VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

Naval Cold War Architecture

In the Cold War Era

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Naval Cold War Architecture in the Hampton Roads Area

I. Abstract

The United States Nuclear Fleet (Nuclear Fleet) has, since the Cold War, served as one of the premier projections of U.S. power, across the globe. With the Cold War now more than two decades ended, the properties of the Cold War have become eligible for listing in the National Register of Historic Places (NRHP) and Virginia Landmarks Register (VLR), especially those of the Norfolk and Newport News areas, which have serviced the Nuclear Fleet for decades. In an effort to help detail these buildings that have already, or will soon, become eligible, numerous primary and secondary sources have been tapped to provide not only an overview of the Nuclear Fleet, but also a more in-depth study of the primary historic resources in Virginia involved in the design, construction, and upkeep of the fleet. In order to fulfill this effort, a bibliography was assembled that would include as many archival resources as possible, whether directly referenced or only indirectly related. The outcome of this should serve as a resource for future researchers, as well as a secondary or tertiary source for those interested in pursuing a NRHP nomination.

II. List of Figures

III. Project Description and Research Design (Materials and Methodologies)

As many Cold War Era resources begin to reach the 50 year mark typical of properties being considered for NRHP listing, the need arises for these resources to be identified, so that when the time comes, register eligibility can be properly discussed. While the responsibility is laid on the Department of Defense (DoD) for their structures, publicly and privately owned buildings have both been utilized in the building of the Nuclear Fleet, and non-DoD institutions may be tasked with recording structures that are privately owned[1]. In order to help facilitate this, the primary aim of this document is to provide a resource for future researchers in their attempts to document the historic resources of the Cold War Era Nuclear Fleet in the Commonwealth of Virginia.

Attention was given to both primary and secondary sources, with an emphasis on primary sources if at all possible. Sources were collected through a variety of methods, including searches on the Virginia Department of Historic Resources' Data Sharing System (DSS), The DoD"DoD Environmental, Safety and Occupational Health Network and Information Exchange" (DENIX), and the DoD's "Legacy" project repository. In an attempt to give a broader overview of the materials available, books published on the subjects were also tapped, including historic and military references.

After materials were collected, the sources were organized into two categories. The first category, Historic Context, encompasses the documents and books that deal with the broad nature of the Cold War as it pertains to the Nuclear Fleet. This includes information on the ships

[1] Gregory and Tag, 1

themselves, their uses during the Cold War, and the areas that they were serviced from. The focus then transitions to include more detailed information about the Newport News and Norfolk facilities, which make up the backbone of the Navy's service facilities in Virginia. The second category is a more focused study of the historic resources that make up these two facilities, and focuses on the architectural and cultural significances where possible. The two facilities are then summed up in a look at the architectural trends and cultural impacts these facilities have had.

The study concludes with a traditional works cited, as well as a more broad secondary bibliography, intended to give future researchers as many avenues of study as possible. To achieve this, the secondary bibliography will include works not necessarily referenced in this study, but that may contain useful information, or may lead to useful information, for researchers.

IV. Historic Context

The Cold War is generally defined one of two ways. The DoD's Legacy Project uses a definition that starts with Winston Churchill's 'Iron Curtain" speech in 1946, and ends in 1989 with the destruction of the Berlin Wall, the physical manifestation of that "Iron Curtain." Congress defines the Cold War in Public Law 105-85, Section 1084 (a) *Commendation of Members of the Armed Forces and Government Civilian Personnel Who Served During the Cold War: Certificate of Recognition,* as the period from the end of World War II on September 2, 1945 to December 26, 1991, with the collapse of the Soviet Union.[2] The Legacy Project aims to bring the needs of the military's resources forward, and includes the Cold War Task Area in its definition[3], but in the ranges of this study, the Congressional definition will be preferred, due to being a more broad description, as well as this study not being affiliated with the Legacy project.

The Legacy project has, most recently, begun moving away from a comprehensive overview type of study, encompassing large swaths of the Cold War Era, toward more installation—specific research. Currently, no historic context statement exists for the entire U.S. Navy during the Cold War period, but in order to frame the Norfolk and Newport News installations' uses during this time, a brief overview is necessary.

At the end of World War II, the United States had a massive naval industrial complex. With more than 100 field establishments, including ammunition depots, ordinance plants, and a "big gun" factory, the Navy Bureau of Ordinance had an enormous production base to count on.[4] The effect of this postwar complex set the stage for the Navy to remain a force projection for the United States, throughout the Cold War Era. With the dropping of the atomic bombs on Hiroshima and Nagasaki, ending the war with Japan, a new age, generally called the "Atomic Age" was ushered in as well. These two major facts set the stage for the United States to create and sustain a naval fleet that is unparalleled in both size and technology.

