MARYLAND HISTORICAL TRUST
NR-ELIGIBILITY REVIEW FORM

NR Eligible: yes X
no ___

Property Name: Naval Ordnance Laboratory (NSWC White Oak) Inventory Number: M: 33-25

Address: 10901 New Hampshire Ave(MD650 City: Silver Spring Zip Code: ___

County: Montgomery USGS Topographic Map: Beltsville

Owner: Department of the Navy

Tax Parcel Number: ___ Tax Map Number: ___ Tax Account ID Number: ___

Project: ___ Agency: GSA

Site visit by MHT staff: X no ___ yes Name: ___ Date: ___

Eligibility recommended X Eligibility **not** recommended ___

Criteria: X A X B X C ___ D Considerations: ___ A ___ B ___ C ___ D ___ E ___ F X G ___ None

Is the property located within a historic district? ___ no ___ yes Name of District: ___

Is district listed? ___ no ___ yes Determined eligible? ___ no ___ yes District Inventory Number: ___

Documentation on the property/district is presented in:
Maryland Inventory Form M: 33-25; Letter from Little to Mones-O'Hara (GSA) dated 6/6/1997

Description of Property and Eligibility Determination: *(Use continuation sheet if necessary and attach map and photo)*

The Naval Ordnance Laboratory achieves significance under Criterion A as the first, and until the late 1960s, the only comprehensive Cold War-period naval weapons research and development facility in the United States. The property achieves significance under Criterion B for its association with, and employment of several of the county's top scientists, and scientists brought from Germany during and after World War II, whose research at the site resulted in major scientific advances, both in Naval weapons development and science generally. Under Criterion C, the property is significant for its architectural character and design, with several buildings designed by Eggers & Higgins, one of the largest firms in the country, receiving contracts for a variety of government buildings, military facilities, hospitals, and university buildings in the post-war period. Most important under Criterion C is the engineering significance of many facilities where specialized ordnance development and testing occurred, including several unique buildings and structures. For the same three criteria (A, B, and C), the complex achieves exceptional significance under National Register Criteria Consideration G, at the national level for its pivotal role as a first-generation Cold War-period defense weapons research facility, being for many years the only, and after about 1970, the foremost facility of its kind in the United States.

Prepared by: C. Martin, D. Bert (G&O, Inc.) Date Prepared: 02/01/1997

MARYLAND HISTORICAL TRUST REVIEW
Eligibility recommended X **Eligibility not recommended** ___
Criteria X **A** X **B** X **C** ___ **D** **Considerations** ___ **A** ___ **B** ___ **C** ___ **D** ___ **E** ___ **F** X **G** ___ **None**
MHT Comments:

Jo Ellen Freese	
Reviewer, Office of Preservation Services	**Date**
J. Rodney Little	**June 06, 1997**
Reviewer, NR Program	**Date**

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M: 33-25

MARYLAND HISTORICAL TRUST

Office of Preservation Services

Parris N. Glendening, Governor
Patricia J. Payne, Secretary

June 6, 1997

Ms. Andrea Mones-O'Hara
Historic Preservation Officer
General Services Administration
National Capital Region
Washington, D.C. 20407

Re: Naval Surface Warfare Center
(Naval Ordnance Laboratory)
Determination of Eligibility
Section 106 Review

Dear Ms. Mones-O'Hara:

The Maryland Historical Trust has reviewed the submitted MHT Historic Sites Inventory Form and photographs for the Naval Ordnance Laboratory, received 26 March 1997. Our office had previously concurred with the U.S. Navy's determination that there were no National Register eligible properties at the Naval Ordnance Laboratory. This determination was based on the evaluation of only eleven (11) structures at the laboratory. The submitted revised documentation provides a more complete identification and evaluation of the entire laboratory complex including 372 resources. Based on this information, we concur with your determination that the Naval Ordnance Laboratory is eligible for the National Register as an Historic District under National Register Criteria A, B and C and that the district meets National Register Criteria Consideration G, regarding properties less than 50 years of age, as it has achieved exceptional significance at the national level as a first-generation Cold-War-period naval weapons research facility.

The Naval Ordnance Laboratory achieves significance under Criterion A as the first, and until the late-1960's, the only comprehensive Cold-War-period naval weapons research and development facility in the United States. The property achieves significance under Criterion B for its association with, and employment of several of the country's top scientists, and scientists brought from Germany during and after World War II, whose research at the site resulted in major scientific advances, both in Naval weapons development and science generally. Under Criterion C, the property is significant for its architectural

M:33-25

character and design, with several buildings designed by Eggers & Higgins, one of the largest firms in the country, receiving contracts for a variety of government buildings, military facilities, hospitals, and university buildings in the post-war period. Most important under Criterion C is the engineering significance of many facilities where specialized ordnance development and testing occurred, including several unique buildings and structures. For the same three criteria (A, B, and C), the complex achieves exceptional significance under National Register Criteria Consideration G, at the national level for its pivotal role as a first-generation Cold-War-period defense weapons research facility, being for many years, the only, and after about 1970, the foremost facility of its kind in the United States.

Our office is concuring with your determination of eligibility for the historic district as a whole. We are not concuring with your determination concerning which individual buildings do or do not contribute to the district. Only a few photographs showing representative examples of the resources contained in the district were included with the Inventory Form. In order to make an evaluation of individual properties, we would need photographs of each building and information concerning its use, the role the building played during the district's period of significance, and an evaluation of its integrity.

We understand that this identification and evaluation has been performed as part of GSA's compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended) in conjunction with the Environmental Impact Statement (EIS) for the U. S. Food and Drug Administration Consolidation. Our office has received a copy of the EIS for review through the Maryland State Clearinghouse. The EIS explains that the White Oak site will be used to provide new, consolidated, state-of-the-art facilities for the headquarters component of FDA on one location in Montgomery County, Maryland. The EIS indicates that GSA prepared a detailed evaluation of the existing buildings and systems for their potential renovations/reuse in the new development scheme, or their demolition. The findings indicated that it would not be cost effective to rehabilitate and reuse the majority of the existing buildings. All buildings within a 170 acre area will be demolished with the exception of the Building 1 (the Main Administration Building) and Building 100.

The EIS correctly states that, if the SHPO concurs with the determination that the Naval Ordnance Historic District is eligible for the National Register, the proposed action will have an adverse effect on historic properties, and that GSA will need to consult

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with the SHPO, the Advisory Council, and involve interested persons to determine ways in which GSA will minimize or mitigate adverse impacts.

To date, GSA has not informed the SHPO or the Advisory Council of the proposed undertaking, alternatives considered, or the effect of the project on historic properties. We await this information to initiate Section 106 consultation concerning the effects of the project on historic properties. Should you have any questions, please contact Ms. Jo Ellen Freese at (410) 514-7630.

Sincerely,

J. Rodney Little
Maryland State Historic
Preservation Officer

JRL/JEF/jef
#9603243

cc: Hon. Gilbert Gude
Mr. Charles Edson
Ms. Mary Gardiner
Ms. Gwen Marcus
Ms. Marie-Regine Charles-Bowser

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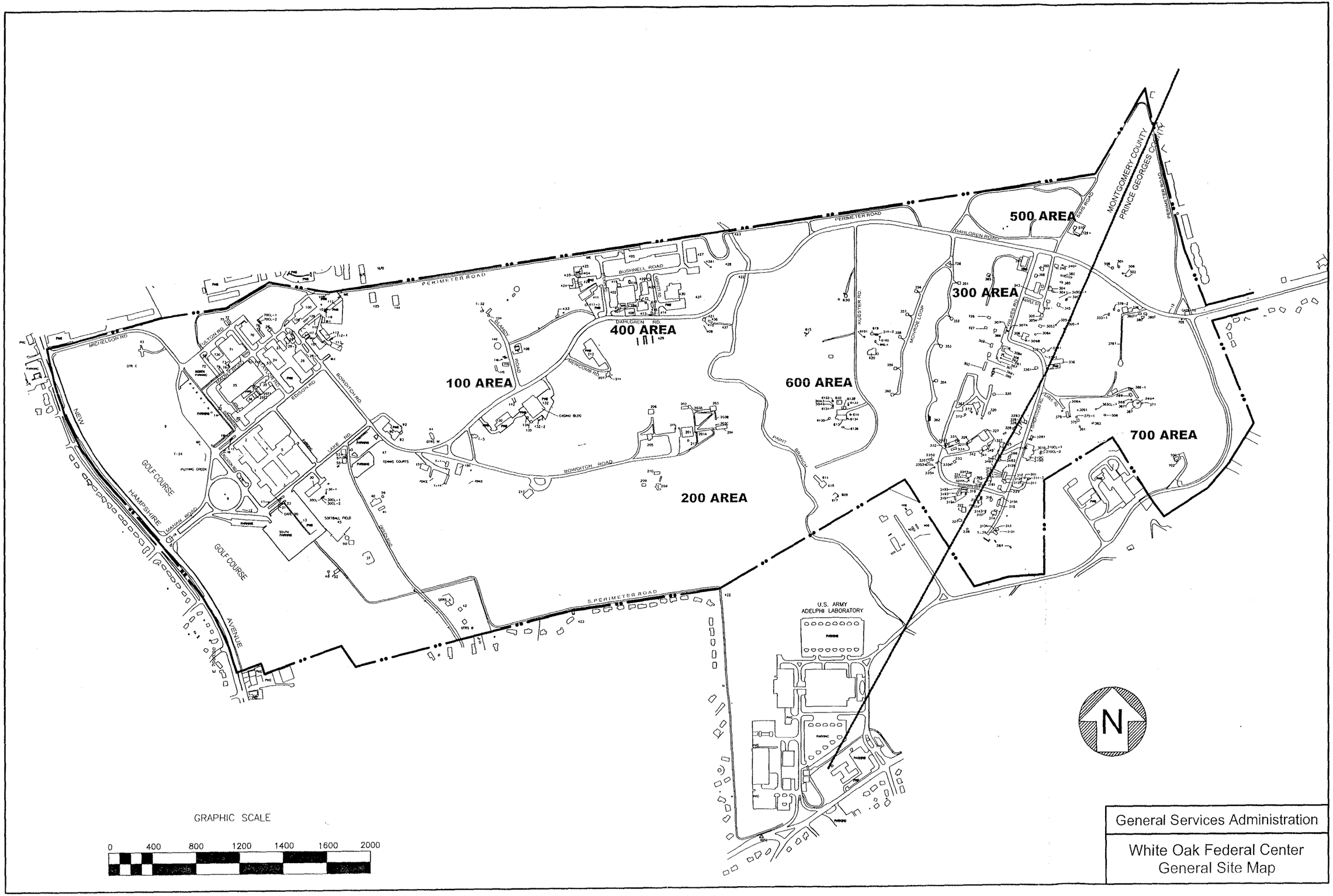
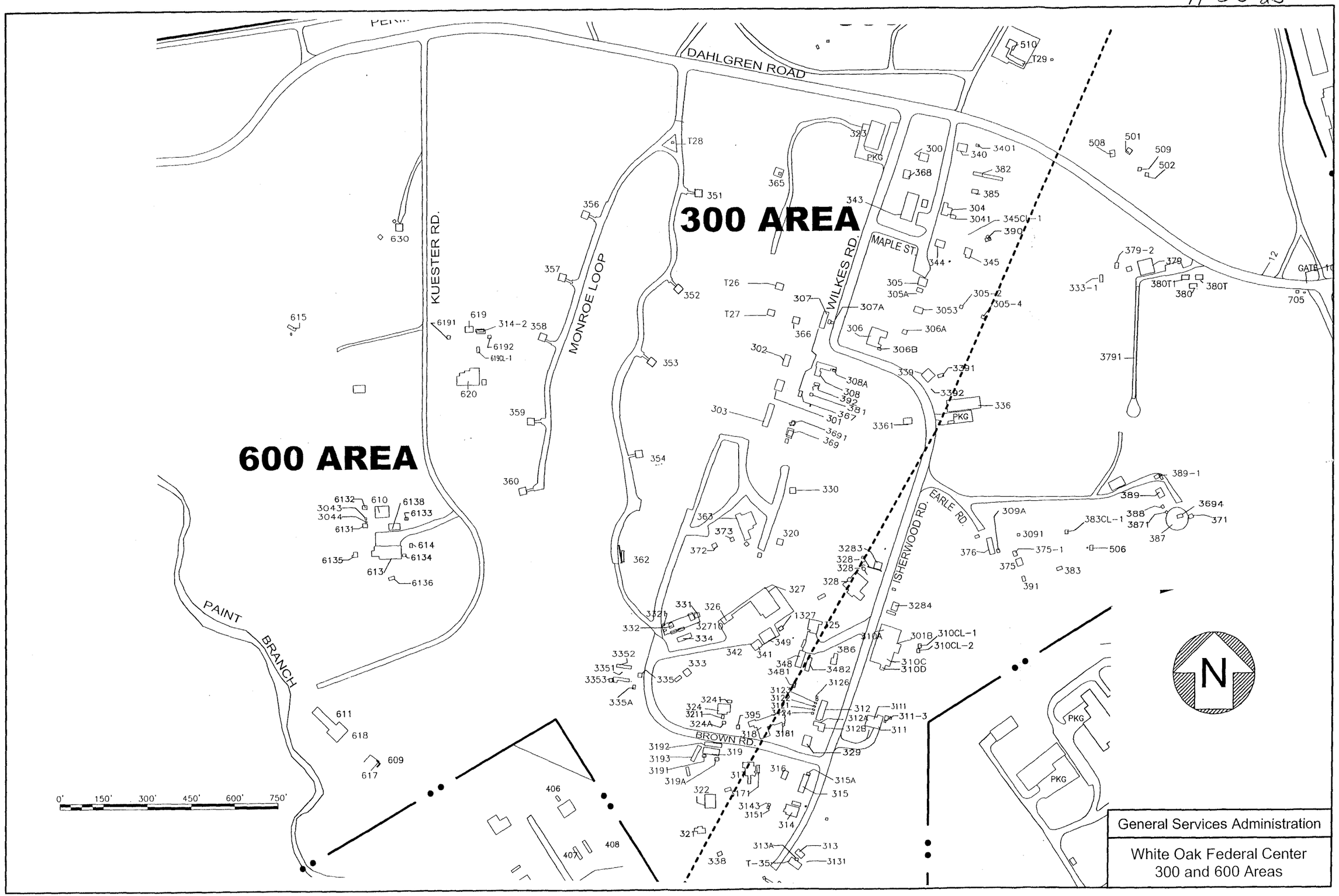


General Services Administration

White Oak Federal Center
General Site Map

M-33-25



General Services Administration

White Oak Federal Center
300 and 600 Areas

M: 33-25

Naval Ordnance Laboratory Historic District
White Oak 300/600 Area Photo Log

Building Number	Facility Name	Roll #	Photo Numbers	Notes	Print
301	Repetitive Impact Test Facility	12	2		1
303	Temp & Humidity Test Facility	2	9		2
305	Explosives Casting/Physical Properties Lab	1	8A		3
306	Vibration Test Facility	1	16A		4
307	Warheads Operations	2	1		5
308	Countermeasure Development	11	13		6
311	Explosives Chemistry Lab	10	2		7
312	XPL Quality Control Lab	10	1		8
314	Explosives Bombproof: Warhead	10	4		9
315	Bombproof: Detonation Physics/Warhead Research.	12	3		10
316	Charge Assembly Building	5	3A		11
317	Bombproof: Fragment Impact Lab	10	6		12
318	Explosives Pressing/Machining Building	5	4A		13
320	40FT Guided Drop Tower	5	32A		14
321	Fracture Studies Laboratory	5	7A		15
323	Explosives/Warheads Operations	12	5		16
324	Bombproof Detonation Physics	5	10A		17
325	Bombproof: Sensitivities Studies	11	16		18
327 (high)	Bombproof Initiation Research	2	19		19
328	Ignition Research lab	12	6		20

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White Oak 300/600 Area Photo Log

Building Number	Facility Name	Roll #	Photo Numbers	Notes	Print
330	40FT Free Fall Drop Tower	5	33A	Structure removed	21
331	Bombproof booster tests	5	14A		22
332	Bombproof: Control Building	5	13A		23
333	Propellant Research Building	5	15A		24
335	Explosives Process Control Building	5	18A		25
336	Explosion Damage/Nuclear Effects Lab	1	21A		26
338	Explosive Magazine	5	9A		27
339	Detonator/Lead Test Facility	12	8		28
340	HI Press Physics & Spec Lab	6	0		29
343	Chemical Laboratory	1	3A		30
344	Physical Properties Lab	1	4A		31
345	Physical Properties/Biotechnology Lab	1	5A		32
348	Sensitivities Study Operations	11	17		33
351	Explosives Magazine	5	25A		34
352	Explosives Magazine	5	24A		35
353	Explosives Magazine	5	23A		36
354	Explosives Magazine	5	22A		37
356	Explosives Magazine	5	26A		38
357	Explosives Magazine	5	27A		39
358	Explosives Magazine	5	28A		40
359	Explosives Magazine	5	29A		41

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White Oak 300/600 Area Photo Log

Building Number	Facility Name	Roll #	Photo Numbers	Notes	Print
360	Explosives Magazine	5	30A		42
362	Explosives Magazine	5	21A		43
363	Fuse Evaluation Facility	2	14		44
364	Explosives Magazine	10	5		45
366	Explosives Magazine	2	7		46
369	Temp & Humidity Test Facility	2	12		47
371	Gun Turret Explosives Firing Facility	9	19A	Structure removed	48
372	Mechanical Output Test Building	2	17		49
373	Control House for 372	2	16		50
375	Altitude Blast Chamber	11	14		51
379	V T Fuze Instrumentation Lab	6	12		52
382	Target Preparation lab	1	0A		53
383	Conical Shock Tube	6	14		54
386	Charge Assembly & Conditioning Building	3	25		55
387	Hi/Gravity/Tank Centrifuge Pit	6	6		56
388	Hi/Gravity/Tank Centrifuge Control	6	2		57
390	Explosive Conditioning	1	7A		58
611	Shock Testing Facility Building	12	9		59
613	Hi Energy Materials Process Development	12	10		60
615	Hazardous Machining/Blending	R	00A		61
617 (high)	Shock Tester (G Department Equip)	9	20A	Structure removed	62

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White Oak 300/600 Area Photo Log

Building Number	Facility Name	Roll #	Photo Numbers	Notes	Print
618 (high)	Shock Simulator (G Group)	9	21A	Structure removed	63
620	Explosives Casting Building	6	19		64
309-1	Altitude Blast Chamber	6	18	Structure removed	65
310-A (high)	Chemical Laboratory	R	3A		66
310-B (high)	Instrument Laboratory	9	11A		67
318-1	Explosives Temp Controlled Magazine	9	12A	Structure removed	68
328-3	Service Magazine	9	17A		69
333-1	Office Annex to Building 333	9	18A		70
339-1	Bottle Storage Shelter-339	1	18A		71
335-2	Explosive Processing Bays	9	13A		72
T-29	Neutron Calibration Facility	R	2A		73

