

Building 9. Model Fabrication Facility
NSWCCD Historic District
MIHP # M:29-52 -- 26
Montgomery County
West Bethesda
1946
Public

Building 9 is located in the northeast portion of the 183.6-acre Naval Support Facility (NSF) Carderock, formerly known as the Naval Surface Warfare Center Carderock Division (NSWCCD). Located approximately 12 miles northwest of Washington, D.C., near Bethesda, Maryland, NSF Carderock is situated north of the Potomac River and is bordered by the Clara Barton Parkway to the south and MacArthur Boulevard to the north and east. The installation is composed of 123 buildings and structures that function as research laboratories, administration facilities, and operations and utility structures. At the center of the installation is the David Taylor Model Basin (DTMB) (Buildings 1-4), a group of interconnected buildings that include a model basin, an administration building, a shop building, and a laboratory. The DTMB was listed in the NRHP in 1985 (M:29-47). In 1996 the NSF Carderock Historic District was determined eligible for the NRHP, and 44 of the 116 built resources were recognized as contributing resources. Building 9 is a contributing resource in the NSF Carderock historic district. Since 1996 a number of additions have been constructed on the original main block of the building.

Building 9 (Model Fabrication Facility) is located on the northeast side of the model basin. Building 9 was built in 1946 as a machine shop. Since its construction, several large additions have been constructed and surround the original main block. The one-story, high-bay main block has a rectangular footprint. It sits on a solid concrete foundation and is constructed of poured concrete with a flat roof. The center three bays of the main (south) elevation is the only section of the main elevation that is not covered with additions. It has three large multi-light metal-sash windows. A one-story metal shed with a shed roof lines the three bays of the south elevation. The west elevation is unfenestrated. The north elevation is mostly uncovered and has eight large multi-light metal-sash windows. The east elevation of the main block is not visible as it is covered with additions. Additions to the building were built beginning as early as 1983 and as late as 2005.

Building 9, constructed in 1946, was built to fabricate metal models used in the testing facilities at NSF Carderock. Currently, the models constructed in Building 9 are primarily used for testing in Building 19, the Structural Mechanics Lab.

7. Description

Inventory No. M: 29-52-20

Condition

excellent deteriorated
 good ruins
 fair altered

Prepare both a one paragraph summary and a comprehensive description of the resource and its various elements as it exists today.

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Building 9 (Model Fabrication Facility) is located on the northeast side of the model basin. Building 9 was built in 1946 as a machine shop. Since its construction, several large additions have been constructed and surround the original main block. The one-story high-bay main block has a rectangular footprint. It sits on a solid concrete foundation and is constructed of poured concrete with a flat roof. The center three bays of the main (south) elevation constitute the only section of the main elevation that is not covered with additions. It has three large multi-light metal-sash windows. A one-story metal shed with a shed roof lines the three bays of the south elevation. The west elevation is unfenestrated. The north elevation is mostly uncovered and has eight large multi-light metal-sash windows. The east elevation of the main block is not visible as it is covered with additions. Additions to the building were built beginning as early as 1983 and as late as 2005.

A high-bay metal structure, built in 2005, is attached to the southwest corner of the main block. It is clad in corrugated metal and has a flat roof. A large roll-up metal vehicular door is located on the south elevation. The remaining elevations of the addition are unfenestrated.

A high-bay metal structure, constructed circa 1987, is attached to the south elevation of the main block. It was subsequently expanded to the west and covers all but three bays of the south elevation. The addition is one bay wide and five bays long. It is clad in corrugated metal siding and has a flat roof. The south elevation is unfenestrated. A large metal roll-up door is located on the west elevation. The east elevation has a large roll-up metal door and a flush single-leaf metal door.

Two one-story additions line the east elevation of the main block. The north addition was built in 1983; the construction date of the southern addition is unknown, although it post-dates the north addition. The additions are constructed of poured concrete and have flat roofs with metal coping. The north addition is slightly taller than the south. The south elevation of the south addition has two paired two-light metal-sash awning windows. The east elevation of the addition has two pairs of two-light metal sash awning windows, a single-leaf metal door with a one-light window, and a flush double-leaf metal door.

Two additions form a large L-shaped footprint on the north section of the building. The smaller of the two additions, built in 1993, is oriented north-south and is attached to the north elevation of the main block. The larger of the two additions, built in 2000, is oriented east-west. The additions are constructed of metal with corrugated metal siding and have flat metal roofs. The small 1993 addition is fenestrated by 12-light metal sash awning windows. The north elevation of the 2000 addition is six bays wide, and the easternmost bays hold a single-leaf metal door and a metal roll-up vehicular door. The remaining bays as well as the side elevations are fenestrated by groupings of four and three one-light metal-sash awning windows.