By the 1950s, the Navy was seeing these new technologies begin to come to the forefront. With the launching of the *USS Nautilus* in 1955, the world's first nuclear submarine took to the seas. Within a year, 14 nuclear submarines, 1 nuclear cruiser, and 1 nuclear carrier

[2] Gregory and Tag, 5
[3] Coming in from the Cold, 3
[4] Shiman, 15

were planned.[5] Multiple shipyards in the country were tasked with bringing the fleet into the nuclear age, with areas like General Electric's "Electric Boat" Division in Groton, Connecticut and the Portsmouth, New Hampshire Naval Shipyard dividing up contracts for nuclear submarines and other ships.[6] The armaments of the ships also started changing, with the navy taking up guided missiles over the large scale cannons that had dominated naval warfare for so long. During this time period, the Navy also fought to include ballistic missile carrying submarines in their arsenal, intending to use the submarines as an added deterrence from nuclear attack, by providing a mobile platform with which to retaliate, should American nuclear installations be targeted.[7] With this shift, many ordinance plants were either shut down or converted to new uses.[8]

Starting in the 1960s, Defense Secretary Robert McNamara started shifting production away from the Navy owned shipyards and toward private establishments like those at Newport News. Few naval facilities were actually closed due to this change, but the shift represented a fundamental reevaluation of the naval shipbuilding business.[9] By the late 1960s, the focus was on modernization of existing facilities, bringing shipyards and manufacturing plants into a more modern state, this being set off by problems that were manifesting themselves during the conflict in Vietnam.[10] The program of modernization reached its peak in a period between 1965 and 1971, where the Navy spent a total of $300 million on improvements.

At this time, though, the manufacturing base began to contract, caused by fundamental shifts in U.S. defense manufacturing policy. The DoD adopted a "short-war" scenario, based on the belief that wars would be short and intense, either quickly defusing or escalating into an exchange of strategic nuclear weapons. This led to the belief that the World War II style "surge production" manufacturing, which consisted of multiple installations running generally below peak levels, that could be brought to peak levels in the case of a "surge" in required munitions, would no longer be needed, since the time it would take to bring the manufacturing capacity up to full production would be longer than the time the "short-war" would take. Instead, the DoD opted to move toward reduced numbers of facilities running at peak levels in general. This coincided with reduced defense spending, leading to things such as a fleet reduction from over 1,000 ships, to fewer than 500 between the 1960s and 1980s.[11]

At the time, manufacturing of private ships was beginning to take hold, due to the Merchant Marine Act of 1970, leading private manufacturers to request more favorable terms from the Navy or refusing Navy work outright. The move to divest the military of its facilities became intertwined with the problematic shift in the U.S. defense manufacturing base. By the 1980s, the Navy had closed the Boston Naval Shipyard, and with the privately owned New York Shipbuilding Corporation following suit, the Navy was left with only a single shipyard in the country, Newport News Shipbuilding and Drydock Company (Newport News Shipbuilding), that

[5] Shiman, 61
[6] Ibid., 62
[7] Thompson and Tagg, 21.
[8] Shiman, 61-62
[9] Ibid., 70
[10] Ibid., 77
[11] Ibid., 82

could fulfill the requirements of the Navy's fleet. [12] Bankruptcies and divestments started to take their toll, and the 1980s saw a near collapse of the U.S. shipbuilding industry, with few shipyards in a position to complete the contracts that the Navy required.[13]

The Reagan build-up of the late 1980s did help to alleviate this somewhat, especially in the navy, with the announcement of the 600-ship Navy. This build-up helped leave the US Navy on a strong footing as it exited the Cold War, despite difficulties that would continue to manifest through the 1990s.[14]

V. Building Listings

The resources that make up the backbone of the naval infrastructure in Virginia are located generally in the Hampton Roads area, at the publicly owned Naval Station Norfolk or at the privately owned Newport News Shipbuilding. Between these, Newport News Shipbuilding makes up the vast majority of the shipbuilding infrastructure, while the Naval Station Norfolk serves as the upkeep facility. Newport News Shipbuilding is one of only two shipyards in the country that are able to build nuclear-powered ships, and with Naval Station Norfolk make up one-third of the country's infrastructure for building, repairing, refueling, and overhaul of the Nuclear Fleet.[15]

Many of the resources in these two facilities will soon reach 50 years of age, at which resources are typically evaluated for eligibility for the NRHP, and some already have been listed. For this reason, the importance of documenting the historic resources involved in the creation and upkeep of the Nuclear Fleet cannot be overstated. These resources all share in the historic relevance of contributing to a force projection element that helped the U.S. succeed throughout the Cold War Era.

Due to the fact that resources will generally be related at least indirectly to most all projects done by a facility, the aim of the following lists will only encompass resources that are confirmed to or reasonably could have been directly involved in the construction and care of the Nuclear Fleet.

Naval Station Norfolk:

Residences and personnel facilities will not be included. Fuel storage containers from prior to the Cold War Era also will not be listed, with the assumption that they were not built to house the nuclear fuels of the fleet. While these fuel storage areas might have stored fuel for the conventional ships that accompany the Nuclear Fleet, there is little evidence to suggest that they would store nuclear materials. The resources here have already been surveyed, and serve purely as a reference source to begin an investigation into the current infrastructure at Naval Station Norfolk. This does not include all resources that would be relevant to the Nuclear Fleet, merely those that have already been identified to date through previous survey efforts. Much more research is needed on the more modern structures.