301
Demo

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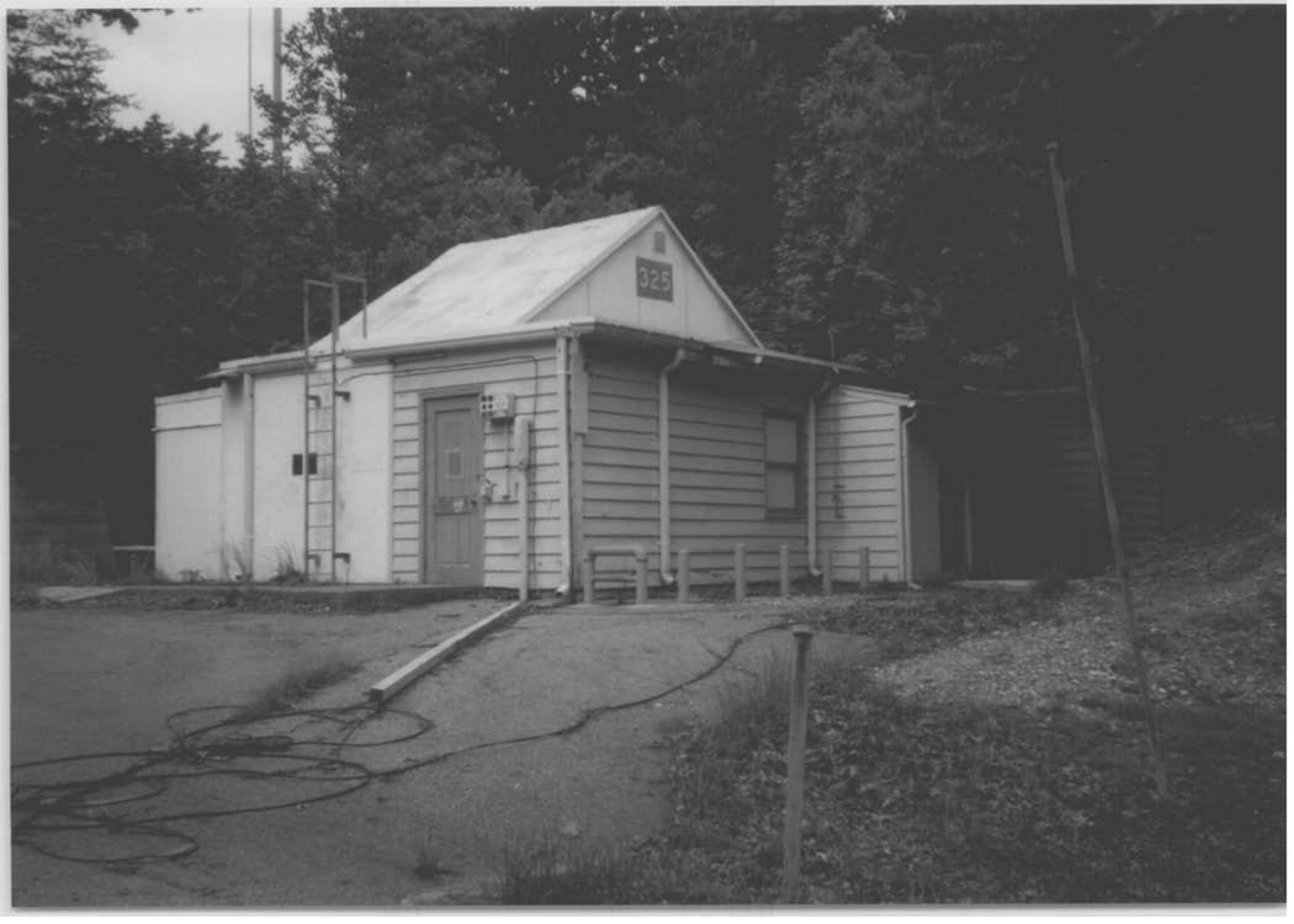
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339
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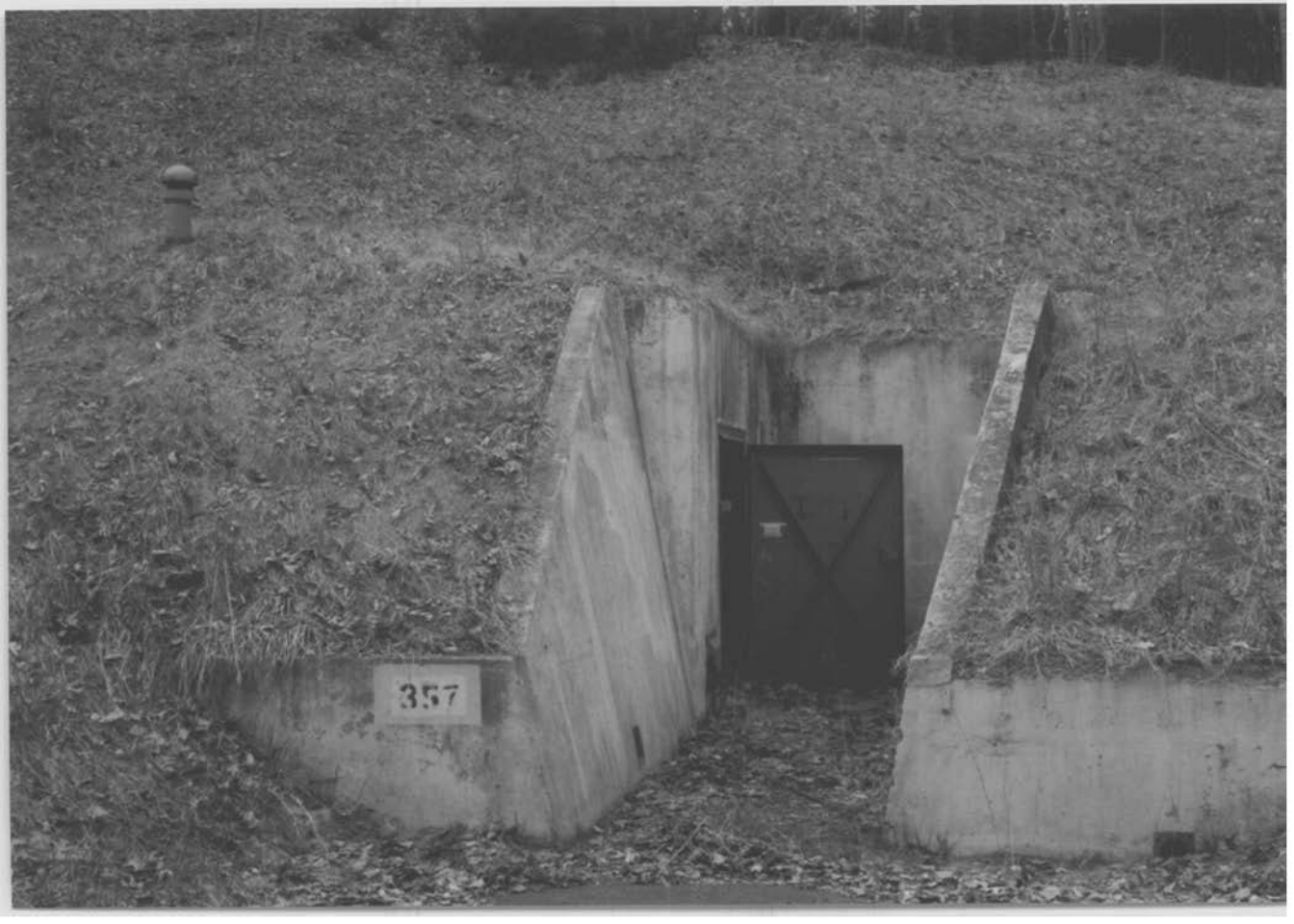
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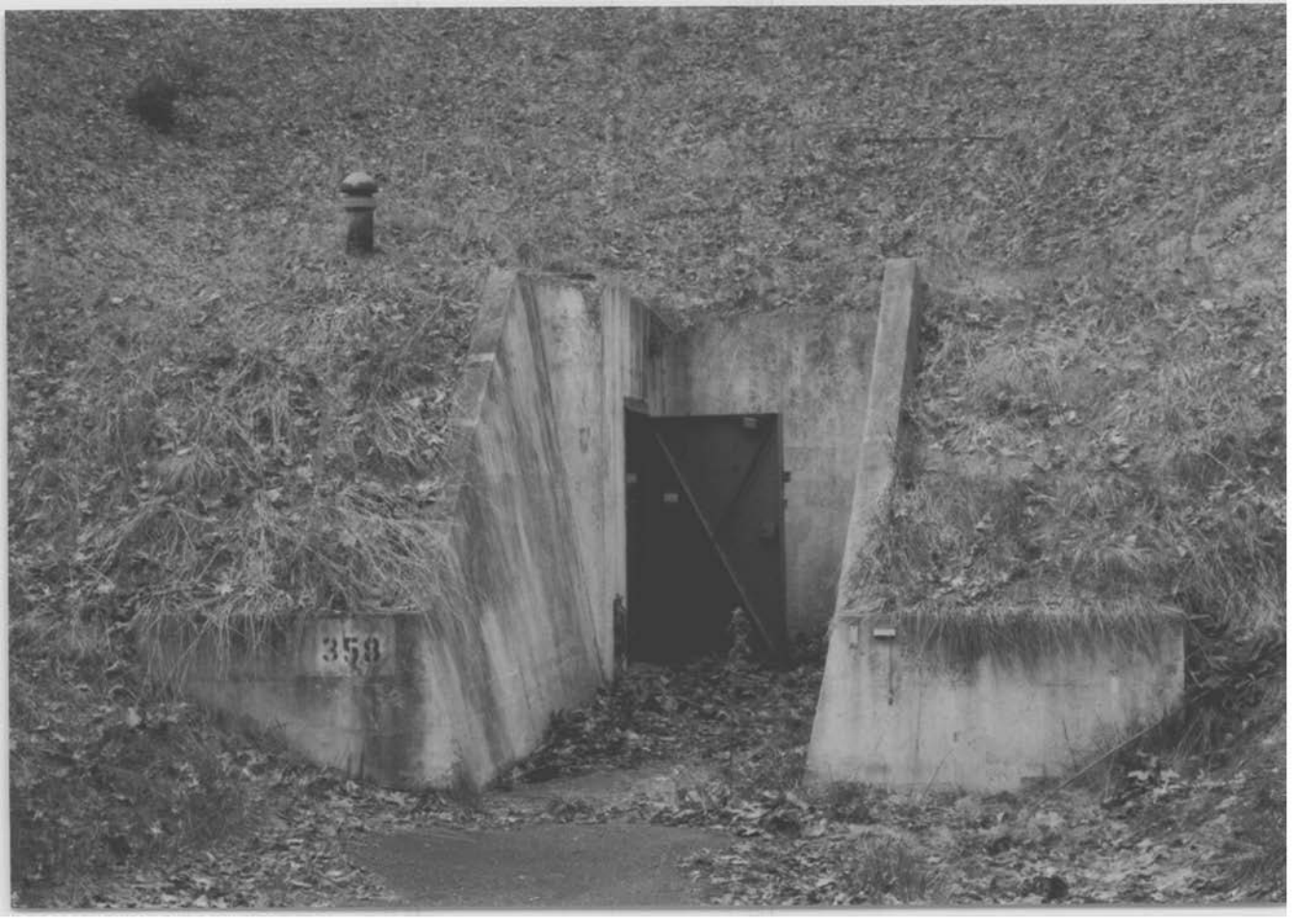
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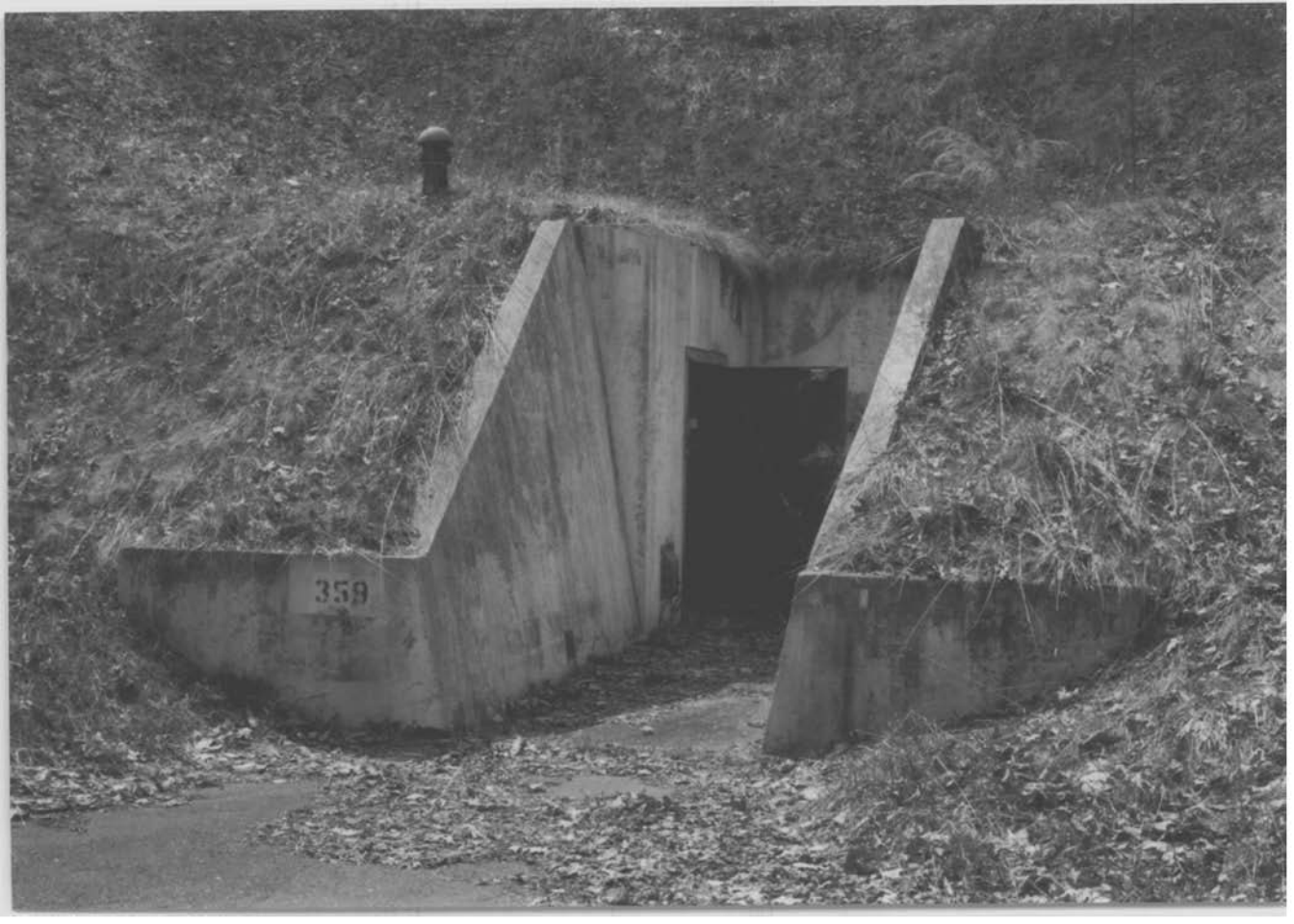
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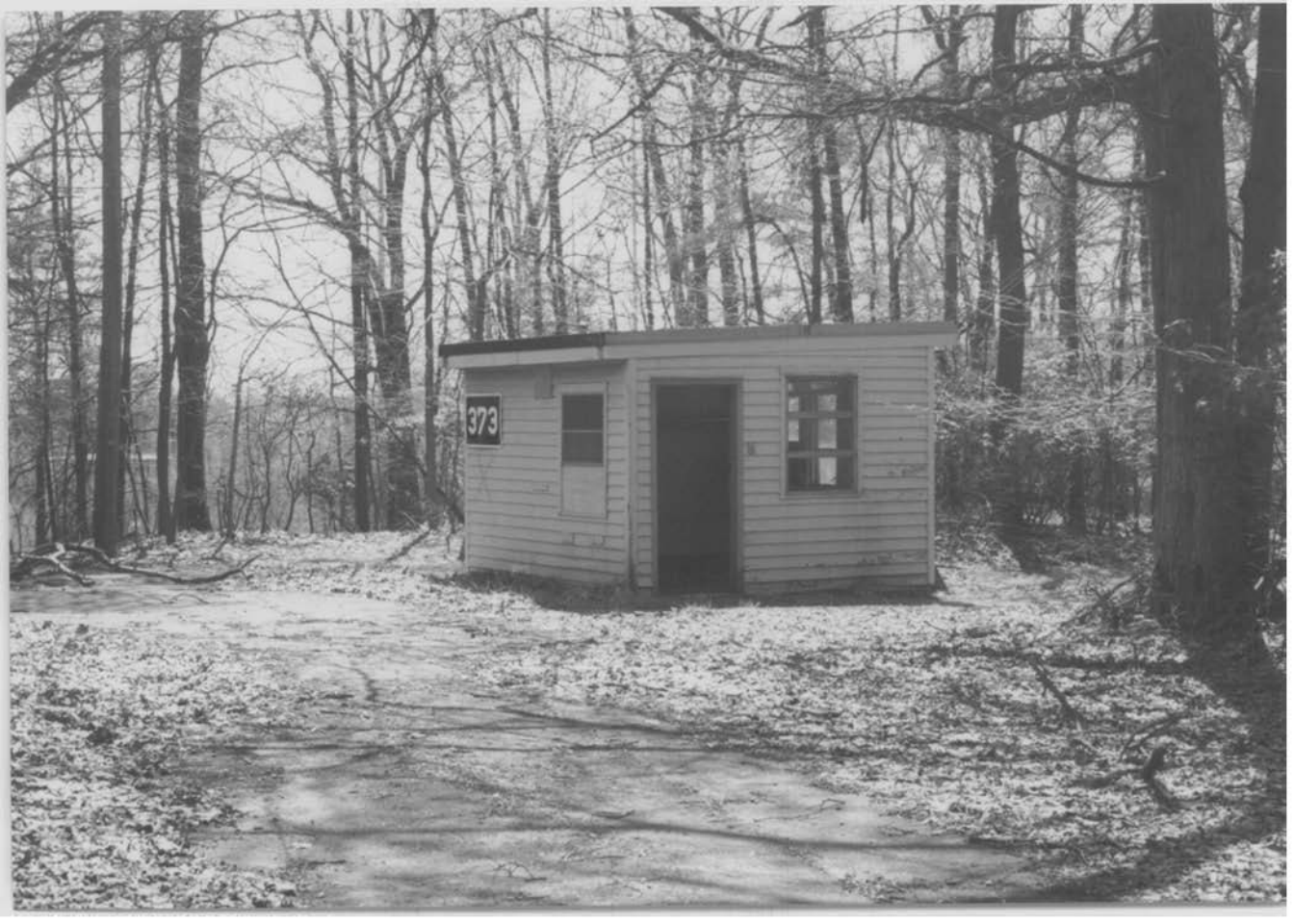
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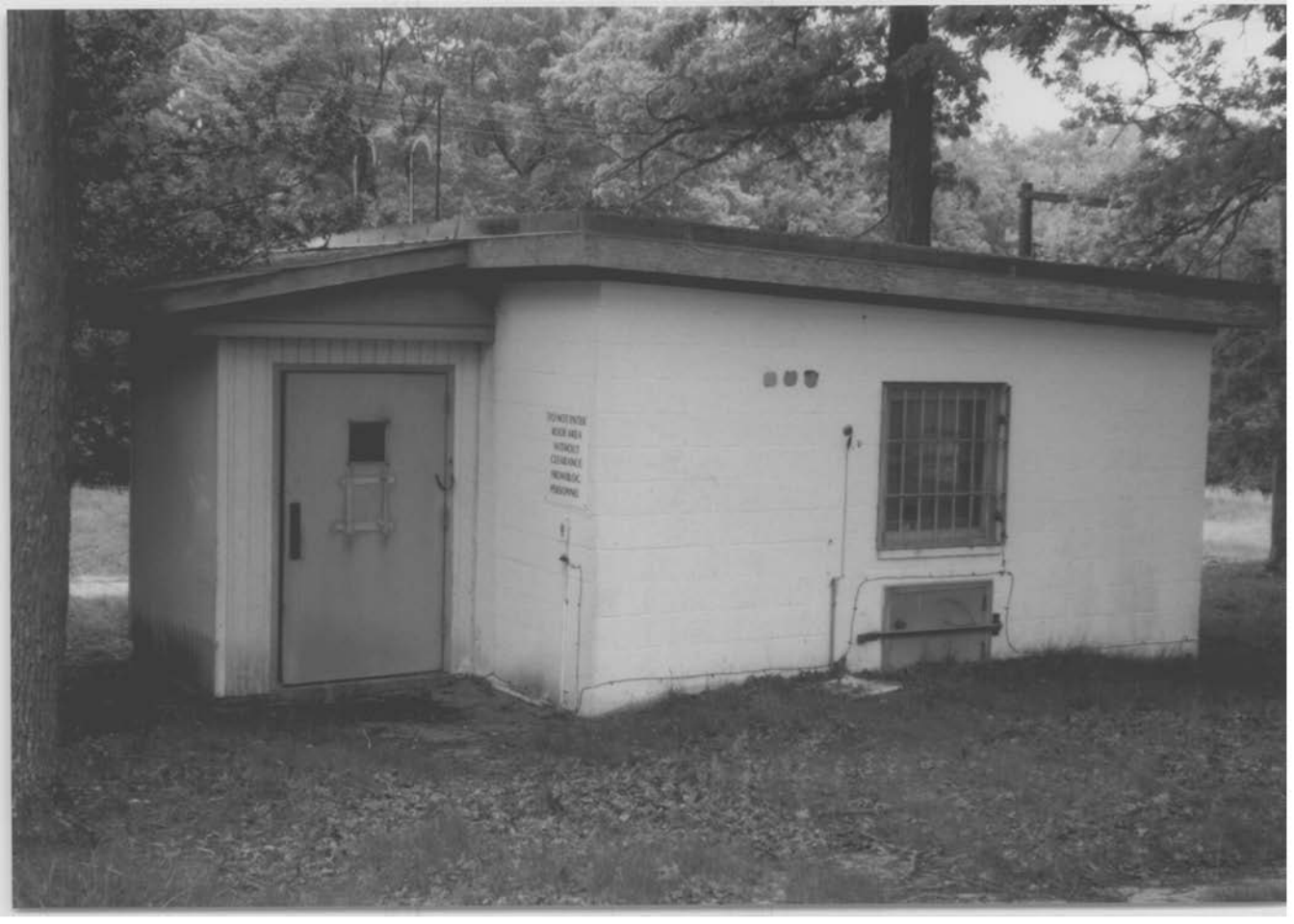

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Naval Ordnance Laboratory H.D.
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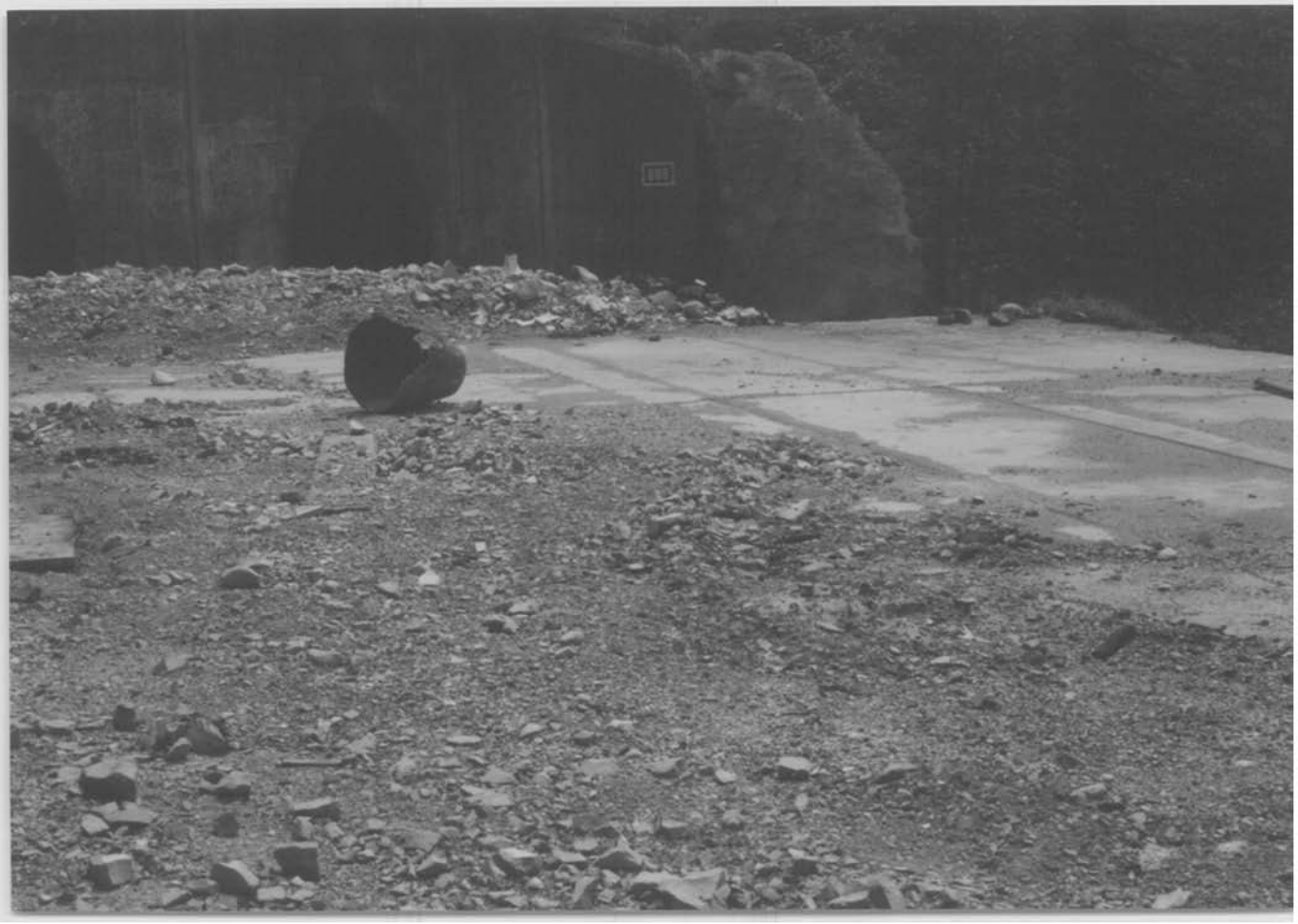

M-33-25
Building 618 (Structure Removed)
Naval Ordnance Laboratory H.D.
Montgomery Co., MD
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M-33-25
Building 620
Naval Ordnance Laboratory H.D.
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Building 309-1 (Building removed)

Naval Ordnance Laboratory H.D.