Building 9 serves as the Model Fabrication Facility, where the metal models used in testing are fabricated. The building contains various welding facilities, which are located in large open workrooms, as well as a small amount of office space. The building has a total of over 39,000 square feet of space (INFADS 2011).

8. Significance

Inventory No. M: 29-52-20

Period	Areas of Significance	Check and justify below		
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> agriculture	<input type="checkbox"/> economics	<input type="checkbox"/> health/medicine	<input type="checkbox"/> performing arts
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> archeology	<input type="checkbox"/> education	<input type="checkbox"/> industry	<input type="checkbox"/> philosophy
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> architecture	<input type="checkbox"/> engineering	<input type="checkbox"/> invention	<input type="checkbox"/> politics/government
<input checked="" type="checkbox"/> 1900-1999	<input type="checkbox"/> art	<input type="checkbox"/> entertainment/ recreation	<input type="checkbox"/> landscape architecture	<input type="checkbox"/> religion
<input type="checkbox"/> 2000-	<input type="checkbox"/> commerce	<input type="checkbox"/> ethnic heritage	<input type="checkbox"/> law	<input type="checkbox"/> science
	<input type="checkbox"/> communications	<input type="checkbox"/> exploration/ settlement	<input type="checkbox"/> literature	<input type="checkbox"/> social history
	<input type="checkbox"/> community planning		<input type="checkbox"/> maritime history	<input type="checkbox"/> transportation
	<input type="checkbox"/> conservation		<input checked="" type="checkbox"/> military	<input type="checkbox"/> other: _____

Specific dates 1939-1970 **Architect/Builder** U.S. Navy, Bureau of Yards and Docks

Construction dates 1946, 1983-2005 (additions)

Evaluation for:

National Register

Maryland Register

not evaluated

Prepare a *one-paragraph* summary statement of significance addressing applicable criteria, followed by a narrative discussion of the history of the resource and its context. (For compliance projects, complete evaluation on a DOE Form – see manual.)

Significance Summary

In 1985 the DTMB and associated buildings (Buildings 1-4) were listed in the National Register. The campus of buildings created at Carderock from 1938 to 1958 was determined eligible for the National Register as the Naval Surface Warfare Center Carderock Division Historic District (NSWCCD) in 1996. The determination of eligibility stated that NSF Carderock possesses the qualities of exceptional significance under Criterion G "within the historic context of military research, design, testing, and evaluation." It also stated that NSF Carderock meets Criteria A for its events that that have made a significant contribution to military technology and Criterion C for its intact collection of RDT&E buildings and facilities. The period of significance for the historic district was determined as beginning in 1938 when the model basin was constructed and ending in 1958, the end date of physical model testing and the official mission change to include computer research and testing. In 1996, 116 built resources were recorded at NSF Carderock and 44 were determined as contributing to the historic district (Melhuish 1996).

In 2006 Berger updated the ICRMP for NSF Carderock. In October-November 2005 Buildings 16 and 18 were re-evaluated and found to be eligible for the National Register as contributing elements in the NSF Carderock Historic District. This evaluation also recommended that the period of significance for the historic district (originally 1938 to 1958) warranted expansion to 1970, marking the completion of the Anechoic Test facility and the close of the 20 "Golden Years of Research" at DTMB (Bowers 2005).

Building 9 (Model Fabrication Facility) is considered a contributing element in the National Register-eligible NSF Carderock Historic District (formerly the NSWCCD Historic District).

Historic Context

The David Taylor Model Basin (1937 to 1952)

The United States Navy constructed its first laboratory for studying ship construction and technology in 1898 at the Washington Navy Yard. The United States Experimental Model Basin, as it was called, was built under the auspices of Rear Adm. David Watson Taylor. Initial research involved a basin and a carriage that towed wooden ship models. In 1912, as the Navy moved toward aeronautical endeavors, the facility explored wind tunnel technology. The Navy's first wind tunnel was operational by 1914. The Navy soon outgrew these facilities as ship and aircraft testing evolved and no space at the Navy Yard was available for expansion.

In May 1936 Congress appropriated \$3.5 million for land acquisition and construction of a new facility. The site at Carderock was chosen for its location near Washington, D.C., and the Navy headquarters, its access to the Potomac River in order to fill the basins, and its bedrock foundation that would support the massive testing mechanisms. In addition, the site was large enough for a 100 percent expansion in 50 years (Carlisle 1998:140).