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[12] Shiman, 83
[13] Ibid., 77
[14] Ibid., 84
[15] http://nnsa.energy.gov/ourmission/poweringnavy#Shipyards

Virginia Department of Historic Resources (VDHR) Number	Naval Station Norfolk Reference Number	Date Built	Name	Number of Resources
122-5046-0117	V-047	1941	Aircraft Parts Storage	1
122-5046-0123	V-052	1942	Aircraft Storehouse	1
122-5046-0019	LP-006	1942	Ammunition Magazine	1
122-5046-0020	LP-007	1942	Ammunition Magazine	1
122-5046-0021	LP-008	1942	Ammunition Magazine	1
122-5046-0022	LP-009	1942	Ammunition Magazine	1
122-5046-0023	LP-010	1942	Ammunition Magazine	1
122-5046-0024	LP-011	1942	Ammunition Magazine	1
122-5046-0031	LP-028	1942	Ammunition Magazine	1
122-5046-0032	LP-030	1942	Ammunition Magazine	1
122-5046-0033	LP-032	1942	Ammunition Magazine	1
122-5046-0042	SDA-210	1942	Ammunition Magazine	1
122-5046-0043	SDA-211	1942	Ammunition Magazine	1
122-5046-0044	SDA-215	1942	Ammunition Magazine	1
122-5046-0045	SDA-216	1942	Ammunition Magazine	1
122-5046-0083	SP-102	1942	Ammunition Magazine	1
122-5046-0084	SP-105	1942	Ammunition Magazine	1
122-0410-0165	LP-054A	1944	Aviation Lube Storage	1
122-0410-0166	LP-054B	1944	Aviation Lube Storage	1
122-0410-0167	LP-054C	1944	Aviation Lube Storage	1
122-0410-0168	LP-054D	1944	Aviation Lube Storage	1
122-0410-0426	SP-086	1943	Aviation Supply Storehouse	1
122-0410-0427	SP-087	1943	Aviation Supply Storehouse	1
122-0410-0428	SP-088	1943	Aviation Supply Storehouse	1
122-0410-0429	SP-089	1943	Aviation Supply Storehouse	1
122-0410-0572	X-134	1940	Aviation Warehouse	1
122-0410-0573	X-136	1940	Aviation Warehouse	1
122-0410-0303	PIER-07	1920	Berthing Pier	1
122-0410-0302	PIER-05	1942	Berthing Pier	1
122-0410-0304	PIER-21	1944	Berthing Pier	1
122-0410-0306	PIER-23	1944	Berthing Pier	1
122-0410-0123	LAG-27	1944	Boat Shed	1
122-5046-0015	LP-001	1940	Control Tower	1
122-0410-0298	P-71	1945	Electric Shop	1
122-5046-0028	LP-020	1942	Engine Overhaul Shop	1
122-5046-0029	LP-022	1942	Engine Test Cells	1
122-5046-0110	V-038	1933	Finish Paint Shop	1
122-5046-0111	V-041	1934	Foundry and Maintenance Shop	1
122-0410-0119	L-30	1942	Garage and Electric Shop	1

122-5046-0128	V-088	1944	Hangar and Shops	1
122-0410-0266	NM-004	1941	High Explosive Magazine	1
122-0410-0275	NM-033	1943	Inert Storehouse	1
122-0410-0279	NM-045	1943	Inert Storehouse	1
122-0410-0513	W-006	1920	Machine Shop	1
122-0410-0269	NM-008, NM-010, NM-022	1941	Magazine	1
122-0410-0270	NM-023, NM-024	1941	Magazine	1
122-0410-0273	NM-027	1941	Magazine	1
122-0410-0592	Z-140	1942	Maintenance Shop	1
122-0410-0495	V-058	1942	Maintenance, Office, Shops	1
122-0410-0326	SP-112	1944	Open Storage	1
122-0410-0351	SDA-320	1945	Open Storage	1
122-5010-0001	Z-133	1941	Ordnance Storehouse	1
122-0410-0423	SP-083	1942	Paint and Oil Storehouse	1
122-0410-0127	LAG-50	1944	Paint Locker	1
122-0410-0546	W-217	1945	Paint Storage	1
122-5046-0131	V-159	1941	Pier	1
122-5010-0003	PIER-03	1942	PIER03 and W003	2
122-5010-0004	PIER-04	1942	PIER04 and W004	2
122-0410-0272	NM-026	1941	Pyrotechnic Magazine	1
122-0410-0267	NM-005	1941	Pyrotechnics Magazine	1
122-5046-0030	LP-026	1943	Spare Parts Storehouse	1
122-0410-0409	SP-063A	1942	Storage	1
122-0410-0413	SP-067	1942	Storage	1
122-0410-0460	U-58BQ	1942	Storage	1
122-0410-0169	LP-061	1944	Storage	1
122-0410-0280	NM-059	1944	Storage	1
122-5046-0118	V-048	1941	Storage and Shop	1
122-5046-0120	V-050A	1942	Storehouse	1
122-5046-0123	V-053	1942	Storehouse	1
122-0410-0531	W-135	1942	Storehouse	1
122-0410-0241	NH-035	1944	Storehouse	1
122-5046-0047	SP-010	1941	Torpedo Shop	1
122-0410-0515	W-007	1920	Torpedo Storehouse/Admin	1
122-0410-0296	P-66	1944	Utility Storage	1
122-0410-0571	X-132	1940	Warehouse	1
122-0410-0574	X-137	1940	Warehouse	1
122-0410-0346	SDA-213	1941	Warehouse	1
122-0410-0347	SDA-214	1941	Warehouse	1
122-0410-0340	SDA-202	1942	Warehouse	1
122-0410-0341	SDA-203	1942	Warehouse	1
122-0410-0342	SDA-204	1942	Warehouse	1

122-0410-0343	SDA-205	1942	Warehouse	1
122-0410-0344	SDA-210	1942	Warehouse	1
122-0410-0345	SDA-211	1942	Warehouse	1
122-0410-0348	SDA-215	1942	Warehouse	1
122-0410-0349	SDA-216	1942	Warehouse	1
122-0410-0326	SC-401	1944	Warehouse	1
122-0410-0329	SC-406	1942	Welding Shop	1

Table compiled from VDHR CRM File, NR-43

The Naval Station Norfolk was created in 1917 with the Navy's purchase of the Jamestown Exposition's land in Sewell's Point, Norfolk. [16] Buildings surviving from the exposition period are not likely to serve the Nuclear Fleet directly, due to generally being administrative or personnel buildings. The Jamestown Exposition contained certain buildings that were built as the exhibit areas of particular States. These "State Buildings" in particular served as officer housing.[17] After the navy's acquisition of the land, a concerted effort was made to turn the area into a fully fledged naval base.