Prince George's Co, MD

R. Voorhees

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Building 310-A

Naval Ordnance Laboratory H.D.

Prince George's Co. MD

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Building 310-B
Naval Ordnance Laboratory H.D.
Prince George's Co. MD
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M-33-25
Building 318-1 (Structure Removed)
Naval Ordnance Laboratory H.D.
Prince George's Co. MD
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Building 328-2

Naval Ordnance Laboratory H.D.

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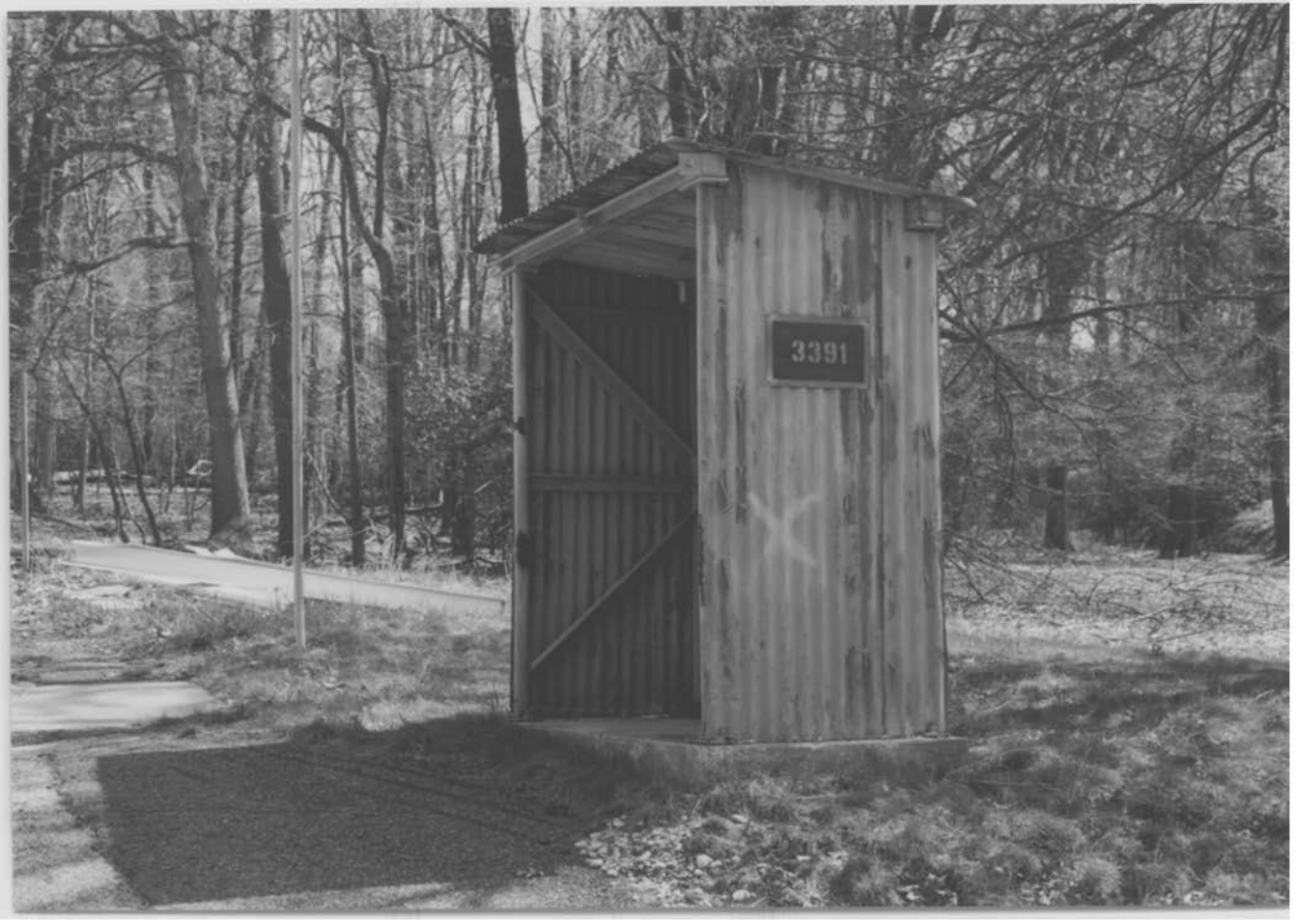
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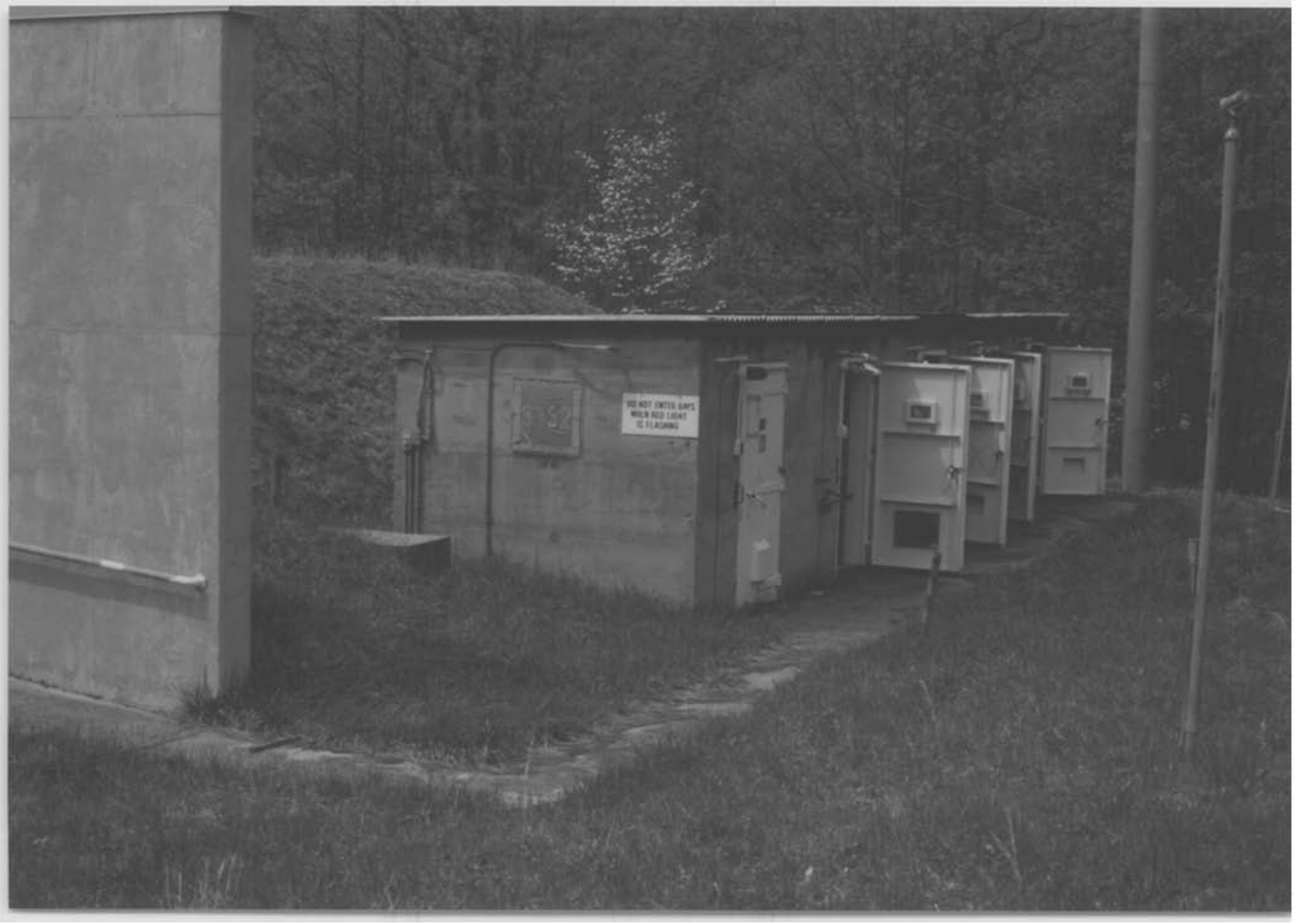
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Naval Ordnance Laboratory H.D.
Montgomery, Co., MD
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Maryland Historical Trust
State Historic Sites Inventory Form

Survey No. M:33-25
Magi No.
DOE ___ yes ___ no

1. Name (indicate preferred name)

historic Naval Ordnance Laboratory

and/or common Naval Surface Warfare Center, White Oak Laboratory

2. Location

street & number 10901 New Hampshire Avenue ___ not for publication

city, town White Oak, Silver Spring ___ vicinity of congressional district 4

state Maryland county Montgomery and Prince George's

3. Classification

Category	Ownership	Status	Present Use	
X district	X public	X occupied	___ agriculture	___ museum
___ building(s)	___ private	___ unoccupied	___ commercial	___ park
___ structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	X yes: restricted	X government	X scientific
	X being considered	___ yes: unrestricted	___ industrial	___ transportation
	___ not applicable	___ no	X military	___ other:

4. Owner of Property (give names and mailing addresses of all owners)

name Department of the Navy, Engineering Field Activity Chesapeake

street & number Washington Navy Yard, 901 M Street, SE, Bldg. 212 telephone no.: 202-685-3071

city, town Washington, D.C state and zip code: 20374-5018

5. Location of Legal Description

courthouse, registry of deeds, etc. Washington Navy Yard, Bldg. 212, Code 24 liber (several deeds)

street & number 901 M Street, SE folio

city, town Washington, D.C. state

6. Representation in Existing Historical Surveys

title (SEE CONTINUATION SHEET)

___ federal ___ state ___ county ___ local

depository for survey records

city, town state

6. Representation in Existing Historical Surveys

The purpose of completing this current Maryland Historical Trust inventory form for the entire NOL White Oak complex is to fulfill Section 106 and Section 110 (National Historic Preservation Act) obligations, as well as National Environmental Policy Act (NEPA) mandates to identify and evaluate potential historic properties affected by the proposed use of the site by the General Services Administration for construction of a new consolidated campus for the Food and Drug Administration.

Previous to this MHT inventory form on the Naval Ordnance Laboratory survey district, there has been no comprehensive survey and evaluation of the NOL. The facility is not currently included in either the Montgomery County or Prince George's County inventory of historic sites (Maryland-National Capital Parks and Planning Commission 1992; Maryland-National Capital Parks and Planning Commission 1995).

The parent facility of the Naval Ordnance Laboratory at White Oak is located in the complex of buildings at the Washington Navy Yard in Southeast Washington, D.C. This complex was listed as both a National Register site and National Historic Landmark in 1973, with significance under National Register criteria A (association with events contributing to the broad patterns of our history) and C (architectural significance).

Potential above-ground historic properties at the NOL at White Oak have been recognized in two preliminary overview survey reports and one undertaking-specific report conducted for Section 106 compliance (Greenhorne & O'Mara, Inc. 1992a, 1992b, Rosenzweig 1995). The two preliminary overview reports, varying primarily in the scope of their management recommendations, were intended to provide the basis for any future intensive surveys that may be required during future construction activity. These two reports concluded by recommending that subsequent, in-depth, comprehensive surveys would need to be coordinated with the Maryland SHPO (Greenhorne & O'Mara, Inc. 1992a, 1992b).

The undertaking-specific investigation was conducted by Ecology and Environment, Inc., to assist the Navy in compliance with Section 106 for the proposed realignment of the Naval Sea Systems Command at the White Oak facility (Rosenzweig 1995). This report, titled *Architectural Resource Survey, Naval Surface Warfare Center*, was prepared by an archeologist and included an evaluation of eleven buildings in the 100 ("Front") Area: Buildings 1-4 (MHT Inventory Number M:33-14), Building 5 (M:33-15), Building 20 (M:33-16), Building 25 (M:33-17), Building 30 (M:33-18), Building 70 (M:33-19), Building 71 (M:33-20), and Building 90 (M:33-21). Maryland Inventory of Historic Properties survey forms were completed for these eleven buildings, including the main administrative/north-south laboratory complex. The *Architectural Survey* report concluded that none of the eleven buildings meet National Register criteria because of "the apparent absence of unique and significant events/developments or persons associated primarily with Naval facilities at White Oak; the absence of unique architectural styles or architecture that embodies the 'best' characteristics of a style or period; and the relatively recent age (e.g., construction of the first structure was begun in 1945) in light of the absence of overwhelming significance as noted above" (Rosenzweig 1995).

The report's conclusion also states, however, that "although the Front Area of the White Oak Laboratory appears to meet the criteria to be considered a historic district in itself, creation of a district (or discontinuous district) that includes the other primary activity areas of this facility may be more appropriate"; and that "in light of the potential for the White Oak Laboratory to meet NRHP eligibility criteria in the future because of recent and historic activities conducted there, the tenant activities at the White Oak Laboratory should exercise prudent and reasonable efforts to minimize impacting the integrity of the structures and infrastructure except as necessary to fulfill their missions" (Rosenzweig 1995).

7. Description

Survey No. M:33-25

Condition		Check one	Check one
____ excellent	____ deteriorated	X unaltered	X original site
X good	____ ruins	____ altered	____ moved date of move ____
____ fair	____ unexposed		

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

(SEE CONTINUATION SHEET)

7. Description

Contributing Resource Count: 260
Non-contributing Resource Count: 112
Total Resource Count: 372
(See Table 7.1)

Summary Paragraph

The Naval Ordnance Laboratory (NOL) property has a variety of natural and man-made landscape features including buildings, structures, a golf course, and several wooded stream valleys. Groups of buildings--including laboratories, administrative offices, and support facilities--are distinctly separated from one another, due to initial layout requirements for isolated areas for explosives and magnetic materials testing. Groups of buildings include the 100 Area (Administration/Laboratory Complex), 200 Area (Magnetics Testing), 300 Area (Explosives Storage/Testing), 400 Area (Ballistics), 500 Area (Hazardous Materials Storage), 600 Area (Small-scale Explosives Testing), and 700 Area (Hazardous Materials Storage). The original site layout and current integrity of resources is generally very good. Of 372 buildings, structures, and landscape features, 260 (70%) are Contributing. All Areas except the 700 Area include resources that are Contributing elements of a survey district that appears eligible as a National Register historic district.

Further Description

The Naval Ordnance Laboratory, currently referred to as the Navy Department's Naval Surface Warfare Center at White Oak, is located on a large site encompassing 732 acres. The main entrance to the site is at 10901 New Hampshire Avenue **[Photo 1]**. The site is approximately 1.15 miles north of the Capital Beltway (Interstate 495), and 0.75 miles south of U.S. Highway 29 (Colesville Road). The site is irregularly shaped, and bounded by New Hampshire Avenue on the west; the property is roughly bounded by Perimeter Road (just inside its boundary) on the north, east, and south **(See Figure 7.1 (Location Map) and Figure 7.2 (General Resource Map))**.

The area surrounding the site varies widely, and includes suburban residential subdivisions to the west, south and east, commercial buildings bordering the northwest corner along New Hampshire Avenue, Paint Branch Park to the north, Hillandale Park to the southwest, Paint Branch Stream Valley Park and Powder Mill Community Park to the southeast, and the U.S. Army's Harry Diamond Laboratory adjacent to the south **(See USGS map in Section 10)**.

The Naval Ordnance Laboratory (NOL) property has a variety of natural and man-made landscape features including buildings, structures, a golf course, other recreation/picnic areas, and several wooded stream valleys, the largest being Paint Branch bisecting the site from north to south. Groups of buildings including laboratories, administrative offices, and support facilities which are distinctly separated from one another, due to initial layout requirements for isolated areas for explosives and magnetic materials testing. Distinct groups of buildings and the intact natural terrain surrounding Paint Branch give the property a picturesque character, enhanced by several dozen deer occupying the woodlands around Paint Branch. The golf course around the western and southern borders of the site also contributes to the picturesque character, and preserves the campus-like design of the westernmost building complex and surrounding area.

Buildings are generally grouped on the western, central, and eastern thirds of the site with the largest and main concentration on the western third **(See Figure 7.2)**. All buildings and structures are identified with sequential numbers on the Naval Surface Warfare Center's property inventory **(Figure 7.3 (Detailed Resource Map), Table 7.1)**.

Resources were constructed on the site between 1932 and 1994. The major construction phase of the NOL occurred from 1945-54. There are five pre-1945 buildings and structures: Quarters M (Officers Quarters), Building 118 (Storage Building), Quarters C (Officers Quarters), Structure 8 (Anchor Monument), and Structure 422 (Dahlgren Road Bridge). Quarters C, a pattern-book bungalow house built for use as quarters during the earliest construction phase, has been severely altered over the years; due to these alterations Quarters C is a Non-contributing element of the survey district **[Photo 11]**. Quarters M, built in 1932, is a small, pattern-book farmhouse that pre-existed construction of the NOL. Quarters M was used as quarters for the medical officer on duty at NOL during most of the years between 1946 and 1973. Due to major exterior alterations, including vinyl siding and the replacement of most original windows (most notably the replacement of the front elevation windows with French doors), Quarters M is also a Non-contributing element of the survey district **[Photos 41-43]**. Building 118 is a small frame storage shed credited with a 1942 construction date. Although it may have been moved to the site during construction of the NOL, Building 118's original

association is unknown; it is considered Non-contributing. Structure 8 (Anchor Monument, acquired on the site in 1944) and Structure 6 (flagpole on circle) are associated with initial construction of NOL and are considered Contributing. Incidentally, the flagpole is from the U.S.S. Maine (Caudle, et al. 1997). Structure 422 (Dahlgren Road Bridge, 1916), is a steel, through plate girder vehicular bridge that was moved to its present location in 1945 during initial construction; it is Contributing element illustrating the U.S. Military's frequent re-use of bridges **[Photo 21]**.

Building numbers are assigned according to location as follows, moving west to east: the main Administrative/Laboratory complex (the 100 Area) on the westernmost portion of the site, accessed by New Hampshire Avenue; the Magnetics Area (200 Area) and Ballistics Area (400 Area) in the center of the property; the 600 Area, a small, combination fuel storage and shock testing area located across Paint Branch along Kuester Road; the Explosives Area (300 Area), located further east across Paint Branch; the 500 Area, containing a few storage buildings for hazardous materials, located at the northeast corner of the property; and the 700 Area, also containing hazardous waste storage and located on the easternmost section of the site **(See Figures 7.2 and 7.3)**.

The 100 Area, also known as the "Front Area," retains its original campus-like plan, structured around the large, centrally located Administrative Building/Laboratory Complex (Buildings 1-4) approached by a main entrance road and circular driveway. The 100 Area retains its original plan and visual distinction, with the main complex a visual landmark clearly visible from New Hampshire Avenue **[Photos 1-5]**. The golf course, a Contributing element dating to 1952, provides a physical and natural buffer which preserves the visual character of the main complex **[Photos 9, 10] (See Figure 7.4)**.

Both the Administration Building/Laboratory Complex and buildings in the 200 Area (Magnetics Area) were designed by the architectural firm of Eggers & Higgins, New York, with Taylor & Fisher, Baltimore, as associates. The consulting engineer was Edward A. Sears, also of New York City (Greenhorne & O'Mara, Inc. 1992a, 1992b). The three-story Administration/Laboratory Complex is articulated in a Late Art Deco style with restrained classical inspiration, and has an institutional appearance used in other government buildings of the period in Montgomery County and the metropolitan D.C. area (Alexis 1988). The facade has slightly projecting angular columns faced with granite, contrasting with the red brick walls **[Photo 5]**. The style and composition of the main building recalls the Bethesda Naval Hospital (1942) and Erskine Hall of the Army Mapping Service (1945) (Alexis 1988).

The Administration/Laboratory Complex survives with an excellent degree of physical integrity, its exterior remaining essentially unchanged from its original appearance (Rosenzweig 1995; Greenhorne & O'Mara, Inc. 1992a). The buildings and structures in the 100 Area--like those throughout the entire NOL site--generally retain a high degree of physical integrity **[Photos 6-8]**. Those built before 1974 which retain their physical integrity are recommended as Contributing resources to the survey district (the rationale for the 1974 cutoff for a 1944-1973 period of significance is discussed in Section 8). Like most other groups of buildings at the NOL, the 100 Area has many Non-contributing resources; these are either pre-1974 buildings that have lost their integrity or post-1974 buildings and structures, built as recently as the early 1990s **[Photo 12]**.

