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0080** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1941*

Building 1146C is a one-story, three-bay concrete block building set on a concrete slab foundation with a flat roof. There is a metal fascia at the edge of the tar and gravel roof. There is a single-leaf flush metal door with a light in the top and a louver at the bottom centered in the facade. There is a single fixed light window with a steel frame on either side of the door. The windows have molded concrete sills.

*Individual Resource Status: Pump House Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0081** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1970*

Building 1146D is a one-story, one-bay building set on a raised concrete foundation and clad with square channel metal panels. The building has an over hanging metal roof and single-leaf flush metal door with a single light. There are double-leaf flush metal doors on the west elevation.

*Individual Resource Status: Pump House Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0082** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1941*

This 1941, one-story, shed roof, 154 square-foot building is concrete block. The foundation is not visible. The roof is not visible. No windows are visible. The entrance on the facade is a single, metal door with one light.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0083** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1941*

This 1941, one-story, flat roof, 145 square-foot building is corrugated metal. The foundation is not visible. The roof is not visible. No windows are visible, although there is one louvered opening. The entrance on the facade is a double, metal door. There is a cylindrical, metal, valve structure that leads from the southwest of the building underneath the wind tunnel to the other side. A second, smaller cylindrical section with a screened valve on top rises from the end of the valve structure.

*Individual Resource Status: Pump House Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0084** *Other DHR-ID:*

*Primary Resource Information: Shed, Stories 1.00, Style: No Discernable Style, 1941*

Building 1146G is a one-story, one-bay building clad with square channel metal siding. There are plain metal corner channels and a metal fascia at the flat roof. The building is set on a concrete slab. There is a single, fixed window centered in the north elevation.

*Individual Resource Status: Shed Non-Contributing Total: 1*

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**11 Taylor Street, West** **114-5313-0085** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 3.00, Style: No Discernable Style, 1941*

Building 1146H is a three-story cast concrete structure attached to the wind tunnel at its northeast corner. The lower two levels are square in plan and the third level is vaulted and projects beyond the east wall plane of the lower two levels. There are double-leaf, flush metal doors on the north elevation and three circular portals in the third story.

*Individual Resource Status: Other Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0086** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 3.00, Style: No Discernable Style, 1941*

Building 1146I is a cast structure attached to the northwest corner of the wind tunnel. The first two levels have a square plan and the third level has a vaulted form and projects beyond the west wall plane of the first two levels. There are double-leaf, flush metal doors in the north elevation and three, circular portals in the north and south elevations at the third story.

*Individual Resource Status: Other Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0087** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1941*

Building 1146J is a one-story, one-bay vertical standing seam metal clad building set on a concrete slab. The flat roof is also covered with standing seam metal. There is a single-leaf, flush metal door on the south elevation. The door is set on the east side of the elevation with a louvered opening near the floor line to the west. On the east elevation there is a centered over head garage door.

*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0088** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 3.00, Style: No Discernable Style, 1941*

This 1941, three-story, 4,467 square-foot building is clad in metal. The foundation is not visible. The roof is not visible. No windows are visible. There is no entrance on the facade.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0089** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1941*

Building 1146 L is a one-story, one-bay front gable roofed building clad with flat metal panels. The building is set on a concrete pad. There is a single-leaf, flush metal door set on the south side of the facade and there is a two-light metal-framed window on the south elevation. The front-gable roof has a projecting eave and appears to be clad with metal panels.

*Individual Resource Status: Other Non-Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0090** *Other DHR-ID:*

*Primary Resource Information: Other, Style: No Discernable Style, 1941*

This structure, constructed in 1941, is poured concrete and approximately 86-square feet. The structure rests on steel supports. Extending upwards from the top is a capped vent pipe, which is bolted to the main body of the structure. The vents are covered with a heavy gage wire mesh.

*Individual Resource Status: Other Contributing Total: 1*

**11 Taylor Street, West** **114-5313-0011** *Other DHR-ID:*

*Primary Resource Information: Energy-Related, Style: No Discernable Style, 1940*

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This structure, an electrical substation that provided power to the 16-Foot Transonic Tunnel (Building 1146), is sited close to the street, at street grade, on the west side of West Taylor Street, fronting West Taylor Street. Building 1147 is situated on the northwestern side of the wind tunnel (Building 1146) between the tunnel and West Taylor Street. A concrete block wall separates the electrical components from the elements on the east and south elevations. A chain link fence surrounds the structure to the west and north.

*Individual Resource Status: Energy-Related Non-Contributing Total: 1*

**12 Taylor Street, West**

**114-5313-0150**

*Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, ca 1971*

Constructed in 1971, Building 1151 is a 1-story, seven-bay, ell-plan building organized in two massing blocks and constructed of brick laid in a stretcher bond pattern. The entrance is centered on the east elevation of the building and consists of double-leaf anodized aluminum and glass door with a stucco panel above. There are three windows on each side of the entrance. One window is placed closer to the entrance and the other windows are grouped near the corners. The two light anodized aluminum windows are set in stucco panels with brick row lock sills. The windows are organized with a slightly larger lower light and a narrower operable upper light. The flat roofed building is topped by a deep stuccoed fascia that is projected slightly in front of the wall plane.

*Individual Resource Status: Other Non-Contributing Total: 1*

**13 Taylor Street, West**

**114-5313-0034**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, ca 1945*

Constructed in 1946, Building 1234 is a one-story, two-bay concrete block building set on a raised concrete curb with a side gable roof. The roof is covered with asphalt shingles. There is evidence that four windows have been infilled on the facade. There is a single-leaf, flush metal door on the south end of the facade that is protected by a one-story, one-bay, shed-roofed corrugated metal structure. Center in the facade is a pair of large, flush metal doors.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**14 Taylor Street, West**

**114-5313-0020**

*Other DHR-ID:*

*Primary Resource Information: Shed, Generator, Stories 2.00, Style: No Discernable Style, ca 1946*

This 1946, two-story, flat roof, 22,779 square-foot building is red, common-bond brick and rests on below grade concrete footers with a poured concrete slab at grade. The roof is not visible. Fixed, four-light, metal-frame windows are typical with fixed, four-light, ribbon windows on the second story. The entrance on the façade is a single, metal door. The interior consists of the first floor with a mezzanine on the second floor. There is substation and cooling tower attached to the west elevation.

*Individual Resource Status: Power Plant Contributing Total: 1*

**15 Taylor Street, West**

**114-5313-0325**

*Other DHR-ID:*

*Primary Resource Information: Communications Facility, Stories 1.00, Style: No Discernable Style, 1965*

This one-story building was constructed in 1965 and initially served as a research facility, and is now a communications facility. It has an irregular form composed of several additions to all sides of the rectangular main mass. The masonry structural system is clad with red brick laid in a common bond. The building rests on a raised continuous concrete foundation and is topped by a flat roof. The main entrance is set in a clipped corner on a projecting vestibule on the front façade and consists of a set of double doors with a transom light above. Fenestration includes metal windows with a fixed pane over an awning sash. They are set in full-height recessed panels with gravel panels above and below. The lower window panels extend down to a gravel apron just above the foundation and the upper window panels extend up to a gravel parapet. A large ground-mount satellite dish is set to the rear of the building and several smaller dishes are located on the roof of the building.

*Individual Resource Status: Communications Facility Contributing Total: 1*

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**16 Taylor Street, West**

**114-5313-0019**

*Other DHR-ID:*

*Primary Resource Information:* **Dining Hall/Cafeteria, Stories 1.00, Style: No Discernable Style, ca 1945**

Constructed in 1946, Building 1213 is a one-story, seven-bay, Stripped Classicism-style building constructed of pressed brick laid in five-course American bond pattern. The facade is organized into three blocks. The centered entrance has a molded concrete architrave with a projecting, curved entablature. There are double-leaf, anodized aluminum and glass doors with an opaque panel above. The entrance is approached by a concrete stoop with four concrete steps enclosed by brick cheek walls. Descending from the concrete stoop is a u-shaped ramp set on a brick base with a metal guardrail. There are three windows on each side flanking the entrance. The windows are three-part, six-light anodized aluminum units with a large fixed upper light and a narrow, operable lower sash. There are rusticated brick piers between each window and a three-course rusticated lintel and a molded concrete sill that unify the three windows. To the south of the entrance block is a slightly projected, one-story, one-bay five course American bond brick block that has no fenestration. To the north of the entry block is a recessed, one-story, two-bay. There are two windows in this elevation, one is a sixteen-light (4X4) anodized aluminum window and the other is a twelve-light (4x3) anodized aluminum window. The top and bottom lights of these windows are opaque panels and the center two light are fixed clear glass panes. The windows are separated by rusticated brick piers and united by continuous three-course rusticated lintels and molded concrete sills.

This building has a complex form that has grown and evolved through numerous additions to the original mass. When originally constructed, the building consisted of a seven bay wide front block and an eleven bay wide rear block. Additions have been appended to the southern end of the rear block on the west, south, and east sides. An addition has also been appended to the north side of the rear block that partially wraps around the rear of it as well. While all of the additions are clad in brick and generally match the scale and style of the original building; they are differentiated by their simpler ornamentation and fenestration.

The main entrance to the building is located centrally on the front façade. This entrance consists of an inset doorway with a smooth concrete architrave and is approached by a raised concrete platform with steps and a U-shaped ramp. A second entrance is located centrally on the rear elevation under a flat roof porch supported by brick columns. A large concrete-paved patio is located adjacent to this porch. Several other entrances are found at various locations on the building's additions. All of the windows on the building have been replaced, and many openings have been enclosed or modified to accommodate additions to the building and its current function.

*Individual Resource Status:* **Dining Hall/Cafeteria Contributing Total: 1**

**17 Taylor Street, West**

**114-5313-0018**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 2.00, Style: Other, 1946**

Building 1212 is a one and two-story, three-part, seventeen-bay, Stripped Classicism-style building constructed of brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a metal coping at the edge of the flat roof. The facade is dominated by a central, two-story, three bay mass. Double-leaf glass and steel doors with an opaque transom are centered in this mass and surrounded by a molded concrete architrave. The entrance is approached by stacked granite platforms that form a stoop and two steps. On each side of the entrance are four-part, eight-light windows. There are three similar windows on the second story, all with molded concrete sills and three course rusticated lintels. Flanking the center mass are two, set back, one-story, seven-bay wings with six, three-part, six-light anodized windows and one, two-part, four-light window. The smaller window is set closest to the center block. The windows are separated by rusticated piers between each set of windows and they are unified by continuous molded concrete sills and three-course rusticated lintels. The lintels extend beyond the edge of the windows and wrap the outside corners of the building. Each window part has a large fixed upper light and a narrow, operable bottom sash.

*Individual Resource Status:* **Office/Office Building, Contributing Total: 1**

**17C Taylor Street, West**

**114-5313-0335**

*Other DHR-ID:*

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**Primary Resource Information: Research Facility/Laboratory, Stories 3.00, Style: No Discernable Style, 1970**

This three-story building was constructed in 1970 and serves as a wind tunnel research laboratory. It has an irregular form composed of several blocks of varying heights. The steel frame structural system is clad with corrugated metal and rests on a continuous concrete foundation. The building is topped by a flat roof. Fenestration includes metal double-hung sash windows with one-over-one light configurations and ribbons of fixed single-pane metal windows. There are entrances and garage bays on all sides of the building. A wing projects from the south side of the building in which the wind tunnel structure is attached. The wind tunnel consists of four legs set at right-angles. The wind tunnel has a mostly rectangular profile but tapers to a cylindrical profile on the southern leg. The tunnel has an external steel skeleton over corrugated metal sheathing.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**24 Taylor Street, West**

**114-5313-0355**

*Other DHR-ID:*

**Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: International Style, 1968**

This two-story International style building was constructed in 1968 and serves as research space. It has an L-shaped form and the steel skeleton structural system is clad with a combination of red brick laid in a common bond and smooth aluminum paneling. The building rests on a raised continuous brick foundation and is topped by a flat roof with a short metal parapet. The main entrance is located in a projecting central vestibule. It consists of a set of double doors flanked by a grid of plate-glass windows. A staircase with concrete cheek walls and integral planters leads to a stoop in front of the entrance. The second floor of the projecting vestibule is clad with a grid of stuccoed panels. Fenestration includes ribbons of fixed metal single-pane windows. Smooth aluminum panels are located above and below the windows and extend from the brick foundation to the metal parapet. The windows and panels are divided by a grid of full-height beams that create a ribbed texture on the façade. There are narrow full-height brick panels at each outside corner of the building. The south side of the building generally matches the front in appearance; however a centrally located entrance is located at-grade in an inset nook.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**24 Taylor Street, West**

**114-5313-0358**

*Other DHR-ID:*

**Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1993**

This two-story building was constructed in 1993 and serves as research space. It has an L-shaped form and the steel frame structural system is clad with corrugated metal paneling. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The main entrance is a simple door on the shorter block on the south side of the building. Fenestration is located only on this short block as well, and includes single and three-pane fixed metal windows. A second floor enclosed breezeway extends from this block along the rear of Building 1268A. The taller main block has only a large garage bay on the north side.

*Individual Resource Status: Research Facility/Laboratory Non-Contributing Total: 1*

**THOMPSON STREET**

**114 Thompson Street**

**114-5313-0422**

*Other DHR-ID:*

**Primary Resource Information: Office Bldg., Stories 2.00, Style: Stripped Classicism, 1925**

This two-story building was constructed in 1926 and currently serves as office space. It has an H-shaped form and the masonry structural system rests on a continuous raised concrete foundation and is topped by a flat roof. The two wings to the sides of the building were later additions and appear to have been constructed in the 1960s. As this building was constructed as a support facility to the primary headquarters and administration space in the current Building 587, this building did not have a formal front entrance but rather several doors located around the building. Formal entrances were later provided centrally on each of the two wings and consist of single doors flanked by sidelights and are sheltered by cantilevered canopies. Fenestration on the original block consists of ribbon metal windows set on concrete sills with soldier course lintels and on the wing additions consists of paired metal windows set in nearly

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full-height recessed panels. These recessed panels are topped by corbelled brick lintels capped by a continuous concrete stringcourse that delineates the parapet. A two-story glass stairwell addition and one-story brick utility addition have been appended to the rear recently.

*Individual Resource Status:* **Office Bldg. Contributing Total:** 1

**THORNELL AVENUE**

**187 Thornell Avenue**                      **114-5313-0420**                      *Other DHR-ID: 114-0165-0109*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: Stripped Classicism, 1920**

Building 580 was constructed in two separate phases and consists of a hipped roof main mass completed in 1920 with a full-width flat roof addition to the rear constructed in 1965. The addition now functions as the front of the building. The original building was constructed in the Stripped-Classicism style characteristic of Albert Kahn's designs for other Langley buildings. The rectangular building has a brick structural system and rests on a continuous raised concrete foundation. It is topped by a hipped roof covered with composition shingles. The wide overhanging eaves are embellished with exposed scalloped rafter tails and a classical cornice. A decorative brickwork frieze below features a diamond pattern typical of Albert Kahn's Langley designs. The original main entrance is located centrally on the former front façade and is embellished with a classically inspired concrete frontispiece. The side wall is divided by tall window bays that originally housed full-height industrial windows, however now have been mostly infilled with plaster and contain small paired metal windows on the first and second floors. These bays sit on top of a continuous concrete belt course and are topped by soldier brick lintels. The new block was also constructed in the Stripped-Classicism style, but a less elaborate interpretation. The brick structural system rests on a continuous concrete foundation and is topped by a flat roof. The current front entrance is located centrally on the west façade of this mass and consists of a set of double doors sheltered by a copper hood. The entrance bay project slightly from the rest of the façade and is capped by a low-pitched gabled parapet. The windows are set in nearly full-height recessed panels topped by corbelled brick lintels. The paired metal windows sit on concrete sills. A continuous concrete stringcourse delineates the parapet and the entrance bay is embellished with a cast concrete plaque that features the NACA emblem.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total:** 1

**191 Thornell Avenue**                      **114-5313-0393**                      *Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: Other, 1921**

Constructed in 1921, Building 582 is a two-story, three-bay wide Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The slightly projected, centered entrance bay has a shallow front gable roof that rises above the flanking flat parapets. The parapets, both flat and raked, are edged with a cast stone coping. The entrance is composed of a single-leaf glass and aluminum door with a two-part, fixed, opaque panel to the right. There is a two-light transom and a cast stone lintel above. At the second story is a two-part, four-light anodized aluminum window. The smaller lower sash of the windows is operable. There is a cast stone cartouche above the window bearing the N.A.C.A. symbol. Flanking the entrance, are stacked two-part, four-light anodized aluminum windows that are organized vertically by a recessed panel. The smaller lower sash of the windows is operable. The windows have cast stone sills, the first story windows have soldier course lintels and the second story windows have four-course corbelled lintels that step out to the wall plane. There is a cast stone belt course between the window heads and the parapet on the recessed flanking bays.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total:** 1

**581 Thornell Avenue**                      **114-5313-0392**                      *Other DHR-ID:*

*Primary Resource Information:* **Energy-Related, Style: Other, 1940**

This structure was constructed in 1940 to provide electricity to power the wind tunnels housed at the adjacent Low Turbulence Pressure Tunnel (LTPT) complex. This small support structure, 233 square feet, consists of a two-foot thick rectangular poured



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concrete pad with the electrical components covered by a thick plated metal box. The electrical substation sets back from the edge of the concrete pad approximately one foot. A chain link fence is set in the edge of the concrete pad and surrounds the structure. Two poured concrete steps on the north elevation provide access to the top of the foundation, where a metal door provides access.

*Individual Resource Status: Energy-Related Non-Contributing Total: 1*

**582A Thornell Avenue**

**114-5313-0394**

*Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: Other, 1940*

Constructed in 1940, Building 528A is a two-story, eleven-bay wide Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The facade is organized by two main blocks – a slightly recessed eight bay section and a three-bay section that forms an entrance feature similar in composition to Building 582. The eight-bay section is composed of stacked two-part, four-light anodized aluminum windows that are organized vertically by a recessed panel. The smaller lower sash of the windows is operable. The windows have cast stone sills, the first story windows have soldier course lintels and the second story windows have four-course corbelled lintels that step out to the wall plane. There is a cast stone belt course between the window heads and the cast stone coping at the parapet. The three northern bays are slightly projected and form a three-part entrance block similar to Building 582. The slightly projected, centered entrance bay has a shallow front gable roof that rises above the flanking flat parapets. The parapets, both flat and raked, are edged with a cast stone coping. The entrance is composed of a double-leaf glass and aluminum door with a narrow transom and a cast stone lintel above. At the second story is a two-part, four-light anodized aluminum window. The smaller lower sash of the window is operable. There is a cast stone cartouche above the window bearing the N.A.C.A. symbol. Flanking the entrance, are stacked two-part, four-light anodized aluminum windows that are organized vertically by a recessed panel. The smaller lower sash of the windows is operable. The windows have cast stone sills, the first story windows have soldier course lintels and the second story windows have four-course corbelled lintels that step out to the wall plane. There is a cast stone belt course between the window heads and the parapet on the recessed flanking bays.

A closed-loop Low Turbulence Pressure tunnel constructed of welded steel plates with exterior transverse standing steel ribs that reinforce the steel skin of the oval shaped tunnel circuit was previously located to the north and west of the brick office and support building (582 and 582A), however has since been demolished.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**641 Thornell Avenue**

**114-5313-0002**

*Other DHR-ID: 114-0139*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1936*

This two-story building was constructed c.1936 and serves as office space. It appears to have been recently been extensively renovated. The building has an irregular form and the masonry structural system has been clad with dryvit. It rests on a continuous raised concrete foundation and is topped by a flat roof. The main entrance is located centrally on the northern block of the building and consists of a set of double doors within a Moderne-influenced boxed casement. Additional entrances are located at the corners of the middle block and are sheltered by cantilevered canopies. Fenestration consists of single metal windows set in recessed panels. Each recessed panel consists of two windows with a smooth panel between and sits on a concrete sill. The building is simple in ornamentation and any decoration was likely removed or covered during renovations. The large wind tunnel structure is sited to the rear of the building and consists of a four-sided tubular structure coated with cast concrete.

*Individual Resource Status: Research Facility/Laboratory Contributing/NRHP/NHL Total: 1*

**641 Thornell Avenue**

**114-5313-0401**

*Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1970*

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This structure was constructed in circa 1970 as storage to Building. 641. This support structure is constructed of concrete block painted white with a flat roof, two-over-two windows on the north elevation, and a double metal door on the western elevation. The structure sits on a poured concrete foundation.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**641 Thornell Avenue** **114-5313-0402** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 2.00, Style: No Discernable Style, 1970*

The cooling tower is set on a battered concrete base that is topped with a chain link fence. There are angled louvers around the base of the cooling tower and the walls above are corrugated metal. A ladder, on the south side, leads from the concrete base to the top of the structure where there is a wood guardrail around the perimeter. Two circular metal clad vents rise out of the top of the cooling tower.

*Individual Resource Status: Other Non-Contributing Total: 1*

**VICTORY STREET**

**6B Victory Street** **114-5313-0148** *Other DHR-ID:*

*Primary Resource Information: Other, Style: No Discernable Style, 1983*

The satellite dish is set on a concrete pad and supported by steel legs. There are two metal vaults on concrete foundations at the base of the dish and a concrete bunker in the north corner.

*Individual Resource Status: Other Non-Contributing Total: 1*

**10 Victory Street** **114-5313-0033** *Other DHR-ID:*

*Primary Resource Information: Power Plant, Stories 1.00, Style: No Discernable Style, ca 1946*

Constructed in 1946, the Stratton Road Substation is a large complex enclosed by a chain link fence and contains numerous transformers, vaults and other electrical transfer equipment.

*Individual Resource Status: Power Plant Contributing Total: 1*

**12 Victory Street** **114-5313-0070** *Other DHR-ID:*

*Primary Resource Information: Workshop, Stories 1.00, Style: No Discernable Style, ca 1957*

This is a one-story, three-bay building set on a concrete slab with a front gable roof. The walls are clad with vertical metal panels and the roof is covered with standing-seam metal. From west to east the facade has a four-light fixed metal window adjacent to a single leaf flush metal door. There is a projecting wood frame and corrugated metal canopy over the door and window. The facade is dominated by a two leaf metal door that slides on an exterior mounted track. There is a louver in the gable.