World War I saw a sizeable expansion of Naval Station Norfolk, which continued through the inter-war period, as Naval Station Norfolk became the United States' chief berth for the Atlantic Fleet. With the onset of World War II, though, the port went through its largest building process, adding hundreds of resources to the base, including two new piers, multiple storage areas, and ordinance manufacturing. Naval Station Norfolk also gained an air station at that time, to support both land- and seaplanes.[18] This addition helped cement the base as the country's main mooring for the Atlantic fleet by allowing the base to service, not only the ships, but the planes that made up the backbone of the Navy's carrier-based fleet's offensive and defensive abilities. By the 1950's, and during the U.S. involvement in Korea, Norfolk settled into its role as an overhaul and repair facility, providing a key role for the U.S. fleet. The base was expanded and updated in the 1960s to make it ready for servicing nuclear warships. By 1964, the base covered over 800 acres, included 424 buildings, 350 cranes, two shipways, and seven dry-docks.[19]

[16] VDHR Cultural Resource NR-43, 32
[17] Ibid., 34
[18] Ibid., 63
[19] Shiman, 165

Resource Details:

Aircraft Parts Storage (122-5046-0117): Metal, gable roofed, steel framed building, with a concrete foundation. The building is one story in height, with a rectangular footprint of 288 feet by 100 feet. It is three bays in width, with an oversized hangar door at the end of each. Built in 1941, the building sits on Pocahontas Street in Norfolk, serving as an aircraft parts storage building.

Aircraft Storehouse (122-5046-0123): A large, metal frame, rectangular building, with a low-pitched front gable roof. The east elevation contains multiple-paneled hangar doors, while the west contains three overhead metal doors, surrounded by industrial sash windows. Built in 1942, the hangar is located on Aircraft Tow Way.

Ammunition Magazine (122-5046-0019): A one-story, rectangular concrete building with flat concrete slab roof. Four metal doors are spaced along the front. Built to act as armament storage in 1942, this building is situated on Air Station Taxiway.

Ammunition Magazine (122-5046-0020): Same as 122-5046-0019, this is a one-story, rectangular concrete building with flat concrete slab roof. Four metal doors are spaced along the front. Built to act as armament storage in 1942, this building is situated on Landplane Area.

Ammunition Magazine (122-5046-0021): Same as 122-5046-0019 and 122-5046-0020, this is a one-story, rectangular concrete building with flat concrete slab roof. Four metal doors are spaced along the front. Built to act as armament storage in 1942, this building is situated on Air Station Taxiway.

Ammunition Magazine (122-5046-0022): Same as the above, this is a one-story, rectangular concrete building with flat concrete slab roof. Four metal doors are spaced along the front. Built to act as armament storage in 1942, this building is situated on Air Station Taxiway.

Ammunition Magazine (122-5046-0023): Same as the above, this is a one-story, rectangular concrete building with flat concrete slab roof. On this building, though a two-bay by one-bay concrete block addition has been appended to the south end of the magazine. Four metal doors are spaced along the front. Built to act as armament storage in 1942, this building is situated on Air Station Taxiway.

Ammunition Magazine (122-5046-0024): Same as the above (but with no addition), this is a one-story, rectangular concrete building with flat concrete slab roof. Four metal doors are spaced along the front. Built to act as armament storage in 1942, this building is situated on Air Station Taxiway.

Ammunition Magazine (122-5046-0031): This is a one-story, rectangular concrete building with flat concrete slab roof. Two metal doors are situated in the front. Situated along Landplane Area, this building acts as an ammunition magazine for the base.

Ammunition Magazine (122-5046-0032): Same as 122-5046-0031, this is a one-story, rectangular concrete building with flat concrete slab roof. Two metal doors are situated in the front. Situated along Landplane Area, this building acts as an ammunition magazine for the base.

Ammunition Magazine (122-5046-0033): Same as 122-5046-0031 and 122-5046-0032, this is a one-story, rectangular concrete building with flat concrete slab roof. Two metal doors are situated in the front. Situated along Landplane Area, this building acts as an ammunition magazine for the base.

Ammunition Magazine (122-5046-0042): This is a one-story, rectangular concrete building with flat concrete slab roof, with four metal doors on the front. The magazine occupies A Street, and was constructed in 1942.

Ammunition Magazine (122-5046-0043): Same as 122-5046-0042, this is a one-story, rectangular concrete building with flat concrete slab roof, with four metal doors on the front. The magazine occupies A Street, and was constructed in 1942.

Ammunition Magazine (122-5046-0044): Same as 122-5046-0042 and 122-5046-0043, this is a one-story, rectangular concrete building with flat concrete slab roof, with four metal doors on the front. The magazine occupies A Street, and was constructed in 1942.