The 200 Area (Magnetics Testing), is a relatively small complex of buildings and structures isolated between two streams on the west side of Paint Branch **(See Figure 7.2)**. The area is geographically isolated from the rest of the site to avoid interference with magnetics testing, and primary buildings within the 200 Area are approximately 100 feet apart. The 16 buildings in the core of this area were designed to minimize radio wave interference. The decision to use the White Oak site for the NOL was made on several bases, including the fact that this area had uniform magnetic fields, a property which was essential for the successful operation of a magnetics testing facility. Begun at the Navy Yard, this research was essential during and immediately after World War II due to the German's development of magnetic mines, and was the first major research performed at the new facility in White Oak.

The primary 200 Area buildings in particular--such as 205 (Large Projects Laboratory, 1945), 206 (Model Laboratory, 1945), 201 (Operations Laboratory, 1945), 204 (Long Field Laboratory, 1946), 202 (Standard Laboratory, 1946), and 203 (Spherical Field Laboratory, 1946) **[Photos 13, 14, 44-48]** --were all constructed of large earthen blocks containing no metals. The architectural style of these same buildings is also notable. Designed by Eggers & Higgins, their unusual designs were based primarily on the practical need to house large testing equipment, however they have a uniform appearance, exhibiting characteristics of the Eclectic styles, borrowing most notably from the relatively rare French Eclectic and Italian Eclectic styles. The buildings consist of both one and two-story buildings built of earthen block, having 12/12 windows on the first stories, and 12-pane awning windows on the second stories. The main entrances to the two-story buildings have an arched set of windows over a pent roof which covers four paneled doors. The roofs are jerkin-head or hipped, and most of the roofs still possess their original slate coverings **[Photos 13, 44-48]**. All pre-1974 buildings in the 200 Area, excepting Building 201, are Contributing elements of the survey district. Building 201 has had

extensive alterations and additions, including the renovation of two one-story wings, and the addition of stucco, aluminum siding, and the replacement of all original windows **[Photo 44]**.

Also west of Paint Branch is the 400 Area (Ballistics Area), a densely packed cluster of approximately 38 buildings and structures **(Figures 7.2 and 7.3)**. Notable resources within this cluster include its largest technical facilities, built in the 1950s, 1960s, and early 1970s. These include 409 (Undersea Weapons Tank, 1956), used to test mine anchoring systems, 406 (Hypersonic Tunnel Building, 1957), 427 (Hydroballistics Tank, 1966), 428 (Hydroballistics Water Storage Tank, 1966), 431 (Tunnel 9 Vacuum Sphere, 1970), and 430 (Hypervelocity Wind Tunnel, 1972) **[Photos 15-20]**. The latter facility is particularly important in current testing because it allows longer test times than other hypervelocity facilities in serving its purpose of providing aerodynamic simulation associated with strategic missile systems and hypersonic vehicle technologies. This complex also includes several power plants, substations, and transformers; since these are original to the period of significance, they are Contributing resources.

The 600 Area is the first group of buildings east of Paint Branch. This group of approximately 25 buildings and support structures consists of three clusters located along Kuester Road. Notable facilities include 611/618 (Shock Testing Facility, 1963/Shock Simulator, 1960), which houses a 90-foot-long, 26-inch-bore air gun designed at NOL in 1958 for testing full-size weapons **[Photos 23-24]**. It likely remains one of the largest, if not the largest, of its type in the United States (Marion 1996a).

Resources in the 300 Area (Explosives Area) dominate the eastern third of the site. The approximately 160 buildings and structures in this group are located primarily on either side of Isherwood Road. A geographically distinct part of this Area is the road called Monroe Loop, where more than a dozen explosives magazines are located. This loop road runs parallel to both sides of a stream branch, with the magazines built into the hillside of the steeply sloping topography. Explosives magazines are of two basic types, illustrated by comparing the clustered containment of Structure 362 with the individual, widely spaced type used type that dominates Monroe Loop, as illustrated by structure 352 **[Photos 25, 26]**.

The 300 Area along Isherwood Road contains a variety of explosives fabrication and testing facilities. The Chemical Laboratory (310A, 1948) is especially important for its role in the creation of numerous developments and inventions related to naval weapons. Due to a roof leak, a metal tent-like shell was built over the building circa 1970 **[Photos 30, 31]**. Notable among other structures are several "bombproofs" and related structures (314, 317, 324, 327, 331, 332), designed to contain and withstand various types of explosions **[Photo 27]**. Also notable is the layout of these facilities, spaced far enough apart so that possible explosions would not affect nearby structures. Interestingly, when a few newer or relocated facilities requiring a physical buffer were added to the complex, a large earthen berm was constructed around each one to protect it from adjacent buildings, as seen with 316 (Charge Assembly Building) **[Photo 28]**. Notable for both technical function and on-site invention and improvisation is a large, high-gravity centrifuge (387), containing a modified gun turret firing component (371) with the centrifuge powered by approximately 12 V-8 automobile engines **[Photo 29]**. This facility, used for centrifugal testing, was last used about 20 years ago (Marion 1996a).

Both the 500 and 700 Areas are small clusters of 2-5 buildings located in outlying areas and used for the storage and disposal of hazardous materials and chemicals. The 500 Area is located north of Dahlgren Road at the extreme eastern edge of the site; the 700 Area is located at the southeastern edge of the site just inside Perimeter Road. The only pre-1974 buildings among these two groups are two Contributing buildings in the 500 Area that date to 1951; the remainder (Non-contributing resources) in both areas were constructed after 1980 **[Photos 34, 35]**.

The interiors of buildings on the site were not examined, for two primary reasons: 1) lack of access due to security restrictions, and 2) the lack of need due to the very good integrity of the exteriors, original site plan, and landscape features, which suggest very good integrity of the survey district as a whole. Generally speaking, the interiors of the largest administrative buildings appeared conservative in excess detail, and similar to 1950s school buildings in finish. A notable exception to this is the main foyer of building 1 (Administrative Laboratory), two stories tall and partially finished with marble (not photographed). Undoubtedly there have been some interior alterations to both the administrative buildings and test facilities over the years; for scientific testing facilities in particular, this would be expected over a 50-year period of use.

A few buildings at the NOL complex have exhibit panels, used during open houses and private tours. The exhibit panels reveal the facility's perception of its own importance. These panels and exhibits are located in the entryways and halls of buildings 430 (Hypervelocity Wind Tunnel), 427 (Hydroballistics Tank), and 323 (Explosives/Warheads Operations). The panels use text and photographs to illustrate several processes: "Explosive Processing Mixing and Casting," "Hydroballistic Facility" with a cutaway image of 427(Hydroballistics Tank), "Water Entry Model" (for subsurface

projectiles), and a multi-panel display on "Hypervelocity Wind Tunnel No. 9). There is also a scale model of 427 (Hydroballistics Tank) next to its exhibit panel **[Photos 24, 36-40]**.

8. Significance

Survey No. M:33-25

Period	Areas of Significance----Check and justify below			
____ prehistoric	____ archeology-prehistoric	____ community planning	X landscape architecture	____ religion
____ 1400-1499	____ archeology-historic	____ conservation	____ law	X science
____ 1500-1599	____ agriculture	____ economics	____ literature	____ sculpture
____ 1600-1699	X architecture	____ education	X military	____ social/ humanitarian
____ 1700-1799	____ art	X engineering	____ music	____ theater
____ 1800-1899	____ commerce	____ exploration/settlement	____ philosophy	____ transportation
X 1900-	____ communications	____ industry	____ politics/government	____ other (specify)
		X invention		

Specific dates 1944-73 **Builder/Architect** Eggers & Higgins, Taylor & Fisher Associates

Check: Applicable Criteria: X A X B X C ____ D

and/or

Applicable Exception: ____ A ____ B ____ C ____ D ____ E ____ F X G

Level of Significance: X national X state X local

Prepare both a summary paragraph of significance and a general statement of history and support.

(SEE CONTINUATION SHEET)

8. Significance

Summary Paragraph

The Naval Ordnance Laboratory (NOL) is significant as an historic district under National Register criteria A, B, and C. The property achieves significance under Criterion A (association with an event or historical trend) as the first, and until the late-1960s, the only comprehensive Cold-War-period naval weapons research and development facility in the United States. Virtually every explosive ingredient used by the Department of Defense was developed and tested at the NOL, as well as numerous new metal alloys, batteries, and countless other materials, processes, and new mathematical formulae, which have become essential in military, medical, and commercial applications, were developed at the NOL. Experiments in flow mechanics, magnetics, and other fields such as Chaos analysis, have led to hundreds of practical uses throughout the world. The property achieves significance under Criterion B (association with an important person) for its association with, and employment of several of the country's top scientists, and scientists brought from Germany during and after World War II, whose research at the site resulted in major scientific advances, both in Naval weapons development and science generally. Under Criterion C (architecture, engineering, construction, aesthetic significance) the NOL is significant for its architectural character and design, with several buildings designed by Eggers & Higgins, one of the largest firms in the country, receiving contracts for a variety of government buildings, military facilities, hospitals, and university buildings in the post-war period. The buildings designed by Eggers & Higgins included main laboratory buildings in an austere neoclassical style typical of government buildings of the period, and the 200 Area's unique Eclectic style earthen block buildings, containing non-ferrous materials that do not interfere with magnetics testing. Significance is also contained in the carefully designed site plan, including the campus-like design of the 100 Area, golf course as an early element and physical landscape buffer for the 100 Area, natural physical buffers (trees and streams) separating other areas, and specialized building groups. The site location for the NOL was carefully selected for its natural geomagnetic character. Perhaps most important under Criterion C is the engineering significance of many facilities where specialized ordnance development and testing occurred, including several unique buildings and structures.

Sixty-one buildings and structures at the complex were constructed before 1948 (the fifty-year cutoff for properties to be eligible without the special exception criterion), with these pre-1948 facilities located in the 100, 200, 300, and 400 Areas. The initial, primary building phase occurred from 1945-1954, with subsequent groups of buildings and structures completed in the 1960s and 1970s, reflecting technological advances and changing needs in naval weapons development during the Cold War period.

For the same three criteria noted above (A, B, and C), the complex achieves exceptional significance under National Register Criteria Consideration G, at the national level for its pivotal role as a first-generation Cold-War-period defense weapons research facility, being for many years, the only, and after about 1970, the foremost facility of its kind in the United States. The NOL laboratories designed and developed the majority of early Cold War technology and ordnance (Criterion A). The NOL is also associated with several nationally and internationally significant scientists (Criterion B), and has many unique buildings and structures related to testing weapons systems throughout the Cold War period, with significance in the areas of both architecture and engineering, some designed by a nationally renowned architecture firm (Criterion C).

Significance at the state and local levels has also been recognized in local planning documents. Though not yet included on lists of historic sites in either the Montgomery or Prince George's County inventories, local significance is noted in the NOL's contribution to the growth of military facilities and suburban expansion in the World-War-II and Cold-War periods. *Historic Resources of the Eastern Montgomery County Master Plan Areas* states that the Naval Surface Warfare Center at White Oak "may well be considered to possess public architectural significance and historical importance for their association with the federal government's decentralization policies during the Cold War era...." (Maryland-National Capital Park & Planning Commission 1995).

The latest White Oak master plan, in recognizing the economic value of the Front Area complex, "recommends a future reuse study of the Naval Surface Warfare Center if it is determined that the base will be closed" (*Public Hearing Preliminary Draft, White Oak Master Plan* 1995).

Period of Significance: 1944-1973

The period of significance in which all significant buildings were constructed is 1944-1973. The period of significance not only includes NOL's site acquisition and major construction phase (1944-54) but also the period in which this facility experienced its heydey--through the late 1950s and 1960s--as the foremost Naval research and development laboratory in the United States. Of the 260 structures determined as contributing, only two of them (less than one percent) were built after 1973. Also, the mission of the facility changed after 1973. The end date of 1974 marks an administrative change in the history of the NOL, when nearly a decade of debate over its mission resulted in consolidation with the Dahlgren facility (and subsequently renamed the "Naval Surface Warfare Center") as well as the construction of other Naval research facilities in other parts of the country. All major significant buildings and engineering facilities on the site, including 430 and 431 (Hypervelocity Tunnel Number 9, 1972, and Tunnel 9 Vacuum Sphere, 1970) were constructed by 1974.

Elaboration of History and Significance

Land for the Naval Ordnance Laboratory complex at the White Oak site was acquired by the U.S. Navy in 1944 to supplement the tremendous wartime expansion of research and weapons development needs at the original Ordnance Laboratory located at the Washington Navy Yard in southeast Washington, D.C. According to the published administrative history of the White Oak facility, during World War II the Washington Navy Yard's Naval Ordnance Laboratory became the world's largest military research and development center of its kind (Smaldone 1977). The Washington Navy Yard, where the NOL's parent facility is located, was listed as both a National Register site and National Historic Landmark in 1973, with significance under National Register criteria A (association with events contributing to the broad patterns of our history) and C (for architectural significance).

Despite the end of the war, there were several reasons for pursuing plans to expand Navy Yard facilities and relocate the Ordnance Laboratory functions to a new, separate site. During war time, lack of space made it increasingly difficult for growing ordnance testing laboratories and production facilities (the Naval Gun Factory) to coexist on the same site. In searching for a new site, the Bureau of Ordnance required several characteristics for a new ordnance laboratory site, including: a suburban site within 30 minutes driving distance from the main Navy Yard buildings; a location near a developed residential community commensurate with the income of NOL personnel; a low-density location where security could be enforced relatively easily; an area isolated from residential and commercial buildings to minimize radio and communications interference; a large site with sufficient open space to allow the isolated locations for electromagnetic testing facilities; a site with little "magnetic noise", or with ground having uniform magnetic fields to accommodate magnetic testing; and the potential for a campus-like atmosphere to attract civilian scientific and research personnel (Rosenzweig 1995). At the time, the idea of having a facility solely for the purpose of Navy research and development was somewhat revolutionary.

A new ordnance laboratory accommodated an expanded post-war research and development program which included a new partnership between military officers and civilian scientists. This cooperative approach, quickly accepted throughout the Navy, was forwarded by Dr. Ralph D. Bennett, a Massachusetts Institute of Technology professor who became associated with the NOL in 1940. Bennett eventually became its Director by 1945, and remained in that position until 1954 (Alexis 1988). Laboratory and testing facilities were built at the White Oak site during an initial building campaign lasting between 1945 and 1954, with the transfer of Naval Ordnance Laboratory operations from the Navy Yard completed in mid-June 1948 (Greenhorne & O'Mara, Inc. 1992a; Rosenzweig 1995). A resulting housing boom transformed the White Oak area in the decade following World War II, immediately felt in the Burnt Mills Knolls neighborhood, where it is estimated that 60% of the houses around Schindler Drive, named in honor of the Lab's former chief Admiral, Walter Schindler, were purchased by Laboratory employees (Maryland-National Capital Parks and Planning Commission 1995).

The Administration and Laboratory complex (in the 100 Area), Magnetic Research buildings (in the 200 Area), and several buildings in the 400 Area were designed by the architectural firm of Eggers & Higgins, New York, with Taylor & Fisher, Baltimore, as associates. The consulting engineer was Edward A. Sears, also of New York City. Otto Eggers and Daniel Paul Higgins were partners in, and successors to, the firm of John Russell Pope, the internationally renowned architect. In 1937, after Pope's death, they formed their own firm, completing such projects as the National Gallery of Art, and the Jefferson Memorial (Rosenzweig 1995). By the 1950s the firm of Eggers & Higgins was one of the largest in the country, designing a large number of government buildings, hospitals, military facilities, commercial buildings, and university buildings (Greenhorne & O'Mara, Inc. 1992a, 1992b). According to *Historic Resources of the Eastern Montgomery County Master Plan Areas*, the buildings at the facility "were highly representative of the firm's nationally renowned modern Neo-classical design" (Maryland-National Capital Park & Planning Commission 1995).

The three-story administration/laboratory complex is articulated in a Late Art Deco style with restrained Neoclassical inspiration, with an institutional appearance used in other government buildings of the period in Montgomery County and the metropolitan area (Alexis 1988). The Front Area, with its original circular drive, maintains the rigid symmetry of its original campus design. Its focal point is the facade of the main building, visible from New Hampshire Avenue. The facade has slightly projecting angular columns faced with granite contrasting with the red brick construction. The style and appearance of the main building recalls the Bethesda Naval Hospital (1942) and Erskine Hall of the Army Mapping Service (1945) (Alexis 1988).

One aspect of the NOL landscape that holds particular significance for NOL employees is the nine-hole golf course, which was conceived, built, and maintained entirely by the employees. By 1952 the NOL Employees Association formed a special Naval Ordnance Laboratory Golf Association (NOLGA) to explore the construction of an employee golf course.

The golf course is personally important to many former and current employees as a major achievement because all costs associated with the venture were borne by the members, with no Navy-appropriated funds used for its construction and maintenance. This also included the purchase and maintenance of all equipment required to service the golf course. Because of a close working relationship with the University of Maryland, the NOL golf course was the first to use the then new hybrid of Zoysia which was developed by the University's agricultural labs. In 1964, the NOLGA contracted with Edmund Ault, a registered golf course architect, to provide a long range renovation plan to improve the course's safety and character. Over the next thirty years several of these suggestions were implemented, again using association members to provide not only the funding but the physical labor. Initially, membership was restricted to military and civilian employees of NOL, the Army's Harry Diamond Laboratory, and employees of tenant activities at NOL. For community relations, membership was opened to residents in the surrounding communities by the 1960s. The vast majority of current members are retired employees (Marion 1996b).

The mission of the NOL at White Oak upon its creation in 1945 was to:

Carry out the mission of research and development establishments as related generally but not exclusively to fire control, demolitions, guns and accessories, explosives, including nuclear, projectiles, propellants, ammunition and components, guided missiles, mines, depth charges, torpedoes, nets, degaussing, and such other weapons or devices as may from time to time be assigned (Smaldone 1977).

By 1956, when many aspects of the facility were in full operation, the general mission statement became more focused: "conduct research, design, development, test, and technical evaluation of ordnance materials, components, assemblies and systems, principally in the fields of fuzes, explosives, warheads, mines, depth charges, torpedoes, bombs and missiles." The statement concluded with an added emphasis, to "conduct research and evaluation in the fields of aerodynamics" (Smaldone 1977). By 1972, the initial, broad mission of the NOL became more restricted, due to both the growth of other Navy facilities and the impending consolidation with the Navy's Dahlgren facility. By that time, the NOL's mission was to be the principal, although no longer the exclusive, in-house research and development facility for ordnance technology, concepts, and systems (Smaldone 1977).

Since its founding, the White Oak facility has developed numerous unique and highly significant research facilities, including wind tunnels, a hydroacoustic facility, hydroballistics tank, electromagnetically shielded laboratories, and several environmental and nuclear effects simulation facilities (Greenhorne & O'Mara, Inc. 1992a). An interesting aspect of weapons development at the NOL involved war prizes after 1945 and interaction with German scientists after the war. The sphere on top of 402 (Supersonic Wind Tunnel, 1947) is a German war prize that became important in the testing of V-2 rocket projectiles (DeSavage 1996). According to architect Joseph Miller, who was the project manager for Eggers & Higgins associated with the design and construction of the Supersonic Wind Tunnel, German engineers were brought to White Oak and provided valuable information, because they were the designers of the original rocket system that caused much damage in London during World War II (Miller 1996).

Among the most notable scientists brought from Germany after the war was Dr. Rudolf Hermann. Dr. Hermann was Director of the German wind tunnel developments at Peenemunde, Germany beginning in 1936, and after November of 1944, at Kochel, Germany. The experiments and equipment used at Kochel included supersonic wind tunnels, and the beginning of the design and construction of a hypersonic wind tunnel for Mach 10 wind experiments.

Following the war, two German supersonic wind tunnels (Supersonic Tunnels 1 and 2), along with the designs, reports and experiment data were sent to the NOL in White Oak. One tunnel, Wind Tunnel No. 1, is still on site, and the historic documents brought from Germany are still extant today in the NOL archives. Dr. Hermann and approximately 35 of his associates and engineers were also brought to the NOL to continue the work. Dr. Hermann Kurzweg, who had been Dr. Rudolph Hermann's Assistant Director in Germany, also came to NOL, and became the Director of the NOL Wind Tunnel Laboratories. Other German scientists who worked at NOL after the war were, Dr. Richard Lehnert (now retired from NASA), Dr. Gerhard Eber, Dr. Ernest Winkler (now retired from NSWC), Dr. Edmund Stollenwerk (now retired from Lockheed), Max Peucker, Dr. Peter Wegener (now a professor at Yale University), and Dr. Willi Heybey (now retired from NASA). Under project "Paperclip", Dr. Karl H. Grunewald, Dr. Eva Winkler, and Mr. Florian Geineder joined the NOL team during the years 1947 and 1948 (Hastings 1979; Sherman 1988).

Although the United States had a few other wind tunnels in operation or under construction after the war, such as the Lone-Star tunnel in Daingerfield, Texas, and one tunnel at the Aberdeen Proving Ground in Maryland, these tunnels were extremely limited in their capacity, leaving NOL as the primary research facility for flow experiments throughout the Cold War Era (Hastings 1979).

Since its creation the NOL's research and development mission has depended on a cooperative approach between military officers and many of the top scientists in the United States. Scientists of note whose research at NOL has resulted directly in the development of major scientific advances include Dr. John Bardeen, whose research resulted in the invention of transistors. Dr. Bardeen has been awarded two Nobel Prizes in Physics, one for the invention of the transistor in 1956, and one for the development of a theoretical explanation for superconductivity in terms of quantum theory (Hamlin 1985). Dr. Bardeen is the only one to have received two Nobel Prizes in the same subject.

The basic operating principles for all modern computers were invented in the early 1940s by Dr. John Vincent Atanasoff, who worked at NOL until moving on to establish his own business in 1952. Although Dr. Atanasoff has not always been recognized for his great contribution to our society due to others who originally took credit for his work, in 1973, the courts ruled that the invention of the electronic digital computer was the work of Dr. John Vincent Atanasoff. Today, Atanasoff is recognized worldwide for his achievement (Hamlin, 1984). Experience with early computers at the NOL reportedly inspired the term "de-bugging" for fixing computer problems; the term originated because moths frequently got into computers causing faulty circuitry.