*Individual Resource Status: Workshop Contributing Total: 1*

**16 Victory Street** **114-5313-0045** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1952*

This 1952, two-story, flat roof, 139,787 square-foot, structure is red, common-bond brick and rests on below grade concrete footers with a poured concrete slab basement. The roof is not visible. Fixed, five-light, metal frame windows are typical. The entrance on the facade is a double, glass, metal-frame door. There is a 1952, two-story, red, common-bond brick addition attached to the north elevation.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**16 Victory Street** **114-5313-0112** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1952*

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Constructed in 1952, Building 1251A is a two-story, four-part, eight-bay Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern. The building is set on a concrete plinth with a concrete coping at the edge of the flat roof. The parts of the building are defined by the juxtaposition of the wall planes and roof lines. The first part of the building at the west end is slightly recessed from the adjacent wall plane and has a centered coiling over head door that is approached by a loading dock. There are metal steps from the loading dock to the driveway. The next bay to the east is slightly projected with a lower roof line. There is a metal coping at the roof and the wall plane is un-penetrated. The next part of the building to the east is a projecting five-bay block with three-part, six-light windows flanking a ribbon of three, five-part, ten-light windows. The windows are separated by brick piers and organized by a molded concrete frame. The entrance is located in a recessed block at the east end of the facade. At the first story the corner adjacent block is wrapped with black travertine marble panels that extend back to the entrance. There is an elevated planter in front of the marble panels. The entrance is a nine-part aluminum, glass and opaque panel system. There are double-leaf, glass and aluminum doors on the east side with two fixed panels to the west. There are three fixed glass panels above the doors and three opaque panels above the glass panels. There is a travertine clad pillar at the east side that supports the roof that protects the entrance. The recessed entrance is approached by granite steps and a concrete ramp to the east.

*Individual Resource Status:* **Research Facility/Laboratory Contributing Total: 1**

**16 Victory Street**

**114-5313-0113**

*Other DHR-ID:*

*Primary Resource Information:* **Other, Stories 1.00, Style: No Discernable Style, 1952**

This 1952, one-story, flat roof, structure is clad in corrugated metal. The foundation is not visible. The roof is not visible. No windows are visible. There is no entrance on the facade.

*Individual Resource Status:* **Other Contributing Total: 1**

**16 Victory Street**

**114-5313-0114**

*Other DHR-ID:*

*Primary Resource Information:* **Pump, Stories 1.00, Style: No Discernable Style, 1952**

Building 1251C is a one-story, one-bay building constructed of pressed brick laid in a five-course American bond pattern. It is set at grade with a concrete coping at the edge of the parapet roof. There are double-leaf, metal doors centered in the facade with four lights on top and louvered panels below.

*Individual Resource Status:* **Pump Contributing Total: 1**

**16 Victory Street**

**114-5313-0115**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, 1952**

Building 1251D is a one-story, one-bay building clad with vertical, square channel metal panels. The flat roof projects beyond the walls and is clad with standing seam metal. A single-leaf, flush metal door is centered in the facade.

*Individual Resource Status:* **Storage Contributing Total: 1**

**16 Victory Street**

**114-5313-0116**

*Other DHR-ID:*

*Primary Resource Information:* **Other, Stories 1.00, Style: No Discernable Style, 1952**

This 1952, one-story, flat roof, 119 square-foot, structure is concrete block. The foundation is not visible. The roof is not visible. No windows are visible. The entrance on the facade is a single, metal door with one light and a flat roof overhang.

*Individual Resource Status:* **Other Contributing Total: 1**

**WARNER STREET, SOUTH**

**2 Warner Street, South**

**114-5313-0075**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 1.00, Style: No Discernable Style, 1963**

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This 1963, one-story, flat roof, 2,284 square-foot building is concrete block and rests on poured, concrete slab at grade. The roof is not visible. Fixed, four-light, metal-frame windows are typical. The entrance on the facade is a single-leaf, metal door with a square light. There is a projecting concrete canopy over the door. There is an adjacent overhead garage door.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**2 Warner Street, South** **114-5313-0284** *Other DHR-ID:*

*Primary Resource Information: Workshop, Stories 1.00, Style: No Discernable Style, 1975*

This 1975, one-story, two-bay, shallow gable roofed building is clad in standing seam metal siding and rests on a poured concrete slab at grade. The roof is covered in corrugated metal. Fixed, metal-frame windows are typical. The entrance on the east side of the facade is a single-leaf metal door with a small light. There an overhead garage door on the south elevation to the west of the entry door.

*Individual Resource Status: Workshop Non-Contributing Total: 1*

**2A Warner Street, South** **114-5313-0375** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1965*

This one-story building was constructed in 1965 and serves as a pump house. It has a rectangular form and the steel frame structural system is clad with corrugated metal. The building rests on a poured concrete slab foundation and is topped by a gable roof covered with raised-seam metal. The main entrance is offset on the front facade and consists of a single door and there is also a garage bay is located on the west side. A tapered metal chimney is appended to the north side of the building and a raised pipe connects the building to a vacuum sphere located across the alley.

*Individual Resource Status: Pump House Contributing Total: 1*

**2A Warner Street, South** **114-5313-0376** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1970*

This one-story building was constructed in 1970 and serves as a support facility for the vacuum sphere facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a shed roof. The main entrance is offset on the front facade and consists of a set of double doors. Fenestration includes metal double-hung sash windows with a one-over-one light configuration.

*Individual Resource Status: Other Contributing Total: 1*

**2A Warner Street, South** **114-5313-0377** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1970*

This one-story building was constructed in 1970 and serves as a pump house for the vacuum sphere facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a shed roof. It is located under a vacuum sphere and connected to it by a raised metal pipe.

*Individual Resource Status: Pump House Contributing Total: 1*

**2A Warner Street, South** **114-5313-0378** *Other DHR-ID:*

*Primary Resource Information: Pump House, Stories 1.00, Style: No Discernable Style, 1975*

This one-story building was constructed in 1975 and serves as a pump house for the vacuum sphere facility. It has a rectangular form and the steel frame structural system is clad with corrugated metal. The building rests on a poured concrete slab foundation and is topped by a shed roof. It is located under a vacuum sphere and connected to it by a raised metal pipe.

*Individual Resource Status: Pump House Non-Contributing Total: 1*

**10 Warner Street, South** **114-5313-0071** *Other DHR-ID:*

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*Primary Resource Information:* **Power Plant, Style: No Discernable Style, ca 1961**

This 1961, 8,222 square-foot structure is an open substation that rests on a raised concrete foundation.

*Individual Resource Status:* **Power Plant Non-Contributing Total: 1**

**WRIGHT STREET, NORTH**

**11 Wright Street, North**

**114-5313-0318**

*Other DHR-ID:*

*Primary Resource Information:* **Water Tower, Style: No Discernable Style, 1994**

This structure was constructed in 1994 and serves as a water tower for the base. It has a steel frame structural system clad with welded metal panels. The tower consists of a sphere set on a cylindrical base that tapers out towards the bottom where it rests on a poured concrete slab foundation. There is a single door located at the bottom of the structure.

*Individual Resource Status:* **Water Tower Non-Contributing Total: 1**

**WRIGHT STREET, SOUTH**

**1 Wright Street, South**

**114-5313-0023**

*Other DHR-ID:*

*Primary Resource Information:* **Aviation-Related, Stories 1.00, Style: Other, ca 1945**

Constructed in 1945, Building 1220 is a two-story, sixteen-bay Stripped Classicism-style building constructed of pressed brick laid in a five-course American bond pattern and is set on a concrete plinth with a metal coping at the parapet edge. The facade is organized into three masses by the juxtaposition of the wall planes. The entrance is centered in the recessed seven-bay block of the building and is approached by a concrete stoop and concrete steps. The entrance is demarcated by a curved molded concrete architrave with a curved entablature. The sides of the architrave slant back to the double-leaf, glass and anodized aluminum doors that are slightly recessed. Between the head of the doors and the entablature are a metal canopy and an anodized metal panel bearing the inscription "NASA" and the building number. There are three windows on each side of the entrance -- paired one/one anodized aluminum frame windows flanking a triple one/one window. The windows have a large fixed upper light and an operable lower sash. There are rusticated piers between the windows. The three windows are unified by a continuous molded concrete sill and a three course rusticated lintel. To the north of the center recessed block is a five-bay projected wing and to the south a four-bay projected wing. The windows in these bays are vertical three light anodized aluminum units. They have a large fixed center light, a narrow operable lower light, and a narrow fixed opaque upper light. The windows all have cast concrete sills and there is a continuous three course rusticated lintel that unifies the window heads and wraps the corner of the building.

*Individual Resource Status:* **Aviation-Related Contributing Total: 1**

**2 Wright Street, South**

**114-5313-0357**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Stories 2.00, Style: No Discernable Style, 1994**

This two-story building was constructed in 1994 and serves as research space. It has a rectangular form and the masonry structural system is clad with red brick laid in a common bond. The building rests on a continuous brick foundation and is topped by a flat roof with metal coping. The main entrance is located on the south end of the building and consists of a single door with a plate-glass sidelight in an inset nook. The entrance is flanked by full-height brick pilasters and features a full-height stucco panel above that extends to the roofline. A second entrance and a garage bay on the east side have similar embellishments. Fenestration includes fixed metal windows found individually, in pairs, and threes and is limited to the first floor on the east side of the building and the second floor on the west side. A one-story porch with a flat roof with a heavy stucco parapet, and brick side and cheek walls, is located on the west side and shelters an entrance and a loading dock. The building features full-height pilasters flanking each entrance and near the building corners, as well as soldier brick string courses that align with the top and bottom edges of the windows.

*Individual Resource Status:* **Research Facility/Laboratory Non-Contributing Total: 1**

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**4 Wright Street, South**

**114-5313-0016**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 2.00, Style: No Discernable Style, ca 1942**

Constructed in 1942, Building 1192 is a two-story, five-bay Stripped Classicism-style building with a recessed, six-bay wing to the north. The building is constructed of pressed brick laid in a five-course American bond pattern and is set on a concrete plinth with a cast concrete belt course above the second story windows and a cast concrete coping at the parapet edge. The entrance is centered in the five-bay block of the building and is composed of a double-leaf glass and anodized aluminum doors with a transom. The entrance is demarcated by a one-story, one-bay porch with a concrete deck and two concrete steps. Metal posts support a flat metal roof structure and the sides are enclosed with a six-panel glass and aluminum system. There is a metal panel above the porch with a two-part, six-light window above. There are two windowed bays to either side of the entrance and six windowed bays in the addition to the north. The windows are two-part, six-light units with a large fixed center light, a narrow operable lower light, and a narrow fixed opaque upper light. The windows all have cast concrete sills and there are soldier course lintels at the first story and four course corbelled lintels at the second story windows that step out to the wall plane. All of the windows and the entrance are vertically organized within recessed planes.

This two-story, flat-roof building has a tapering rectangular form composed of three blocks. The southernmost block is the original mass, and is five bays wide by three bays deep. A six bay wide by two bay deep block has been appended to the north side of the original mass, and a one bay by one bay addition has been appended to the north side of this. Prior to these two additions being attached to the building, a long and narrow gable-roofed structure that projected from the north side of the building was removed. The additions generally match and blend in to the original building.

*Individual Resource Status:* **Office/Office Building, Contributing Total: 1**

**4 Wright Street, South**

**114-5313-0188**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 1.00, Style: No Discernable Style, 1965**

Constructed in 1965, Building 1192C is a one-story, three-bay vertical metal panel clad building set on a raised concrete foundation with a shallow side gable roof covered with corrugated metal. The asymmetrically arranged facade is organized around a double leaf, glass and anodized aluminum door with sidelights and a transom. The entrance is approached by a concrete stoop with two steps and ramp to the east. The entrance is flanked by two (one each side) four-part, eight-light anodized aluminum windows.

*Individual Resource Status:* **Office/Office Building, Non-Contributing Total: 1**

**4 Wright Street, South**

**114-5313-0189**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 1.00, Style: Modern Movement Style, 1966**

Constructed in 1966, Building 1192D is a one-story, six-bay Modern Movement-style building constructed of pressed brick laid in a stretcher bond pattern. The building has slab on grade construction with a metal coping at the edge of the flat roof and forms a continuous facade with Building 1192E. There are five windows from the east end of the building to the entrance. The windows are three-part aluminum windows with a large fixed center light, an operable lower light and a fixed opaque panel at the top. The windows extend to the under side of the metal coping and the area below the window to grade is filled with a decorative panel of stacked stretcher bricks. The entrance is composed of the single leaf glass and aluminum door with four glass and aluminum panels to the east. There is a concrete pad at the entrance that is protected by a rectangular canopy that is made of three black anodized aluminum panels separated by aluminum strips.

*Individual Resource Status:* **Office/Office Building, Contributing Total: 1**

**4 Wright Street, South**

**114-5313-0190**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 1.00, Style: Modern Movement Style, 1966**

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Constructed in 1966, Building 1192E is a one-story, six-bay Modern Movement-style building constructed of pressed brick laid in a stretcher bond brick pattern. The building has slab on grade construction with a metal coping at the edge of the flat roof and forms a continuous facade with Building 1192D. There are nine windows from the east end from the entrance to Building 1192D and the entrance to Building 1192E. The windows are three-part aluminum sash with a large fixed center light, an operable lower light and a fixed opaque panel at the top. The windows extend to the under side of the metal coping and the area below the windows to grade is filled with a decorative panel of stacked stretcher bricks. The entrance is composed of the single leaf glass and aluminum door with four glass and aluminum panels to the east. There is a concrete pad at the entrance that is protected by a rectangular canopy that is made of three black anodized aluminum panels separated by aluminum strips. There are three more windows to the west of the entrance to the corner of the building.

*Individual Resource Status:* **Office/Office Building, Contributing Total: 1**

**WYTHE CREEK ROAD**

**50 Wythe Creek Road**

**114-5313-0368**

*Other DHR-ID:*

*Primary Resource Information:* **Power Plant, Style: No Discernable Style, 1980**

This multiple-story building was constructed in 1980 and serves as a refuse-fired power plant. It has a complex form consisting of numerous blocks of varying heights and the steel frame structural system is clad with a combination of corrugated metal and plastic. The building rests on a continuous concrete foundation and is topped by a flat roof. The front mass of the building is large open drive-through bay and several shorter and smaller blocks are attached to the northeast corner of the building and contain office space. The rear of the building has a mix of mechanical equipment, and various flues and chimneys are located all around the building. Fenestration includes two-pane metal awning windows, as well as semi-translucent corrugated plastic panels. There is a tall smoke stack located to the rear of the building.

*Individual Resource Status:* **Power Plant Non-Contributing Total: 1**

**50A Wythe Creek Road**

**114-5313-0369**

*Other DHR-ID:*

*Primary Resource Information:* **Office/Office Building, Stories 1.00, Style: No Discernable Style, 1984**

This one-story building was constructed in 1984 and serves as office and administration space for the Refuse-Fired Steam Generating Facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The main entrance to this building is on the north side and consists of a single door flanked by a plate-glass clad atrium and is sheltered by a projecting parapet. Fenestration includes single-pane fixed metal windows. The building is connected to Building 1288 by a covered walkway.

*Individual Resource Status:* **Office/Office Building, Non-Contributing Total: 1**

**WYTHE LANDING LOOP**

**4 Wythe Landing Loop**

**114-5313-0052**

*Other DHR-ID:*

*Primary Resource Information:* **Storage, Stories 1.00, Style: No Discernable Style, ca 1953**

This 1953, one-story, side-gable, 3,200 square-foot building is clad in corrugated metal and rests on a poured concrete slab at grade. The roof is clad in metal. Fixed, six-light, metal-frame windows are typical. The entrances on the façade are a double, metal door with lights and a single, metal door with lights.

*Individual Resource Status:* **Storage Contributing Total: 1**

**8 Wythe Landing Loop**

**114-5313-0049**

*Other DHR-ID:*

*Primary Resource Information:* **Research Facility/Laboratory, Style: No Discernable Style, 1956**

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This 1956, poured concrete structure has two metal tracks running parallel to each other, 2,200 feet long, the entire length of the structure and consists of 400-foot carriage acceleration section, a 1200-foot test section, and a 600-foot section for carriage arrestment. The tracks are separated by a raised concrete portion in the center of the structure.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**8 Wythe Landing Loop** **114-5313-0120** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1956*

This 1956, one-story, 2,780 square-foot structure is poured concrete. The foundation is not visible. The structure steps down, away from the Load Landing track (Building 1257), and is attached to a series of overhead wires. There is a platform on the top of the structure that is surrounded by a metal railing.

*Individual Resource Status: Other Contributing Total: 1*

**8 Wythe Landing Loop** **114-5313-0121** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, 1956*

This 1956, one-story, 2,780 square-foot structure is poured concrete. The foundation is not visible. The structure steps down, away from the Load Landing track (Building 1257), and is attached to a series of overhead wires. There is a platform on the top of the structure that is surrounded by a metal railing.

*Individual Resource Status: Other Contributing Total: 1*

**8 Wythe Landing Loop** **114-5313-0353** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1964*

This one-story building was constructed in 1964 and serves as a storage building for the ALDF testing facility. It has a rectangular form and the concrete block structural system is exposed. The building rests on a poured concrete slab foundation and is topped by a flat roof with metal coping. The building is unadorned and has only a single entrance on the front façade.

*Individual Resource Status: Storage Contributing Total: 1*

**8 Wythe Landing Loop** **114-5313-0354** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1953*

This one-story pre-fabricated building was constructed in 1953 and serves as a storage shed for the ALDF testing facility. It has a rectangular form and the metal frame structural system is clad with corrugated metal. The building rests on stacked concrete block foundation piers and is topped by a gable roof covered with corrugated metal. The building has a set of double doors on the front façade approached by a wood ramp. Fenestration includes two metal double-hung sash windows with four-over-four light configurations on the north side.

*Individual Resource Status: Storage Contributing Total: 1*

**10 Wythe Landing Loop** **114-5313-0050** *Other DHR-ID:*

*Primary Resource Information: Research Facility/Laboratory, Style: No Discernable Style, 1953*

This 1953 structure is a metal cylinder with a metal, tubular, arch connecting the structure to the ground. The structure rests on a raised concrete foundation.

*Individual Resource Status: Research Facility/Laboratory Contributing Total: 1*

**10A Wythe Landing Loop** **114-5313-0122** *Other DHR-ID:*

*Primary Resource Information: Aviation-Related, Stories 1.00, Style: No Discernable Style, 1976*

This structure, 161 square feet, is a metal structure with corrugated siding and two single light metal doors.



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*Individual Resource Status: Aviation-Related Non-Contributing Total: 1*

**12 Wythe Landing Loop** **114-5313-0387** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, 1991*

This one-story building was constructed in 1991 and serves as a storage facility. It has a rectangular form and the steel frame structural system is clad with corrugated metal paneling. The building rests on a continuous poured concrete foundation and is topped by a gable roof covered with raised-seam metal. It has a garage bay located centrally on the front façade and a second entrance is located on the south side.

*Individual Resource Status: Storage Non-Contributing Total: 1*

**18A Wythe Landing Loop** **114-5313-0123** *Other DHR-ID:*

*Primary Resource Information: Other, Stories 1.00, Style: No Discernable Style, ca 1956*

This 1956, one-story, side-gable, 264 square-foot building is clad in corrugated metal siding and rests on a poured concrete slab at grade. The roof is covered in metal. There is a shed roof on the west elevation. There are no windows present. The entrance on the façade is a metal door with a double, garage door.

*Individual Resource Status: Other Contributing Total: 1*

**20 Wythe Landing Loop** **114-5313-0051** *Other DHR-ID:*

*Primary Resource Information: Storage, Stories 1.00, Style: No Discernable Style, ca 1953*

This 1953, one-story, front-gable, 3,200 square-foot building is clad in corrugated metal and rests on a poured, concrete slab at grade. The roof is clad in metal. Fixed, nine-light, metal-frame windows are typical. The entrance on the façade is a metal, roll up door.