Ammunition Magazine (122-5046-0083): A one-story, rectangular concrete building with flat concrete slab roof, and two metal doors on the front. The magazine occupies A Street, and was constructed in 1942.

Ammunition Magazine (122-5046-0084): Same as 122-5046-0083, a one-story, rectangular concrete building with flat concrete slab roof, and two metal doors on the front. The magazine occupies A Street, and was constructed in 1942.

Aviation Lube Storage (122-0410-0165 to 122-0410-0168): Very little information is documented of these structures, though they are all situated on Land Plane Fuel Farm. A photo of them gives little detail, except to show that the four structures are buried beneath a hill, and marked by a quartet of signs.

Aviation Supply Storehouse (122-0410-0426): Large, barrel roofed, nine bay by thirty bay structure. The building is divided into three long sections that run the entire length of the building, three bays wide each, each with their own barrel roof, connected to the others by a short flat area. The center division has an oversized door in its middle bay, and all three are sided by weatherboard.

Aviation Supply Storehouse (122-0410-0427): Identical to 122-0410-0426. Large, barrel roofed, nine bay by thirty bay structure. The building is divided into three long sections that run the entire length of the building, three bays wide each, each with their own barrel roof, connected to the others by a short flat area. The center division has an oversized door in its middle bay, and all three are sided by weatherboard.

Aviation Supply Storehouse (122-0410-0428): Identical to 122-0410-0426 and 122-0410-0427. Large, barrel roofed, nine bay by thirty bay structure. The building is divided into three long sections that run the entire length of the building, three bays wide each, each with their own barrel roof, connected to the others by a short flat area. The center division has an oversized door in its middle bay, and all three are sided by weatherboard.

Aviation Supply Storehouse (122-0410-0429): Identical to 122-0410-0427, 122-0410-0427, and 122-0410-0427. Large, barrel roofed, nine bay by thirty bay structure. The building is divided into three long sections that run the entire length of the building, three bays wide each, each with their own barrel roof, connected to the others by a short flat area. The center division has an oversized door in its middle bay, and all three are sided by weatherboard.

Aviation Warehouse (122-0410-0572): Constructed in 1940, this building consists of a large, three story, central section beneath a monitor roof, flanked a two story section on either side. Access is through large sliding doors located at each end. Originally clad in corrugated asbestos protected metal, this has since been covered over by particle board. Property is located on Dillingham Boulevard.

Aviation Warehouse (122-0410-0573): A twin of 122-0410-0572. Constructed in 1940, this building consists of a large, three story, central section beneath a monitor roof, flanked a two story section on either side. Access is through large sliding doors located at each end. Originally clad in corrugated asbestos protected metal, this has since been covered over by particle board. Property is also located on Dillingham Boulevard.

Berthing Pier (122-0410-0302): Pier 5, as it is designated by Norfolk, is a ship berthing pier located on Decatur Avenue. The pier's structure is built from wood, but the top appears to be paved. The pier was built in 1942. No measurements for the pier are on record at the Virginia DHR.

Berthing Pier (122-0410-0303): Pier 7 was built in 1920, and appears to use the same methods as the later built piers in construction. The structure is wood, but the top appears paved. As with 122-0410-0302, no measurements exist for this pier.

Berthing Pier (122-0410-0304): Pier 21 was built in 1944. No information was recorded during architectural surveys, but it appears to be much larger than earlier piers. Structural details are impossible to make out. Located on Third Street.

Berthing Pier (122-0410-0306): Pier 23 seems to mirror 122-0410-0302 and 122-0410-0303 in that the structure is wood, but has been paved. The pier is at least large enough to service an individual nuclear submarine.

Boat Shed (122-0410-0123): A smaller building, gable roofed, with weatherboard siding. The building is four bays long. The front consists of an oversized door. The property dates to 1944 and sits on the Lagoon thoroughfare.

Control Tower (122-5046-0015): The two is an L-shaped building, two stories tall, and topped with a flat parapet roof. A taller, three story rectangular control tower occupies the southeast corner of the building. Windows are of a metal-sash type along most of the building and tower, but the tower also includes an octagonal, glass-enclosed observation deck. This 1940 building is located on Air Station Taxiway.

Electric Shop (122-0410-0298): A large, two story, concrete building with a flat, or mostly flat roof. The building is six bays long and two bays wide, with a stairway up to the second floor on the side facing way from the thoroughfare. Built in 1945 on Piersey Street.

Engine Overhaul Shop (122-5046-0028): A large, two level, one and two story masonry and concrete building. Many multi-pane windows adorn the front. The entire building sits beneath a pair of flat roofs, capping the two parts of the structure. Built in 1942 on Third Avenue.

Engine Test Cells Addition (122-5046-0029): Two story masonry and concrete building addition, considered a secondary resource to 122-5046-0028. Built in 1945.

Finish Paint Shop (122-5046-0110): A one-story, metal-frame building, clad in corrugated metal. Overhead doors are located on north and south, while a shed-roofed extension protrudes from the west. The extension has two metal personnel doors. Built on Hornet Street in 1933.

Foundry and Maintenance Shop (122-5046-0111): Built with two different sections. The west half consists of a brick base with a continuous band of industrial sash windows. The bays are defined by concrete faced columns and entries include double metal doors on the west side, with two single metal doors on the north. The east half of the building is a metal frame clad with corrugated metal walls. A metal-frame overhang covers single and double doors to the east. Building was built in 1934 on Pocahontas Street.