Other well known scientists at the NOL include Dr. Donna Price, whose work in 310A (Chemical Laboratory) resulted in major advances in the field of plastic explosives (Caudle 1996; DeSavage 1996). Dr. Price is revered as a national expert in the field of plastic explosives. Dr. Kathryn Shipp, who worked at NOL during the 1950s and 1960s, discovered several complex organic compounds, the best known of which is HNS, which was developed at NOL and used on the moon by the Apollo 14 astronauts in active seismic experiments upon the request of NASA. HNS was also used to deploy the landing gear of the lunar module, and to effect the separation of different stages. Dr. Shipp received a Presidential award for her work on this project. Other chemists involved with the Apollo program at NOL were Dr. Jerome Rosen, Harry Heller, and Eugene Kilmer (NOL 1971).

Ceramics research and development was undertaken by former Soviet scientist Dr. Talmy Inna at the NOL. A widely used application of this research is the production of ceramic tiles and brick from fly-ash generated by coal fired electric plants [this technology is currently being used by Montgomery County, Maryland] (Caudle, et al. 1997).

The research and weapons development which took place at the NOL are of exceptional importance in our Nation's waging of the Cold War. Most of our most innovative weapons systems were developed in their entirety at this site, and many other NOL research products have become essential to American commercial products. In addition, many of the Nation's top scientists worked on these studies at NOL. Some specific achievements include:[1]

AERODYNAMICS

Eventually, seven wind tunnels were built at NOL between 1946 and 1972, many of which are still operational. Most of these tunnels were also designed at NOL. Early work on the tunnels was performed at a frenetic pace, with three shifts working through the night. Tests performed in the original German Tunnels 1 and 2 included those on, guided missiles, mines, depth bombs, sonobouys, aircraft and reentry bodies. Hardware produced as a result of these experiments included 20mm and 40mm antiaircraft projectiles, the MK-80 series bombs, Sidewinder and Bumblebee missiles, SUBROC, the F-102 Fighter aircraft, Jupiter and the MK-1 and MK-2 Polaris (Hastings 1979).

Tunnel 3, built in 1949, was used primarily for supersonic diffuser research, which became the basis for future diffuser research at Tullahoma, Tennessee. In 1955, this tunnel was given to the Aerospace Engineering Department of the University of Maryland. Tunnel 4 was built in 1950. In this tunnel was demonstrated the first air-liquification-free hypersonic tunnel flows at Mach speeds up to 10. This tunnel made the first Mach 10 static force tests on the Polaris MK-1, the Jupiter, Pershing, and Minuteman missiles. Tunnel 6, also completed in 1950, was used to research supersonic turbulence and shock wave phenomena. The first Schlieren photographs of jet aircraft creating a shock wave (sonic boom) were taken at NOL during wind tunnel experiments. Important new measurement techniques such as color Schlieren and Laser Holographic Interferometry were developed as well. Tunnels 5 and 7, although designed and partially constructed, were never completed. Hypervelocity Research Tunnel 8A, was installed in 1974. It has been used for high altitude testing of various re-entry bodies and the space shuttle orbiter (Hastings 1979).

Hypervelocity Tunnel 9 was authorized by Congress in 1966, and essentially completed in 1972. This tunnel is the only one of its kind in the United States, and is unique for having the highest speed, longest flow time, and largest object capacity of any such tunnel in the Unites States. It has a significantly greater productivity per run than other tunnels,

[1] The information on NOL research and development was obtained from unpublished information available at the NSWC in White Oak unless otherwise noted.

thus reducing the cost of data. While other hypervelocity tunnels were limited to run times on the order of tens of milliseconds, Tunnel 9 provided, and still provides, one second run times. Furthermore, this tunnel can accommodate full size models. This tunnel has been invaluable for research and development for all three armed services, and the National Aeronautics and Space Administration (NASA), and it is expected that this tunnel will remain in use at its current site by the U.S. Air Force (Hastings 1979).

Parachutes (Retardation Devices) have been designed, tested, and produced at NOL for dozens of applications including those used on the Space Shuttle, and the Mars Pathfinder.

NUCLEAR WEAPONS

Scientists at the NOL designed and developed many of the Navy's first nuclear weapons. Among these were:

ELSIE I: the Navy's first nuclear weapon for use against land targets, and ELSIE II.
BETTY (Bomb M90): the Navy's first nuclear depth bomb.
LULU: the Navy's second nuclear depth bomb.
HOTPOINT (Mk105): a parachute retarded design similar to LULU.
SUBROC: the Navy's first submarine launched anti-submarine nuclear weapon.

NOL employees also designed and developed arming and fuzing devices for the POLARIS, MINUTEMAN, and TERRIER nuclear weapons. NOL also designed and installed the test equipment to collect shock pressure information on the BIKINI underwater shock and air blast nuclear test conducted in 1947, as well as those of the SANDSTONE tests started in 1948, WIGWAM, WAHOO, & UMBRELLA underwater tests in 1955, and the development of nuclear test simulators.

EXPLOSIVES

NOL scientists invented 9 of the 10 new energetic molecules (explosives) developed since World War II that are now used by the Department of Defense (DOD) for practical use in explosive and propellant devices. For example, the substance labeled PBXW-100 which was developed at NOL, has come into use in all underwater explosives used in defense.

DEGAUSSING

NOL scientists developed the technology and system designs for all the degaussing (demagnetizing) systems for all Navy ships and all magnetic calibration facilities in the United States.

ALTERNATING MAGNETIC (AM) FIELDS

In the 1960s and 1970s, the NOL ran experiments to determine the cause of AM signatures on large naval targets. As a result, the NOL developed AM signature reduction systems which reduced the vulnerability of U.S. and NATO ships and submarines.

METAL ALLOYS

The NOL was the nation's leading research facility in non-magnetic and soft-magnetic alloys after World War II. All of these alloys are easily identified as having been developed at the NOL by the last three letters of their names, "NOL". The products developed included, most significantly, NITINOL, a corrosion resistant, high electrical resistance, strong, "metal with a memory." It has found widespread applications in weapons systems, but is also used commercially in thousands of products, including: eyeglass frames, dentistry products, blood vessel stent, bra underwiring, anti-scald devices for showers, flow regulators in autos, catheter guidewires, ligament and bone attachments, etc. Also developed were NITINOL-60, PYRONOL, WAGONOL, which are all used mainly for defense purposes.

The NOL has also developed a number of soft magnetic metal alloys which have laid the foundation for the soft magnetic materials industry in the United States. Many of these developments were made for use in the Vietnam War, for such devices as magnetic sensors to detect mines, but this research, which began as military research, has spawned many industries in the Unites States. Some of these applications include magnetic traffic light/highway sensors and weapons detectors at airline gates (developed by agreement with American Airlines). These alloys are also used in transformers, motors, signal processors, memories, recorders (including video tape recorder heads), actuators, etc. Among the alloys

developed were: PARABANOL, ORTHONOL, ALFENOL, APHONOL, and TERFENOL. One of the NOL scientists, Dr. Arthur Clark, worked on magnetic materials which are currently being used by Ikea corporation for use in the manufacture of a new cashier and inventory control system (Caudle, et al. 1997).

BATTERY MATERIALS

The NOL developed many of the battery systems which are widely used today, including improvements to Lithium thermal batteries, and a thermally stable form of silver oxide for use in high-rate silver oxide batteries.

More recent facilities related to nuclear and environmental testing were added to the site during the 1970s and 1980s, including refinements to systems for detection of low observable targets. Reflecting this expanded mission, in 1974 the Naval Ordnance Laboratory was consolidated with the Naval Weapons Laboratory at Dahlgren, Virginia, to become the Naval Surface Weapons Center. The White Oak facility's name was changed to Naval Surface Warfare Center in 1987. Since 1974 (until recent preparations for base closure begun in 1995), the Center's programs have changed in focus from individual weapons design and testing to broader weapons systems, demonstrating "leadership in all aspects of surface ship combat systems engineering and integration analysis" (Greenhorne & O'Mara, Inc. 1992a; Rosenzweig 1995).

There were two major changes in the size of the NOL White Oak land parcel since its creation in the mid-1940s. In 1969, 137 acres at the south-central edge of site were transferred to the Department of the Army for construction of the Harry Diamond Laboratories; there were no buildings related to the NOL on this site when it was transferred (Building Technology Incorporated 1984). The other reduction occurred in 1995, when 22 acres of vacant land in the southeastern corner were transferred to the U.S. Army (Whiteford 1996).

9. Major Bibliographical References

Survey No M:33-25

(SEE CONTINUATION SHEET)

10. Geographical Data

Acreage of nominated property 732 acres

Quadrangle name Beltsville, MD

Quadrangle scale 1:24,000

UTM References Do NOT complete UTM references

	Zone	Easting	Northing		Zone	Easting	Northing
A				B			
C				D			
E				F			
G				H			

Verbal boundary description and justification

(SEE CONTINUATION SHEET)

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

state	Maryland	code	MD	county	Montgomery	code
state		code		county	Prince George's	code

11. Form Prepared by

name/title	Christopher Martin, David Berg, Architectural Historians		
organization	Greenhorne & O'Mara, Inc.	date	February 1997
street & number	9001 Edmonston Road	telephone	(301) 220-1897
city or town	Greenbelt	state	MD 20770

The Maryland Historic Sites Inventory 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
DHCP/DHCD
100 Community Place
Crownsville, MD 21032-2023
410-514-7600

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10. Geographical Data

Verbal Boundary Description and Justification

The proposed historic district boundary is identical with the current property boundary, which includes the initial NOL parcel. This property has experienced no major additions and only two major reductions is size since its creation; the first reduction was in 1969 when 137 acres at the south-central edge of site were transferred to the Department of the Army for construction of the Harry Diamond Laboratories; there were no buildings related to the NOL on this site when it was transferred (Building Technology Incorporated 1984). The other reduction occurred in 1995, when 22 acres of vacant land in the southeastern corner were transferred to the U.S. Army (Whiteford 1996). The proposed historic district boundary includes the current property boundary, encompassing 732 acres. For graphical representation, see the additional Section 10 Continuation Sheet showing the **"Naval Ordnance Laboratory Survey [i.e. Historic] District Boundary."**

Maryland Comprehensive Historic Preservation Plan Data

Geographic Organization:	Piedmont, Western Shore
Chronological/Development Periods:	Modern Period (A.D. 1930-Present)
Historic Period Themes:	Military (World War II, Post WW II/Cold War) Engineering/Invention (Military-Civilian) Architecture, Landscape Architecture, Community Planning
Resource Type:	Military Weapons Research, Testing & Development Facility
Site/Data Types:	Standing Structures Landscape Features Town/City/Community Plans Objects Oral History
Known Designers/Architects:	Eggers & Higgins, Architects, New York, New York Taylor & Fisher Associates, Baltimore Department of the Navy

Ta. 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Note: All buildings are viewed as important in the areas of military, scientific, engineering, and invention significance as each building contributed to achieving the mission of NOL. Areas 100, 200, and 400 have, in addition, architectural and landscape architecture significance. The golf course has landscape architecture significance.

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
1	Admin Bldg-Lab Base	Bldg	C3	3	132116 SF	1945	G	C
2	North Laboratory	Bldg	C3	3	59800 SF	1945	G	C
3	South Laboratory	Bldg	D3	3	59266 SF	1945	G	C
4	East Laboratory	Bldg	C3	3	109174 SF	1945	G	C
5	Cafeteria/Auditorium	Bldg	C3	2	47142 SF	1949	G	C
6	Flagpoles	Strc	C3	0	3 EA	1946	G	C
8	Anchor Monument	Strc	D3	0	1 EA	1944	G	C
9	Comfort Station	Bldg	C2	1	650 SF	1960	G	C
10	Pumping Station/Wtr	Util	C3	0	1000 GM	1966	G	C
11	Underground Pumping Station	Util	D3	0	1000 GM	1970	G	C
12	Billboard	Strc	BAS	0	2 EA	1979	G	C
13	Covered Walkway South	Strc	D3	0	347 SY	1947	G	C
14	Covered Walkway North	Strc	C2	0	809 SY	1947	G	C
16	Sentry House	Bldg	C3	1	60 SF	1948	G	C
17	Sentry House	Bldg	C3	1	200 SF	1948	G	C
19	Construction Office	Bldg	D2	1	588 SF	1949	G	C
20	Ordnance Environmental Lab	Bldg	C3	2	95786 SF	1946	G	C
21	Security Office	Bldg	D3	1	200 SF	1948	G	C
22	Scale House	Bldg	C3	0	1 EA	1946	G	C
23	Sentry House	Bldg	D3	1	60 SF	1948	G	C
24	Magnetic Materials Lab	Bldg	B3	1	20735 SF	1950	G	C
25	Technical-Public Works Shop	Bldg	C3	2	130700 SF	1947	G	C
26	Rubber Processing Lab	Bldg	B3	1	1000 SF	1946	G	C
27	Storage/Packaging	Bldg	B3	1	4360 SF	1951	G	C
28	Underwater Weapons Asby Bldg	Bldg	C3	1	20665 SF	1954	G	C
29	Ordnance Assembly Building	Bldg	B3	1	4808 SF	1952	G	C
30	Explosive Laboratory	Bldg	D3	2	32998 SF	1947	G	C
30-1	Solvent Storage	Bldg	D3	1	64 SF	1984	G	N
31	Outdoor Fitness Course	Strc	C4	0	1 EA	1982	G	N
35	Sot Storage Area		C3	0	175 SY	1967	G	C
36	Storage Pad	Strc	C3	0	361 SY	1967	G	C
37	Picnic and Play Area	Strc	D4	0	1 EA	1974	G	N
38	Picnic and Play Area	Strc	C2	0	1EA	1974	G	N

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T. e 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
40	Fuze-Wave Trace Laboratory	Bldg	D4	1	4234 SF	1950	G	C
41	Acoustics Laboratory	Bldg	D4	1	1200 SF	1950	G	C
42	Garage-Storage Qtrs A-B	Bldg	E5	1	1288 SF	1948	G	C
43	Garage Qtrs C	Bldg	B2	1	240 SF	1949	F	N
44	Garage Qtrs M	Bldg	C4	1	200 SF	1949	F	N
45	Softball Field	Strc	C4	0	1 EA	1951	G	C
46	Lift Station	Util	C2	0	70 GM	1974	G	N
47	Tennis Court	Strc	C4	0	1 EA	1948	G	C
48	Golf Equipment Storage Shed	Bldg	D4	1	240 SF	1988	G	N
49	Softball Field	Strc	D4	0	1 EA	1982	G	N
50	Recreation Pavillion	Strc	D4	1	1134 SF	1986	G	N
52	Golf Equipment Storage Shed	Bldg	D4	1	1152 SF	1988	G	N
53	Secure Computer Info Fac	Bldg	D4	1	2091 SF	1992	G	N
55	Detection Sys Lab (Beartrap)	Bldg	D3	1	2091 SF	1990	G	N
57	Utility Building	Bldg	D3	1	168 SF	1990	G	N
59	Storage Building	Bldg	D4	1	320 SF	1991	G	N
60	Golf Starter House	Bldg	C2	1	64 SF	1992	G	N
68	Sentry House	Bldg	B2	1	32 SF	1990	G	N
70	X-Ray and Plastics Lab	Bldg	B3	1	22051 SF	1947	G	C
71	Laboratory-Technical Shop	Bldg	B3	1	34323 SF	1946	G	C
72	Lumber Storage	Bldg	C2	1	3757 SF	1948	G	C
73	Paint and Oil Storage	Bldg	C3	1	800 SF	1949	G	C
75	Regrigerated Storage for R	Bldg	B3	1	816 SF	1950	G	C
76	Regrigerated Storage	Bldg	B3	1	1647 SF	1950	F (Altered)	N
77	General Storage	Bldg	B3	1	576 SF	1952	G	C
78	Solvent Storage Building	Bldg	C3	1	180 SF	1962	F	N
79	Gas Cyl Storage	Bldg	C3	1	960 SF	1979	G	N
89	Sanitary Sewage System	Util	C3	0	15437 LF	1945	G	C
90	Expl Damage Branch Opns	Bldg	C4	2	31099 SF	1946	G	C
92	Storage	Bldg	C4	1	117 SF	1951	G	C
93	Sta for 90	Util	C4	0	1500 KV	1958	G	C
95	Wind Direction Indicator	Strc	C3	0	1 EA	1972	G	C
96	40000 GA Fuel Oil Tank	Strc	B4	0	40000 GA	1978	G	N
97	40000 GA Fuel Oil Tank	Strc	B4	0	40000 GA	1978	G	N
98	40000 GA Fuel Oil Tank	Strc	B4	0	40000 GA	1978	G	N
99	40000 GA Fuel Oil Tank	Strc	B4	0	40000 GA	1978	G	N

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List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
100	Garage-Fire House	Bldg	B3	2	23745 SF	1946	G	C
101	Boiler Plant	Bldg	B3	2	7934 SF	1945	G	C
101-1	Truck Spill Containment Dike	Strc	B3	0	6 OL	1981	G	N
101-2	Truck Spill Containment Dike	Strc	B3	0	4 OL	1981	G	N
101-3	Heating Fuel Storage Tank	Strc	B3	0	40000 GA	1991	G	N
101-4	Heating Fuel Storage Tank	Strc	B3	0	40000 GA	1991	G	N
101-A	Storage Building	Bldg	B4	1	560 SF	1949	G	C
104	Pest Control Office	Bldg	B5	1	308 SF	1945	G	C
108	Incinerator Building	Bldg	B5	2	1088 SF	1946	G	C
109	Vehicle-Equipment Shed	Bldg	B3	1	2800 SF	1949	F	C
110	Vehicle-Equipment Shed	Bldg	B3	1	3065 SF	1949	F	C
111	Equipment Shed	Bldg	B4	1	4680 SF	1952	G	C
112	Storage Building	Bldg	B4	1	4141 SF	1951	G	C
112-1	Waste Spill Containment Dike	Strc	B4	0	8 SY	1981	G	N
113	Storage Building	Bldg	B4	1	4141 SF	1951	G	C
114	Storage Bin	Strc	C5	1	117 SY	1954	G	C
115	Storage Shed PW Maint	Bldg	C5	1	816 SF	1960	G	C
116	Transformer Station for 101A	Util	B4	0	150 KV	1949	G	C
117	Heating Fuel Pump House	Strc	B3	1	4 OL	1964	G	C
118	Storage Bldg Matls PW Maint	Bldg	B5	1	48 SF	1942	F	N
121	Tank for Diesel Fuel	Strc	B3	0	1000 GA	1949	F	C
125	Test Equip Storage for R/D	Bldg	B4	0	500 SF	1965	G	C
129	Filling Station	Strc	B3	0	3 OL	1973	G	C
130	Vulnerability & Hardening Fac	Bldg	C5	2	22757 SF	1973	G	C
132	DNA Casino Facility	Bldg	C5	2	39202 SF	1974	G	C
132-2	Storage Shed for 132	Bldg	C5	1	1250 SF	1991	G	N
134	Transformer Station for 132	Util	C5	0	1500 KV	1974	G	N
135	Standby Generator Bldg	Bldg	C5	1	400 SF	1975	G	N
139	Tank for Gasoline Service	Strc	B3	0	10000 GA	1981	G	N
140	Salt Storage Building	Bldg	B5	1	2826 SF	1986	G	N
142	Truck Spill Containment Dike	Strc	C5	0	1 OL	1981	G	N
144	Trash Transfer Station	Strc	B4	0	1 EA	1975	G	N
147	Heating Fuel Storage Tank	Strc	C5	0	10000 GA	1994	G	N
148	Heating Feul Storage Tank	Strc	C5	0	10000 GA	1994	G	N
150	Storage Building	Bldg	D5	1	5050 SF	1987	G	N
151	Storage Building	Bldg	D5	1	3700 SF	1990	G	N

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Table 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
201	Operations Lab Boiler Plant	Bldg	C7	1	11595 SF	1945	G	N
201-1	Heating Fuel Storage	Strc	C7	0	1500 GA	1945	G	C
201-3	Contaminated Fuel Storage	Strc	C7	0	7 BL	1976	G	N
202	Standard Lab	Bldg	C7	1	2728 SF	1946	G	C
203	Spherical Field Lab	Bldg	C7	1	4346 SF	1946	G	C
203-A	Compensation Sensor Housing	Bldg	C7	1	120 SF	1993	G	N
204	Long Field Laboratory	Bldg	C7	1	2813 SF	1946	G	C
205	Large Projects Laboratory	Bldg	C7	2	3713 SF	1945	G	C
206	Model Laboratory	Bldg	C7	2	5029 SF	1945	G	C
207	Antenna Range Building	Bldg	C6	1	1271 SF	1945	G	C
208	Solenoid Lab	Bldg	D7	1	1020 SF	1947	G	C
209	Gradhelm Laboratory	Bldg	D6	1	672 SF	1947	G	C
210	Balance Lab	Bldg	D7	1	1050 SF	1947	G	C
212	Antenna Range	Strc	B6	0	1 EA	1952	G	C
213	Transformer Station for 201	Util	C7	0	300 KV	1945	G	C
214	Test Equip Storage Shed	Bldg	C6	1	96 SF	1961	G	C
215	Test Equip Storage Shed	Bldg	C7	1	63 SF	1946	G	C
217	Hydroacoustics Facility	Bldg	D5	1	8142 SF	1973	G	C
217-1	Heating Fuel Storage Tank	Strc	D5	0	550 GA	1993	G	N
219	Transformer Station for 217	Util	D5	0	150 KV	1973	G	C
25T-1	ASWCS Computer Annex	Bldg	C3	1	1200 SF	1992	G	N
25T-2	ACSAZ Computer Annex	Bldg	C3	1	1200 SF	1992	G	N
300	Synthesis/Formulations Opns	Bldg	B10	1	1656 SF	1991	G	N
301	Repetitive Impact Test Fac	Bldg	B10	1	1036 SF	1946	G	C
302	Storage	Bldg	B10	1	760 SF	1946	G	C
303	Temp & Humidity Test Fac	Bldg	C10	1	1520 SF	1945	G	C
304	Mechanical Properties Lab	Bldg	B10	1	953 SF	1948	G	C
304-1	Storage Shed 304	Bldg	B10	1	150 SF	1959	G	C
304-3	Chemical Storage Shed	Bldg	C8	1	48 SF	1950	G	C
304-4	Chemical Storage Shed	Bldg	C8	1	48 SF	1950	G	C
305	Physical Properties Lab	Bldg	B10	1	766 SF	1948	G	C
305-2	Magazine	Strc	B10	1	100 SF	1991	G	N
305-3	Test Equip Storage 305	Bldg	B10	1	560 SF	1965	G	C
305-5	Heating Fuel Storage Tank	Strc	B10	0	1000 GA	1993	G	N
305-A	Boiler House	Bldg	B10	1	187 SF	1948	G	C
306	Vibration Test Facility	Bldg	B10	1	3416 SF	1948	G	C