*Individual Resource Status: Storage Contributing Total: 1*

**TOTAL NUMBER OF RESOURCES: 251\***

**\*(249 resources were identified during preparation of this nomination. Three resources were previously listed in the NRHP: Lunar Landing Facility (Gantry) (114-0140; 114-5313-0290); Variable Density Tunnel (114-0143; 114-5313-0006); and 8-Foot High Speed Tunnel (114-0139; 114-5313-0002).)**

**Table of Resources arranged by NASA Building #**

NASA Building #	Building Name	Year Built	NRHP-Eligibility	VDHR ID#
580	NACA Tunnel One	1920	Contributing	114-5313-0420
581	Thornell Avenue Substation	1940	Non-Contributing	114-5313-0392
582	East Compressor Building	1921	Contributing	114-5313-0393
582A	Low-Turbulence Pressure Tunnel	1940	Contributing	114-5313-0394
584	NACA Utility Building	1934	Contributing	114-5313-0421
586	NACA Services Building	1926	Contributing	114-5313-0422
587	Langley Memorial Aeronautical Laboratory/NACA Headquarters	1917	Contributing	114-5313-0423

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<b>641</b>	<b>8-Foot High Speed Tunnel</b>	<b>1936</b>	<b>NRHP, NHL, and Contributing</b>	<b>114-0139 (114-5313-0002)</b>
641A	Storage Building	1970	Non-Contributing	114-5313-0401
641B	Cooling Tower	1970	Non-Contributing	114-5313-0402
642	Back River Substation	1941	Non-Contributing	114-5313-0403
<b>644</b>	<b>12-Foot Low-Speed Tunnel</b>	<b>1939</b>	<b>Contributing</b>	<b>114-5313-0405</b>
<b>645</b>	<b>20-Foot Free Spinning Tunnel</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0406</b>
645A	Spin Tunnel Support Building	1979	Non-Contributing	114-5313-0407
<b>646</b>	<b>Engineer Technology Laboratory</b>	<b>1934</b>	<b>Contributing</b>	<b>114-5313-0408</b>
<b>647</b>	<b>Rotor Aeroelastic Laboratory</b>	<b>1939</b>	<b>Contributing</b>	<b>114-5313-0409</b>
<b>648</b>	<b>Transonic Dynamics Tunnel</b>	<b>1938</b>	<b>Contributing</b>	<b>114-5313-0410</b>
648A	Transonic Dynamics Tunnel Complex	1979	Non-Contributing	114-5313-0411
648B	Transonic Dynamics Tunnel Complex	1979	Non-Contributing	114-5313-0412
650	Mathis Road Substation	1938	Non-Contributing	114-5313-0413
<b>720</b>	<b>Tow Tank Building</b>	<b>1931</b>	<b>Contributing</b>	<b>114-5313-0424</b>
<b>750</b>	<b>East Hangar</b>	<b>1932</b>	<b>Contributing</b>	<b>114-5313-0425</b>
1101	Wythe Creek Guardhouse	1979	Non-Contributing	114-5313-0134
1121	NTF Model Storage	1994	Non-Contributing	114-5313-0238
1122	Storage Facility	1995	Non-Contributing	114-5313-0275
1133B	Satellite Dish	1983	Non-Contributing	114-5313-0148
1145	Visual Imaging Studio	1992	Non-Contributing	114-5313-0295
<b>1146</b>	<b>16-Foot Transonic Tunnel</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0010</b>
<b>1146A</b>	<b>16-Foot Transonic Tunnel Complex</b>	<b>1958</b>	<b>Contributing</b>	<b>114-5313-0078</b>
1146B	16-Foot Transonic Tunnel Complex	1959	Non-Contributing	114-5313-0079
1146C	16-Foot Transonic Tunnel Complex	1941	Non-Contributing	114-5313-0080
1146D	16-Foot Transonic Tunnel Complex	1970	Non-Contributing	114-5313-0081
1146E	Newport News Waterworks	1941	Non-Contributing	114-5313-0082
1146F	Big Bethel Reservoir	1941	Non-Contributing	114-5313-0083

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1146G	16-Foot Transonic Tunnel Complex	1941	Non-Contributing	114-5313-0084
<b>1146H</b>	<b>16-Foot Transonic Tunnel Complex</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0085</b>
<b>1146I</b>	<b>16-Foot Transonic Tunnel Complex</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0086</b>
1146J	16-Foot Transonic Tunnel Complex	1941	Non-Contributing	114-5313-0087
<b>1146K</b>	<b>16-Foot Transonic Tunnel Complex</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0088</b>
1146L	16-Foot Transonic Tunnel Complex	1941	Non-Contributing	114-5313-0089
<b>1146M</b>	<b>16-Foot Transonic Tunnel Complex</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0090</b>
1147	Taylor Road North Substation	1940	Non-Contributing	114-5313-0011
<b>1148</b>	<b>Structures &amp; Materials Research Lab</b>	<b>1940</b>	<b>Contributing</b>	<b>114-5313-0012</b>
<b>1149</b>	<b>Dispensary Office of Patent Counsel</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0013</b>
1151	Management Support	1971	Non-Contributing	114-5313-0150
<b>1152</b>	<b>Publications Editorial Office</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0014</b>
<b>1153</b>	<b>External Affairs</b>	<b>1941</b>	<b>Contributing</b>	<b>114-5313-0015</b>
<b>1154</b>	<b>Steam to Hot Water Exchange/Pump House</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0296</b>
<b>1158</b>	<b>Pyrotechnics Storage</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0298</b>
<b>1158A</b>	<b>Pyrotechnics Storage</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0299</b>
<b>1159</b>	<b>Pyrotechnics Test Facility</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0300</b>
1165	Storage Facility	1979	Non-Contributing	114-5313-0305
1166	Hazardous Waste Pre-Ship Facility	1991	Non-Contributing	114-5313-0306
1167	PCB Storage Facility	1991	Non-Contributing	114-5313-0307
1169	Office Facility	1978	Non-Contributing	114-5313-0308
1170	Storage and Issue Facility	1974	Non-Contributing	114-5313-0309
1171	Storage and Issue Facility	1974	Non-Contributing	114-5313-0310
1172	Storage and Issue Facility	1974	Non-Contributing	114-5313-0311
1173	Chemical Storage Warehouse	1974	Non-Contributing	114-5313-0312
1174	Storage and Issue Facility	1979	Non-Contributing	114-5313-0313
1175	Storage Facility	1988	Non-Contributing	114-5313-0314

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1176	Storage and Issue Facility	1991	Non-Contributing	114-5313-0315
1177	Mail Handling Facility	1992	Non-Contributing	114-5313-0316
1181	Reclamation and Recycling Facility	1995	Non-Contributing	114-5313-0317
1186	Water Spheroid (500K Gallon)	1994	Non-Contributing	114-5313-0318
1187	Storage and Issue Facility	1992	Non-Contributing	114-5313-0319
1188	Component Cleaning Facility	1993	Non-Contributing	114-5313-0320
1189	Offload Temp Housing Support	1993	Non-Contributing	114-5313-0321
1190	Offload Temp Housing Support	1993	Non-Contributing	114-5313-0322
1191	Support Offices	1993	Non-Contributing	114-5313-0191
<b>1192</b>	<b>Financial Management Division</b>	<b>1942</b>	<b>Contributing</b>	<b>114-5313-0016</b>
1192C	Impact Basin Office Building	1942	Non-Contributing	114-5313-0188
<b>1192D</b>	<b>Projects Directorate</b>	<b>1966</b>	<b>Contributing</b>	<b>114-5313-0189</b>
<b>1192E</b>	<b>Scout Project Office</b>	<b>1966</b>	<b>Contributing</b>	<b>114-5313-0190</b>
<b>1194</b>	<b>Library</b>	<b>1942</b>	<b>Contributing</b>	<b>114-5313-0017</b>
1194A	West Area Training Facility	1977	Non-Contributing	114-5313-0217
<b>1195</b>	<b>Financial Management and Procurement Building</b>	<b>1966</b>	<b>Contributing</b>	<b>114-5313-0192</b>
<b>1195A</b>	<b>Fiscal &amp; Procurement Building Annex</b>	<b>1966</b>	<b>Contributing</b>	<b>114-5313-0193</b>
<b>1195B</b>	<b>Fin. Management Division, U.S. Army Lab</b>	<b>1972</b>	<b>Contributing</b>	<b>114-5313-0194</b>
1195C	Administrative Management Building	1977	Non-Contributing	114-5313-0195
1196	Tape Storage Facility	1991	Non-Contributing	114-5313-0387
1197	Storage Building	1991	Non-Contributing	114-5313-0197
1198	Air Conditioning Shop	1989	Non-Contributing	114-5313-0323
<b>1199</b>	<b>Plant and Vehicle Support Facility</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0324</b>
<b>1200</b>	<b>Laser Optics Laboratory</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0200</b>
<b>1200A</b>	<b>Research Support</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0201</b>
<b>1201</b>	<b>Communications Facility</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0325</b>
<b>1202</b>	<b>Research Lab</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0326</b>
<b>1202A</b>	<b>Pearl Young Conference Center</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0327</b>

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1205	Research Lab	1967	Contributing	114-5313-0329
1206	Distribution Center	1966	Contributing	114-5313-0330
1208	Acoustics Research Facility	1972	Contributing	114-5313-0331
1208A	Acoustics Research Facility	1991	Non-Contributing	114-5313-0332
1209	Office Facility	1976	Non-Contributing	114-5313-0333
1211	Telephone Switching Facility	1989	Non-Contributing	114-5313-0334
1212	Subsonic Tunnels Facility	1946	Contributing	114-5313-0018
1212C	14x22 Foot Subsonic Tunnel	1970	Contributing	114-5313-0335
1213	Cafeteria Telephone Exchange	1946	Contributing	114-5313-0019
1214	Basic Aerodynamics Research Tunnel	1970	Contributing	114-5313-0215
1215	Central Heating & Steam Generation	1946	Contributing	114-5313-0020
1216	Outreach Center	1992	Non-Contributing	114-5313-0336
1219	Langley Research Center Headquarters	1945	Contributing	114-5313-0022
1220	Management Information Systems Simulation	1945	Contributing	114-5313-0023
1221	High-Intensity Noise Research Facility	1946	Contributing	114-5313-0024
1221A	1221 Research Complex	1965	Contributing	114-5313-0337
1221B	High-Intensity Noise Research Facility	1945	Contributing	114-5313-0093
1221C	High-Intensity Noise Research Facility	1946	Contributing	114-5313-0094
1221D	High-Intensity Noise Research Facility	1946	Contributing	114-5313-0095
1221E	High-Intensity Noise Research Facility	1946	Contributing	114-5313-0096
1222	Employee Activities Conference Center	1946	Contributing	114-5313-0025
1222B	Gymnasium and Fitness Center	1986	Non-Contributing	114-5313-0338
1225	Experimental Machine Shop	1945	Contributing	114-5313-0027
1226	Variable Density Tunnel	1921	NRHP, NHL, and Contributing	114-0143 (114-5313-0006)
1227	Substation-DL	1967	Non-Contributing	114-5313-0339

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NASA Building #	Building Name	Year Built	NRHP-Eligibility	VDHR ID#
1228	Main Gate House	1948	Contributing	114-5313-0028
1229	Loads, Structures, & Dynamics Research	1945	Contributing	114-5313-0029
1229B	High Speed Research Facility Storage	2000	Non-Contributing	114-5313-0098
1230	Instrumentation Research	1945	Contributing	114-5313-0030
1230A	Gas Flow Calibration Lab	1946	Contributing	114-5313-0099
1230B	Gas Flow Calibration Lab	1988	Non-Contributing	114-5313-0225
1231	Child Development Center	1946	Non-Contributing	114-5313-0031
1231A	Astronomy Club Facility	1946	Contributing	114-5313-0100
1231B	Child Development Center	1992	Non-Contributing	114-5313-0340
1231C	Child Development Center	1991	Non-Contributing	114-5313-0341
1232	Space Technology	1946	Contributing	114-5313-0032
1232A	Structural Fabrication Support Administration Offices	1946	Contributing	114-5313-0101
1233	Stratton Road Substation	1946	Contributing	114-5313-0033
1234	Jet Exit Test Facility	1945	Contributing	114-5313-0034
1235	Frequency Converter Building	1947	Contributing	114-5313-0035
1236	National Transonic Facility (NTF)	1947	Contributing	114-5313-0036
1236A	National Transonic Facility (NTF)	1947	Contributing	114-5313-0103
1236B	NTF Complex	1979	Non-Contributing	114-5313-0342
1236C	NTF Complex	1981	Non-Contributing	114-5313-0343
1236D	NTF Complex	1997	Non-Contributing	114-5313-0344
1237A	Foundry	1971	Contributing	114-5313-0231
1237B	Foundry	1971	Contributing	114-5313-0232
1237C	Foundry	1971	Contributing	114-5313-0233
1238	Laser/Optics Lab	1975	Non-Contributing	114-5313-0234
1238A	Composite Model & Metal Finishing Shop	1978	Non-Contributing	114-5313-0235
1238B	1238 Complex	1978	Non-Contributing	114-5313-0345
1239	Taylor Road Substation	1945	Non-Contributing	114-5313-0037
1240	Ready Issue Stores Building	1951	Contributing	114-5313-0038
1241	Tunnel Power Control	1951	Contributing	114-5313-0039

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<b>1242</b>	<b>0.3-Meter Transonic Cryogenic Tunnel</b>	<b>1945</b>	<b>Contributing</b>	<b>114-5313-0040</b>
1242A	Cryogenic Tunnel Complex	1974	Non-Contributing	114-5313-0346
1243	Yorktown Road Substation	1950	Non-Contributing	114-5313-0041
<b>1244</b>	<b>Research Aircraft Operations</b>	<b>1951</b>	<b>Contributing</b>	<b>114-5313-0042</b>
<b>1244A</b>	<b>Water Tank No. 2</b>	<b>1951</b>	<b>Contributing</b>	<b>114-5313-0104</b>
1244B	Viking Lander Impact Test Facility	1955	Non-Contributing	114-5313-0105
<b>1244C</b>	<b>Flight Operations Support Building</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0388</b>
1244D	Hangar Complex	1974	Non-Contributing	114-5313-0347
1245	General Storage Building No. 1	1952	Non-Contributing	114-5313-0043
1246	General Storage Building No. 2	1952	Non-Contributing	114-5313-0044
<b>1247A</b>	<b>High Speed Aerodynamics Division Lab Offices</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0106</b>
<b>1247B</b>	<b>High Speed Aerodynamics Div. Complex West Wing</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0107</b>
<b>1247C</b>	<b>Gas Dynamics Cooling Tower</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0108</b>
<b>1247D</b>	<b>Aero-Physics Laboratory</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0109</b>
<b>1247E</b>	<b>Gas Dynamics Compression Building</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0110</b>
<b>1247F</b>	<b>Ames Road Substation</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0111</b>
<b>1247H</b>	<b>1247 Complex</b>	<b>1967</b>	<b>Contributing</b>	<b>114-5313-0348</b>
1247J	1247 Complex	1991	Non-Contributing	114-5313-0349
<b>1248</b>	<b>NASA Fire Station</b>	<b>1967</b>	<b>Contributing</b>	<b>114-5313-0350</b>
<b>1250</b>	<b>Environmental and Space Sciences</b>	<b>1968</b>	<b>Contributing</b>	<b>114-5313-0136</b>
<b>1250A</b>	<b>Environmental and Space Sciences</b>	<b>1967</b>	<b>Contributing</b>	<b>114-5313-0137</b>
1250CTI	Substation	1979	Non-Contributing	114-5313-0138
<b>1251</b>	<b>Unitary Plan Wind Tunnel</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0045</b>
<b>1251A</b>	<b>Continuous Flow Hypersonic Tunnel</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0112</b>
<b>1251B</b>	<b>Chemical Treatment Facility</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0113</b>
<b>1251C</b>	<b>Sprinkler House</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0114</b>
<b>1251D</b>	<b>Hypersonic Flow Apparatus</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0115</b>
<b>1251E</b>	<b>Hypersonic Flow Apparatus</b>	<b>1952</b>	<b>Contributing</b>	<b>114-5313-0116</b>

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1253	Substation-S2DM	1967	Contributing	114-5313-0351
1253A	Substation-S2DM	1970	Contributing	114-5313-0352
1254	Radiation Waste Storage	1954	Contributing	114-5313-0046
1255	General Storage Building No. 3	1955	Contributing	114-5313-0047
1256	Engineering Drawing Files Building	1958	Contributing	114-5313-0048
1256A	Combined Loads Testing Facility	1958	Contributing	114-5313-0117
1256B	Combined Loads Testing Facility	1999	Non-Contributing	114-5313-0118
1256C	Integrated Test Facility	2003	Non-Contributing	114-5313-0119
1257	Aircraft Landing Loads & Traction Facility	1956	Contributing	114-5313-0049
1257N	ALDF Complex	1956	Contributing	114-5313-0120
1257S	ALDF Complex	1956	Contributing	114-5313-0121
1258	Landing Loads Track Compressor Building	1953	Contributing	114-5313-0050
1258A	Outdoor Anechoic Gear Building	1976	Non-Contributing	114-5313-0122
1259	North Arresting Gear Housing	1953	Contributing	114-5313-0051
1259A	Refrigeration Building	1956	Contributing	114-5313-0123
1260	South Arresting Gear Housing	1953	Contributing	114-5313-0052
1261	Landing Loads Track Shop	1953	Contributing	114-5313-0053
1261A	ALDF Complex	1964	Contributing	114-5313-0353
1261B	ALDF Complex	1953	Contributing	114-5313-0354
1262	High Speed Hydrodynamics Office and Shop	1956	Contributing	114-5313-0054
1265	8' High-Temperature Structures Tunnel	1960	Contributing	114-5313-0057
1265A	Bottle Storage Building	1960	Contributing	114-5313-0124
1265B	Combustor Building	1960	Contributing	114-5313-0125
1265C	Cooling Tower and Equipment Building	1960	Contributing	114-5313-0126
1265D	Fuel Comp. Equipment Building	1960	Contributing	114-5313-0127



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1265E	Storage Buildings	1960	Contributing	114-5313-0128
1265F	Thermal Protection Systems Test Facility	1960	Contributing	114-5313-0129
1265G	Gas Bottle Storage	1960	Contributing	114-5313-0130
1265H	Storage Building	1975	Non-Contributing	114-5313-0131
1266	Moffett Road Substation	1960	Contributing	114-5313-0058
1267	Thermal Protection Research Lab	1960	Contributing	114-5313-0059
1267A	Materials Development Shop	1960	Contributing	114-5313-0132
1268	Data Reduction Center	1960	Contributing	114-5313-0060
1268A	1268 Research Complex	1968	Contributing	114-5313-0355
1268B	1268 Research Complex	1979	Non-Contributing	114-5313-0356
1268C	1268 Research Complex	1994	Non-Contributing	114-5313-0357
1268D	1268 Research Complex	1993	Non-Contributing	114-5313-0358
1273A	Substation No. 1	1968	Non-Contributing	114-5313-0359
1274B	Cooling Water Storage (60,000 Gallon)	1969	Contributing	114-5313-0360
1275	CF4 Tunnel Complex	1969	Contributing	114-5313-0361
1277	Nitrogen Pumping Facility (70,000 lb. Cap)	1974	Non-Contributing	114-5313-0362
1283	Fabrication Facility	1958	Contributing	114-5313-0363
1283D	Substation No. 2	1968	Contributing	114-5313-0364
1284A	Systems Safety Quality Rehabilitation	1960	Contributing	114-5313-0133
1284B	1284 Research Lab	1966	Contributing	114-5313-0365
1285	Ground Maintenance Repair	1972	Contributing	114-5313-0367
1286	Rocket Assembly & Propellant Alteration Bldg	1960	Contributing	114-5313-0068
1288	Refuse-Fired Steam Generating Facility	1980	Non-Contributing	114-5313-0368
1288A	Refuse-Fired Steam Generating Facility	1984	Non-Contributing	114-5313-0369
1289	Maintenance Shop-Coatings Contractor	1957	Contributing	114-5313-0070
1290	Substation Unitary Plan Wind Tunnel	1961	Non-Contributing	114-5313-0071
1291	Pump Station (Sewage)	1961	Non-Contributing	114-5313-0072

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NASA Building #	Building Name	Year Built	NRHP-Eligibility	VDHR ID#
<b>1292</b>	<b>Construction and Repair Shop</b>	<b>1960</b>	<b>Contributing</b>	<b>114-5313-0073</b>
1292A	Construction Storage	1975	Non-Contributing	114-5313-0274
1292B	Building Trades Shop	1975	Non-Contributing	114-5313-0370
<b>1293A</b>	<b>1293 Research Complex</b>	<b>1963</b>	<b>Contributing</b>	<b>114-5313-0371</b>
<b>1293B</b>	<b>1293 Research Complex</b>	<b>1963</b>	<b>Contributing</b>	<b>114-5313-0372</b>
1293C	1293 Research Complex	1986	Non-Contributing	114-5313-0373
<b>1293D</b>	<b>1293 Research Complex</b>	<b>1963</b>	<b>Contributing</b>	<b>114-5313-0374</b>
<b>1295</b>	<b>Shop &amp; Instrumentation for 60' sphere</b>	<b>1963</b>	<b>Contributing</b>	<b>114-5313-0075</b>
<b>1295A</b>	<b>Vacuum Sphere Facility</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0375</b>
<b>1295B</b>	<b>Vacuum Sphere Facility</b>	<b>1970</b>	<b>Contributing</b>	<b>114-5313-0376</b>
<b>1295C</b>	<b>Vacuum Sphere Facility</b>	<b>1970</b>	<b>Contributing</b>	<b>114-5313-0377</b>
1295D	Storage Building	1975	Non-Contributing	114-5313-0284
1295E	Vacuum Sphere Facility	1975	Non-Contributing	114-5313-0378
<b>1296</b>	<b>Ceramic Spray Shop</b>	<b>1963</b>	<b>Contributing</b>	<b>114-5313-0077</b>
<b>1297</b>	<b>Lunar Landing Facility (Gantry)</b>	<b>1965</b>	<b>NRHP, NHL, and Contributing</b>	<b>114-0140 (114-5313-0290)</b>
<b>1297A</b>	<b>Impact Dynamics Facility</b>	<b>1972</b>	<b>Contributing</b>	<b>114-5313-0379</b>
<b>1297B</b>	<b>Impact Dynamics Cable Storage</b>	<b>1969</b>	<b>Contributing</b>	<b>114-5313-0287</b>
1297C	Impact Dynamics Facility	1978	Non-Contributing	114-5313-0380
1297D	Impact Dynamics Facility	1977	Non-Contributing	114-5313-0381
1297E	Impact Dynamics Facility	1991	Non-Contributing	114-5313-0382
<b>1297F</b>	<b>Impact Dynamics Facility</b>	<b>1966</b>	<b>Contributing</b>	<b>114-5313-0389</b>
<b>1297G</b>	<b>Impact Dynamics Research Facility</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0135</b>
<b>1298</b>	<b>Office Facility</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0383</b>
<b>1299</b>	<b>Flight Electronics/ Electromagnetics Laboratories</b>	<b>1965</b>	<b>Contributing</b>	<b>114-5313-0390</b>
1299F	1299 Research Complex	1990	Non-Contributing	114-5313-0386
1308	Badge and Pass Office	2005	Non-Contributing	114-5313-0391

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<sup>1</sup> Hansen, James R. *Engineer in Charge: A History of the Langley Aeronautical Laboratory, 1917-1958* (Washington, D.C.: National Aeronautics and Space Administration, 1987), 11.

<sup>2</sup> Baals and Corliss, *Wind Tunnels of NASA* (National Aeronautics and Space Administration, Washington, D.C, 1981) 94.

<sup>3</sup> Cook, Jody. *Langley Field and Langley Aeronautical Research Laboratory*. (Draft National Register of Historic Places Nomination Form. On File at NASA LaRC, 1995) 1.

<sup>4</sup> Ibid. p. 6.

<sup>5</sup> Ibid. p. 8.

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**SUMMARY OF SIGNIFICANCE**

The NASA LaRC—the successor of the NACA’s Langley Memorial Aeronautical Laboratory (LMAL) and later the Langley Aeronautical Laboratory (LAL)—was the nation’s first civilian aeronautics laboratory and played a principal role in the American aerospace story. From its beginnings in 1917, the NASA LaRC has examined complex and groundbreaking issues associated with flight and space travel. Collaborative research conducted in wind tunnels and laboratories, as well as testing of research aircraft, spacecraft, and flight simulators at the NASA LaRC have led to significant advances in American aeronautical and space research and technology.

The NASA LaRC Historic District includes extant buildings and structures in both the East and West Areas that illustrate the major contributions and advances made by NASA researchers in the fields of aeronautics and space flight. The district is potentially eligible for listing in the National Register under **Criterion A** and **Criterion C** in the areas of science, engineering, military, communication, and transportation. The proposed district’s defined period of significance begins in 1917 coinciding with the establishment of the LMAL and the date of the earliest surviving facility, and ends with the conclusion of the Apollo program in 1972, thus Criteria Consideration G applies.

**HISTORICAL BACKGROUND**

**The Beginnings of the National Advisory Committee for Aeronautics and Langley Field**

When the National Advisory Committee for Aeronautics (NACA) was established on March 3, 1915, American aviation was still in its infancy.<sup>1</sup> The Wright brothers had accomplished the first powered flight only a dozen years earlier, and it was not until their first well-publicized flights at Fort Myer, Virginia, that the potential of powered flight was accepted. Congress made the first appropriation for Army aeronautics in March 1911, and over the next several years the Army made rapid strides to incorporate the new technology. As the field of American aviation grew, the NACA was directed to “supervise and direct the scientific study of the problems of flight, with a view to their practical solution.” European aviation advances and the potential for U.S. involvement in the First World War were largely responsible for the creation of the NACA in 1915, as was the leadership provided by Charles Walcott, secretary of the Smithsonian Institution. An aeronautical research laboratory was the real goal of Walcott's group and its predecessors. They saw the establishment of this advisory committee as an important step to their goal, the best that could be accomplished under prevailing political circumstances. The NACA's enabling legislation was finally passed, but as a rider on the naval appropriations bill for 1916.