Garage and Electric Shop (122-0410-0119): A large, two story building, flanked by one story extensions on either side. The building appears to be a masonry building, with no windows showing, though window shadows do appear along the building, indicating that they were either covered or removed for an unknown reason. The building sits on Piersey Street and dates to 1942.

Hangar and Shops (122-5046-0128): A massive hangar with many oversized doors and entrances in. Concrete masonry structure, adorned by many multi-paned windows. The structure appears four stories in height and is sandwiched between two smaller, two and three story, concrete extensions. The extensions themselves are mostly two stories, with a center area raising up three stories, and the entire structures are also adorned in multi-paned windows. The structure is located at 1234 Pocahontas Street and was built in 1944.

High Explosive Magazine (122-0410-0266): The magazine is mostly buried, but a certain portion is open to the surface. A concrete structure, the building has two metal doors angled toward another magazine of similar design. Building dates to 1941.

Inert Storehouse (122-0410-0275): This inert storehouse, unfortunately, has no records on it, and no pictures specifically attributed to it. Another inert storehouse, 122-0410-0271, may be similar to 122-0410-0271. That storehouse is concrete structure, tiled siding, and four bays deep. The structure has three regular sized overhanging doors along the side, with stairs running up to each. At the end of the three overhanging doors is another oversized overhanging door. Building dates to 1943.

Inert Storehouse (122-0410-0279): A smaller building with painted cinderblock structure. Three bays with a central double door serving as the entrance. The windows seem to have been knocked out, and it is possible that this storehouse has fallen into complete disuse. Constructed in 1943.

Machine Shop (122-0410-0513): A one story, brick structure, with three bays. Two bays consist of oversized doors, while the other is an arched multi-pane window. A one story, two bay, shed

roofed extension is attached. The extension has an overhang door. The building entered service in 1920.

Magazine (122-0410-0269): Constructed in 1941, and dug into the ground, these appear to be concrete structures with a single opening to the surface in the form of a concrete reinforced metal door.

Magazine (122-0410-0270): Built across from the aforementioned High Explosive Magazine 122-0410-0266, all that is viewable of this structure is that it is also an underground structure with a probable opening to the surface. Built in 1941.

Magazine (122-0410-0273): Constructed in 1941, no further pictures or data are archived of this structure.

Maintenance Shop (122-0410-0592): Large three story, flat roofed, concrete building. Multi-pane windows adorn all sides of this structure, except on two one story, gable roofed extensions. Building was constructed in 1942, extensions most likely came later.

Maintenance, Office, Shops (122-0410-0495): A two story building, surrounded on all sides with a one story extension; flat roofed, concrete structure, with multi-pane windows adorning its walls. A garage door faces the parking lot, along with a ladder to the roof of the one floor extension. Building and extension were most likely both built in 1942.

Open Storage (122-0410-0326): Long, rectangular, brick, gable roofed building. Single and double doors line the length of the structure, with double-hung sash and multi-pane windows along the side. A single door with an awning opens to the front of the building. Situated on Noemoor Road, the building was put up in 1944.

Open Storage (122-0410-0351): Built in 1944, no further pictures or data are archived of this structure.

Ordnance Storehouse (122-5010-0001): Large, five-story, concrete and masonry supply warehouse, originally served by railroad that has since been removed. The building is capped by a flat roof with a parapet. The building is approximately 400 feet long, 132 feet wide, and 74 feet tall. Bands of combination, fixed and horizontal pivoted industrial steel windows are featured on each elevation. A cantilevered concrete roof protects the loading docks. Constructed in 1941 and altered in 1944, it stands adjacent to piers for mooring naval vessels.

Paint and Oil Storehouse (122-0410-0423): A concrete and brick building. Approximately two stories tall, and capped by a mansard arch. The roof consists of two barrel roofs connected to each other. The front is six bays in width, with a small outcropping that holds two large garage doors. The back is also six bays in width, but all are windows. All windows have been covered over. This warehouse was constructed on First View Street in 1942.

Pier V-159 (122-5046-0131): This structure was extensively renovated in 2002, and as a consequence, no longer exists in its historic form.

Pier 003 and Transit Shed (122-5010-0003): A 100 foot by 1176 foot structure sits on Pier 3. The structure is constructed of corrugated-metal clad concrete blocks at the base, with ribbon-

window openings and walls above. Metal, roll up, loading doors are located along the east and west ends. The east and west elevations have steep parapet walls. Constructed in 1942, the pier extends 1344 feet into the river.

Pier 004 and Transit Shed (122-5010-0004): The transit shed on Pier 4 measures 170 feet (east/west) by 1285 feet (north/south), and is constructed of corrugated-metal clad concrete block at the base, with ribbon-window openings and walls above. There are seven metal, roll up loading doors on the north and south elevations. The pier and shed were constructed in 1942.

Pyrotechnics Magazine (122-0410-0272): One story, concrete, metal gable-roofed building with three large fans on the top. The front of the structure is three bays wide, with the center bay being a double door. Stairs lead up to and run alongside the front. Built in 1941.

Pyrotechnics Magazine (122-0410-0267): Like 122-0410-0272, a one story, concrete, metal gable-roofed building with three large fans on the top. The front of the structure is three bays wide, with the center bay being a double door. Stairs lead up to and run alongside the front. Built in 1941.