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Table 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
306-A	Storage	Bldg	B10	1	140 SF	1949	G	C
306-B	Boiler House	Bldg	B10	1	77 SF	1948	G	C
307	Warheads Operations	Bldg	B10	1	1033 SF	1948	G	C
307-A	Boiler House	Bldg	B10	1	77 SF	1948	G	C
308	Warhead Development Lab	Bldg	B10	1	1377 SF	1948	G	C
308-A	Boiler House	Bldg	B10	1	77 SF	1948	G	C
309-1	Altitude Blast Chamber	Bldg	C10	1	170 SF	1952	G	C
209-A	Boiler House	Bldg	C10	1	77 SF	1948	G	C
310-A	Chemical Laboratory	Bldg	C10	1	3828 SF	1948	G (Altered)	C
310-B	Instrument Laboratory	Bldg	C10	1	462 SF	1948	G	C
310-C	Chemical Storage/Boiler	Bldg	C10	1	165 SF	1948	G	C
310-D	Chemical/Equipment Storage	Bldg	C10	1	225 SF	1948	G	C
311	Explosives Chemistry Lab	Bldg	D10	1	2015 SF	1948	G	C
311-1	Test Equip Storage 311	Bldg	D10	1	180 SF	1949	G	C
311-3	Storage	Bldg	D10	1	49 SF	1948	G	C
312	XPL Quality Control Lab	Bldg	D10	1	1470 SF	1948	G	C
312-1	Storage Shed	Bldg	D10	1	36 SF	1958	F	C
312-2	Chemical Chamber-312	Bldg	D10	1	36 SF	1958	F	C
312-3	Storage Shed	Bldg	D10	1	36 SF	1958	F	C
312-4	Expl Storage Magazine	Strc	D10	1	49 SF	1958	F	C
312-6	Explosives Storage Magazine	Strc	D10	1	49 SF	0	G	N
312-7	Heating Fuel Storage Tank	Strc	D10	0	6000 GA	1991	G	N
312-A	Compressor Bldg	Bldg	D10	1	154 SF	1948	G	C
312-B	Boiler House	Bldg	D10	1	360 SF	1952	G	C
313	Health Physics Building	Bldg	D10	1	480 SF	1948	G	C
313-1	Storage	Bldg	D10	1	35 SF	1948	G	C
313-A	Boiler House	Bldg	D10	1	77 SF	1955	G	C
314	Bombproof: Warhd Concept Lab	Bldg	D10	1	1188 SF	1948	G	C
314-2	Storage Trailer	Bldg	B9	1	360 SF	1968	G	C
314-3	Magazine	Strc	D10	1	49 SF	1989	G	N
315	Warheads Concept Opns	Bldg	D10	1	1058 SF	1948	G	C
315-1	Expl Temp Control Magazine	Strc	D10	0	48 SF	1963	G	C
315-A	Boiler House	Bldg	D10	1	77 SF	1948	G	C
316	Charge Assembly Bldg	Bldg	D10	1	588 SF	1948	G	C
317	Bombproof: Fragmt Impact Lab	Bldg	D10	1	1538 SF	1948	F	C
317-1	Component Fabrication Stg	Bldg	D10	1	256 SF	1948	G	C

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Table 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
318	Expl Pressing/Maching Bldg	Bldg	D10	1	3657 SF	1948	G	C
318-1	Expl Temp Controlled Magazi	Strc	D10	1	56 SF	1958	G	C
319	Detonation Research Opns	Bldg	D9	1	1008 SF	1948	G	C
319-1	Storage Shed	Bldg	D9	1	96 SF	1950	G	C
319-2	Warhead Concept Opns Trlr	Bldg	D9	1	600 SF	1983	F	N
319-3	Detonation Research Opns Trlr	Bldg	D9	1	600 SF	1983	G	N
319-A	Boiler House	Bldg	D9	1	77 SF	1948	G	C
320	40FT Guided Drop Tower	Strc	C10	0	1 EA	1948	G	C
321	Fracture Studies Laboratory	Bldg	D9	1	766 SF	1949	G	C
321-1	Test Equip Storage 324	Bldg	D9	1	64 SF	1950	G	C
322	Detonation Physics Opns	Bldg	D9	1	1656 SF	1990	G	N
323	Explosives/Warheads Opns	Bldg	B10	3	13500 SF	1951	G	C
323-2	Heating Fuel Storage Tank	Strc	B10	0	6000 GA	1993	G	N
324	Bombproof Detonation Physics	Bldg	D9	1	1089 SF	1950	F	C
324-1	Storage Shed (503)	Bldg	D9	1	104 SF	1948	F	C
324-A	Boiler House	Bldg	D9	1	77 SF	1950	G	C
325	Bombproof: Sensitivities St	Bldg	C10	1	1501 SF	1951	F	C
326	Charge Assembly Bldg	Bldg	C9	1	840 SF	1984	G	N
327	Bombproof: Initiation Rsch	Bldg	C10	1	5203 SF	1984	G	N
328	Ignition Research lab	Bldg	C10	1	3343 SF	1951	G	C
328-3	Service Magazine	Strc	C10	1	16 SF	1951	G	C
328-4	Staging/Shop/Storage Bldg	Bldg	C10	1	560 SF	1983	G	N
328-5	Retaining Wall	Strc	C10	0	50 LF	1983	G	N
328-6	Field Test Staging Pad	Strc	C10	0	343 SY	1983	G	N
329	Change House	Bldg	D10	1	847 SF	1982	G	N
330	40FT Free Fall Drop Tower	Strc	C10	1	1 EA	1945	G	C
331	Bombproof booster/Warhd Ini	Strc	C9	0	1 EA	1950	F (Altered)	C
332	Bombproof: Control Bldg	Bldg	C9	1	176 SF	1956	G	C
332-1	Chemical Chamber-332	Bldg	C9	1	36 SF	1950	G	C
333	Propellant Research Bldg	Bldg	C9	1	441 SF	1950	G	C
333-1	Office Annex to Bldg 333	Bldg	B11	1	240 SF	1968	G	N
334	Vacuum Tank Facility	Bldg	C9	1	772 SF	1950	F (Altered)	C
335	Expl Process Control Bldg	Bldg	D9	1	144 SF	1950	G	C
335-1	Explosive Processing Bays	Bldg	D9	1	556 SF	1950	F (Altered)	N
335-2	Explosive Processing Bays	Bldg	D9	1	352 SF	1950	F (Altered)	N
335-3	Inert Storage	Bldg	D9	1	110 SF	1950	G	C

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Ta. 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
335-4	Heating Fuel Storage Tank	Strc	D9	0	550 GA	1993	G	N
335-A	Boiler House-335-1-2	Bldg	D9	1	77 SF	1950	G	C
336	Explosion Damage	Bldg	C10	2	7000 SF	1949	G	C
336-1	Staging Bldg	Bldg	C10	1	560 SF	1966	G	C
336-3	Heating Fuel Storage Tank	Strc	C10	0	1500 GA	1993	G	N
338	Explosive Magazine	Strc	D9	0	226 SF	1950	G	C
339	Detonator/Lead Test FAC	Bldg	B10	1	1246 SF	1950	G	C
339-1	Bottle Storage Shelter-339	Bldg	B10	1	38 SF	1962	G	C
339-2	Bottle Gas Storage	Bldg	B10	1	36 SF	1950	G	C
340	HI Press Physics & Spec Lab	Bldg	B10	1	952 SF	1953	G	C
340-1	Storage Shed	Bldg	B10	1	80 SF	1964	G	C
341	Fire Ptctn Pumping Station	Util	C10	0	1000 GM	1984	G	N
342	Fire Water Storage Tank	Util	C10	0	10000 GA	1984	G	N
343	Chemical Laboratory	Bldg	B10	1	3600 SF	1953	G	C
344	Physical Properties Lab	Bldg	B10	1	861 SF	1953	G	C
345	Surveillance Studies Lab	Bldg	B10	1	646 SF	1953	G	C
348	Sensitivities Study Opns	Bldg	C10	1	1027 SF	1948	G	C
348-1	Shop	Bldg	C10	1	96 SF	1950	F	C
348-2	Sensitivities Study Opn Trlr	Bldg	C10	1	600 SF	C.1970	F	N
349	Explosives Applications Opns	Bldg	C10	1	1656 SF	1991	G	N
351	Explosives Magazine	Strc	B9	1	266 SF	1951	G	C
352	Explosives Magazine	Strc	B9	1	266 SF	1951	G	C
353	Explosives Magazine	Strc	B9	1	266 SF	1951	G	C
354	Explosives Magazine	Strc	C9	1	266 SF	1951	D	N
356	Explosives Magazine	Strc	B9	1	108 SF	1945	G	C
357	Explosives Magazine	Strc	B9	1	192 SF	1945	G	C
358	Explosives Magazine	Strc	B9	1	108 SF	1945	G	C
359	Explosives Magazine	Strc	C9	1	108 SF	1945	G	C
360	Explosives Magazine	Strc	C9	1	192 SF	1945	G	C
362	Explosives Magazine	Strc	C9	0	186 SF	1953	G	C
363	Fuse Evaluation FAC	Bldg	C10	1	3504 SF	1952	G	C
363-1	Heating Fuel Storage Tank	Strc	D10	0	550 GA	1993	G	N
364	Explosives Magazine	Strc	B10	1	187 SF	1949	G	C
365	Bldg 365 Transformer Station	Util	B10	0	100 KV	1952	G	C
366	Explosives Magazine	Strc	B10	1	493 SF	1954	G	C
367	Well House	Util	C10	1	22 KG	1945	G	C

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Ta. 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
368	Boiler House	Bldg	B10	1	780 SF	1953	G	C
368-2	Heating Fuel Storage Tank	Strc	B10	0	10000 GA	1991	G	N
369	Temp & Humidity Test Fac	Strc	C10	0	364 SF	1963	F (Altered)	C
369-1	Hi-Cap Surveil Barricade	Strc	C10	0	1 EA	1951	G	C
369-4	Hi-Cap Surveil Barricade	Strc	C11	0	0 SF	1951	G	C
371	Gun Turret Expl Firing Fac	Strc	C10	0	1 EA	1951	G	C
372	Mechanical Output Test Bldg	Bldg	C9	1	224 SF	1955	G	C
373	Control House for 372	Bldg	C9	1	150 SF	1955	G	C
375	Altitude Blast Chamber	Bldg	C10	1	432 SF	1959	G	C
375-1	Storage Shed	Bldg	C10	1	63 SF	1975	G	N
376	Air Blast Field Lab	Bldg	C10	1	1656 SF	1991	G	N
379	V T Fuze Instrumentation Lab	Bldg	B11	1	192 SF	1959	G	C
379-1	Radar Cross Section Range	Strc	B11	0	1 EA	1974	G	N
380	EMR Test Equipment Building	Bldg	B11	1	375 SF	1988	G	N
381	Transformer Station for 301	Util	C10	0	300 KV	1946	G	C
382	Target Preparation lab	Strc	B10	0	0 EA	1960	G	C
383	Conical Shock Tube	Strc	C10	0	1 EA	1961	G	C
385	Storage Building	Bldg	B10	1	180 SF	1945	G	C
386	Charge Assy & Condtng Bldg	Bldg	C10	1	312 SF	1962	G	C
387	Hi/Grav/Tk Centrifuge Pit	Strc	C11	0	225 LF	1963	G	C
387-1	Battery Storage	Bldg	C11	1	56 SF	1963	G	C
388	Hi/Grav/Tk Centri Control	Strc	C11	0	1 EA	1963	G	C
389	Hi/Grav/Tk Centri Stor Bldg	Bldg	C11	1	640 SF	1963	G	C
390	Explosive Conditioning	Strc	B10	0	1 EA	1948	G	C
391	Storage Bldg	Bldg	C10	1	192 SF	1964	G	C
392	Firing Shield	Strc	B10	0	1 EA	1948	G	C
395	Compressor Shed	Bldg	D9	1	143 SF	1992	G	N
401	1000Ft Hyperballistics Rang	Strc	B6	0	1EA	1958	G	C
402	Supersonic Wind Tunnel Bldg	Bldg	B6	2	50715 SF	1947	G	C
403	Conditionuous Wind Tunnel Bldg	Bldg	B6	2	20670 SF	1950	G	C
404	Substation Building	Util	B6	1	1204 SF	1949	G	C
405	Combat Sys Integratn Lab	Bldg	B6	2	58186 SF	1948	G	C
406	Hypersonic Tunnel Building	Bldg	B6	2	18836 SF	1957	G	C
407	HP Vertical Bottle Pit	Bldg	B6	0	1 EA	1955	G	C
408	HP Horizontal Bottle Pit	Strc	B6	0	1 EA	1955	G	C
409	Undersea Weapons Tank	Strc	B7	0	1 EA	1956	G	C

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Table 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
410	Tank Filtration Plant	Bldg	B7	1	624 SF	1956	G	C
411	ACFT/Flight RD&T Building	Bldg	B6	2	12490 SF	1958	G	C
411-1	Transformer Station for 411	Util	B6	0	450 KV	1970	G	C
413	Propane Storage Tank	Strc	B7	0	1 EA	1958	G	C
414	Propane Vaporizer Facility	Bldg	B6	1	225 SF	1958	G	C
416	Bldg 406 Transformer Station	Util	B6	0	4500 KV	1957	G	C
418	Air Cond Plant for 402 & 40	Util	B6	0	700 TN	1946	G	C
419	Transformer Station for 402	Util	B6	0	3500 KV	1949	G	C
420	Transformer Station for 403	Util	B6	0	9365 KV	1950	G	C
421	Transformer Sta for 409	Util	B7	0	225 KV	1956	G	C
422	Dahlgren Rd Bridge Steel	Strc	B7	0	158 SY	1916	G	C
423	Bridge Wooden	Strc	A7	0	53 SY	1945	D	N
424	Radar Engineering Branch	Bldg	B6	1	2640 SF	1961	G	C
425	Substation	Util	B6	0	1500 KV	1949	G	C
426	Transformer Sta for 424	Util	B6	0	3023 KV	1961	G	C
427	Hydroballistics Tank	Strc	B7	8	81270 SF	1966	G	C
428	Hydroballistics Water Sto T	Strc	B7	0	1750000 GA	1966	G	C
428-1	Pumping Station	Util	B7	1	144 SF	1982	G	N
429	Sup Nit Fac Btl Pit	Strc	B6	0	1 EA	1965	G	C
430	Hypervelocity Wind Tunnel	Bldg	B7	2	26308 SF	1972	G	C
430-1	Retaining Wall	Strc	B7	0	47 LF	1977	G	N
431	Tunnel 9 Vacuum Sphere	Strc	B7	0	1 EA	1970	G	C
432	13,200 GA LN2 Tank	Util	B6	0	1 EA	1975	G	N
433	Shelter Grass Cutting Contr	Bldg	B6	1	525 SF	1972	G	C
435	Substation Building	Bldg	B6	1	336 SF	1970	G	C
436	Lubricant Storage	Strc	B6	0	2711 GA	1981	G	N
437	Stairway to Sewer Outfall	Strc	B7	0	165 SY	1977	G	N
501	Hazardous Mat Disposal Stor	Strc	B11	1	322 SY	1951	F	C
506	Battery Storage	Bldg	C11	1	150 SF	1951	G	C
508	Waste Chemical Storage	Strc	B11	1	300 SY	1981	G	N
509	Chemical Storage Facillity	Strc	B11	1	100 SY	1991	G	N
510	Neutron Calibration Facility	Strc	A10	1	1960 SF	1989	G	N
609	Retaining Wall	Strc	D8	0	69 SL	1982	G	N
610	Synthesis/Formulation Opns	Bldg	C8	1	1656 SF	1990	G	N
611	Shock Testing Facility Bldg	Bldg	D8	1	4713 SF	1963	G	C
611-2	Heating Fuel Storage Tank	Strc	D8	0	550 GA	1993	G	N

M.33-25

T. .e 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
613	Hi Energy Matl Process Devlp	Bldg	C8	1	3450 SF	1965	G	C
613-1	Fuel Storage for 613	Bldg	C8	1	192 SF	1966	G	C
613-2	Oxidizer Storage for 613	Bldg	C8	1	192 SF	1966	G	C
613-3	Solvent Storage for 613	Bldg	C8	1	70 SF	1966	G	C
613-4	Solvent Cleaning Tank - 613	Bldg	C8	1	70 SF	1966	G	C
613-5	Curing Test Equip for 613	Bldg	C8	1	192 SF	1966	G	C
613-6	Shipping Material Storage	Bldg	C8	1	40 SF	1965	G	C
613-7	Heating Fuel Storage Tank	Strc	C8	0	2500 GA	1991	G	N
613-8	Inert Storage Bldg	Bldg	C8	1	560 SF	1984	G	N
614	Transformer Sta for 613	Util	C8	0	150 KV	1965	G	C
615	Hazardous Machng/Blending	Strc	B8	0	240 SF	1966	F	C
617	Shock Tester (G Dept Equip)	Bldg	D8	0	1 EA	1960	G	C
618	Shock Simulator (G Group)	Bldg	D8	0	1 EA	1960	G	C
619	Inert Storage	Bldg	B9	1	672 SF	1973	G	C
619-1	Fuels Storage Bldg	Bldg	B9	1	144 SF	1973	G	C
619-2	Oxidizer Storage Bldg	Bldg	B9	1	144 SF	1973	G	C
620	Explosives Casting Bldg	Bldg	B9	1	3729 SF	1973	G	C
620-1	Transformer For Bldg 620	Util	B9	0	225 KV	1973	G	C
620-3	Heating Fuel Storgae Tank	Strc	B9	0	1000 GA	1994	G	N
630	Small Scale Expl Test Area	Strc	B8	0	1 EA	1955	F	C
700	PCB Waste Storage	Strc	C11	1	800 SY	1984	G	N
701	PCB Xfmr Storage Pad	Bldg	C11	0	89 SF	1984	G	N
702	Waste Oil Storage Tank	Strc	C11	0	4000 GA	1989	G	N
705	Sentry House	Bldg	B11	1	24 SF	1990	G	N
1327	Transformer Station for 327	Util		0	500 KV	1984	G	N
380T	Temp Test Site Trailer (H)	Bldg	B11	1	640 SF	1988	G	N
380T-1	Temp Test Site Trailer (H)	Bldg	B11	1	600 SF	1988	G	N
70CL-1	Chemical Storage Locker	Bldg	B3	1	207 SF	1993	G	N
70CL-2	Chemical Storage Locker	Bldg	B3	1	207 SF	1993	G	N
310CL-1	Chemical Storage Locker B310	Bldg	C10	1	207 SF	1991	G	N
310CL-2	Chemical Storage Locker B310	Bldg	C10	1	207 SF	1991	G	N
343CL-1	Chemical Storage Locker B343	Bldg	B10	1	207 SF	1991	G	N
345CL-1	Chemical Storage Locker B345	Bldg	B10	1	144 SF	1993	G	N
383CL-1	Chemical Storage Locker	Bldg	C11	1	144 SF	1994	G	N
A	Married Officers Qtrs	Bldg	E5	2	3738 SF	1946	G	C
B	Married Officers Qtrs	Bldg	E5	2	3738 SF	1946	G	C

M:33-25

...e 7.1
List of Facilities at NSWCDD - White Oak
Property Records Summary (Adapted)