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The NACA stated at one of its first meetings that "one of the first and most important steps. . . is the provision and equipment of a flying field," and it "expressed hope that land. . . could be found on an existing Government reservation."<sup>2</sup> The NACA's organic legislation provided no funds for this purpose, but it did allow for such a laboratory.

The NACA was appropriated \$53,580 for lab construction on August 29, 1916, but no funds were provided for purchasing or developing a laboratory site. Committee members were well aware of the Army's \$300,000 appropriation for a flying field, and apparently saw it as their best opportunity for a laboratory location. The NACA initiated specific actions to establish a joint civil-military experimental field with the Army, and efforts to advance civil and military aviation coincided at a site eventually known as Langley Field.

The NACA appointed a subcommittee to investigate and report on the suitability of sites under consideration by the War Department. The Chief Signal Officer, Brig. Gen. George P. Striven, officially invited the NACA to join the Signal Corps' site search in a letter dated October 13, 1916. The NACA's subcommittee produced a site report noting that it "took advantage of examinations that already had been made under the direction of the Aviation Corps of the War Department, and thus narrowed the search very materially," and the site ~~most~~ nearly meeting all required conditions was situated about 4 miles north of Hampton, Virginia, on the flat lands facing the two branches of Back River, which opens out into Chesapeake Bay."<sup>3</sup> The land was then part of Elizabeth City County, but became part of Hampton in 1952. The NACA pursued assignment of a portion of the Army's new field for its aeronautical laboratory before the Secretary of War had approved the land purchase. Permission was granted by the Acting Secretary of War on December 27, 1916, but it did not identify a specific plot. The Army Chief of Staff and the Secretary of War ultimately approved the \$290,000 purchase on December 15, 1916, and the sale was finalized on December 30, 1916.

On August 7, 1917, the Army's Aeronautical Experimental Station and Proving Ground was officially named Langley Field in honor of Dr. Samuel Pierpont Langley, Secretary of the Smithsonian Institution (1887-1906), whom many at that time considered to be the true "father of aviation." The idea to name the field for Langley appears to have originated with Army air officers, either General Striven or Col. George O. Squier, then chief of the Signal Corps Aviation Section.<sup>4</sup>

All or part of six farms and plantations, including Sherwood Plantation's 720 acres, became government land. On February 13, 1917, the NACA requested assignment of specific space on the new aviation field "near the water front and preferably near the eastern end of the field."<sup>5</sup> Brig. Gen. George O. Squier, Chief Signal Officer, responded on March 1, 1917, that "it will be agreeable and convenient to this Office to assign such space but not until the work of preparing Langley Field is in a more advanced state."<sup>6</sup>

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The Army planned to use funds from its FY 1917 appropriation for construction at Langley Field, but the Comptroller of the Treasury would not allow it because the field was planned for aeronautical experimental activities rather than general military service.<sup>7</sup> Funding for construction at the proving ground subsequently was included in the Army's 1918 deficiencies request, appropriated in June 1917.

The first military personnel arrived to man the field on April 18, 1917. Initially they were housed nearby at Fort Monroe, but soon were quartered at the Sherwood Plantation house on the flying field. The J.G. White Engineering Corporation of New York was selected as contractor, and surveys and land-clearing began in late April. Initial work included erecting temporary buildings, digging a subsoil drainage system to address the site's high water table and susceptibility to flooding, and dredging a channel in the Back River for access to planned wharves and boat houses, with the dredged material then used to fill marsh lands. In addition, trees and bushes were cleared for two dirt aircraft runways.

The architectural firm of Albert Kahn and Associates was employed to develop plans for the Aeronautical Experimental Station and Proving Ground. Professor Ernest Wilby headed Kahn's design team at the site. Kahn's first drawings were included in Specification No. 796, signed on August 2, 1917: "For Distributing System Consisting of the Construction of Primary, Secondary Service and Street Lighting Lines, and the Furnishing and Installation of Cut-Outs, Street Lights and Transformers."<sup>8</sup> It detailed Kahn's original layout along the bank of the Back River with a main traffic circle, directing traffic northwest to the flight line and northeast to the residential area, headquarters, and docks. Two smaller circles were also part of the original design, as well as arced, interconnected streets in the adjacent area. The interior land was left open for the flying field.

At the outset, a small workforce was allocated to the experimental station, but this situation changed after the United States entered World War I in April 1917. New orders for accelerated construction and a larger workforce were issued in August, and again in October. Construction at the site progressed relatively slowly, partly because of funding issues, and later "due to the fine quality of the design of the buildings."<sup>9</sup> The buildings Albert Kahn designed for the Army's first aeronautical experimental station were of high quality, substantial, and permanent. In late 1917, urgent wartime requirements and slow progress at Langley Field led the Army Signal Corps to relocate its aeronautical experimental station to McCook Field, Dayton, Ohio, where operations began before any permanent buildings were completed at Langley.<sup>10</sup>

On August 29, 1917, the NACA wrote to General Squier again: "Independent of any further official action in the matter, this committee has been unofficially assigned a very satisfactory plot of ground on the Langley Field, and is now proceeding with the erection of its laboratory. It appears, therefore, as a matter of record, which it might be well for this office to receive from you some suitable statement designating specifically this plot of ground as the one assigned this committee for the purposes indicated." No reply to this request has been

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located. Specification No. 796-A for construction of the Army Aeronautical Laboratory (now Headquarters Air Combat Command, No. 693) was signed in August 1917.<sup>11</sup> By the following year, construction of a number of facilities, including quarters, hangars, and machine shop were underway.<sup>12</sup> As of October 1918, the overall street layout was complete, while the Newport News *Daily Press* remarked that "Langley Field is to be made one of the prettiest, as well as best equipped, flying experimental stations in the country."<sup>13</sup>

**The Establishment of the Langley Memorial Aeronautical Laboratory**

The Armistice on November 11, 1918, brought Army airfield construction work around the country to an immediate halt. Almost all airfields developed for the war effort were leased properties. Some were immediately abandoned, while others were kept to be used as temporary storage depots during the period of demobilization. Large sums of money expended on military aviation during the war had resulted in large numbers of temporary buildings at most airfields, including wood frame buildings and steel frame hangars. Langley Field and Rockwell Field, site of the Signal Corps Aviation School in San Diego, were the only stations that could claim any permanent construction at the end of the war, and 90 percent of Rockwell's construction was temporary.<sup>14</sup>

After the Armistice, the NACA once again sought official sanction for locating its laboratory at Langley Field. The NACA *Annual Report* for 1918 noted that Langley Field's original purpose was "to provide an experimental flying field and proving ground for aircraft. During the war the field was used primarily as a training school for aviators, but it is contemplated that after the war it will be fully developed in accordance with the original plan."<sup>15</sup> The Aeronautical Experimental Station had been relocated to Ohio during the war years, however, and early Air Service development plans included Langley Field as a fully operational air station with coastal defense responsibilities.<sup>16</sup>

The NACA repeated its request for official assignment of space on Langley Field on December 17, 1918. Dr. Walcott wrote to the Secretary of War that the research laboratory was completed and that construction of the wind tunnel building was underway, but "no official assignment of such space has as yet been made by the War Department." To prevent any possible misunderstanding in the future, Walcott requested that Plot 16 (the lot unofficially assigned in 1917) be "officially allotted to the National Advisory Committee for Aeronautics, for use as an experimental field station and for the conduct of scientific research in aeronautics." The Army's original plans for Langley Field had changed, however, as had the organization of the Army air arm. Assignment of space on Langley Field for the NACA's laboratory now became entangled in the larger question of how post-war Army aviation would be structured.

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The NACA's request brought out the ill will felt by some airmen towards the NACA. In a January 15, 1919, letter to Maj. Gen. William L. Kenly, the Director of Military Aeronautics, Col. Thurman H. Bane, serving as Chief of the Technical Section at McCook Field, questioned the need for duplicate facilities "for carrying on experimental aeronautical research."<sup>17</sup> He strongly recommended that ~~the~~ control of the field and all experimentation at the field remain with the Air Service. . . . Research and experimentation on questions of aeronautics," he proposed, ~~must~~ be controlled and done under the direct supervision of the personnel who are faced with the actual and practical service problems. Research carried on by any other type of organization is liable to beat about long lines that have no immediate practical application to the sacrifice of vitally important matters." Bane also feared "the dangers of dual control" at Langley Field. As a result, he proposed a conference of NACA members and Air Service representatives to discuss a "satisfactory means of co-operating in the work at Langley Field."

On January 25, 1919, Col. Bane received a short reply requesting that he drop the matter, as no final determination had yet been made concerning the control of Langley Field. Eventually a conference was called and an agreement was reached. On April 24, 1919, Acting Secretary of War Benedict Crowell approved a Memorandum from Maj. Gen. Charles T. Menoher, Director of the Air Service, recommending "that that portion of Langley Field known as Plot No. 16 be definitely set aside for use by the National-Advisory Committee for Aeronautics for their purposes in constructing laboratories or other utilities necessary in scientific research and experiments in the problems of flight." The issue of dual control was resolved by authorizing the NACA to conduct its work independent of the Air Service, with the exception that NACA personnel would come under the control of the Post Commander in matters pertaining to discipline, fire, guard, police and sanitation.

In spite of the official assignment of Plot 16, the wartime relocation of Army experimental activities originally planned for Langley Field made the tenure of the NACA's laboratory uncertain. For the next several years, a long-range plan for Army flying fields and depots was under development, and the NACA's laboratory remained in limbo. In fact, the deficient working and living conditions at Langley Field caused some administrators to consider relocating it elsewhere. In the summer of 1919, the laboratory's engineer in charge of buildings and construction stated in a memorandum to Dr. Joseph S. Ames, chairman of the NACA's Committee on Personnel, Buildings, and Equipment, that ~~Langley~~ Field can never be an efficient or satisfactory place for the Committee to carry on research."<sup>18</sup> One of the chief complaints was that proposed powerhouse had not been completed. Sufficient electrical power could not be obtained from the nearby city of Hampton to run the wind tunnel and engine dynamometer laboratory, so a temporary power source had to be supplied. In addition, the NACA was finding it difficult to find and retain ~~high-grade~~ men" to staff the laboratory, and struggled with obtaining the necessary labor, supplies, and equipment in the local market.



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To address some of the NACA's concerns, Acting Secretary of War Crowell submitted a bill on December 8, 1919 to the Chairman, Senate Committee on Military Affairs, requesting that it be introduced in Congress and given special priority. The bill authorized the Secretary of War to furnish separate quarters at Langley Field to the NACA's civilian employees, and to allow them to purchase "subsistence stores and commissarial supplies" at reasonable rates.

Meanwhile, however, the Army and the NACA continued to investigate the possible relocation of the NACA laboratory, and from the fall of 1919 until the early part of 1921, the Air Service pushed to transfer the lab to Bolling Field in Washington, D.C. Throughout 1920, relations between the military and civilian elements at Langley remained tense, with the Commanding Officer and General Billy Mitchell reportedly "anxious to have the Committee move from Langley Field."<sup>19</sup>

Despite the Army's reservations, the NACA's laboratory was officially dedicated in conjunction with completion of its first wind tunnel on June 11, 1920. The NACA's laboratory was officially named the Langley Memorial Aeronautical Laboratory (LMAL) in honor of Samuel Pierpont Langley, the "father of aviation." The Air Service may have been concerned about the NACA's entrenchment at Langley Field, but airmen presented a spectacular flying circus for the formal dedication. Rear Adm. David W. Taylor, Director of Naval Aviation and a noted naval architect and aircraft designer, made the dedication's keynote speech.<sup>20</sup>

On January 15, 1921, legislation authorizing occupancy of quarters by LMAL personnel passed the Senate and was favorably reported to the House. Later that year, a new—and more sympathetic—Commanding Officer arrived at Langley Field, which greatly improved military-civilian relations. From this point on, the NACA's researchers were finally able to conduct their work in earnest.<sup>21</sup>

### The NACA and the LMAL in the 1920s

The NACA's organic legislation had expressed no clear goal, as Committee efforts were initially channeled toward establishing a national aeronautical laboratory. With that goal finally accomplished, the NACA was able to begin developing an aeronautical research program for its laboratory to carry out. Proposed research programs included "experiments on airplanes in full flight, model wind tunnel experiments (i.e., experiments in wind tunnels with models), development of instruments for navigation and operation of aircraft, and determining performance and stresses of planes in flight."<sup>22</sup> As Dr. Walcott expressed to President Woodrow Wilson in the spring of 1920, "the principal duty of the National Advisory Committee for Aeronautics is the conduct of scientific research in aeronautics," and "the continuous scientific study of the problems of flight."<sup>23</sup>

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In this early period of American aviation, the field of aeronautic design was equated with bridge engineering, in the sense that bridges ~~were~~ built by certain rules of thumb without any regard to or analysis of the stresses to which they would be subjected."<sup>24</sup> The LMAL introduced methodical and scientific investigation of aeronautical design problems to place ~~the~~ design of an airplane on the same scientific basis as that which has been employed for a long time in bridge design, where it is possible to know beforehand the stresses to which not only the entire structure but every one of its members will be subjected."<sup>25</sup> Unknown factors in airplane design were identified in qualitative means used to determine performance characteristics of airplanes in flight.<sup>26</sup> The LMAL used empirical methods to solve aircraft design problems, and its reliance on experimental programs was in keeping with the state of American aeronautics in 1915-1930.<sup>27</sup>

Wind tunnels had been used to study aerodynamics as early as the 1830s. As explained by James Hansen, ~~a~~ fundamental law of fluid dynamics is that a body immersed in a moving fluid experiences the same forces as if that body were moving and the fluid stationary, given that the relative speed of the fluid and the solid object is the same in both cases. This means that the conditions surrounding an airplane in flight can be replicated by holding the plane stationary and moving the air past it at a speed comparable to flight speeds."<sup>28</sup> Scientific methods and instruments make it possible to predict what forces an airplane in flight will probably encounter based on tests of an airplane, or an accurate model of it, in a wind tunnel.<sup>29</sup> ~~Advantages~~ of a wind tunnel over flight testing are economy, safety, and research versatility. A model airplane can be tested in a wind tunnel at a fraction of the cost of building and operating a full-scale prototype, and the airworthiness of new and experimental designs can be tested without risking a pilot's life."<sup>30</sup> Flight conditions simulated in wind tunnels can be varied, measured, and more closely controlled than possible in flight research.

When the LMAL was officially dedicated in June 1920, the laboratory complex included three buildings. The ~~Research Laboratory~~" (No. 587, now owned by Langley Air Force Base), completed in 1918, included administrative offices, drafting, machine/woodworking shops, and photography and instrument labs, as well as a lunchroom on the second floor. The wind tunnel building (No. 580, 1920, owned by Langley Air Force Base) which housed Tunnel No. 1 was described in the NACA's 1921 semi-annual report: ~~The~~ equipment at Langley Field is most satisfactory, especially the wind tunnel, which is considered the best for the particular type of work for which it is now being used. The wind tunnel is now capable of being operated at speeds in excess of 110 miles per hour and with the installation of a new propeller it is expected to obtain airspeed of 140 miles per hour. The air flow has been carefully checked and found to be very uniform."<sup>31</sup> The third building was a temporary structure for the engine dynamometer lab equipment that is no longer extant.

The LMAL was in full operation by April 1921. According to the LMAL's chief physicist, by now the laboratory was stimulating a ~~decided~~ change in the nature of the Committee's activities. . . . Emphasis is now rapidly shifting and a constantly increasing portion of the time and money available is being devoted to the carrying on of research in the Committee's own labs."<sup>32</sup> At that time, there were only 13 wind tunnels operating

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in the United States. These tunnels were occupied with routine testing of specific models, with —too little time to spare for real research.”<sup>33</sup> The NACA’s wind tunnel however was ~~devoted~~ entirely to the carrying out of a definite research program without being constantly burdened with tests on the balance and efficiency of new designs of aeroplanes.”<sup>34</sup>

In 1921, the NACA hired Dr. Max Munk to direct its growing aeronautical research program. A German theoretical aerodynamicist from the Zeppelin Company, Munk had abilities as a theoretician and generalist which the Committee expected would enable him to draw conclusions from the LMAL’s research: ~~the~~ scientist providing the conceptual framework on which the NACA engineers would hang their researches.”<sup>35</sup> Munk soon set about designing the LMAL’s second wind tunnel to address the problem of ~~scale~~ effect.” This phenomenon had posed a serious problem for wind tunnel research, as it skewed research results and required correction to accurately simulate conditions encountered by an actual airplane in flight. In response, Munk designed and built the Variable Density Tunnel (VDT), which could vary air density ~~so~~ that almost any model of reasonable size could be tested under conditions comparable to those encountered by a full-scale aircraft in flight.”<sup>36</sup> This tunnel was housed within Building 582.

Throughout this early period of aeronautical development, one of the most pressing areas of research concerned the design of airplane wings. The VDT was the first tunnel able to produce reliable measurements that could be used to develop a wing design based on scientific principles. Munk used the VDT to investigate a new airfoil theory he was developing; this research produced a major breakthrough in airfoil design, and his 1925 research report introduced the NACA’s first ~~family~~ of wings.” Munk’s pressurized wind tunnel launched a worldwide revolution in aeronautical research, and represented ~~a~~ technique that remains one of the NACA’s greatest contributions to wind tunnel technology.”<sup>37</sup> In fact, the VDT has been described as the NACA’s ~~first~~ bold step in the direction of novel research equipment,” winning it international acclaim as a ~~technologically~~ outstanding research organization.”<sup>38</sup>

In 1924, the NACA Headquarters in Washington, D.C. gave up its six-year effort to find a scientist to direct aeronautical research, and the Committee’s executive officer, the engineer George Lewis, assumed the position. Charged with directing the NACA’s technical research program, the head position at the LMAL was subsequently designated ~~engineer-in-charge~~.” Lewis established a research process to refine ~~flight~~ as it then existed . . . based on the belief that a smoothly running research organization holds the greatest promise of technological progress.”<sup>39</sup> The NACA’s 1925 and 1926 annual reports aptly summarized Lewis’ vision of the research process:

There is nothing in sight at this time to indicate the probability of the discovery of a revolutionary principle Contributing- Any great or sudden improvement in aircraft.<sup>40</sup>

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It is apparent that the time has now arrived when the main theoretical foundation has been laid and we may expect in the future to find extensions of and additions to existing theory rather than new fundamental conceptions. We are therefore entering into a phase of refined and applied theory.<sup>41</sup>

Max Munk's volatile genius was not in keeping with Lewis' new, orderly research process, and he resigned early in 1927. The research priority of the LMAL's was now to investigate aerodynamic principles basic to all aircraft, rather than testing for specific aircraft design problems. Opinions concerning this new strategy, which became the blueprint for the research approach for the next two decades—were understandably mixed. Supporters contended that, although it may have ~~lacked~~ "brilliance and inspiration," the process worked ~~exceedingly~~ "well," providing a rational and defensible system of research selection."<sup>42</sup> Detractors tended to point out the restrictions inherent in this approach. ~~For~~ "better or for worse," Alex Roland noted, ~~the~~ "NACA by 1926 was committed to a research philosophy that valued process over prescience, the team over the individual, experiment over theory, engineering over science, incremental refinement of the existing paradigm over revolutionary creation of new paradigms."<sup>43</sup>

Many LMAL veterans, however, expressed support for the approach:

In the early 20s no one knew for sure what the right problems for research were for an agency like the NACA. . . . By 1926, experience was beginning to show that many of the most urgent problems in that period involved engineering questions like ~~is~~ "it worthwhile to retract landing gears," or ~~can~~ "I reduce drag without degrading cooling"—questions which the NACA could answer with the aid of large new facilities, affordable only by the government.<sup>44</sup>

Dr. Ames fostered and approved such work because it was urgently needed—not because the NACA had decided to reject science or theory. As a Ph.D. in physics, Ames understood scientific research at least as well as Munk. Lewis also had a stronger than usual academic background. There was no rejection of individual research, or theory, or fresh ideas.<sup>45</sup>

The formative years for the NACA and the LMAL were over by the mid-1920s. By this time, the NACA had ~~settled~~ "upon aerodynamics as its main field of interest," an area of specialization that offered ~~real~~ "opportunity to advance aeronautical science."<sup>46</sup> The NACA was also beginning to mature into a research agency and not simply an advisory committee. The NACA Headquarters in Washington, D.C., may have ~~run~~ "the show," securing funds and making sure the program satisfied the NACA's customers, primarily the military services and the aircraft industry. Yet, ~~the~~ "aeronautical research to which the NACA was dedicated was conducted at Langley."<sup>47</sup> The death of Charles Walcott in 1927, the NACA's chairman since 1917, punctuated the end of this early phase.<sup>48</sup>

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The late 1920s was a boom period for aviation in America. The federal government began regulating civil aviation under the Air Commerce Act of 1926, while the Army Air Corps Act of that same year expanded military aircraft building programs. Charles Lindbergh's 1927 transatlantic flight from New York to Paris further contributed to a growing national awareness and support of aviation. The NACA had always recognized the importance of commercial aviation, declaring in 1927 that "civil aviation must in itself be regarded as one of the most important factors of civilization."<sup>49</sup> It was also an important player in the long debate over the place of civil aviation in the federal government. In the early 1920s, LMAL research efforts had focused primarily on military requirements. But the growth of commercial aviation increasingly changed the direction of their efforts. In 1926, the NACA initiated an annual aircraft engineering conference to provide the aircraft industry better access to the NACA and the facilities of the LMAL.<sup>50</sup> Aviation leaders from government, educational institutions that taught aeronautical engineering and representatives of aeronautical trade journals were also invited. One result of this collaboration was that the NACA adapted its research priority for long-range fundamental investigations applicable to all flight to consider requests for short-term practical research.