Spare Parts Storehouse (122-5046-0030): A 1943 built, large, rectangular, nine-bay by 35-bay, brick building. The building is comprised of three bents across and 36 along its length, The three structural bays across terminate in a segmental arched roof, which are defined on the east and west elevations by stepped parapet fronts. Centered on top of the arches are three wood frame monitors containing seven industrial metal sash, 12-light pivot windows. Seven ventilators punctuate the monitors. The space between each monitor on the north and south elevations is defined by stepped brick parapets. Concrete coping caps the parapets. All single and overhead track doors are metal units. All windows are 16-light, industrial sash pivot and fixed units defined by concrete lug lintels and concrete slip sills. A concrete loading dock and railroad tracks are located on the north side of the building.

Storage (122-0410-0409): A small rectangular, gable roofed, structure. Clad in weather board, one bay by two bays, with bars over the window in the front. A chain link fence seems to cut off access to this unspectacular building. Constructed in 1942.

Storage (122-0410-0413): This 1942 structure is a longer rectangular building, hipped roofed. A set of concrete stairs lead up to the front entrance, and a pair of windows adorn the extreme edges of the front elevation.

Storage (122-0410-0460): Built in 1942, this is a small, rectangular, barrel roofed structure and looks almost semi-permanent in structure. It has a double-door front entrance and plywood walls.

Storage (122-0410-0169): Another underground structure, all that is discernible of this building is a concrete opening in the side of the hill, and machinery and pipes on the top. Built in 1944.

Storage (122-0410-0280): Long, rectangular structure, one story tall, barrel roofed, eight bays wide. The two front entrances are garage type doors, and multi-pane windows adorn the front. Built in 1944 as well.

Storage and Shop (122-5046-0118): A 1941, T-plan building, constructed of structural clay tile walls. A set of double metal doors are located in the south elevation. The windows are metal-frame fixed upper sash with a hopper window below. The building features a concrete frame that projects slightly at the building's base, above the windows, and at the corners.

Storehouse (122-5046-0120): A two-story, metal-frame building, accessed by a set of wood stairs to the second floor. The doorway contains a single wood-paneled door. A nine-light wood-sash window flanks the door, and the front façade is clad with horizontal wood siding. The rest of the building is clad in corrugated metal. Constructed in 1942 on Pocahontas Street.

Storehouse (122-5046-0123): A large, steel framed storehouse, gable roofed building. The east elevation is dominated by concrete door pockets which contain multiple-paneled hangar doors. The building is 508 feet by 124 feet. It is 52 feet tall, but all one story. The building is sheathed by large expanses of ribbon window fenestration patterns on the east, west, north, and south elevations. The building has a horizontal emphasis articulated by two horizontal bands of windows. The lower fenestration band comprises 20-light metal industrial sash windows, stacked three in height. The upper fenestration band comprises two rows of 20-light metal industrial sash windows. The bands extend across the entire wall planes and are the character-defining features of the north, south, and west walls. Access to the building's interior is gained through three overhead roll-up doors on the west elevation, and a large four-leaf sliding door on the east elevation.

Storehouse (122-0410-0531): A 1942, metal-frame building with three monitor roofs. The exterior cladding is corrugated metal, and the windows in the monitor roofs are metal frame, industrial sash. The building has been resheathed in modern metal siding that does not evoke historic corrugated metal. The lower facades contain replacement window and overhead door units.

Storehouse (122-0410-0241): This large, brick structure sits beneath a barrel roof and contains six bays in its front. Four large, roll up, overhead doors make up four of the six bays, while a small single door makes up a fifth. In between the four overhead doors and the single door is a bricked in area that may have been a fifth garage type door at one time, but has since been replaced with a small metal window. Sitting on Blandy Road, this structure was built in 1944.

Torpedo Shop (122-5046-0047): A rectangular structure with central monitor roof extending the length of the building, built in 1941. Original metal-sash windows are intact along both sides of the monitor roof. The north elevation contains large double metal doors with industrial metal sash at its center. Infilled bays are located to each side of the central entrance. The east and west side elevations contain three infilled bays. A lower one-story concrete block addition has been constructed along the south end of the building. The addition contains tall bands of industrial metal-sash windows. An overhead door is located at the east and west ends of the addition. The building also has a one-story, concrete block addition on its south end. The windows bays of this southern addition have been infilled with brick.

Torpedo Storehouse/Admin (122-0410-0515): A large, 1 story, flat-roofed, brick building with a one story, concrete, shed-roofed addition. The building has three bays, two of which have been bricked in, and the third is a large roll-up, overhead door. The addition has a roll up door as well as multi-pane windows along its sides. Structure was built in 1920.

Utility Storage (122-0410-0296): A tiny, square, shed-roofed, concrete building, constructed in 1944. Front has a single metal door, and the structure has no windows at all.

Warehouse (122-0410-0571): A 1940 warehouse with concrete frame infilled with stuccoed concrete panels. Concrete loading docks are located on the side elevations. The loading docks are protected by cantilevered concrete roofs. The windows are industrial sash units. Loading doors are located along the first story on side elevations.

Warehouse (122-0410-0574): Also built in 1940, this metal-frame warehouse has a monitor roof with a band of industrial sash windows. Industrial sash windows are located along the side elevations, along with loading doors. The roof has wide overhangs to shelter the concrete loading docks. The building contains five brick firewalls that project above the roofline.