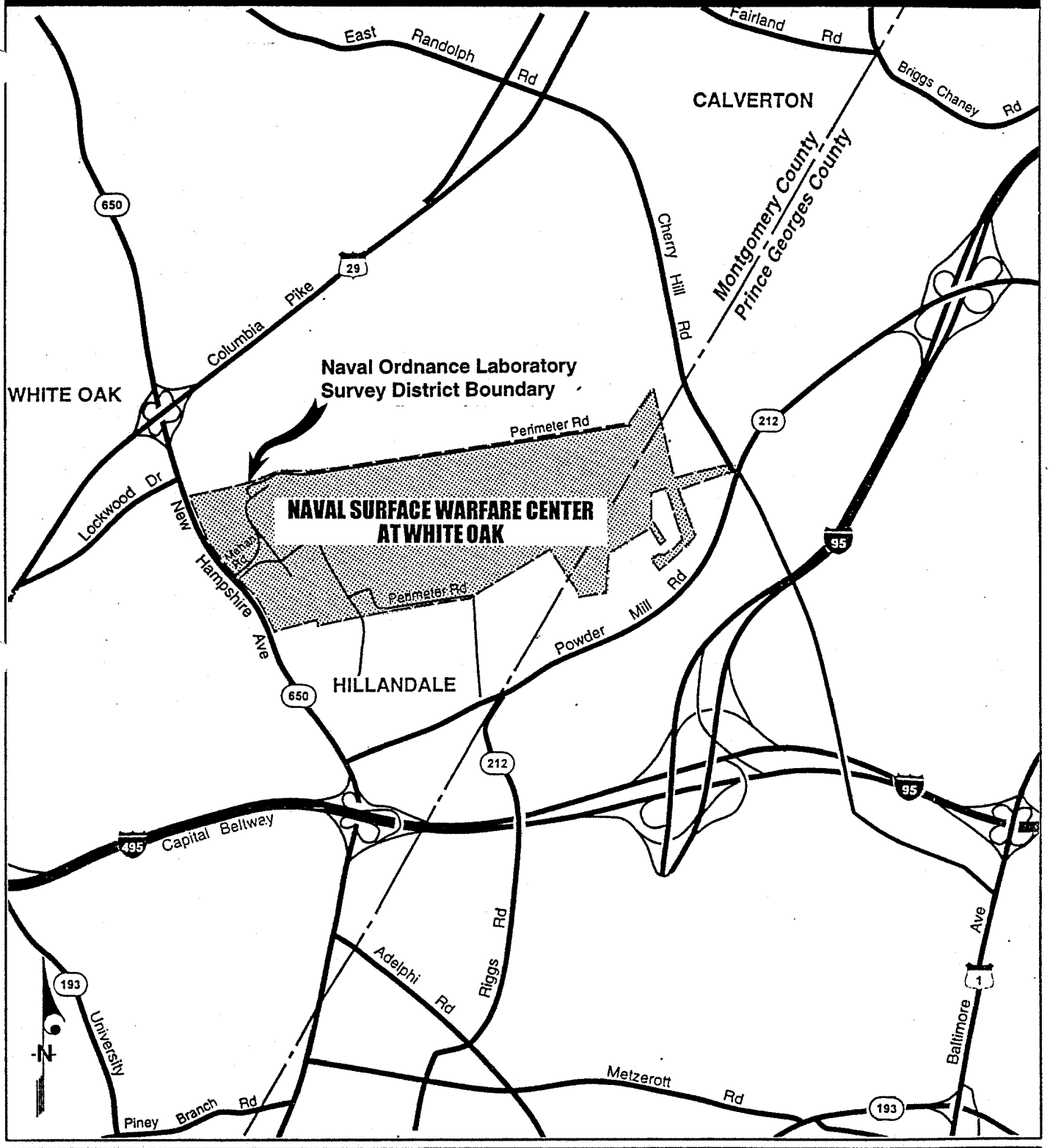
Facility Number	Facility Name	Facility Type	Map Grid (Fig. 7.3)	Stories	Area Area (sq. ft.)	Year Built	Condition/ Integrity	Recommendation Contrib./Non-Contrib.
C	Married Officers Qtrs	Bldg	B2	2	3729 SF	1944	F (Altered)	N
M	Married Officers Qtrs	Bldg	C4	2	3392 SF	1932	F (Altered)	N
T01	Storage	Bldg	C5	1	960 SF	1945	G	C
T05	Health Physics	Bldg	C5	1	1286 SF	1945	F (Altered)	N
T14	Salvage Shed	Bldg	D5	1	1870 SF	1946	G	C
T24	Employees Recreation Bldg	Bldg	C2	1	2064 SF	1945	F (Altered)	C
T26	Storage	Bldg	B10	1	525 SF	1947	G	C
T27	Storage	Bldg	B10	1	525 SF	1947	G	C
T28	XPL Preparation/Packing	Bldg	B9	0	77 SF	1946	G	C
T29	Neutron Calibration Facility	Bldg	A10	1	1176 SF	1947	F	C
T30	Storage Building	Bldg	B3	1	8100 SF	1947	G	C
T32	Pest Control Building	Bldg	B5	1	216 SF	1948	G	C
T35	Temporary Loading	Bldg	D10	1	840 SF	1949	G	C
T48	Welding Shed	Bldg	C3	1	590 SF	1960	G	C
	Golf Course	Landscape	Several	0		1952	G (Altered)	C

no photo

Totals:		
	Contributing	260
	Non-contributing	112
	Total	372

M:33-25

M:33-25



Scale

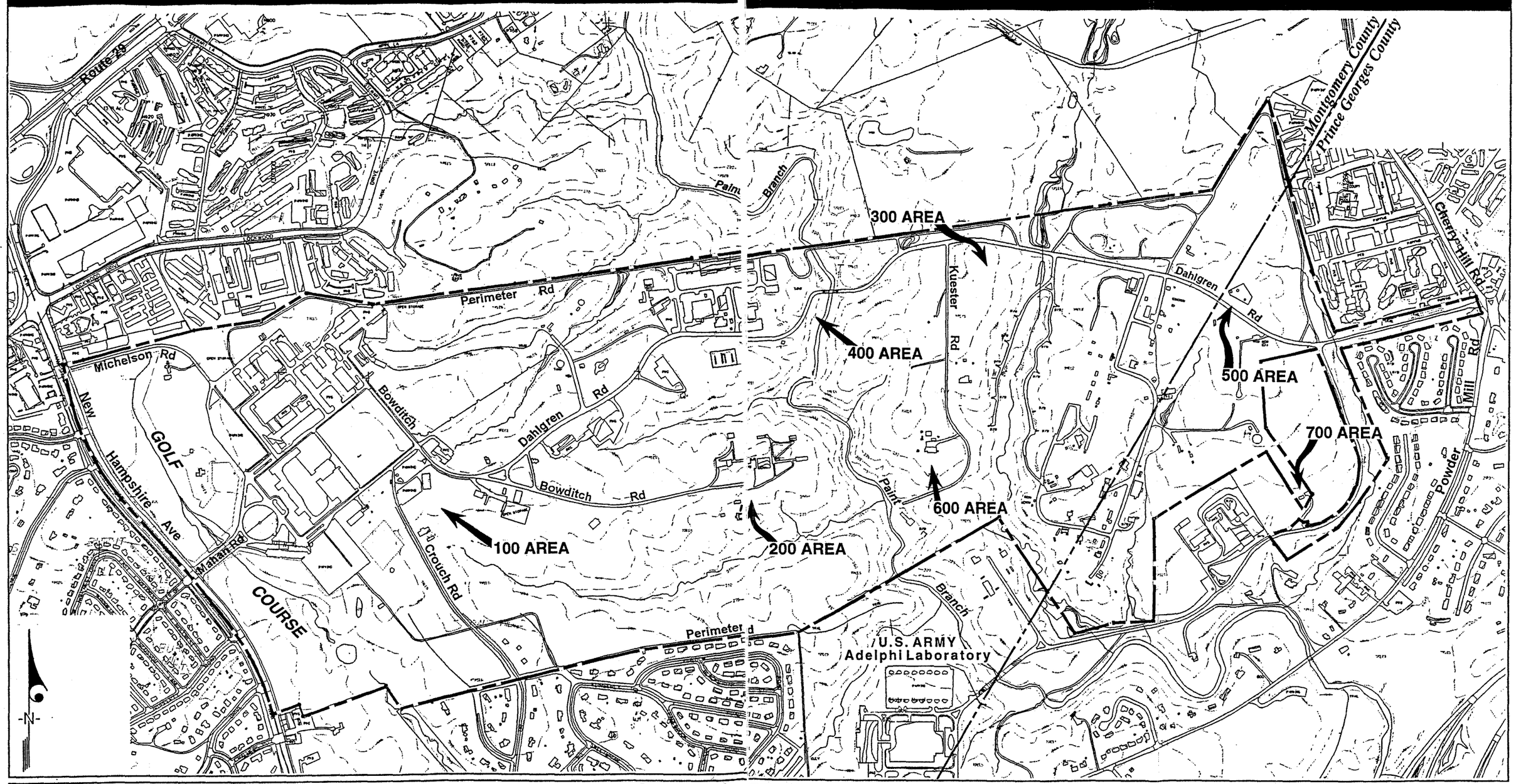
0 2000 4000 8000 feet

0 1 2 kilometer

Location Map

Figure 7.1

M:33-25



Scale
0 400 800 1600 Feet
0 240 480 meters

LEGEND

Site Boundary
(Naval Ordnance Laboratory
Survey District Boundary)

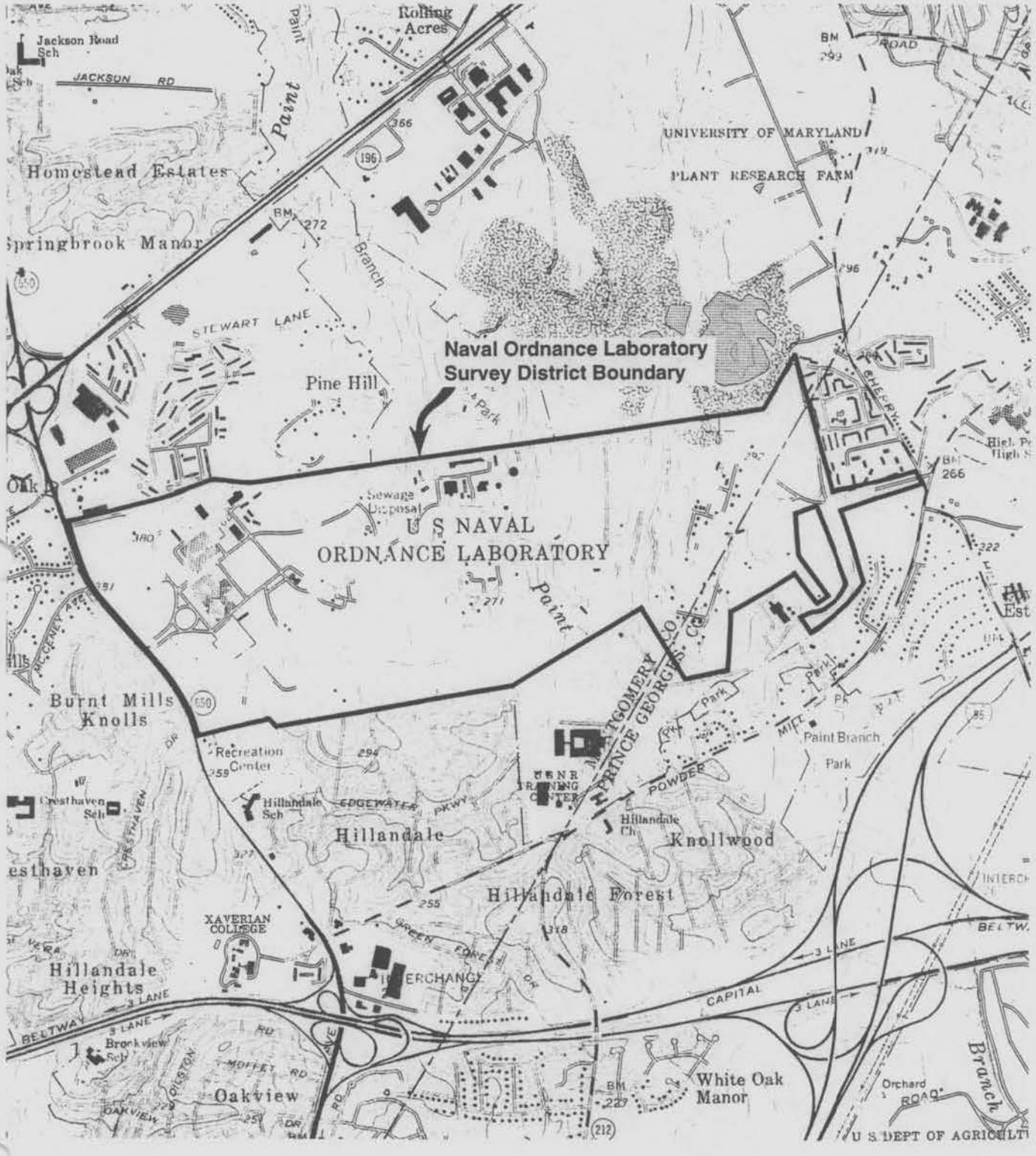
Source: Base map data supplied by
Maryland National Capital Park and Planning Commission, 1995.

General Resource Map

Figure 7.2

10. Geographical Data (SEE VERTICAL FILE FOR ADDITIONAL MAPS)

Naval Ordnance Laboratory Survey District Boundary



NSWC

M:33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD

PHOTOGRAPHER CHRIS MARTIN

MARCH 1996

LOCATION OF NEGATIVES GREENHORNE & O'MARA

MAIN ENTRANCE VIEW, LOOKING NE

1/40

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

MAIN COMPLEX (BUILDINGS 1-3) INCLUDING CIRCULAR DRIVEWAY, LOOKING NE

2/40

M 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORE & O'MARA INC

MAIN COMPLEX (BUILDINGS 1-3), LOOKING N

3/40

M: 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT

MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

PHOTO: CHRIS MARTIN

MARCH 1996

NEGATIVE LOCATION: GREENHORNE & O'MARA, INC

MAIN COMPLEX (BUILDINGS 1-3), looking E

4/40

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

DETAIL, MAIN COMPLEX, BUILDING 1, LOOKING N
5/40

25

M: 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

BUILDING 25 (TECHNICAL - PUBLIC WORKS SHOP), LOOKING NE

6/40

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

BUILDING 90 (EXPLOSIVE DAMAGE BRANCH OPERATIONS), LOOKING NE

7/40

M: 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT

MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD

PHOTOGRAPHER: CHRIS MARTIN

MARCH 1996

LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

QUARTERS B AND BUILDING 42 (GARAGE FOR QUARTERS A AND B), LOOKING N

8/40

M-33-25

NAVAL ORDNANCE HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC

GOLF COURSE, LOOKING W

9/40

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

GOLF COURSE, LOOKING S

10/40

M:33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC

QUARTERS C, LOOKING NE (NON-CONTRIBUTING)
11/40

73
CHEVROLET

MI 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

BUILDINGS 72 (LUMBER STORAGE) AND 79 (GAS CYLINDER STORAGE),
LEFT TO RIGHT, LOOKING NW (79 IS NON-CONTRIBUTING)
12/40

205

M: 33-25

NAVAL ORDNANCE LABORATORY, HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

BUILDING 205 (LARGE PROJECTS LABORATORY), BUILDING 206 (MODEL LABORATORY), RIGHT TO LEFT, LOOKING NE

13/40

M:33-25

NAVAL ORDNANCE [illegible] HISTORIC DISTRICT
MONTGOMERY + PRINCE GEORGES COUNTIES, MD
PHOTO: CHRIS [illegible]
MARCH 1992
LOCATION OF [illegible] & [illegible], INC.

BUILDING 204 (LONG ESCO LABORATORY), detail of wall construction, looking E

14/20

M33-25

NAVAL ORDINANCE LABORATORY HISTORIC DISTRICT

MONTGOMERY COUNTY AND PRINCE GEORGES COUNTY, MD

Photographer CHRIS MARTIN

MARCH, 1996

LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC.

BUILDING 409 (UNDERSEA WEAPONS TANK), looking SW

15/40

417
416

HB3-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTY, MD
PHOTOGRAPHER CHRIS MARTIN

MARCH 1996

LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC.
BUILDING 406 (HYPERSONIC TUNNEL BUILDING), LOOKING NW

46/40

M33-25
NAVAL ORDINANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTY, MD
PHOTOGRAPHER CHRIS MARTIN

MARCH 1996
LOCATION OF NEGATIVES GREENHORNE + O'MARA, INC.
BUILDING 427 (HYDROBALISTICS TANK) LOOKING NE

17/40

M 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT

MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD

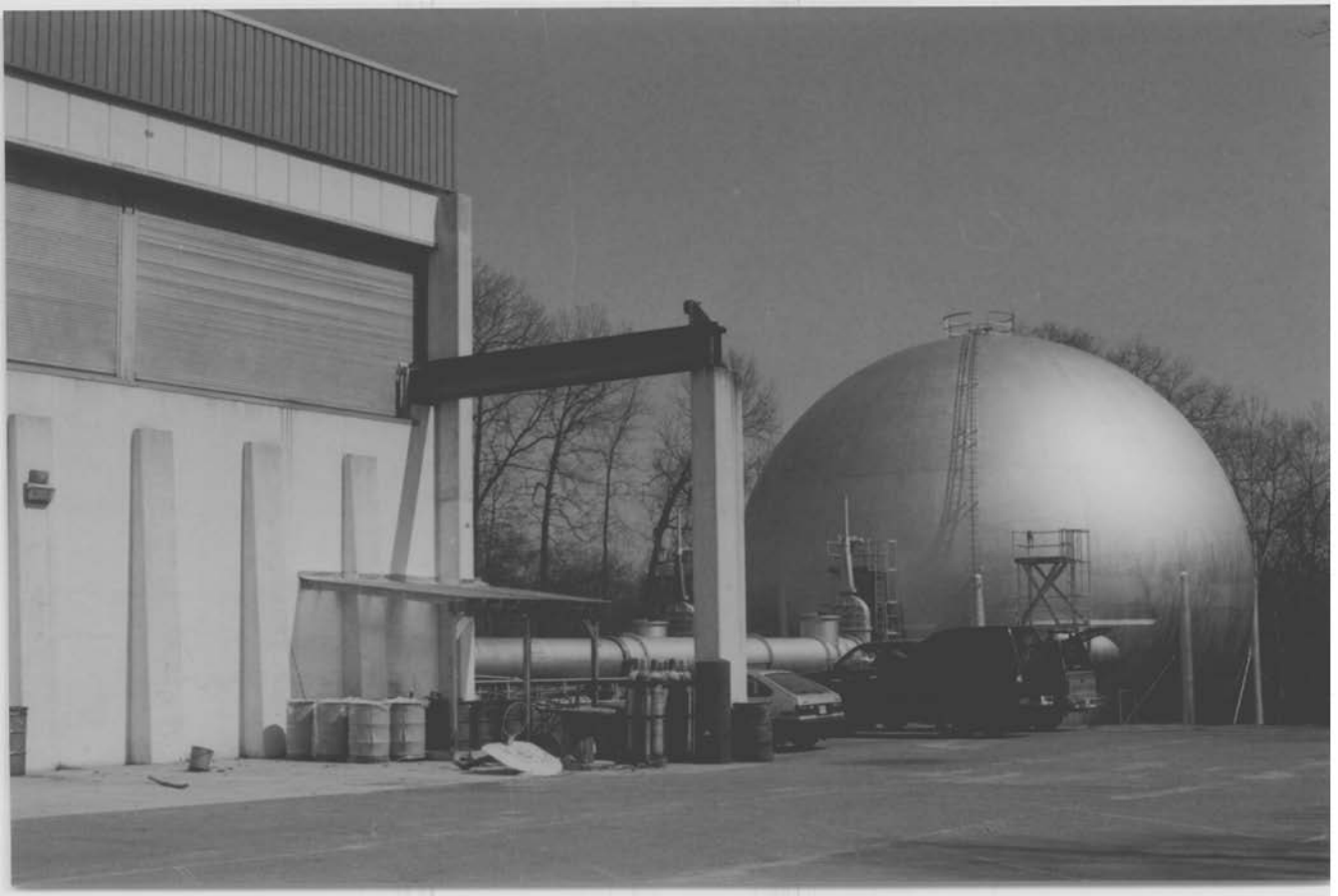
PHOTOGRAPHER CHRIS MARTIN

MARCH 1996

LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

BUILDING 428 (HYDROBALLISTICS WATER STORAGE TANK), LOOKING NW

18/40



M 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVE GREENHORNE & O'MARA INC

BUILDING 430 (HYPERVELOCITY WIND TUNNEL) AND STRUCTURE 431
(TUNNEL 9 VACUUM SPHERE), LEFT TO RIGHT, LOOKING SW
19/40

HYPERVELOCITY WIND TUNNEL
BUILDING 430

M 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT

MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD

PHOTOGRAPHER CHRIS MARTIN

MARCH 1996

LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

BUILDING 430 (HYPERVELOCITY WIND TUNNEL), AND STRUCTURE 431 (TUNNEL 9 VACUUM SPHERE), RIGHT TO LEFT, LOOKING SE

20/40

422

M 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

STRUCTURE 422 (DAHLGREN ROAD BRIDGE), LOOKING NE
21/40

STOP

M: 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVE: GREENHORNE & O'MARA, INC

STRUCTURE 423 (WOODEN BRIDGE), LOOKING NE
22/40

M 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

BUILDING 611 (SHOCK TESTING FACILITY) / 618 (SHOCK SIMULATOR), LOOKING NE
23/40

NOL 26 INCH AIR GUN
DESIGNED NOL 1958
FIRST FIRING AUGUST 1961
CONSTRUCTED 1958 NWP
BUILDING COMPLETED 1963
BORE 26 INCH
LENGTH 90 FEET
TOTAL WEIGHT 212 TONS
BREECH PRESSURE 10,000 PSI
ACCELERATING FORCE 5,300,000 LB
MUZZLE PRESSURE 2,000 PSI
PRIMARY PURPOSE:
CLOSED MUZZLE AIR GUN
OPEN MUZZLE AIR LAUNCHER