The NACA's building program of the late 1920s was characterized by "daring and originality" in developing research equipment for the LMAL.<sup>51</sup> With the VDT, the NACA became renowned for "innovative research techniques and tools," and they translated this fame into "more funds from Congress for equally innovative facilities and equipment in the years to come."<sup>52</sup> NACA director George Lewis requested \$33,000 in the Fiscal Year (FY) 1927 budget to initiate construction of the LMAL's third wind tunnel, the Propeller Research Tunnel (PRT). In May 1927, the NACA received a research request at its second annual aircraft engineering conference for an aircraft engine cowling. This request was seen as an opportunity to address industry needs and to explore research applicable to all aviation. When the PRT was completed, it proved to be the ideal facility for the cowling investigation. The size of the PRT's throat (20 feet) made it the largest in the world at the time, and it required a huge amount of power to operate.<sup>53</sup> The PRT was big enough to allow testing of a real fuselage with its entire engine installation and full-size propeller, making correction for scale effects unnecessary. Test results for propellers were deemed "comparable to those obtained in the VDT for airfoil and airplane models."<sup>54</sup> The PRT "proved as revolutionary and effective" as the VDT, and brought three major findings in the course of a few years. It demonstrated that the exposed radial engine was a source of costly air resistance; it proved that a multi-engine airplane performs best when the engines are in line with the leading edge of the wing; and it indicated that landing gear exacted an enormous toll in drag. These findings resulted in major improvements to aircraft design, including improved cowlings, front-of-wing engine positions, and retractable landing gear.<sup>55</sup> Manufacturers around the world adopted the NACA cowling almost universally in the 1930s and later, making it one of the most significant aeronautical advances of the 1920s.<sup>56</sup> The NACA and the LMAL received their first Collier Trophy in 1929 for development of the aircraft engine cowling.<sup>57</sup>

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The next tunnel proposed by the NACA was a full-scale wind tunnel, and funds for its construction were included in the FY 1928 budget. With a 30- by 60-foot throat, it was to be even larger than the PRT. The initial funding request was not approved, however. In the interim, the importance of the NACA's cowling had been demonstrated, and this accomplishment was exploited with the Bureau of Budget and Congress. The NACA emphasized that superior equipment had produced superior results, and that ~~the~~ research facilities of the Committee had helped determine the quality of the product."<sup>58</sup> The 1928 Annual Report noted that ~~this~~ single contribution will repay the cost of the propeller research tunnel many times and fully justifies the committee . . . in recommending that additional funds be provided next year for construction of a full-scale wind tunnel."<sup>59</sup> Due in large part to the success of the PRT and its research, the Full-Scale Tunnel (FST) was subsequently authorized, despite its hefty \$1 million cost. ~~With~~ the NACA's reputation and boldness growing, the Committee was now trying to secure its newly won position as the best equipped and most productive aeronautical research establishment in the world."<sup>60</sup>

### The NACA and the LMAL in the 1930s

The aeronautical research of the 1920s resulted in a dramatic improvement in aerodynamic designs for engine cowlings, propellers, and wings in a short period of time. Yet, as they became more involved in the various problems of aircraft design and performance, Langley engineers found that they required ~~more~~ sensitive, more powerful, more specialized laboratory equipment. They found the old tools of research crude, inadequate, and in some cases misleading. So they proceeded to improve the old tools and to invent new ones."<sup>61</sup> Scale measurements were required to achieve accurate research results because all wind tunnel research utilized models or specific parts of airplanes, with the exception of full-scale studies. There are three ways to make scale measurements of lift, drag, and other airflow effects approach those of actual flight. These three methods led to three broad lines of wind tunnel development during the 1930s: large scale, high-speed, and low turbulence."<sup>62</sup>

After the success of the LMAL's cowling research, Congress had authorized the construction of the FST, as well as a new maintenance building and a tow tank to study seaplanes. The FY 1930 budget included \$525,000 in construction funds to begin work; another \$375,000 was appropriated the following year."<sup>63</sup> When it was completed in May 1931, the FST cost nearly ~~three~~ times as much as all the other buildings constructed at Langley in the laboratory's first 12 years, including three laboratory buildings, the atmospheric tunnel, the VDT, hangars, and the propeller-research tunnel."<sup>64</sup> The world's newest and largest wind tunnel had a price tag of just over \$1 million, even with reduced Depression-era labor and material costs."<sup>65</sup> Large enough to accommodate an entire aircraft, the FST (No. 643, NHL: 1985) was three times larger than any existing tunnel in the world. It was the first to be powered by two 4,000-hp propeller type fans placed side by side, and the first to include an oval throat, which measured 30 feet high by 60 feet wide. Many structural problems had to be solved to build this tunnel, which was large enough for a single-engine airplane to be mounted and tested ~~in~~ a stream of air

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hurtling past at 129 miles per hour.”<sup>66</sup> Some of its design elements were unprecedented: the permanent steel framework which supported the walls was located on the exterior ~~like~~ scaffolding,” allowing interior room for tunnel space through which air could flow free of obstructive beams, ribs and bracing.

The FY 1930 budget had also included \$208,000 for a towing tank to study seaplanes. The LMAL’s original research program was expanded to include airplane hydrodynamics in 1929. Research in the 1920s had focused on the ~~landplane,~~” but seaplanes had also benefited from general improvements in wings, propellers, engine cowlings, and other developments. Water resistance remained the primary problem for seaplane designers and operators when the tow tank was placed in service. As wind tunnels allowed for experimentation with airflow, the towing tank was designed to demonstrate ~~the~~ laws of waterflow and provides a means for experimenting with various shapes and determining behavior when moving through water.”<sup>67</sup>

The towing tank (No. 720) was large enough (2000 feet long by 24 feet wide and 12 feet deep) and had a carriage fast enough (tow speed 60 miles per hour) to simulate the actual take-off conditions of a seaplane. The basin was extended to 2,900 feet in 1937, and the carriage towing speed increased to 80 miles per hour. Part of the tank equipment included an apparatus for sending waves of various magnitudes over the surface, simulating rough-water conditions for studies of take-off and landing at sea in heavy weather. Special features were incorporated into the tank’s design by Starr Truscott, a naval architect formerly with the Navy Bureau of Aeronautics. In fact, the tank was so long that the curvature of the Earth had to be taken into account in its construction. Completed in 1931, the tank was used to study most of the flying boats and other seaplanes built in the U.S. through the late 1940s. As a result, the LMAL’s ~~extensive~~ series of researches placed the whole subject of water resistance on a firmer basis, and established fundamental data that could be applied in the design of a seaplane of any specified gross-load capacity or take-off speed.”<sup>68</sup>

Wind speeds of LMAL tunnels in the late 1920s were representative of contemporary airplane cruising speeds, but they were not adequate for high-speed research. As airplane speeds increased, so did the need for a tunnel that operated at hundreds of miles per hour. The LMAL’s first high speed tunnel (HST, 1927) was a tall, vertical, steel tube with a 12-Inch throat, installed beside the VDT’s pressure tank. The VDT’s pressurized air, released every time a model was changed, was used to power the tunnel at speeds greater than 500 mph. The throat was narrowed to 11 inches in 1931, with a gain in speed to 765 mph. This tunnel, and the second vertical jet tunnel, the 24-Inch HST (24” HST, 1934), helped to improve airfoils and achieve higher flying speeds.<sup>69</sup> High-speed tests in these tunnels were lacking, however, because they were short (less than a minute in duration, as they used a sudden release of highly compressed air) and models were small. To address these deficiencies, the NACA pursued funding for a larger HST in the early 1930s. The required money and labor ultimately was provided by the Public Works Administration (PWA) as part of relief efforts to address Depression-era unemployment.

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The 8-Foot HST (Facility No. 641), authorized in July 1933 and operational by March 1936, was a full-speed companion to the low-speed FST. It was constructed of reinforced concrete (12 inches thick and lined with steel) with a dome-shaped test chamber to withstand air pressures when operated at high speed. ~~Instead of~~ being contained within a barn-like house, as were the propeller research and FST, the 8-Foot quite frankly and openly exposed its structure to the world: a closed tube of reinforced concrete, shaped into a hollow elongated ring, whose interior tapers from a maximum diameter of twenty-four feet to the minimum of eight feet at the test section.<sup>70</sup> The ~~world's~~ first HST of large size" had an 8,000-horsepower motor driving an 18-blade propeller, 16 feet in diameter. It was designed to reach a speed of 500 mph, but ~~the~~ engineers found they could get 550 mph.<sup>71</sup> Later, in 1945, the speed was increased to 760 mph. An innovative cooling system was designed to address the heat from the energy of the 8,000 hp fan. A ventilating tower with ~~an~~ ingenious system of trading hot air for cool" solved the problem, a system later applied to many more powerful tunnels.<sup>72</sup> Complete airplane models with wingspans over six feet could be tested in the 8-Foot HST. In addition to construction of the 8-Foot HST, PWA funds also paid for the 24-Inch HST (1934, replaced by the 20-Inch Transonic Tunnel in 1953), the 15-Foot Spin Tunnel (Free Spinning Tunnel, Facility No. 646, 1935), and an Aircraft Engine Research Laboratory (1934).

During this period, the LMAL also continued Max Munk's VDT program to develop improved airfoils. The results of this research were published in 1933 as *Characteristics of 78 Related Airfoil Sections from Tests in the Variable-Density Tunnel*. This report introduced the NACA's second series of airfoils, the NACA 4-digit series. It provided aircraft designers with a whole range of wings from which to choose, ~~as~~ one might select home-furnishings or automobile accessories from a catalogue.<sup>73</sup> The NACA 0230 family of wings, the ~~two-thirty~~" family, was the most famous of the 4-digit series, introduced in 1935.<sup>74</sup>

The great amount of airstream turbulence in the VDT gradually came to the attention of LMAL researchers. After the FST was completed in 1930, test results at full scale made it clear that FST tests were more accurate reflections of actual flight conditions than VDT tests. Competition between the LMAL's VDT and FST sections produced a tunnel turbulence factor to compensate for VDT turbulence, but this was seen only as a short-term solution. Eastman Jacobs, head of the VDT section, began to push for a new, larger VDT with airstream quality approaching that of the smooth air of free flight. Jacobs thought that a low-turbulence pressure tunnel ~~would~~ greatly enhance the two related lines of research that the VDT team had long been pursuing: development of new airfoils, and better understanding of the basic aerodynamic relationship between airstream turbulence, boundary-layer flow, and wing performance.<sup>75</sup>

Research in the area of boundary layer flow, led by Eastman Jacobs, was underway while funding for a low-turbulence tunnel was pursued between 1935 and 1937. The boundary layer adjacent to the wing, where smooth (laminar) airflow changes to turbulent flow, was recognized as the great source of parasitic drag. ~~As~~ the air flowed over and under the leading edge of the wing, it moved at first in smooth and undisturbed streams of



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laminar flow adjacent to the wing surface. But . . . by the time it had traveled fifteen percent of the wing's chord the flow was predominantly turbulent. The engineers knew that this turbulent flow was the enemy."<sup>76</sup> As LMAL researchers learned more about the boundary layer, they realized that they needed more than an improved tool (i.e. the proposed tunnel). The experimenters required ~~a~~ new approach to the problem, some guiding theory that would point . . . to a practical way of prolonging laminar flow."<sup>77</sup> The new approach they were seeking, an airfoil with progressively falling pressure across the chord, was the inspiration of Eastman Jacobs. ~~This~~ concept changed the whole manner of thinking on the problem. Heretofore, engineers had thought in terms of the shape of the wing, but now it was the pressure distribution that came first. The idea was to plot a curve of pressure distribution that theoretically should promote laminar flow, and then design a wing section that would induce that sort of pressure distribution."<sup>78</sup> Contemporary airplane wings were a long way from providing the pressure distribution envisioned by Jacobs. Existing theory allowed calculation of pressure distribution from a known airfoil shape, but it did not operate in reverse.<sup>79</sup> Jacobs and his team explored this idea while NACA efforts to secure funding for a low-turbulence pressure tunnel continued.

Two new tunnels had received funding while the laminar research program was underway: the 19-Foot Pressure Tunnel (a super PRT, authorized in 1936, operational 1939)<sup>80</sup> and an icing tunnel (authorized 1937, operational 1938). Both resulted from industry demands for specific research, which overpowered the LMAL's priority for a low-turbulence tunnel. Ice tunnel research was accomplished in a short period, however, and the ice tunnel was immediately converted to a low-turbulence tunnel. In the spring of 1938, Jacobs' group had a breakthrough in their efforts to design an airfoil with progressively falling pressure across the chord. The new pressure distribution concept was verified theoretically, and manufacture of a wind tunnel model was rushed through the LMAL shop.<sup>81</sup> Tests began in June 1938 as soon as the ice tunnel had been converted to a low-turbulence pressure tunnel.

According to the test results, the new airfoil ~~showed~~ a drag on the order of one-half that of the conventional airfoil."<sup>82</sup> The first airplane to utilize the LMAL's laminar-flow airfoil was North American Aviation's P-51 Mustang. The Mustang's subsequent war record ~~confirmed~~ the expectations of appreciable improvements in speed and range as a result of the low-drag design. . . . The Mustang's modified four-series section, with its pressure distributions and other features, proved an excellent high-speed airfoil."<sup>83</sup> Eastman Jacobs, the LMAL's ~~leading~~ "experimentalist," was ~~the~~ inspiration and driving force behind the entire laminar-flow program."<sup>84</sup> In 1937, he received the Sylvanus Albert Reed Award ~~for~~ his contribution to the aerodynamic improvements in military and commercial aircraft" from the Institute of the Aeronautical Sciences.<sup>85</sup> ~~No~~ one working in the U.S. in the 1930s, perhaps the world surpassed his ability to develop airfoils by a combination of theory and experiment."<sup>86</sup>

The first low-turbulence tunnel, the Two-Dimensional Low-Turbulence Tunnel (Facility No. 583, 1938), used two devices to straighten the airflow and ~~strain~~ "out the eddies." It was built as ~~an~~ experimental model to try

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out the idea of radical correction and screening, to see if the combination really would lower the turbulence.” It proved successful, and the researchers then began to plan ~~a~~ larger and still more radical tunnel.”<sup>87</sup> The Low-Turbulence Pressure Tunnel, constructed 1939-1941 (Facility No. 582A) was larger, built of steel, and could compress air to ten atmospheres. Its turbulence was less than one-hundredth that of the original VDT.<sup>88</sup> With the completion of the low-turbulence pressure tunnel in June 1941, the investigators now had ~~an~~ incomparable tool”<sup>89</sup> for developing airfoils. The first low-drag wings were the result of subsequent research. Overall, the experiments that produced the two low-turbulence tunnels also contributed to the design of later tunnels at Langley and other laboratories.<sup>90</sup>

## The NACA and the LMAL in World War II

As early as March 1936, the NACA’s ~~intelligence office,~~ established in Paris in the late 1910s to gather information on European aeronautical developments, reported great expansion of aeronautical research in Germany, England, France, and Italy. ~~The~~ Germans, traditionally strong in applying the science of aerodynamics, were in the midst of what appeared to be a major revitalization of their country’s aeronautical resources. As a result of Nazi support, there would soon be five major regional stations for aeronautical research and development in Germany.”<sup>91</sup> In response to these warnings, the NACA formed a Special Committee on Aeronautical Research Facilities in March 1936, which produced a deficiency appropriation for 1936 and an increased budget for 1938. From 1935 on, the NACA Annual Reports and American aeronautical journals warned of greatly accelerated European aeronautical research. Neither Congress nor the Bureau of the Budget recognized ~~that~~ a crisis was in the making, a crisis requiring a crash program in aeronautical research.”<sup>92</sup>

In September 1936, George Lewis traveled to Europe specifically to investigate aeronautical research in Germany and Russia, touring ~~the~~ vast facilities initiated or expanded under Hitler and... [noting] the unparalleled German commitment to aeronautical supremacy.”<sup>93</sup> He was particularly concerned about the large number of German personnel; 1,600-2,000 at one laboratory alone, compared to Langley’s 350. The German engineers also had special training, especially in comparison with the Langley practice of employing recent engineering graduates for on-the-job training.<sup>94</sup> In response to Lewis’ trip report, the NACA formed another special committee in October 1936, the Special Committee on Relation of the National Advisory Committee on Aeronautics to National Defense in Time of War. This committee was unable or unwilling to formulate any recommendations until the summer of 1938.<sup>95</sup> The Special Committee’s report was finally issued in August 1938. It recommended establishment of a new aeronautical laboratory to relieve ~~the~~ congested bottleneck of Langley Field. . . and to disperse the Committee’s research facilities so they would not be vulnerable to a single attack.”<sup>96</sup> Another committee recommendation was that the NACA become an arm of the military services during wartime through the Aeronautical Board, a joint Army-Navy board that coordinated all military aeronautics. The Special Committee’s recommendations were incorporated into the Aeronautical Board’s

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mobilization plan, including an exemption for NACA personnel from military service in the event of war. President Roosevelt approved the Aeronautical Board's mobilization plan on June 29, 1939.

In August 1939, the federal government authorized unprecedented expansion of its aeronautical facilities in anticipation of war in a belated response to Germany's aggression and unparalleled commitment to aeronautical supremacy." Plans included expansion of the NACA's first and only laboratory at Langley, as well as a new aeronautical laboratory in Sunnyvale, California, on part of the Army's Moffett Field. Construction on the second lab began in 1940, which was named in honor of Dr. Joseph Ames, the NACA chairman from 1927 until 1939. A substantial part of the Ames research staff relocated from the LMAL by the fall of 1940. A third NACA lab for aircraft engine research was authorized in June 1940 and was constructed in Cleveland, Ohio, and research began there in June 1942. As the United States prepared for war, the LMAL served as a "mother" lab, providing key personnel for the two new laboratories. "NACA's most important preparation for the impending war was its construction of two new research laboratories. These projects consumed vast amounts of time and material, distracted and in some cases completely occupied key members of the staffs at both headquarters and the Langley laboratory, and led to a radical change in the way the NACA operated."<sup>97</sup>

In addition to efforts to establish the new research laboratories in California and Ohio, the priorities of the coming war also directed the LMAL's research program well before Pearl Harbor. Both military and commercial aviation benefited from aerodynamic design improvements in the 1920s and early 1930s. These initial developments enabled aircraft designs to be specialized, and resulted in diverging NACA Laboratories that reflected the changed agenda.

The NACA was placed on a footing with President Roosevelt's approval of the Aeronautical Board's mobilization plan in June 1939. The NACA "did everything it could to meet the requests of the services and to defer its own programs in the interest of national security."<sup>98</sup> For the duration of the war, the LMAL essentially became an aeronautical engineering and research facility for the armed services. The NACA's Technical Report and Technical Note, major publications which previously received wide distribution, were "virtually suspended... replaced by a series of wartime reports, all classified and with limited distribution, usually within the military services and among industry contractors having a need to know."<sup>99</sup>

In 1939, the federal government authorized a War Department grant of property located several miles northwest of the original laboratory site. The new tract was referred to as the "West Area," while the original location was now known as the "East Area." The \$8 million wartime expansion program at the LMAL included the construction of a number of new facilities to investigate special characteristics and problems of military aircraft. The first technical facilities constructed in the West Area included the Structures Research Laboratory (No. 1148, 1940); 16-Foot High-Speed Tunnel (No. 1146, 1941); Stability Tunnel (No. 1149, 1941); and Seaplane

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Impact Basin (No. 1192, 1942). Initial construction in the West Area also included a substation (No. 1147, 1940), generating plant (No. 1152, 1941), heating plant (No. 1153, 1941), and the West shop (No. 1194, 1942).

Priorities of the looming conflict had directed the LMAL's research program well before the U.S. declared war. Approximately 50 percent of the LMAL's fundamental research had been displaced by military requests by late 1940; military projects represented 71 percent of the research just before Pearl Harbor.<sup>100</sup> Even with the LMAL's substantial personnel increase (less than 500 pre-war to over 3,200), and multi-million-dollar construction program (primarily in the new West Area), the workload was overwhelming. The NACA's long-standing mission of basic scientific research was replaced with applied research, the ~~testing~~, cleanup and refinement of military prototypes of immediate use in war."<sup>101</sup>

The LMAL conducted a wartime program of unprecedented proportions to refine military aircraft, primarily with its drag cleanup test. The test identified specific airplane design flaws resulting from faulty design or manufacturing process defects. Seemingly minor aerodynamic design improvements reduced drag and increased top speed, achieving dramatic improvements in performance for Army and Navy prototypes prior to production. The Brewster XF2A-1 Buffalo, an experimental Navy fighter, was the first prototype subjected to the LMAL for drag cleanup. The program continued throughout the war, and was primarily carried out in the Full-Scale Tunnel. ~~Here again . . .~~ NACA engineers were demonstrating how the correct design of small details improved the performance of an aircraft. The significance of this work should not be underestimated: by pointing out ways for these aircraft to gain a few extra miles per hour, the NACA effort might often have made the difference between Allied victory and defeat in the air."<sup>102</sup>

Overall, the wartime mission of the LMAL was ~~to~~ find practical ways for American aircraft to achieve improved performance, i.e., higher speeds and altitudes, longer range, more maneuverability, and better handling characteristics. . . . Though all aircraft used by the United States in combat were designed to the same basic formula (internally braced, all metal monoplane, equipped with retractable landing gear, wing flaps, controllable pitch propeller, and enclosed compartment for the crew), they differed widely and significantly in terms of their aerodynamic details. It was thus essential to refine aircraft on a case-by-case basis as problems arose."<sup>103</sup> The LMAL's drag cleanup testing continued throughout the war and was primarily handled by the FST, although ~~this~~ program of specific configuration tests was of unprecedented proportions for the NACA laboratory."<sup>104</sup> It required ~~precisely~~ the kind of systematic wind tunnel work that Langley did best." The lab had derived its original family of airfoils in the VDT, and its first low-drag cowlings in the PRT, according to the method of experimental parameter variation; similarly, it cleaned up the drag problems of the American military aircraft that fought World War II. One of the clean-up test's most dramatic improvements was achieved with the P-39 Airacobra, with its top speed increased from 340 to 392 mph.<sup>105</sup>

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In addition to drag clean-up, the LMAL addressed a number of other military aircraft design problems during World War II. ~~In~~ all, Langley tested 137 different airplane types between 1941 and 1945, representing more than half of all the types contracted for by the Army and Navy during the war and including virtually all types that actually saw combat service.”<sup>106</sup> Langley’s solutions to specific problems included a wing flap that made recovery from a high-speed dive possible, and a modified tail arrangement and anti-spin device for the Vought F4U-1 Corsair. LMAL research in the towing tanks and seaplane impact basin produced a ~~hydro~~flap” that aided the emergency ditching of airplanes in water.<sup>107</sup> In September 1941, the LMAL conducted one of the NACA’s more extraordinary flight-research projects in cooperation with the Army, the only experimental full-scale ditching of an aircraft during the war.<sup>108</sup> A ditching test was needed to confirm test data derived from models. Col. Carl F. Greene had pushed the ditching test as a way to promote life safety of aircrews in planes forced down at sea, and he became one of two Army officers who flew a B-24 bomber into the James River for the test. Col. Greene, lauded as ~~one~~ of the true pioneers of aviation engineering in the Army,” was awarded the Air Medal in 1945 for meritorious achievement in the ditching test.<sup>109</sup>

Most of the NACA’s high-speed propeller research during the war was conducted at the Langley in the 8-Foot HST and in the 16-Foot HST (a new facility in the West Area). Propellers were generally held to be ~~the~~ most efficient component of the airplane” at pre-war cruising speeds of 300-350 miles per hour.<sup>110</sup> Yet the demand for higher speeds presented new problems for propellers. Experiments in 1938 using the laminar-flow airfoil theory had produced an entirely new family of propeller airfoils, designated the ~~16~~-Series.” Tests showed that propeller blades made in these shapes would retain their propulsive efficiency at exceptionally high speeds. As a result, the 16-Series became the ~~preferred~~ pattern for high-speed propeller blades” during the war.<sup>111</sup>

Instruments to measure and record wind tunnel and flight test data advanced rapidly during the war years. Prior to World War II, wind tunnel measurements were made almost exclusively with scales or balances, while self-recording instruments to measure and record flight research tests were first developed by NACA engineers in the early 1920s. Before the war, mechanical means such as photography were generally used to record measurements. With the onset of the war, however, Langley’s experience of more than ~~twenty~~ years of invention” proved crucial in developing new means of measuring and recording, and adapting existing devices to new requirements.<sup>112</sup>

The war brought instruments originally used in flight research into the wind tunnels, and also required development of entirely new instruments for wind tunnel research. In the free-flight tunnel (No. 644, 1939), airplane models actually flew in the windstream. The Instrument Research Division developed an automatic control device that responded to a light at the end of the tunnel to reduce crashes into the tunnel wall. Instrument designers also developed a magnetic control system for the spin tunnel (No. 645), that allowed spin investigators to control models until they reached the stage of the spin that was to be recorded.