Maryland Historical Trust

Maryland Inventory of Historic Properties Form

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Construction started at the Carderock campus on September 8, 1937, and it was dedicated on November 4, 1939 (Carlisle 1998:145). It was named the David Taylor Model Basin in honor of Rear Adm. David Watson Taylor. Commander Ben Moreell is credited with the design of the new basin. The initial buildings constructed on the campus included an interconnecting administration building, shop, and laboratory building (Nos. 1, 2, and 3) arranged in a linear pattern. These support buildings reflect the influence of the streamlined Art Moderne style favored by the federal government during the 1940s. The model basin was constructed parallel to the three structures and housed a deep water basin, a shallow water and turning basin, and a high speed basin. The main entrance to the interconnecting office buildings, shop, and lab was designed to face south, toward the Potomac River. A large, grassy "meadow" fronted the centered main entrance of Building 2 and extended south toward the river. This vast south lawn added to the open and campus-like feeling of the facility but also allowed for future expansion. In 1985 the DTMB and associated buildings were listed in the National Register.

The primary mission of the DTMB, as defined by Congress, was to investigate and determine the most suitable and desirable shapes and forms for naval vessels and aircraft (Melhuish 1996). During its first year of operation, the DTMB was mostly involved in design work, but at the outset of World War II, activities at the DTMB were focused on war-related topics. Research became a major directive, and new facilities and staff were added to support research activities. New facilities added to the installation included a research pit for explosion testing (1941), wind tunnels and associated buildings (1942), a pentagonal test pond to test underwater explosives (1943), the Circulating Water Channel to test the angles and drag of submerged towed devices (1942), and two supersonic wind tunnels that had been dismantled in Germany and installed at Carderock (1946) (Melhuish 1996).

During this rapid expansion, careful consideration was given to the overall physical planning and growth of the installation. Under the direction of Capt. H.S. Howard, the installation grew with the addition of 47 acres in 1943 and 55 acres in 1946. Howard wrote in 1945, "Having in mind the architecture of the main building, I visualize something in the nature of a college campus or graduate school grown up around and in front of the main building. A row of buildings might well grow to the east and to the west of the main building toward the south but the central area should be kept free of building so that eventually a U-shaped group is formed with the open end toward the Highway" (Carlisle 1998:192). The campus of buildings created at Carderock during this period was determined eligible for the National Register as the Naval Surface Warfare Center Carderock Division Historic District in 1996.

The "Golden Age of Research" (1952 to 1970)

Expansion of the aerodynamics facilities at Carderock after World War II coincided with a "drastic realignment" of mission that inaugurated a "Golden Age of Research" at DTMB (McCarthy 1993:30, 34). In 1952 the Navy established the Applied Mathematics Department at Carderock and introduced computer-based research, beginning with a Universal Automatic Computer in 1953 and the Livermore Atomic Research Computer in 1960. The basin itself was also improved after World War II: construction began on a new 36-inch water tunnel in 1955 and on a maneuvering basin and a large rotating arm basin (under one roof and called the Maneuvering and Seakeeping [MASK] facility) in 1956. The MASK facility was ready for calibration and use in 1961, and the water tunnel was completed the following year (Brownell 1962:2-3).

Facilities at Carderock expanded again in 1964 with the Acoustics and Vibration Laboratory, which brought together scientists and engineers from several other departments to play a lead Navy role in measurement and diagnosis of full-scale radiated noise signatures from ships and submarines, which was an area of inquiry of paramount importance to the Navy's submarine warfare programs (McCarthy 1993:32). Four years later the Structural Mechanics department obtained a major new facility featuring five high-pressure deep submergence tanks for testing the hulls of underwater vehicles and a test bed for stressing large model ship structures under loads up to 250,000 pounds. On March 31, 1967, the Marine Engineering Laboratory at Annapolis and the Carderock facilities were merged to form the David Taylor Naval Ship Research and Development Center.

Maryland Historical Trust

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By 1970 the acoustics department had significantly expanded its capabilities with the addition of acoustic ranges off Washington and California, plus, at Carderock, completion of an Anechoic Data Analysis Center and an anechoic flow facility consisting of a subsonic wind tunnel equipped with an anechoic chamber. That same year the Systems Development Department was created "with the intention of providing a total ship systems, hardware-oriented focus" (McCarthy 1993:32-36). The "Golden Age" of research at DTMB came to an end in the 1970s, as funding declined and the staff was reduced from 3,122 to 2,482 (McCarthy 1993:33).