M:33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

BUILDINGS 611/618, INTERIOR SHOWING 26-INCH-BORE-GUN, LOOKING N
24/40

352

M:33-25

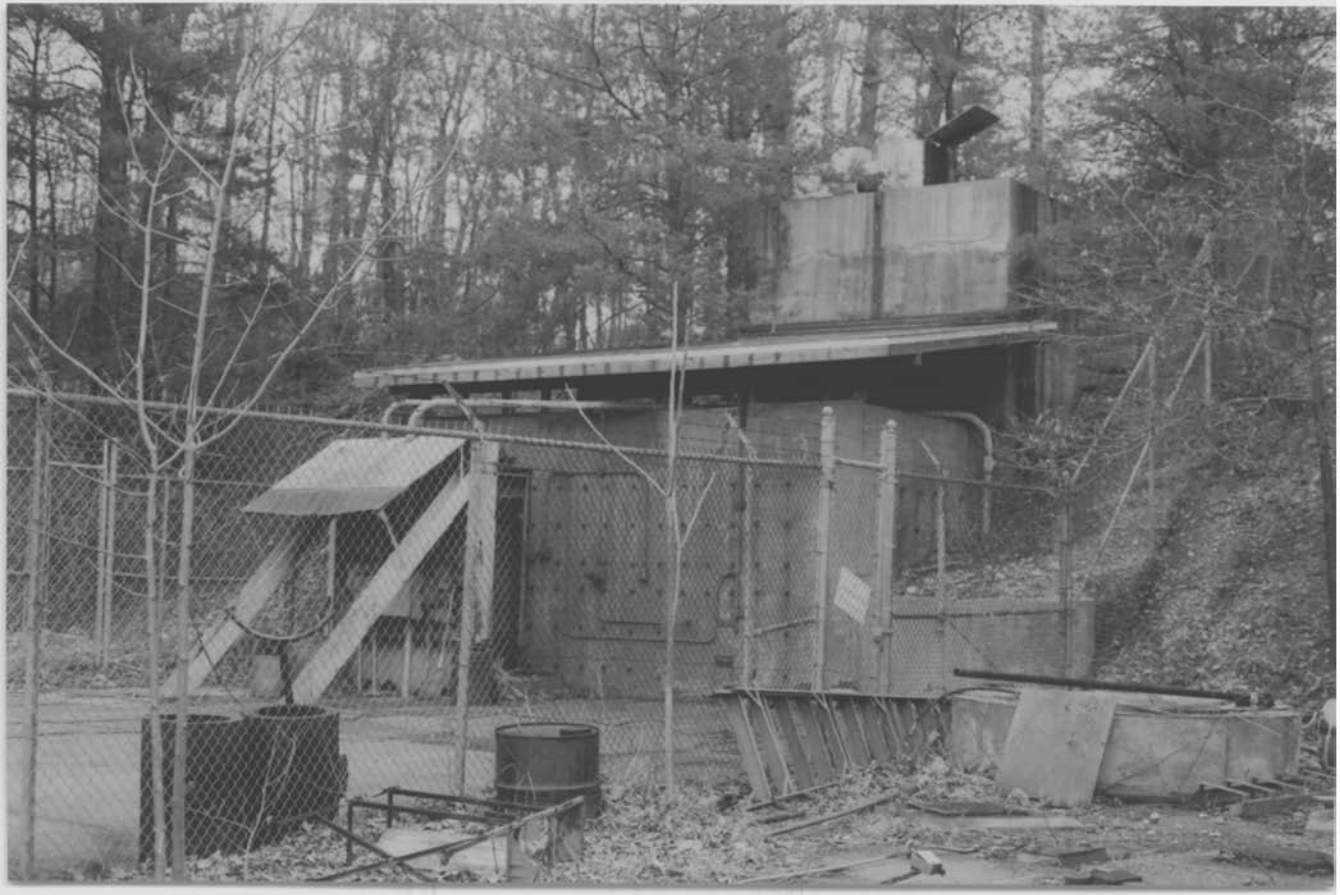
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

STRUCTURE 352 (EXPLOSIVES MAGAZINE), LOOKING SE
25/40

362
1

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC
MARCH 1996

STRUCTURE 362 (EXPLOSIVES MAGAZINE), LOOKING NE
26/40



M: 33-25
NAVAL ORDNANCE HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

BUILDING 331 (BOMBPROOF), LOOKING NE
27/40

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

BUILDING 316 (CHARGE ASSEMBLY BUILDING), LOOKING SE
28/40

M:33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

STRUCTURES 387/369-4 (HIGH-GRAVITY CENTRIFUGE PIT/HI-CAP SURVEILLANCE BARRICADE), LEFT TO RIGHT, LOOKING W

29/40

310A

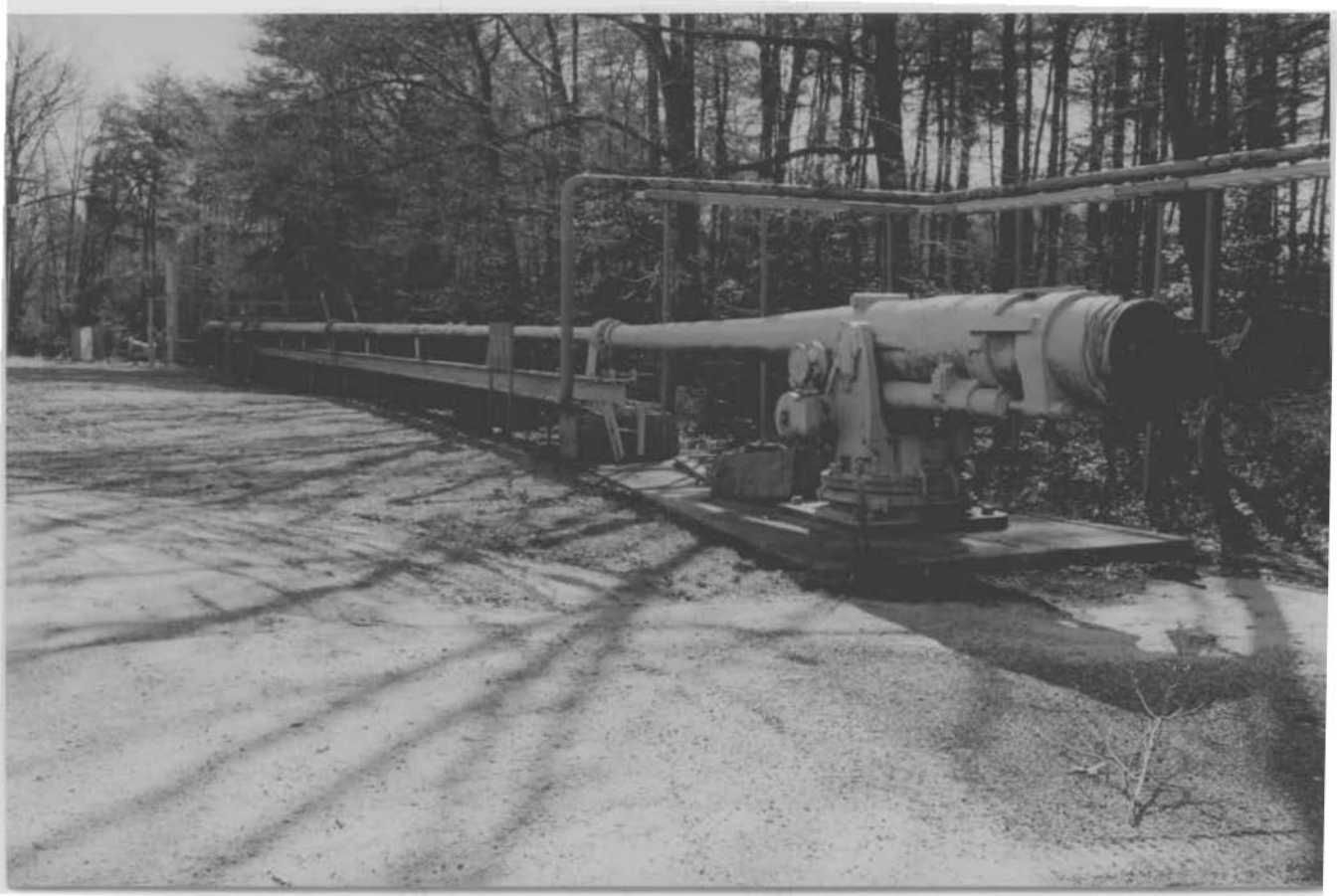
M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC

BUILDING 310A (CHEMICAL LABORATORY), LOOKING S
30/40

M 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

HISTORIC PHOTO OF 310A (CHEMICAL LABORATORY), CIRCA 1973, LOOKING NE
31/40



M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC

STRUCTURE 323 (CONICAL SHOCK TUBE), LOOKING E
32/40

302

M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA, INC

BUILDING 302 (STORAGE BUILDING), LOOKING SW
33/40

508
501

M 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

BUILDING 508 (WASTE CHEMICAL STORAGE), LOOKING N (NON-CONTRIBUTING)
34/40

702

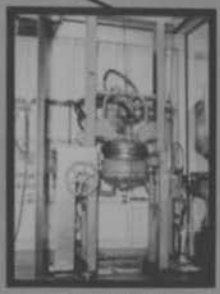
M: 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER: CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES: GREENHORNE & O'MARA, INC

BUILDING 700 (PCB WASTE STORAGE), BUILDING 702 (WASTE OIL STORAGE TANK), LOOKING SW (BOTH NON-CONTRIBUTING)
35/40

EXPLOSIVE PROCESSING
MIXING AND CASTING

BLDG. 620

20 GAL. KETTLE

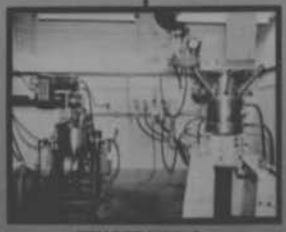


2 GAL. KETTLE

REMOTE PANEL

TEMP CONTROL

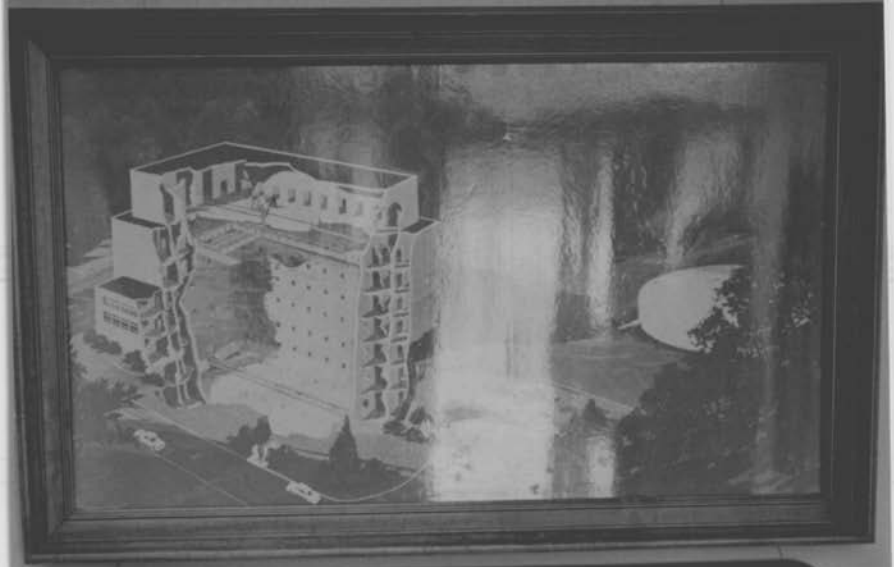
STEAM TABLE



REMOTE MIXING
2 GAL. ROSS MIXER (ON RIGHT)
5 GAL. KETTLE

M 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

EXHIBIT PANEL: "EXPLOSIVE PROCESSING, MIXING AND CASTING"
36/40



HYDROBALLISTIC FACILITY

PHYSICAL DESCRIPTION

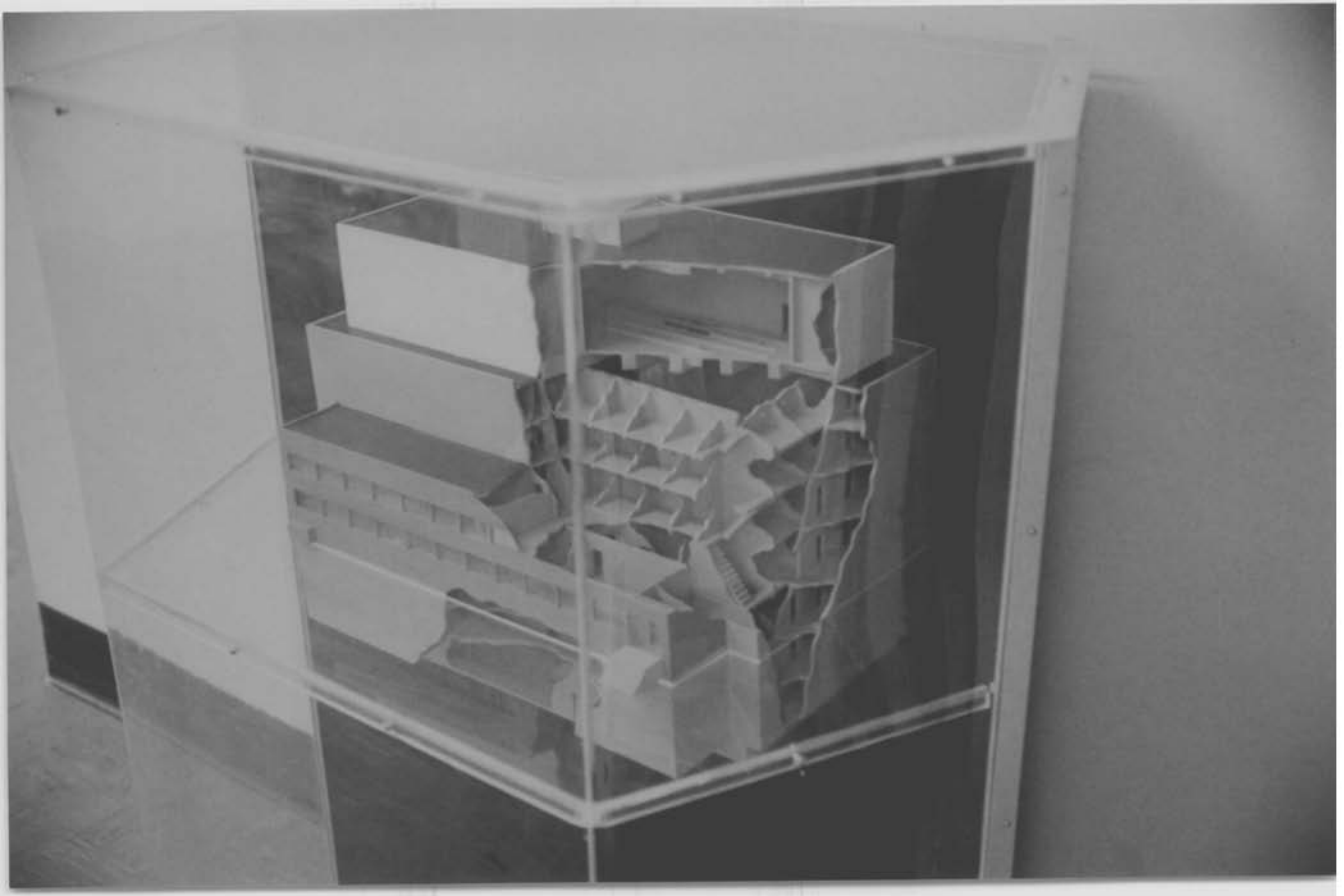
- 100 FEET LONG
- 35 FEET WIDE
- 75 FEET DEEP
- STAINLESS STEEL LINED
- 1.75 MILLION GALLONS OF WATER
- 60 FEET WATER DEPTH (VAR.)
- VACUUM CAPABILITY

RESEARCH AND DEVELOPMENT TESTING

- WATER ENTRY
- WATER EXIT
- UNDERWATER LAUNCHING
- TRAJECTORIES
- BUOYANT RISE
- SINK RATE

M 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

EXHIBIT PANEL: "HYDROBALLISTICS FACILITY" (427, HYDROBALLISTICS TANK)
37/40



M 33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN

MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

SCALE MODEL: BUILDING 427 (HYDROBALLISTICS TANK)

38/40

WATER ENTRY MODEL
Torpedo Impact Test

M:33-25

NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD
PHOTO: CHRIS MARTIN
MARCH 1996
NEG. LOCATION: GREENHORNE & O'MARA, INC.

EXHIBIT PANEL: "WATER ENTRY MODEL"
39/40

NSWC
HYPERVELOCITY
WIND TUNNEL
NO. 9
is the nation's primary high Mach number, high Reynolds number facility for aerodynamic testing of strategic weapons and hypersonic flight vehicles. It is able to accomodate full scale re-entry bodies, advanced interceptors and scaled aerospace plane models.
Mach numbers: 8, 10, 14, (18)
Attitude simulation: sea level to 180 kft
Reynolds number: to 50 X 10⁶/ft
Long run times: 0.25 to 10 sec
Large size: 5 ft diameter test section

M 33-25
NAVAL ORDNANCE LABORATORY HISTORIC DISTRICT
MONTGOMERY COUNTY AND PRINCE GEORGE'S COUNTIES, MD
PHOTOGRAPHER CHRIS MARTIN
MARCH 1996
LOCATION OF NEGATIVES GREENHORNE & O'MARA INC

EXHIBIT PANEL "HYPERVELOCITY WIND TUNNEL NO. 9"
40/40

MD 33-35 QUARTERS M
NAVAL ORDNANCE LABORATORY
MONTGOMERY CO., MD
DAVID L. BERG
1/22/97
MD SHPO
QUARTERS M VIEW TO N
41 OF 48

MD 33-25 QUARTERS M

NAVAL ORDNANCE LABORATORY

MONTGOMERY CO., MD

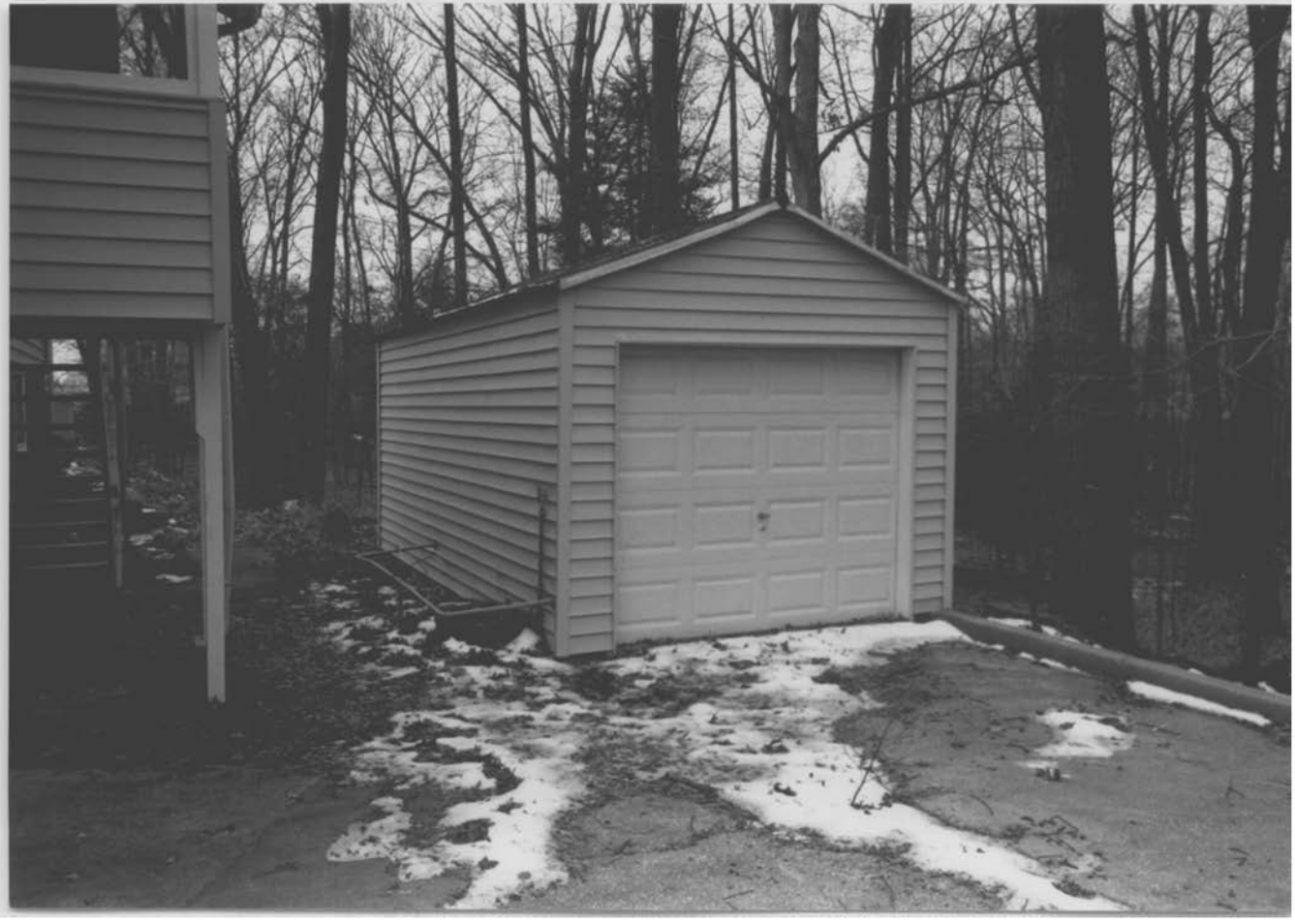
DAVID C. BERG.

1/22/97

MD SHPO

QUARTERS M, VIEW TO W

#42 OF 48



MD 33-25 QUARTERS M GARAGE
NAVAL ORDNANCE LABORATORY
MONTGOMERY CO., MD
DAVID C. BERG
1/22/97
MD SHPO
QUARTERS M GARAGE, VIEW TOW
#43 OF 48

MD 33-25 OPERATIONS LAB BOILER PLANT, BLDG. 201
NAVAL ORDNANCE LABORATORY
MONTGOMERY CO., MD
DAVID C. BERG
1/22/97
MD SHPO
OPERATIONS LAB BOILER PLANT, BLDG 201
VIEW TO N
#44 OF 48

202

MD 33-25 BUILDING 202, STANDARD LAB

NAVAL ORDNANCE LABORATORY

MONTGOMERY CO., MD

DAVID C. BERG

11/22/97

MD SHPO

BLDG 202, STANDARD LAB

VIEW TO W

#45 OF 48

203

MD 33-25 BUILDING 203, SPHERICAL FIELD LAB
NAVAL ORDNANCE LABORATORY
MONTGOMERY CO., MD
DAVID C BERG
1/22/97
MD SHPO
BLDG. 203 SPHERICAL FIELD LAB
VIEW TO N
#46 OF 48

204

MD 33-25, BLDG 204 LARGE PROJECTS LAB
NAVAL ORDNANCE LABORATORY
MONTGOMERY CO., MD
DAVID C. BERG
1/22/97
MD SHPO
BLDG. 204, LARGE PROJECTS LAB
VIEW TO E
#47 OF 48

206

MD 33-25
BUILDING 206, MODEL LABORATORY
NAVAL ORDNANCE LABORATORY
MONTGOMERY CO. MD
DAVID C. BERG
1/22/97
MD SHPO
VIEW TO N
#48 OF 48