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One of the LMAL's major challenges during World War II was to balance its work on specific problems of military aircraft with the need for basic research on high-speed aerodynamics. Diving aircraft, jet engines, and missiles presented new priorities for high-speed investigations, and research in the transonic range of flight proved to be extremely difficult. The transonic region of flight is an intermediate range from just below to just above the speed of sound (760 mph in the lower atmosphere). Airplanes approaching the speed of sound encounter shock waves and problems with stability and control due to sharp increases in drag and decreases in lift. These compressibility effects will cause an aircraft to go into an uncontrollable spin and crash. Successful passage through the transonic region was obviously necessary to achieve supersonic flight. In July 1943, Langley's research program was reorganized to facilitate transonic investigations. The new Compressibility Research Division combined all ground-based high-speed research sections, including the 16-Foot HST Section, the 8-foot HST Section (East Area), and the first NACA and LMAL supersonic tunnel, a nine-inch pilot model completed in the West Area in 1942.

Shock waves occurring near the speed of sound caused wind tunnels to choke and produce questionable data, so ground-based transonic research was limited until the problem of wind tunnel choking was solved. Langley researchers invented unique types of flight research to gather transonic data until wind tunnels could operate in the transonic range (Mach 0.7 to Mach 1.3, or approximately 530 mph to 990 mph). New research methods included falling-body investigations, wing-flow tests, and rocket-model launching.

Langley researchers began the first alternative type of transonic research—the falling-body method—in the spring of 1943. The test object, which consisted of a model of a wing mounted on a missile, was dropped from a B-29 Superfortress at high altitude so that its speed, drag, and other forces could be measured by radar and recorded. The falling body provided data for a speed range from that of the B-29 (300 mph) to 1000 mph, the approximate speed of the falling body when it hit the ground. Another alternative type of flight research was the wing-flow technique. Air flow around a small model of an airfoil mounted on the upper surface of an airplane wing was measured and recorded when the Langley test pilot would dive the plane as rapidly as was safe. Even though the airplane's speed was not supersonic, airflow over the wing was supersonic to about Mach 1.4. The first wing-flow test results "gave the most systematic and continuous plots of transonic data assembled by the NACA up to that time," while helping to confirm the opinion of Langley researchers that supersonic flight required a thin wing.<sup>113</sup>

Transonic data was also collected with the aid of rockets. In the spring of 1945, Congress authorized expanded research on guided missiles at the LMAL. The NACA acquired a permanent rocket launching facility at Wallops Island on the coast of Virginia's Eastern Shore, and soon began launching rocket-propelled research models. Initially known as the Auxiliary Flight Research Station, it was renamed the Pilotless Aircraft Research Division (PARD) in June 1946. PARD subsequently became one of Langley's formal research divisions. In particular, the rocket-model test proved particularly challenging to LMAL flight researchers, as it required them to acquire

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and apply new knowledge about how to measure, transmit, and record accurate test data during the few fleeting seconds of a flight which changed speed, altitude, and model attitude rapidly.”<sup>114</sup>

In addition to its support of military guided missile projects, the NACA wanted the Wallops station to provide design data for high-speed airplanes to help define the basic airplane wing and fuselage configuration best able to fly in and through the transonic range.<sup>115</sup> Researchers also wanted more than stop-gap types of transonic investigations. The LMAL’s John Stack, head of the Compressibility Research Division, had envisioned a high-speed airplane for transonic research in the 1930s, but engines at that time could not provide the thrust necessary to reach high speeds (500+ mph.). In 1942, Stack received permission to proceed with the identification of general design requirements for a transonic research aircraft. The NACA was not currently able to support development projects, so a cooperative program with military support was necessary to procure such an airplane. The first formal discussion of the transonic research airplane project took place at the LMAL in March 1944. A proposal for a joint NACA-military program was not successful because Army and Navy representatives had major differences of opinion over program goals for the research plane and its basic features. The Army had additional meetings at Langley in May 1944, and eventually contracted with Bell Aircraft Company to design and build a rocket plane that could reach Mach 1.2.

Stack and his associates believed rocket-powered airplanes were too dangerous. They wanted an airplane with a speed range from Mach 0.8 to Mach 1 that provides transonic research data as its primary purpose, rather than a prototype for an operational high-speed fighter. Stack pursued Navy support for a more conservative high-speed research aircraft with a turbo jet, and Douglas Aircraft Corporation was working on an experimental plane for the Navy by the end of 1944. For two years, Langley made key contributions to the design and development of both transonic research planes, the XS-1 sponsored by the Army Air Force and the Navy’s D-558.

In general, the LMAL made considerable progress in improving wind tunnels during the war years. Langley’s high-speed wind tunnels could not yet reach supersonic speeds, but they had achieved speeds right around Mach 1. With this background, researchers would soon be able to devise new ways to conduct wind tunnel testing that minimized choking by using smaller models and new support systems for models that allowed testing at higher Mach numbers.

### **The NACA in the Postwar Period**

World War II changed the NACA forever. The wartime focus on practical applications and development was far removed from the NACA’s original priority of fundamental research. After the war, NACA chairman Jerome Hunsaker (served 1941-1956) attempted to return the NACA’s focus to basic aeronautical research. Yet his efforts were overridden by the increasing demands of military and commercial interests.

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The structure of the American aeronautical community changed dramatically as the result of the war. Aircraft manufacturing had become the country's largest industry, and its power increased accordingly. The Army Air Force's 40-year campaign for independence from the Army as a separate air arm was nearly won. Wartime developments also emphasized the importance of science and technology, and had provoked some criticism of the NACA, particularly its failure to keep up with German achievements in the field of jet propulsion. When the Allies captured Germany's aeronautical center at Pennemunde in the summer of 1945, they found two "super-supersonic" wind tunnels, one capable of Mach 5 and another under construction planned for Mach 10. These facilities, which had supported the V-2 long-range ballistic missile program, were the only ones of their kind in the world. This recognition of German's superiority in rocketry and jet propulsion would prompt a re-evaluation of the NACA and its role in the immediate postwar period. No longer could it maintain its monopoly on fundamental aeronautical research, or corner the market on large expensive research facilities. Yet the aeronautical community generally agreed that fundamental research was the NACA's responsibility. Increasingly, it was felt that development should be conducted by industry, while the military would be responsible for evaluation. This arrangement was formalized in the National Aeronautical Research Policy adopted by the NACA in March 1946, although considerable "gray area" remained between these overlapping responsibilities.<sup>116</sup> The aircraft industry subsequently acquired three seats on the NACA in the 1940s, an illustration of its growing power and influence.<sup>117</sup>

The NACA, the Army Air Force, and private industry agreed that it would be essential to develop a state-of-the-art supersonic research center, but the NACA and the military each had its plan for building what promised to be a costly facility. The National Unitary Wind Tunnel Plan Act of 1949 authorized three supersonic wind tunnels for the NACA. Even though the NACA was required to devote them to industry development work, the three new tunnels "represented a landmark in wind tunnel design by any criterion---size, cost, performance, or complexity."<sup>118</sup> The NACA's position in the postwar aeronautical community, however, was clearly reflected in its loss of the Unitary Plan's new supersonic research center. The Air Force was given the cornerstone facility to focus on military aeronautics, the Arnold Engineering and Development Center at Tullahoma, Tennessee, which opened in 1951. It was "a harbinger of the [NACA's] diminished standing with agencies and individuals who would control its destiny."<sup>119</sup>

The great technological advances of World War II brought high-speed flight to the research forefront. New systems of propulsion had made supersonic flight foreseeable rather than academic. In the postwar period, the NACA focused on high-speed flight and conducted exceptional research in the transonic, supersonic, and hypersonic regions of flight. The agency consistently developed "the new scientific and technological concepts and the greater part of the detailed design data needed to produce generation after generation of advanced airplanes," while leading the way in the field of guided missile technology, including aerodynamics, rocket propulsion, and guidance and control.<sup>120</sup>



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In the postwar period, the NACA had 7,000 employees and three excellent research laboratories. The Langley Aeronautical Laboratory (LAL) in Hampton, Virginia was the oldest, largest, and most diversified. Its research programs included all phases of aerodynamics, hydrodynamics, aircraft structures, and aircraft loads. The Ames Aeronautical Laboratory, south of San Francisco, specialized in high-speed aerodynamics. The laboratory in Cleveland, Ohio investigated aircraft propulsion. Originally known as the Aircraft Engine Research Laboratory, it was renamed the Flight Propulsion Research Laboratory in 1947 and the Lewis Flight Propulsion Laboratory in 1948.<sup>121</sup>

Although the LMAL—renamed the Langley Aeronautical Laboratory (LAL) in 1948—was no longer the center of American aeronautical research after World War II, it remained the largest and most diversified of the three principal NACA research laboratories. Its research programs included all phases of aerodynamics, hydrodynamics, aircraft structures, and aircraft loads. The NACA annual conference for industry resumed in 1946, and Langley alternated with Ames Laboratory in hosting the event. During this period, LAL researchers continued to grapple with the problems characteristic of transonic speed ranges, in which shock waves occurring near the speed of sound caused airplanes to spin out of control and wind tunnels to “choke.” Any effort to achieve supersonic flight would thus require the solution of the “transonic problem.” The NACA devised unique research methods to gather transonic data until wind tunnel technology caught up, including falling-body investigations, wing-flow tests, and rocket-model launching. These types of flight research were considered only stop-gap or alternative methods, but they helped fill in the transonic blind spot in aeronautical research until large transonic tunnels were available.

Efforts to procure a high-speed research airplane led to cooperative programs with the Army, the Navy, and industry. The cooperative program with the AAF produced the XS-1 and the first manned supersonic flight. On 14 October 1947, AAF Capt. Charles E. “Chuck” Yeager flew the XS-1 to Mach 1.06 as part of flight tests at Muroc Army Airfield (later Edwards Air Force Base). This first manned supersonic flight was honored as the year’s greatest achievement in American aviation. The Collier Trophy for 1947 was awarded to the NACA’s John Stack, who conceived the research airplane project, Lawrence D. Bell, president of Bell Aircraft, and Capt. Charles E. Yeager, United States Air Force (USAF), for achieving human supersonic flight. “The cooperation between the NACA, the services, and the industry exemplified the seamless web of coordination that had evolved during World War II into an indispensable ingredient of radical aircraft development. Military sponsorship was needed for money and *raison d’être*; the NACA was needed for fundamental concepts of design and instrumentation; and industry was needed for design, development, and production facilities.”<sup>122</sup> The supersonic prototypes were not designed for sustained supersonic flight, and the research airplane program continued into the 1950s to improve designs for high-speed aircraft. “Research aircraft operated by NACA and the military... supplied fundamental design data [for transonic and supersonic aircraft] for years to come.”<sup>123</sup>

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Wind tunnel choking in the transonic range was the initial impetus for the research airplane program. By the time Captain Yeager broke the so-called “~~sound barrier~~,” a number of innovations had already been made in wind tunnel technology. In 1946, Langley engineer Ray H. Wright’s concept of a partially open tunnel with ten narrow slots was first tested in a small, experimental tunnel off the 16-Foot HST. In 1947, it went up to and through the speed of sound. The “~~slotted-throat~~” or “~~slotted-wall~~” design, proved controversial. Power requirements for such a tunnel were enormous, as were costs for converting existing tunnels to the new design. Meanwhile, many NACA researchers and theorists remained skeptical that the new design concept could accommodate transonic research at a large scale.

In late 1947, the NACA authorized the conversion of the 16-Foot HST to Wright’s slotted design. However, the 8-Foot HST (in the East Area) was converted first, as it proved quicker and cheaper, and in late 1948 it became the first large wind tunnel to go through the speed of sound with a slotted throat. Slotted tunnels became “best practice” in transonic research almost immediately, and the NACA claimed that Langley’s development of slotted-throat transonic tunnels gave the U.S. “~~a~~ two-year lead over all other nations in the design of supersonic fighters and bombers.”<sup>124</sup> Large increases in drag from shock waves were the biggest problem for supersonic aircraft designers, and information on the transonic zone was critical to the supersonic fighters and bombers being planned in the postwar era.<sup>125</sup> The NACA received the 1951 Collier Trophy for its slotted-throat tunnel, which allowed laboratory testing in the transonic speed range.

Langley engineer Richard Whitcomb used the converted 8-Foot HST to conduct tests of new wing and fuselage combinations. His testing showed that transonic drag patterns were very different than those predicted by theory, while two new types of shock waves were also observed for the first time. In late 1951, Whitcomb revealed a new basic design concept for the shape of the high-speed aircraft, the “~~area rule~~,” which considered an airplane’s wings and body as an interactive aerodynamic system rather than separate components. Aircraft designed according to the area rule were pinched at the middle of the fuselage and known as “~~wasp-waisted~~.” At the time of Whitcomb’s discovery, it appeared that military fighters would not be able to surpass Mach 1, due to the inability of the current generation of jet engines to overcome the “~~tremendous~~ drag rise.”<sup>126</sup> The USAF halted production of its Convair F-102 when NACA testing showed the YF-102 prototype could not fly supersonically as planned. This fighter-interceptor was urgently needed to maintain air superiority in the Cold War, and when it was redesigned according to the area rule, its top speed increased by approximately 25 percent. Subsequently, Grumman’s F9F-9 Tiger (later the F11F-1), a carrier-based fighter for the Navy, was the first aircraft based on the area rule to fly supersonically in August 1954. The following year, Whitcomb won the Collier Trophy for his discovery of the area rule.

An LMAL supersonic tunnel (originally located in Facility No. 1191, was the first to test Langley researcher Robert T. Jones’ concept of using swept airplane wings to reduce supersonic drag. The swept-wing concept accelerated the development of large supersonic tunnels and began the race for supersonic aircraft supremacy.<sup>127</sup>

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Major new facilities in the early postwar period reflected the change from subsonic to supersonic flight. Construction began in 1945 on the first large supersonic wind tunnel, the Four-by-4-Foot Supersonic Pressure Tunnel. It was operational by 1948 and tested a number of important military aircraft and space vehicles before it was dismantled in 1977, including the Century Series fighters (F-102, F-105, etc.), the B-58 supersonic bomber, and the X-2 research aircraft. An additional large supersonic tunnel, the Unitary Plan Supersonic Tunnel, was authorized in 1949 and operational by 1955 (Facility No. 1251). Originally dedicated to missile development, it also was involved in testing a number of aircraft, including the McDonnell F-4 Phantom, the X-15, and the F-111, as well as models of space vehicles.<sup>128</sup>

In November 1947, the first hypersonic tunnel in the United States was successfully run at the Langley Laboratory in the shop of the Propeller Research Tunnel (East Area, demolished in 1950). The division between supersonic and hypersonic flight occurs about Mach 5, where aerodynamic heating becomes a critical problem. This 11-inch pilot model operated satisfactorily up to Mach 6.9 and enabled researchers to study heat transfer, which was crucial in the design of supersonic aircraft and missiles. The hypersonic pilot tunnel showed that traditional wind tunnels could not be adapted for hypersonic testing at large scale, as hypersonic operations entailed formidable design problems that could not be encompassed in a single facility.

In the late 1940s, the NACA developed a new basic design concept for hypersonic wind tunnels to address their requirements for very high temperatures, very high speeds, large pressure ratios, and power. The NACA's hypersonic investigations focused initially on long-range missile research. After the USAF contracted for the first intercontinental ballistic missile (ICBM) in 1951, the Atlas, American rocket projects soon became a top national priority. In Fiscal Year (FY) 1953, the Department of Defense first spent more than \$1 million on missiles which grew to more than \$1 billion by FY 1957. The ICBM program eventually dominated the aerospace industry. From 1955 to 1957, the NACA made major research contributions to military missile programs. These included materials research on ablation led by Robert R. Gilruth, H. Julian Allen's blunt-nose cone shape for bodies reentering the Earth's atmosphere, and Alfred J. Eggers' simulation work on the mechanics of ballistic reentry. The NACA's missile research, including facilities, budget, and personnel, grew in proportion to the national commitment in the mid- to- late 1950s, while aeronautical research decreased.

The Ames and Langley Laboratories expanded their hypersonic research in 1952 after requests from guided missile manufacturers and Bell Aircraft Corporation. This led the NACA to define requirements for a hypersonic research airplane in 1954, the X-15, and promote its development to the military. The X-15 made its first flight in 1959 and eventually became the first aircraft to fly into space. It held altitude and speed records for winged aircraft until the Space Shuttle Columbia's first flight in 1981. The NACA's fundamental research in hypersonic aerodynamics produced the X-15 program and laid the foundation for manned spaceflight.

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Manned spaceflight was generally viewed as science fiction until the late 1950s. Even most aeronautical engineers believed hypersonic flight was probably restricted to missiles. In 1952, the Ames and Langley Laboratories expanded their hypersonic research and included limited study of speeds beyond Mach 10, the range of spaceflight. Key aspects of hypersonic flight at extremely high altitudes—such as stability and control problems, and distortion of aircraft structures by aerodynamic heating—could not be studied with wind tunnels or other equipment, and NACA installations were directed to identify requirements of a potential hypersonic research airplane in 1954. Design requirements for a hypersonic research aircraft were found to be radically different even from supersonic designs.

By the middle of 1954, Langley's hypersonic aircraft study group conceived the basis of a Mach 7 research airplane and presented them to military representatives. A formal proposal followed for design and development of a research aircraft capable of Mach 7 and altitudes of several thousand feet, the X-15. The NACA, USAF, and Navy established a Research Airplane Committee for technical direction of the X-15 research airplane in December 1954, and the contract was awarded to North American Aviation in September 1955.

The Langley Laboratory supported the X-15's development with extensive wind-tunnel testing and structure research during 1956, which enabled construction to begin in September 1957. The first non-powered glide flight was made in June 1959, and the X-15 made its first powered flight in September 1959. The world's first ~~trans~~transatmospheric vehicle, the X-15 hypersonic research airplane was considered to be ~~one~~one of the most important and significant airplane designs of all time," and was the only winged aircraft to fly 50 miles into space until the Space Shuttle in 1981.<sup>129</sup> In fact, the pioneering X-15 re-entry systems and flight experiences directly influenced those used successfully in the Space Shuttle.<sup>130</sup>

Despite the rapid advances made by Langley scientists in hypersonic research, not all the research conducted during this era was geared toward extending the frontiers of flight. A significant example of a facility that made important, if less dramatic, contributions to basic aircraft design was the Landing Loads and Traction Facility for Increased Performance (Facility No. 1257). Built in 1953 at a cost of \$1,249,000, the facility was the first in the world capable of studying full-size aircraft landing gear and tires on runway surfaces under closely controlled conditions of forward speed, sink speed, and vertical load to simulate actual aircraft landing, takeoff, and taxi operations. It consisted of a 2,200-foot track length, including a 400-foot carriage acceleration section, a 1,200-foot test section, and a 600-foot section for carriage arrestment. The Landing Loads track offered the only means of experimenting with tracking, braking, and directional control performance margins other than actual aircraft operations, which could be expensive and dangerous.<sup>131</sup>

**The Langley Research Center and Project Mercury**

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On October 4, 1957, the Soviet Union launched Sputnik, the first satellite to orbit the Earth. This achievement was downplayed by President Eisenhower, who thought the U.S.'s huge missile program adequately countered the Soviet threat to national security, and that the exorbitant cost of a space program would upset the American economy. Sputnik, however, caused widespread paranoia as it traveled overhead. Space was soon seen as the Cold War's new battlefield and plans were underway for a major American space program by the end of 1957.

The NACA's successful hypersonic research prepared the agency for a leading role in fundamental space flight research. The NACA saw development of space technology as ~~an~~ evolution fully within the capacity of the established aeronautical research agency."<sup>132</sup> The Department of Defense was its major rival for the position, but President Eisenhower accepted the recommendation of his Science Advisory Committee for a new civilian agency with the NACA as its nucleus.

President Eisenhower signed the National Aeronautics and Space Act on July 29, 1958. As of October 1st, the National Aeronautics and Space Administration (NASA) became the successor to the NACA. NACA personnel and laboratories became the nucleus of the NASA, which was soon known as the space agency, and the LAL was renamed the Langley Research Center (LaRC). These changes in nomenclature reflected a shift away from the field of aeronautical research in which the Langley Laboratory had been preeminent for 40 pivotal years in aviation history.