NSF Carderock (1971 to present)

When funding resumed under the Reagan Administration (1981 to 1989) in the 1980s, it was on a very different basis, as most of the Center's annual budget was contracted to private industry. The Center was increasingly involved in both design and hardware demonstration phases of vehicle development, and there was much less support for "fundamental research, exploratory development, and advanced development investigations" (McCarthy 1993:37, 40). NSF Carderock was established in January 1992 under the U.S. Navy's Laboratory Consolidation Plan. The division was formed by the merger of DTMB and the Naval Ship Systems Engineering Station, Philadelphia.

Building 9, Model Fabrication Facility

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9. Major Bibliographical References

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See continuation sheet.

10. Geographical Data

Acreage of surveyed property less than 0.5 acres
Acreage of historical setting less than 0.5 acres
Quadrangle name Falls Church

Quadrangle scale: 1:24000

Verbal boundary description and justification

The boundary of the property occupies the footprint of the Building 9 within NSF Carderock located in West Bethesda.

11. Form Prepared by

name/title	Patti Kuhn, Architectural Historian		
organization	The Louis Berger Group, Inc.	date	4/4/2011
street & number	1250 23 rd Street, NW	telephone	202-303-2665
city or town	Washington	state	DC

The Maryland Inventory of Historic Properties was officially created by an Act of the Maryland Legislature to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 supplement.

The survey and inventory are being prepared for information and record purposes only and do not constitute any infringement of individual property rights.

return to: Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, MD 21032-2023
410-514-7600

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Maryland Inventory of Historic Properties Form

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Bowers, Martha H.

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Brownell, W.F.

1962 *Two New Hydromechanics Research Facilities at the David Taylor Model Basin.* Hydromechanics Laboratory Research and Development Report No. 1690. Department of the Navy, David Taylor Model Basin, Carderock, Maryland.

Carlisle, Rodney

1987 *Where the Fleet Begins: A History of the David Taylor Research Center.* Prepared for the David Taylor Naval Ship R & D Center, Carderock, Maryland, by History Associates Incorporated.

Internet Navy Facilities Assets Data Store [INFADS]

2011 Various property records. Naval Facilities Engineering Command [NAVFAC] Washington.

McCarthy, Justin H.

1993 David Taylor Research Center. In *A Half-Century of Marine Technology, 1943-1993*, edited by H. Benford and W.A. Fox. Society of North American Mechanical Engineers, Jersey City, New Jersey.

Melhuish, Geoffrey E.

1996 *Historical and Architectural Documentation of the Naval Surface Warfare Center Carderock Division, Maryland: Draft.* Prepared for Engineering Field Activity-Chesapeake, Washington, D.C., by R. Christopher Goodwin and Associates, Inc.

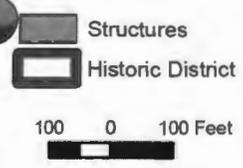


USGS Falls Church Quadrangle

Naval Support Facility, Carderock
 NSWCCD Historic District (MIHP No. M:29-52) 26

Building Number 9

A legend box containing a shaded rectangle labeled 'Historic District' and a scale bar showing 0, 500, and 500 Feet.



Naval Support Facility, Carderock
 NSWCCD Historic District (MIHP No. M:29-52) 26

Building Number 9



M: 29-52-26

NSWCCD HISTORIC DISTRICT (NSF BORDER ROCK)

BLOG 9. MACHINE SHOP

MONTGOMERY COUNTY, MD

LOUIS BERGER GROUP

4/2010

MDSHPO

SOUTHEAST CORNER, LOOKING NORTHWEST

PHOTO 1 OF 4



M: 29-52-26

NSWCCD HISTORIC DISTRICT (NSF CARDEROCK)

BLOG 9. MACHINE SHOP

MONTGOMERY COUNTY, MD

LOUIS BERGER GROUP

4/2010

MDSHPO

EAST ELEVATION, LOOKING SOUTHWEST

PHOTO 2 of 4



M: 29-52-26

NSWCCD HISTORIC DISTRICT (NSF GARDEROCK)

BLOG 9. MACHINE SHOP

MONTGOMERY COUNTY, MD

LOUIS BERGER GROUP

4/2016

MDSHPO

NORTH ELEVATION OF NORTHERN ADDITION, LOOKING SOUTHWEST

PHOTO 3 of 4



M: 29-52-26

NSWCCD HISTORIC DISTRICT (NSF CARDEROCK)

BLDG 9. MACHINE SHOP

MONTGOMERY COUNTY, MD

LOUIS BERGER GROUP

4/2010

MDSHPO

NORTH ELEVATION OF ORIGINAL MAIN BLOCK, LOOKING SOUTHEAST

PHOTO 4 of 4