Notwithstanding these bureaucratic alterations, Langley was already in the midst of an ~~extensive~~ shift in emphasis" towards the fields of hypersonic and space flight.<sup>133</sup> With its several hypersonic wind tunnels and wide experience with rocket testing, Langley quickly became a cornerstone of the NASA's space effort, and the NASA drew heavily on Langley's ~~expertise~~ and facilities."<sup>134</sup>

The basic outline of the United States first manned spaceflight program, Project Mercury, was established by a special task force at NASA Headquarters in Washington in the summer of 1958. Langley engineer Robert R. Gilruth assembled a group of researchers from the Langley and Lewis Laboratories to plan the project. Known as the Space Task Group (STG), it was based at the LaRC, with quarters initially in the Unitary Plan Wind Tunnels offices. Within a year, the STG grew to include more than three hundred staff, with more than half from Langley.<sup>135</sup> A large number came from Langley's PARD, where Gilruth had been a division chief. Their experience was particularly necessary because PARD engineers had ~~established~~ launch procedures at Wallops Island, experimented with the principles of rocket staging, developed key technologies for missile guidance and control systems, and built or refined sensitive instrumentation for telemetry studies."<sup>136</sup>

Between October 1958 and January 1959, the STG completed specifications for the Mercury capsule, solicited and evaluated proposals from the aerospace industry, and awarded the contract to build the capsule.<sup>137</sup> As proposed by the STG, the Mercury spacecraft would be a ballistic capsule that would carry a man into orbit.

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With its blunt body, retrorockets, and parachutes, it has been described as ~~an~~ elegant solution to the problem.”<sup>138</sup>

In addition to its responsibility for the Mercury spacecraft, the STG was also in charge of astronaut selection and training. The ~~Mercury Seven~~” astronauts came from a pool of almost 600 military test pilots evaluated by criteria established by the STG. After selection in April 1959, training followed at the LaRC under the supervision of the STG. The program included space science studies—including reentry physics, astronomy, celestial mechanics, and navigation—as well as demanding physical exercise. The STG also developed space flight simulator and procedure trainers for the astronauts.<sup>139</sup> ~~Langley~~ was the place where the stars of the space program—STG and its astronauts—were in training for the first U.S. manned space effort.”<sup>140</sup>

The STG recognized that ground control of some critical space flight decisions would be crucial, and so initiated plans for a Mercury Control Center at Cape Canaveral, Florida. The control center needed a global communication and tracking network to maintain and monitor communications with orbiting spacecraft. At that time global communications via satellite were not yet available and underwater cables provided the only long-range communications between continents. Creation of such a worldwide network was more than the STG could reasonably undertake. In February 1959, the NASA Headquarters assigned the LaRC full responsibility for planning and contracting the Mercury tracking network. Out of all the responsibilities Langley had in support of Project Mercury, the tracking range project was ~~by~~ far the biggest, the most difficult to carry out logistically, and the most adventuresome.” When it was completed, the network ~~stretched~~ from the new Mercury Control Center at Cape Canaveral to 18 relay stations spanning three continents, seven islands, and two ocean-bound radar picket ships. . . . The network utilized landlines, undersea cables and radio circuits, special computer programs, and digital data conversion and processing equipment, as well as other special communications equipment installed at commercial switching stations in both the Eastern and Western hemispheres.”<sup>141</sup>

LaRC efforts were crucial in creating this unprecedented and highly successful worldwide ground instrumentation and tracking network, which became operational in June 1961. Langley’s Instrument Research Division helped guide the design of the electronic systems, its Engineering Service Divisions assisted with the site selection and station constructions, and its Procurement Division negotiated the huge contract and maintained liaisons with the contractors.<sup>142</sup>

Langley also provided major support for Project Mercury with its wind tunnels and other facilities, conducting thousands of aerodynamic, component, materials, and structural tests. The LaRC investigated the Mercury spacecraft’s performance in all phases of its flight, including launch, spaceflight, atmospheric reentry, and ocean recovery. The final shape and appearance of the Mercury capsule was based on these tests. Langley also did considerable work on ~~Big Joe~~” and ~~Little Joe~~.” Little Joe (50 feet tall, 28,000 pounds, eight solid propellant engines) was ~~an~~ innovative solid-fuel rocket, one of the earliest U.S. launch vehicles based on the principle of

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the clustered rocket engine.”<sup>143</sup> Little Joe rockets were launched from Wallops Island and provided critical information for Project Mercury prior to more complicated and expensive tests at Cape Canaveral. Little Joe did not prove reliable enough to carry a man into space, however, and was abandoned for the Redstone and Atlas boosters. Big Joe, a one-ton, full-scale model of the Mercury spacecraft, was launched from Cape Canaveral on an Atlas booster and demonstrated the feasibility of Mercury’s design concepts.

Although Project Mercury continued until May 1963, the LaRC’s association with Mercury declined after mid-1962. The manned space program required its own center, and the NASA acquired land for a new installation just south of Houston, Texas. The STG’s relocation to Houston was announced in September 1961, and in November the STG was renamed the Manned Spacecraft Center (MSC). The MSC’s move to Houston from Langley was completed by June 1962.

### **The Echo and Scout Programs at the Langley Research Center**

The LaRC was responsible for the world’s first communication satellite, Echo 1. Echo was a 100-foot inflatable balloon, described as “perhaps the most beautiful object ever to be put into space.” Weighing only 132 pounds, it consisted of a large sphere with a surface of Mylar plastic covered with vapor-deposited aluminum.<sup>144</sup> This “satelloon” was folded in a canister, launched in the nose cone of a Thor-Delta rocket, and inflated when it reached orbit 1,000 miles above the earth. Echo acted as a passive reflector that relayed signals around the curvature of the earth, and provided instantaneous worldwide communications for the first time in August 1960.

The idea for Echo began as an experiment for the International Geophysical Year (IGY). In 1952, the International Council of Scientific Unions established the period spanning July 1, 1957 to December 31, 1958 as the IGY as it would be a period of high solar activity. This international event fostered a number of proposals for scientific experiments, including Sputnik, the first man-made satellite to orbit the earth. LaRC engineer William J. O’Sullivan conceived the inflatable balloon in January 1956 as a way to measure air density in the upper atmosphere. The satellite’s light weight and thin skin were required for it to be aerodynamically sensitive in the vacuum of the upper atmosphere. The purpose of the experiment was to provide aerodynamic information crucial to the design of new aircraft, missiles, satellites and other spacecraft. In October 1956, development at the LaRC was approved as a NACA contribution to the IGY.

O’Sullivan’s original experimental balloon was only 30 inches in diameter. Before it could be successfully launched, however, the Soviets had placed Sputnik in orbit and started the space race. A number of government agencies, including the State Department and the Central Intelligence Agency (CIA), were eager to orbit an American satellite that would be visible over Russia as well as the United States. What had begun as a “simple air-density experiment” was now becoming “an instrument of propaganda in the cold war.”<sup>145</sup> Government

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officials were interested in the balloon's second generation, a 12-foot sphere that would orbit the earth at 300 to 400 miles and appear as bright as the North Star to the naked eye. Before the 12-foot model could be successfully launched, it had been transformed into a 100-foot communications satellite (comsat). The new project was formally approved by the NACA in May 1958 and came to be known as Project Echo.

In October 1959, primary management of Project Echo was assigned to Goddard Space Flight Center in suburban Maryland, the NASA's new center for space projects. Even though Echo's overall management became Goddard's responsibility at that time, Echo was essentially a Langley project. The Echo concept originated at the LaRC, and Langley did virtually all of the preliminary design work, completed extensive ground tests, and assisted in all launches and test flights.<sup>146</sup>

Echo 1 was launched successfully from Cape Canaveral on August 12, 1960 and orbited the earth until May 1968. Not only was it a "significant propaganda weapon" for the United States, but it also served as a "popular symbol of the peaceful and practical uses of space research."<sup>147</sup> In many ways, the Echo project changed prevailing conceptions of the potential for satellite communication systems, and encouraged subsequent private sector initiatives that have since transformed the field of communications.<sup>148</sup>

Called the "the unsung hero of space" because it set a standard for reliability, simplicity, and economy, the relatively small rocket known as "Scout" was also conceived and developed at the LaRC. Although not widely known, Scout developed into "one of the finest pieces of technology in the history of space exploration, and became a "very reliable, consistent, performing warhorse."<sup>149</sup> Scout provided access to space for more than 30 years and was one of the few programs "born of the spaceflight revolution [that] survived the spaceflight revolution."<sup>150</sup>

Scout was a four-stage, solid-fuel rocket capable of orbiting, sounding, and reentry flights with a large variety of payloads. It had three types of missions: placing small satellites in orbit; high-velocity reentry studies and testing of heat-resistant materials; and launching high-altitude and space probes. The original Scout was only 72 feet high and weighed only 37,000 pounds, while the total thrust of its four stages was just under 200,000 pounds.<sup>151</sup>

In 1956, Langley engineers in PARD conceived this solid fuel launch vehicle as a means of putting light payloads into orbit. Technologically, it built upon the hypersonic solid-fuel rocket technologies that they had been developing at Wallops Island and Langley since the early 1950s. Initially ignored in favor of larger liquid-fueled rockets, Scout was authorized in May 1958 in direct response to Sputnik. PARD rocketeers planned to assemble an economical stack of rocket motors for its four-stage booster from off-the-shelf hardware developed for military ballistic missiles. Langley finalized the design by early 1959, and launched the first experimental Scout from Wallops Island in April 1960. Initially managed by PARD, Scout was transferred to the STG after



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its creation in 1958, and then to the Scout Project Group in February 1960. This became the first large NASA project that the LaRC ran ~~in~~-house.”<sup>152</sup>

Most of the early Scout launches were failures, and a comprehensive investigation of the program in 1963 included a three-month moratorium on the launch schedule. The first launch after recertification of the rocket occurred in December 1963, after which Scout’s performance was remarkable, with an overall success rate of 96 percent over a total of 113 launches.<sup>153</sup> In addition to its launch reliability, Scout payloads were critical in the advancement of atmospheric and space science. Early Scout missions helped researchers study the density of the atmosphere at various altitudes, the properties of the Van Allen radiation belts, and the possible dangers of the micrometeoroid environment on spacecraft. Scouts in the 1970s tested Einstein’s theory of relativity by carrying an extremely accurate atomic clock in space, and they also helped to confirm the theory of the ~~black~~ hole.”<sup>154</sup> Scouts also launched a number of satellites, including 23 for foreign countries. The series launched for the Center for Italian Aerospace Research gathered ~~v~~aluable data about the ionosphere and the magnetosphere, about galactic sources of radiation and X-rays, and especially about the nature of the earth’s atmosphere in the region of the equator.”<sup>155</sup> In summary, Scout proved critical in the context of the NASA’s early space program by providing important data on reentry dynamics. NASA researchers learned much about what materials best withstood the heat of reentry, allowing for the subsequent successes of the Mercury, Gemini, and Apollo projects.<sup>156</sup>

### **The Langley Research Center and the Apollo Program**

When President John F. Kennedy confidently predicted in 1961 that the United States would land a man on the Moon by the end of the decade, the task of implementing what seemed to be a wildly ambitious goal fell to the engineers of the NASA. Three different strategies for a Moon landing appeared possible: direct ascent, Earth-orbit rendezvous (EOR), or lunar-orbit rendezvous (LOR). A direct ascent to the Moon was ruled out due to the projected size of the launch vehicle, while the EOR concept would require two separate launch vehicles. The NASA eventually settled on the LOR method, in which a single rocket would launch two spacecraft into lunar orbit. One would circle the Moon while the other descended to the lunar surface. The lander would then boost itself back into orbit, dock with the mother ship, and return to Earth.

The success of the LOR strategy ultimately depended on whether the astronauts could learn to safely land the Lunar Excursion Module (LEM) on the Moon’s surface and return into orbit to dock with the mother ship. A major obstacle in designing a training procedure, however, was that the LEM would handle far differently in the Moon’s atmosphere, with 1/6<sup>th</sup> the gravitational pull of Earth’s. The problem thus became how to replicate the operation of the LEM in a low gravitational environment. The solution came in the form of the Lunar Landing Research Facility (LLRF), a training simulator that allowed NASA engineers to study the complex lunar landing process, while giving the Apollo astronauts critical hands-on pilot training in the LEM.

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The LLRF was completed in 1965 at a cost of \$3.5 million. Located in the West Area of Langley Research Center, the most obvious feature of the LLRF was its enormous gantry, which became an unmistakable landmark on the horizon. The A-frame steel structure, measuring 400 feet long by 240 feet high, was composed of truss elements arranged with four sets of inclined legs that provided adequate clearance for any pendulous motion the vehicle might develop. An elevator shaft in the east end provided access to the overhead equipment, while catwalks allowed the inspection of all structural areas.

The LLRF simulated lunar gravity through an overhead partial-suspension system that provided lifting force through cables acting through the LEM's center of gravity, counteracting all but one-sixth of the Earth's gravitational force. Both the lifting force and vertical alignment of the cables was controlled automatically through servo-controlled hydraulic drive systems that powered an overhead traveling bridge crane and dolly unit mounted on the gantry. The cables were attached to the LEM with a gimbal system that allowed complete freedom of motion. Protected by automatic and manual braking equipment, the LEM could fly unobstructed within an area measuring approximately 360 feet long, 180 feet high, and 42 feet wide.

The operation of the facility was directed from a control room on the second floor of the 2-story office and shop building located near the southwest corner of the gantry structure. From here the movements of the LEM, bridge, and dolly could be viewed by the test director and facility operators through large observation windows. The control room was equipped with controls for the manual and automatic operation of the bridge crane drive system, while numerous instrument displays indicated the status and performance of the drive system and the LEM. Two-way communications throughout the facility allowed the test director to maintain constant voice contact with the pilot and operational crews. Sophisticated data, photographic, and voice recorders rounded out the facility's technologically advanced features, providing a complete analytical framework for the testing process.

In addition to allowing flight testing of the LEM, the LLRF also was used as a lunar-walking simulator for the Apollo astronauts. This was accomplished by suspending the astronaut on his side with a system of slings and cables, allowing him to walk on a plane inclined to approximately 80.5 degrees relative to the vertical direction of Earth's gravity. Other gravitational conditions, even weightlessness, could be created by varying the inclination of the walkway. Initially paved with a 30-foot wide strip of concrete to minimize jet-blast effects and fuel spillage problems, the base of the LLRF later was modeled with fill dirt to resemble the lunar surface, complete with the holes, pits, and craters the astronauts would encounter on the Moon.

From its inception in 1965 until the end of the Apollo program in 1972, the LLRF was used to train 24 astronauts for lunar missions, including Neil A. Armstrong and Edwin E. "Buzz" Aldrin, Jr., of Apollo 11, the first men to walk on the Moon. Armstrong offered what was perhaps the greatest tribute to the importance of the

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LLRF in the success of the Apollo program. When asked what it was like to land on the Moon, he replied: —Ike Langley.”

Although its role in the Apollo program has tended to be overlooked, the LaRC contributed immeasurably to the technical achievements that made the Moon landing possible. Langley scientists conducted the basic rendezvous and docking studies, the wind-tunnel investigations of the aerodynamic integrity of the Saturn-Apollo launch combination, the work on reentry heating and its potentially fatal effects on the returning Apollo spacecraft, and the simulation training that helped prepare the astronauts not only for the rendezvous and docking in space but also for the actual landing of a manned spacecraft and for astronaut locomotion activities on the moon. —From launch to splashdown, there was no aspect of the Apollo mission that scientists, engineers, and technicians at Langley had not helped to develop in one way or another.”<sup>157</sup>

**AREAS OF SIGNIFICANCE**

Science/Engineering

The NACA LaRC furthered several advances in scientific research as applied to controlled flight. With its inception came the introduction of methodical and scientific investigation of aeronautical design problems, indicating a departure from previously less rigorous methods of development. By utilizing this approach, unknown factors in airplane design were identified by qualitative means used to determine performance characteristics of airplanes in flight. The LaRC used empirical methods to solve aircraft design problems, and its reliance on experimental programs was in keeping with the state of American aeronautics in 1915-1930 time period.

Early research performed at the LaRC furthered the field of aeronautical engineering, including the development of state-of-the-art experimental facilities such as the Variable Density Tunnel (VDT), the Propellor Research Tunnel (PRT), and the Full-Scale Tunnel (FST), leading to such aeronautical design advances as improved engine cowlings, front-of-wing engine positions, and retractable landing gear. These advances placed the LaRC at the forefront of aeronautical engineering and development, ensuring funding for future research.

Developments in research into the characteristics of flight during World War II included further advancements in wind tunnel technology and the instrumentation used to measure the effects of wing and fuselage design on airflow. Although wind tunnel airspeed had not yet reached super sonic speeds, researchers were able to achieve speeds of just under Mach 1. Falling body and controlled dive testing of airfoil design also provided critical data for transonic experimentation.

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Following World War II, the LaRC turned its attention to manned spaceflight, assisting in the development of the Mercury and Apollo space programs, as well as the X-15 hyper-sonic research airplane. Key to this research were the significant advances in wind tunnel technology, which achieved hyper-sonic windspeeds (in excess of Mach 5) by 1947. Fundamental research into the development of spaceflight vehicles played a key role throughout the duration of the Mercury and Apollo programs, and included advances in personnel training facilities such as the Lunar Landing Research Facility, which was used to train astronauts from 1965 until 1972.

Military

Research conducted at the LaRC directly affected military aircraft design, particularly during the years leading up to and during World War II. Research included such areas as airfoil design, high-speed propeller design, trans-sonic flight, spin recovery, rocket flight, and jet engines. Post-war research included advances in super-sonic flight, and along with the design and construction of super-sonic and hyper-sonic wind tunnels, were crucial to later development of manned spaceflight. This technology also played a critical role in the development and design of ICBM technology.

Other facilities installed in the years following World War II included the Supersonic Pressure Tunnel and the Unitary Plan Supersonic Tunnel, used in the development of supersonic military aircraft such as the Century Series fighters (F-102, F-105, etc.), the B-58 supersonic bomber, and the McDonnell F-4 Phantom. The focus on development of military aircraft reflected the shift from fundamental aeronautical research to specific design evaluation and contribution involving individual aircraft development. Although the LaRC continued to play a role in fundamental research, such tasks were increasingly absorbed by private sector industry during the years following World War II. As a result of this transition, as well as the increased use of computer predictive modelling for design analysis, the need for large specialized structures such as wind tunnels decreased significantly. Several of the wind tunnels which saw intense use during the early years of the LaRC and the years surrounding World War II were transferred to Langley Air Force Base, and in some cases were subsequently demolished. Other buildings which were transferred to the Air Force were repurposed, and many remain in use today.

Communication/Transportation

The years following World War II also saw the LaRC turn its attention to the development of satellite based communications and the earth to orbit transportation required for this and other scientific applications. The development of the Echo program at the LaRC introduced the first example of an artificial satellite used for communications purposes. The Echo 1 was an inflatable mylar balloon 100 feet in diameter, which was placed into orbit at an altitude of 1,000 miles on August 12, 1960, where it remained in service until May 1968. This marked the beginning of satellite based communications for both civilian and military use throughout the world,

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and additionally served as both a propaganda tool in the Cold War and as a symbol of peaceful and practical application of space research.

The development of the Scout program in the mid-1960s also played a role in furthering space research objectives by providing economical and reliable vehicle for transporting payloads into orbit and conducting space-based experimental research. Scout was a four stage solid-fuel rocket used for placing satellites into orbit, high velocity reentry studies and testing of heat-resistant materials, and launching high-altitude and space probes. These functions allowed scientists and researchers at the LaRC to perform experiments in the areas of atmospheric density, Van Allen radiation belts, and micrometeoroids, as well as to launch satellites used for additional atmospheric research.

**ENDNOTES SECTION 8:**

- <sup>1</sup> This section compiled from *Phase I Reconnaissance Survey of Architectural Resources at the National Aeronautics and Space Administration, Langley Research Center, Comprehensive Report*, prepared for NASA LaRC SAIC by Dutton + Associates, LLC, May 2010.
- <sup>2</sup> Jerold E. Brown, *Where Eagles Land: Planning and Development of U.S. Army Airfields, 1910-1941* (Washington, D.C.: Office of Air Force History, 1985), 60.
- <sup>3</sup> NACA site report, November 23, 1916.
- <sup>4</sup> Colonel Squier was promoted to Brigadier General and Chief Signal Officer in early 1917.
- <sup>5</sup> James R. Hansen, *Engineer in Charge: A History of the Langley Aeronautical Laboratory, 1917-1958* (Washington, D.C.: National Aeronautics and Space Administration, 1987), 11.
- <sup>6</sup> Ibid.
- <sup>7</sup> Jerold E. Brown, *Where Eagles Roost: A History of Army Airfields Before World War II*, (Durham, North Carolina: Ph.D. Dissertation, Duke University, 1977), 75.
- <sup>8</sup> Colonel Charles L. Weidinger, USAF (Ret.), *The People of Langley, A Historical Chronology of Residents in Officers Quarters Main Cantonment Area, 1983, revised 1986*, TMs [photocopy], 4, Office of History, 1<sup>st</sup> Tactical Fighter Wing, Langley Air Force Base, Virginia.
- <sup>9</sup> *History of Langley Field, Virginia, Inception to 1 March 1935, First Period, 1944*, TMs, 4, Office of History, 1<sup>st</sup> Tactical Fighter Wing, Langley Air Force Base, Virginia.
- <sup>10</sup> McCook Field was a leased property; operations and personnel were absorbed by Wright Field in 1927.
- <sup>11</sup> Weidinger, *People of Langley*, 3.
- <sup>12</sup> Colonel Charles L. Weidinger, USAF (Ret.), *The Birth of Langley Field*, TMs [photocopy], 3, Office of History, 1<sup>st</sup> Tactical Fighter Wing, Langley Air Force Base, Virginia.
- <sup>13</sup> *Newport News (Virginia) Daily Press*, 3 November 1918, quoted in Robert I. Curtis, John Mitchell, and Martin Cop, *Langley Field, the Early Years, 1916-1946* (Hampton, Virginia: Langley Air Force Base, Office of History, 4500<sup>th</sup> Air Base Wing, 1977), 14.
- <sup>14</sup> Ibid, 106, 138.
- <sup>15</sup> Maurer Maurer, *Aviation in the U.S. Army, 1919-1939* (Washington, D.C.: Office of Air Force History, 1987), 109.
- <sup>16</sup> Ibid.
- <sup>17</sup> McCook Field was the location of Army aeronautical experimental activities originally planned for Langley Field.

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- 18 John Victory, "The Langley Laboratory," TMs (Rough Draft) [photocopy] (Hampton, Virginia: Langley Historical Archive,  
NASA Langley Research Center), 10.
- 19 Ibid., 16-17.
- 20 *Newport News (Virginia) Daily Press*, June 21, 1920.
- 21 Victory, "Langley Laboratory," 19, citing Memorandum Griffith to Victory, January 5, 1922.
- 22 Ibid.
- 23 Ibid.
- 24 Charles D. Walcott to President Woodrow Wilson.
- 25 Making America Independent in the Air, *Mechanical Engineering*, September, 1923, Vol. 45, No. 9, 515.
- 26 Charles D. Walcott, "Aeronautics in the Government-The National Advisory Committee," *National Aeronautic Association  
Review*, Vol. 3, No. 6, June 1925, 88.
- 27 Ibid.
- 28 Hansen, *Engineer*, xxix.
- 29 Alex Roland, *Model Research: The National Advisory Committee for Aeronautics, 1915-1958* (Washington, D.C.: National  
Aeronautics and Space Administration, 1985), 508.
- 30 John F. Victory, "Foundations of Air Progress," *National Aeronautics*, January 1940, 8-9.
- 31 NACA Minutes of Semiannual Meeting, April 21, 1921.
- 32 Roland, *Model Research*, 508.
- 33 Edward P. Warner, "Aeronautical Research in the U.S.A.," *Aeronautics* 20 (May 19, 1921): 352-353.
- 34 Ibid., 353.
- 35 Roland, *Model Research*, 92.
- 36 Ibid., 93.
- 37 Ibid., 508.
- 38 Hansen, *Engineer*, 99.
- 39 Roland, *Model Research*, 97.
- 40 Annual Report, 1925.
- 41 Annual Report, 1926.
- 42 Roland, *Model Research*, 106.
- 43 Ibid., 97-98.
- 44 Ibid., 346, Footnote 65, quoting John V. Becker, NACA veteran.
- 45 Ibid.
- 46 Ibid., 88-89.
- 47 Ibid., 101.
- 48 Walcott's "genius had been political and organizational, consummating in the give and take of Washington politics the dream of  
establishing for the United States an aeronautical research organization rivaling those of Europe. He, more than any other  
individual, had guided the campaign through the frustrating years of failed commissions and stalled legislation, and had ensured  
for the nascent committee an acceptable status within the government hierarchy and the American aviation scene. Although he  
never mastered the technology of aviation, as a bureau-builder he was without peer." Ibid., 100.
- 49 Ibid., 109.
- 50 Industry representatives had never been permitted as members of NACA's principal committees, only on technical  
subcommittees, because of potential conflict of interest.
- 51 Roland, *Model Research*, 106.
- 52 Ibid., 93.

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- <sup>53</sup> Neither the Hampton nor the Newport News generating plant was powerful enough to supply the electricity needed to drive the Propeller Research Tunnel, so the NACA arranged to drive the horsepower diesel engines salvaged from a Navy T-2 submarine.” Ibid., 445.
- <sup>54</sup> Roland, *Model Research*, 107.
- <sup>55</sup> George W. Gray, *Frontiers of Flight: The Story of NACA Research* (New York: Alfred A. Knopf, 1948), 37.
- <sup>56</sup> Roland, *Model Research*, 116.
- <sup>57</sup> The Collier Trophy is the nation’s highest aeronautical award, presented annually “for the greatest achievement in aviation in America, the value of which has been thoroughly demonstrated during the preceding year.”
- <sup>58</sup> Roland, *Model Research*, 117.
- <sup>59</sup> 1928 Annual Report, 80.
- <sup>60</sup> Roland, *Model Research*, 108.
- <sup>61</sup> Gray, *Frontiers*, 34.
- <sup>62</sup> “It is a principle of physics that the responses of an object to airflow depend on its size, the speed with which it (or the air) is moving, the density of the air, and the viscosity (or stickiness) of the air. The multiple of the first three factors divided by the fourth, viscosity, provides a scale index known as the Reynold’s number.... You can increase the Reynold’s number of an object by increasing its size, or by increasing its speed, or by increasing the density or decreasing the viscosity of the medium in which it operates.” Ibid., 35.
- <sup>63</sup> Ibid., 349.
- <sup>64</sup> Roland, *Model Research*, 108.
- <sup>65</sup> Hansen, *Engineer*, 101.
- <sup>66</sup> Gray, *Frontiers*, 37-39.
- <sup>67</sup> Ibid., 65.
- <sup>68</sup> Ibid., 65, 67.
- <sup>69</sup> The 24-Inch HST had “Langley’s first schlieren photographic system to show compressibility burbles and shock waves in air at high speeds.... The complex phenomena of the compressibility burble were seen for the first time with the new schlieren system and correlated with the pressure distributions for various wing sections. This new understanding led quickly to the development of improved high-speed airfoils.” Hansen, *Engineer*, 52.
- <sup>70</sup> Gray, *Frontiers*, 42.
- <sup>71</sup> Ibid.
- <sup>72</sup> Ibid., 43.
- <sup>73</sup> Roland, *Model Research*, 540.
- <sup>74</sup> Ibid.
- <sup>75</sup> Hansen, *Engineer*, 104.
- <sup>76</sup> Gray, *Frontiers*, 104.
- <sup>77</sup> Ibid.
- <sup>78</sup> Ibid., 105.
- <sup>79</sup> Ibid.
- <sup>80</sup> This tunnel combined large size and high pressure in a single facility for the first time. Its speed was too slow for high-speed propeller research, however, and it was converted to the Transonic Dynamics Tunnel, 1955-1959. Donald D. Baals and William R. Corliss, *Wind Tunnels of NASA* (Washington, D.C.: National Aeronautics and Space Administration, 1981), 29.
- <sup>81</sup> Hansen, *Engineer*, 114.
- <sup>82</sup> Ibid., quoting Jacobs, “Notes on the History of the Development of the Laminar-Flow Airfoils,” 27 December 1938, A173-1, LCF.
- <sup>83</sup> Ibid., 117-118.

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- 84 Ibid., 114.
- 85 *Significant American and International Awards in Aviation*, 1954, 77. Established by Dr. Reed in 1933 "for a notable contribution to the aeronautical sciences resulting from experimental or theoretical investigations, the beneficial influence of which on the development of practical aeronautics is apparent."
- 86 Hansen, *Engineer*, 108.
- 87 Gray, *Frontiers*, 48.
- 88 Ibid.
- 89 Ibid., 107.
- 90 Ibid., 48-49.
- 91 Hansen, *Engineer*, 188.
- 92 Roland, *Model Research*, 147.
- 93 Ibid.
- 94 Ibid., 149.
- 95 Ibid.
- 96 Ibid., 154.
- 97 Roland, *Model Research*, 173.
- 98 Ibid., 177.
- 99 Ibid., 179.
- 100 Roland, *Model Research*, 178.
- 101 Ibid., 167.
- 102 Hansen, *Engineer*, 203.
- 103 Ibid., 219.
- 104 Ibid., 196.
- 105 Gray, *Frontiers*, 123.
- 106 Hansen, *Engineer*, 219-220.
- 107 Ibid., 219.
- 108 Ibid., 545.
- 109 *LMAL Air Scoop*, September 21, 1945, 2.
- 110 Gray, *Frontiers*, 208.
- 111 Ibid., 211.
- 112 Ibid., 52-53.
- 113 Hansen, *Engineer*, 267.
- 114 Ibid., 267-268.
- 115 Ibid., 268.
- 116 Roland, *Model Research*, 205-206
- 117 Seats for industry representatives were prohibited previously due to conflict of interest concerns.
- 118 Baals and Corliss, *Wind Tunnels*, 71.
- 119 Roland, *Model Research*, 221.
- 120 Ira H. Abbott, "A Review and Commentary of a Thesis by Arthur L. Levine, Entitled 'United States Aeronautical Research Policy, 1925-1958, A Study of the Major Policy Decisions of the National Advisory Committee for Aeronautics,' Dated 1963." (Washington, D.C.: typescript, NASA History Office, 1964), 175.
- 121 The laboratory was named for George W. Lewis after his death. He had worked for the NACA since 1919.
- 122 Roland, *Model Research*, 247.



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- <sup>123</sup> David D. Anderton, *Sixty Years of Aeronautical Research, 1917-1977*. (Washington, D.C.: National Aeronautics and Space Administration, 1978), 27.
- <sup>124</sup> Hansen, *Engineer*, 329-331.
- <sup>125</sup> Baals and Corliss, *Wind Tunnels*, 61-62.
- <sup>126</sup> Hansen, *Engineer*, 338.
- <sup>127</sup> *Ibid.*, 472-475.
- <sup>128</sup> *Ibid.*
- <sup>129</sup> Anderson, *Sixty Years*, 39.
- <sup>130</sup> *Ibid.*, 377.
- <sup>131</sup> Fred DeMeritte, et al., *Report to Deputy Administrator and Associate Administrator for Center Operations, National Aeronautics and Space Administration on Office of Aeronautics and Space Technology Non-National Aeronautics and Space Facilities* (Washington, D.C.: National Aeronautics and Space Administration, 1977), 122-23.
- <sup>132</sup> Hansen, *Engineer*, 376.
- <sup>133</sup> *Ibid.*, 377.
- <sup>134</sup> Baals and Corliss, *Wind Tunnels*, 94.
- <sup>135</sup> *Ibid.*, 60.
- <sup>136</sup> *Ibid.*, 57.
- <sup>137</sup> *Ibid.*, 50.
- <sup>138</sup> James R. Hansen, *Spaceflight Revolution: NASA Langley Research Center from Sputnik to Apollo* (Washington, D.C., National Aeronautics and Space Administration, 1995), 54.
- <sup>139</sup> *Ibid.*, 41, 60.
- <sup>140</sup> *Ibid.*, 33.
- <sup>141</sup> *Ibid.*, 63, 66.
- <sup>142</sup> *Ibid.*, 69.
- <sup>143</sup> *Ibid.*, 47.
- <sup>144</sup> *Ibid.*, 187.
- <sup>145</sup> *Ibid.*, 172.
- <sup>146</sup> *Ibid.*
- <sup>147</sup> *Ibid.*, 189.
- <sup>148</sup> *Ibid.*, 189.
- <sup>149</sup> *Ibid.*, 217.
- <sup>150</sup> *Ibid.*, 219.
- <sup>151</sup> *Ibid.*, 210.
- <sup>152</sup> *Ibid.*, 198.
- <sup>153</sup> *Ibid.*, 204.
- <sup>154</sup> *Ibid.*, 213.
- <sup>155</sup> *Ibid.*, 217.
- <sup>156</sup> *Ibid.*, 216.
- <sup>157</sup> *Ibid.*, 356.

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**GEOGRAPHICAL DATA**

UTM References (continued)

5.	18	0376926	4107518
6.	18	0376644	4107599
7.	18	0376780	4107773
8.	18	0376964	4107793
9.	18	0377089	4108002
10.	18	0377290	4107892
11.	18	0377640	4107343
12.	18	0377544	4106770
13.	18	0377241	4106154
14.	18	0377790	4105828
15.	18	0377785	4105479
16.	18	0377437	4105446
17.	18	0377792	4104904
18.	18	0377651	4104435
19.	18	0377346	4104417
20.	18	0377232	4104970
21.	18	0376723	4105686
22.	18	0376204	4105943
23.	18	0380492	4105234
24.	18	0380555	4105178
25.	18	0380510	4105120
26.	18	0380443	4105180
27.	18	0380697	4105053
28.	18	0380770	4105025
29.	18	0380792	4105072
30.	18	0380778	4104979
31.	18	0380889	4104849
32.	18	0380796	4104733
33.	18	0380726	4104756
34.	18	0380765	4104848
35.	18	0380802	4104835
36.	18	0380856	4104956
37.	18	0380775	4104991

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38.	18	0380751	4104933
39.	18	0380659	4104966
40.	18	0380489	4104602
41.	18	0380623	4104502
42.	18	0380537	4104387
43.	18	0380413	4104489

Verbal Boundary Description

The boundaries of the historic district encompass the entire NASA LaRC installation as well as several buildings that were historically part of NASA LaRC, but are now owned and operated by the Air Force, and is composed of four separate sections. Three of the four discontinuous sections are located in the earlier East Area of the LaRC and are within the boundaries of Langley Air Force Base. The southern section in the East Area is rectangular in shape and bounded by Plumb Street to the north, Thornell Avenue to the east, Thompson Street to the south, and Dodd Avenue to the west. This section contains a mix of former administration and research buildings. All of the resources in this section are currently owned by the Air Force. The northern section is separated by approximately two city blocks of unrelated Air Force facilities. This section is irregular in shape and the boundaries hug those NASA-associated buildings that remain extant. The boundaries roughly include the footprint of Building 641 to the south, extends north along the western edge of the Backriver Substation (Building 642), follows the back side of Buildings 645 and 646 on the south side of Andrews Street, turns south along the east side of Building 647 on the west side of Hunting Avenue, continues along the south side of Building 647, 648, and 650 to Dodd Avenue, extends north along Dodd Avenue to Andrews Street, turns east on Andrews Street which serves as the northern boundary except where it is extended to the backside of buildings 648A and 720, continues back to Sijan Road which it follows to the shoreline. The shoreline is the eastern boundary as far south as the southern edge of Building 641. This section was developed later than the southern section and contains mostly wind tunnels, research laboratories, and associated structures. All of the buildings except 641 and 720 are still under NASA control. The third section is located to the west and includes one building, Hangar 750 that is now owned by the Air Force. The boundary of this section includes only the footprint of the building and the small grassy lawn in front of the office portion.

The largest of the four sections of the proposed NASA LaRC historic district is located in the more recent West Area of the NASA LaRC. The section contains visually cohesive concentrations of both contributing and non-contributing resources interspersed with open and undeveloped portions. The West Area includes a mix of research laboratories, wind tunnels, a hangar, and associated facilities, and forms the core of the NASA LaRC. It is arranged in a campus like setting with open space (non-contributing) between many of the buildings. It has an irregular shape and its boundaries are aligned with adjacent Wythe Creek Road on the west, Commander

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Shepard Boulevard on the south, the shoreline of the Brick Kiln Creek on the north, and Langley Air Force Base on the east.

More specifically, the boundaries include the following City of Hampton tax parcels 6001242 and portions of 6001241.

Boundary Justification

The boundaries include all buildings and structures that are currently, or were historically operated by NASA at the Langley Research Center. The boundary of the section in the West Area includes the entire NASA property because it represents the land purchased by NASA to function as its independent research center once it outgrew its initial location within Langley Air Force Base. The boundaries of the section in the East Area include only the property where extant buildings and structures currently or historically associated with NASA exist. This includes several buildings that are now owned by the Air Force, but are included because they were originally built for use by NASA and are related to the significant research and events that occurred at Langley. Property where former NASA buildings were located in the East Area that have been demolished is not included.

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**INVENTORY OF PHOTOGRAPHS**

1. NASA LaRC Historic District (114-5313)
2. Hampton, Virginia
3. June 2010
4. Dutton + Associates, LLC
5. Brooke Shortridge
6. View of Main Gate, Facing North
7. Photograph 1 of 27

**Items 1, 2, 4, 5 are the same for the remaining photographs except as noted otherwise.**

3. June 2010
6. Thornell Avenue Streetscape, East Area, Facing Southwest
7. Photograph 2 of 27

3. June 2010
6. General view of East Area, Northern Section, Facing North
7. Photograph 3 of 27

3. March 2011
5. Robert J. Taylor, Jr
6. General view of East Area, Northern Section, Facing South
7. Photograph 4 of 27

3. March 2011
5. Robert J. Taylor, Jr
6. Original Headquarters and Administration Building, Building 587 (114-5313-0423), Facing Southeast
7. Photograph 5 of 27

3. March 2011
5. Robert J. Taylor, Jr
6. Former NASA Hangar, Building 750 (114-5313-0425), Facing Northwest
7. Photograph 6 of 27

3. June 2010
6. Langley Boulevard Streetscape, West Area, Facing Northeast
7. Photograph 7 of 27



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3. June 2010

6. General View of West Area, Facing Southeast

7. Photograph 8 of 27

3. June 2010

6. General View of West Area, Facing Northwest

7. Photograph 9 of 27

3. June 2010

6. General View of West Area, North Quadrant Section, Facing North

7. Photograph 10 of 27

3. June 2010

6. Representative Landscaping in West Area, Facing West

7. Photograph 11 of 27

3. March 2009

5. Robert J. Taylor, Jr

6. Representative Early Wind Tunnel, West Area, Building 1146 (114-5313-0010), Facing West

7. Photograph 12 of 27

3. March 2009

5. Robert J. Taylor, Jr

6. Representative Stripped Classicism Architecture, West Area, Building 1152 (114-5313-0014), Facing North

7. Photograph 13 of 27

3. June 2010

6. View of NASA LaRC Headquarters, West Area, Building 1219 (114-5313-0022), Facing Northwest

7. Photograph 14 of 27

3. June 2010

6. Representative Later Wind Tunnel, West Area, Building 1293A (114-5313-0371) Facing Southeast

7. Photograph 15 of 27

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3. April 2009

5. Robert J. Taylor, Jr

6. Representative Brutalism Architecture, West Area, Building 1208 (114-5313-0331), Facing Northeast

7. Photograph 16 of 27

3. June 2009

5. Robert J. Taylor, Jr

6. Representative International Style Architecture, West Area, Building 1299 (114-5313-0390), Facing Northeast

7. Photograph 17 of 27

3. June 2010

6. Representative Modern Movement Architecture, West Area, Facing West

7. Photograph 18 of 27

3. April 2009

5. Robert J. Taylor, Jr

6. Representative North Quadrant Wind Tunnel, West Area, Building 1275 (114-5313-0361), Facing Southeast

7. Photograph 19 of 27

3. June 2010

6. View of Lunar Landing Research Facility Gantry and Landing Loads Track, West Area, Facing West

7. Photograph 20 of 27

3. April 2009

5. Robert J. Taylor, Jr

6. Representative Support Facility, West Area, Building 1261B (114-5313-0354), Facing Southwest

7. Photograph 21 of 27

3. May 2009

5. Robert J. Taylor, Jr

6. Representative Later Wind Tunnel, West Area, Building 1212C (114-5313-0335), Facing East

7. Photograph 22 of 27

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3. April 2009  
5. Robert J. Taylor, Jr  
6. Representative Nonhistoric Blonde Brick Architecture, West Area, Building 1290 (114-5313-0333), Facing North  
7. Photograph 23 of 27

3. May 2009  
5. Robert J. Taylor, Jr  
6. Representative Nonhistoric Stripped Classicism Architecture, West Area, Building 1216 (114-5313-0336), Facing Southwest  
7. Photograph 24 of 27

3. May 2009  
5. Robert J. Taylor, Jr  
6. Representative Nonhistoric Stripped Classicism Architecture, West Area, Building 1238B (114-5313-0345), Facing North  
7. Photograph 25 of 27

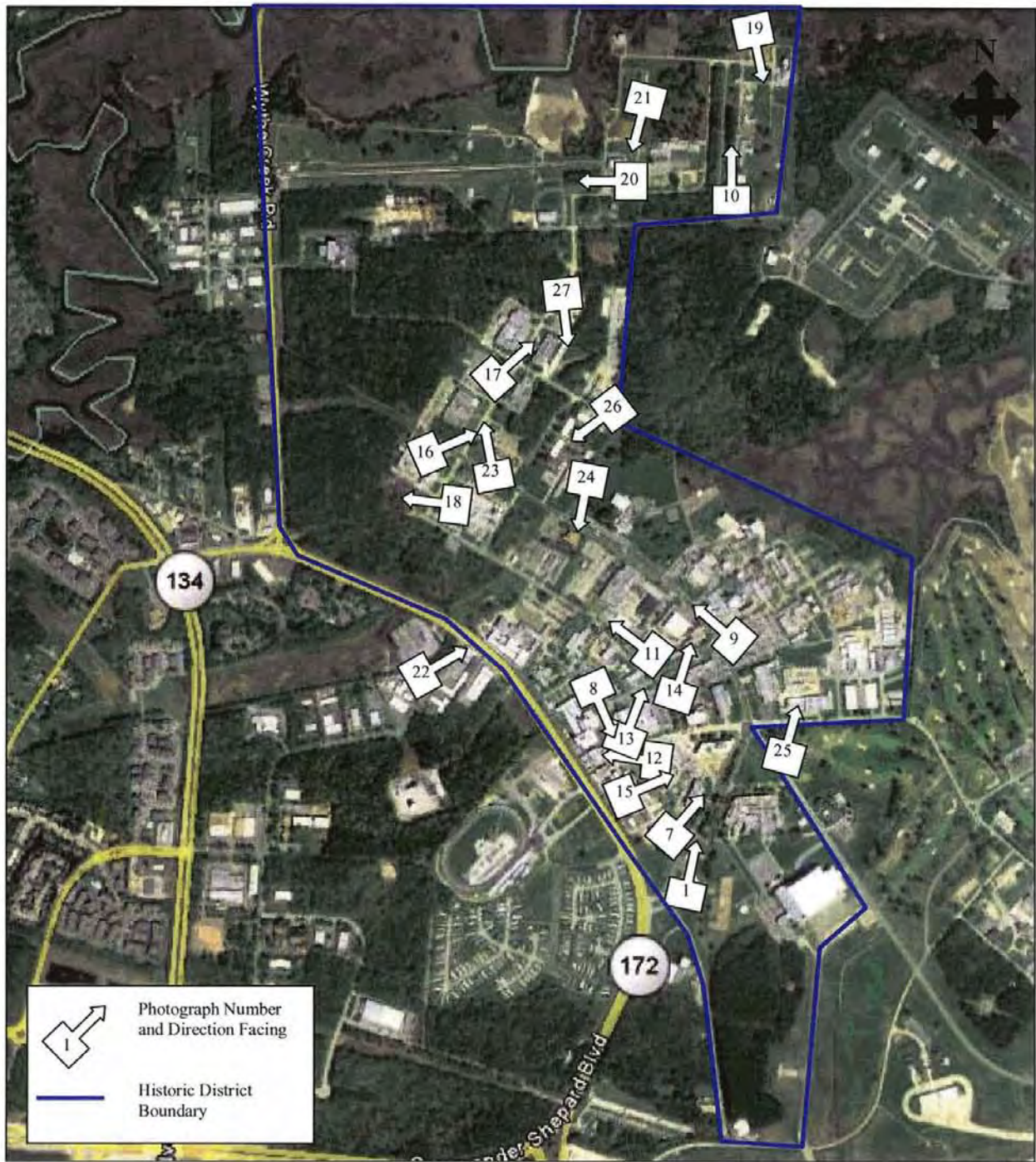
3. April 2009  
5. Robert J. Taylor, Jr  
6. Representative Nonhistoric Storage Building, West Area, Building 1190 (114-5313-0322), Facing West  
7. Photograph 26 of 27

3. April 2009  
5. Robert J. Taylor, Jr  
6. Representative Nonhistoric Wind Tunnel, West Area, Building 1299F (114-5313-0386), Facing South  
7. Photograph 27 of 27

**HISTORIC PHOTOGRAPHS**

Aerial View of East Area, 1951  
Historic Photograph 1 of 2

Aerial View of West Area, 1945  
Historic Photograph 2 of 2



**NASA LaRC Historic District  
Photograph Location Key: West Area**





**NASA LaRC Historic District  
Photograph Location Key: East Area**