Warehouse (122-0410-0340): A massive, concrete, tiled, flat-roofed building with a central rise taking up approximately one fifth of the building, and adorned by windows. The warehouse, built in 1942, has an opening on its front, an overhang door. No other openings are visible on this deteriorating building.

Warehouse (122-0410-0341): Much like 122-0410-0340 (though significantly more deteriorated), it is a massive, concrete, tiled, flat-roofed building with a central rise taking up approximately one fifth of the building, and adorned by windows. The warehouse, built in 1942, has an opening on its front, an overhang door. No other openings are visible on this highly deteriorating building.

Warehouse (122-0410-0342): A gigantic, metal sided, barrel roofed building with a shed-roofed side extension running its length on either side. The building has a large front, roll up, overhang door and windows along the structure. Built in 1942.

Warehouse (122-0410-0343): As with 122-0410-0342, this is a gigantic, metal sided, barrel roofed building with a shed-roofed side extension running its length on either side. The building has a large front, roll up, overhang door and windows along the structure. Also built in 1942.

Warehouse (122-0410-0344): Built in the same style as 122-0410-0340 and 122-0410-0341, this building is significantly less deteriorated. A massive, metal sided, tiled, flat-roofed building with a central rise adorned by windows. The warehouse, built in 1942, has an opening on its front, an overhang door. No other openings are visible on this structure.

Warehouse (122-0410-0345): As with 122-0410-0344, this is a much less deteriorated version of 122-0410-0340 and 122-0410-0341. A massive, concrete, metal sided, flat-roofed building with a central rise adorned by windows. The warehouse, built in 1942, has an opening on its front, an overhang door. No other openings are visible on this structure.

Warehouse (122-0410-0346): A massive, 1941 built warehouse. Like 122-0410-0345 and the others, it has a central rise adorned by windows, and is metal sided and flat-roofed. Unlike 122-0410-0345, the central rise is much larger, dominating a third of the structure, making this much wider than its later successor styles. A single roll up, overhang door is in the front.

Warehouse (122-0410-0347): Built in 1941, this structure most likely served as the model for 122-0410-0342 and 122-0410-0343. A gigantic, metal sided, barrel roofed building with a shed-

roofed side extension running its length on either side. The building has a large front, roll up, overhang door and windows along the structure.

Warehouse (122-0410-0348): Built in 1942, the design seems to be a cross between the structures like 122-0410-0340 and the structures more like 122-0410-0342. This warehouse has a central rise that, like 122-0410-0340, is small and only takes up about a fifth of the structure. Unlike 122-0410-0340, the extensions on either side are more reminiscent of 122-0410-0342 with more rounded, almost barrel roofing. A small front extension juts out with a shed roof and is one bay by one bay. The warehouse opening is still a large, front, roll up, overhang door.

Warehouse (122-0410-0349): A highly deteriorated version of the style used in 122-0410-0342 and 122-0410-0343, this is a gigantic, metal sided, barrel roofed building with a shed-roofed side extension running its length on either side. The building has a large front, roll up, overhang door and windows along the structure. Built in 1942.

Warehouse (122-0410-0326): A large, brick building with steeply pitched gable roof. This 1944 structure has multiple openings along its sides, and a three bay front. A small awning overhangs the central front door.

Welding Shop (122-0410-0329): A small, one bay by two bay, concrete building with gable roof. Two double hung, 1/1 windows make up either side, and a metal double door adorns the front. Built in 1942.

Newport News Shipbuilding and Drydock Company:

A full, public list of the resources of Newport News Shipbuilding is unavailable. Resources included below are only those that have public information available about them, either submitted by Newport News Shipbuilding or stored in the archives of the Virginia Department of Historic Resources.

VDHR Number	Newport News Shipbuilding Reference Building Number	Date Built	Name	Number of Resources
121-0051	Dry Dock #1	1891	Dry Dock 1	1
N/A	Unavailable	1940 ca.	Dry Dock 10	1
N/A	Unavailable	1940 ca.	Dry Dock 11	1
N/A	Unavailable	1970 ca.	Dry Dock 12	1
N/A	Unavailable	Unavailable	Dry Dock 2	1
N/A	Unavailable	Unavailable	Dry Dock 3	1
N/A	Unavailable	Unavailable	Dry Dock 4	1
121-0051	86	1891 ca.	Engineering and Administration	1
N/A	Unavailable	1892	Inclined Shipway 5	1

N/A	Unavailable	1892	Inclined Shipway 6	1
N/A	Unavailable	1980 ca.	Land Level Facility	1
121-0051	25, 60, 62, 65	1891 ca.	Machine Shops	4
N/A	Unavailable	Unavailable	Outfitting Berth 1	1
N/A	Unavailable	Unavailable	Outfitting Berth 2	1
121-0051	501	1919	Pattern Shop	1
N/A	Unavailable	Unavailable	Pier 2	1
N/A	Unavailable	Unavailable	Pier 3	1
N/A	Unavailable	Unavailable	Pier 5	1
N/A	Unavailable	Unavailable	Pier 6	1
N/A	Unavailable	1919	Semi-submerged Shipway 8	1
N/A	Unavailable	1919	Semi-submerged Shipway 9	1
121-0051	103	1891	Ship Shed #1	1
121-0051	550	1899	Shipyard Foundry	1
N/A	Unavailable	1970 ca.	Steel Fabrication Shop	1
N/A	Unavailable	1960 ca.	Steel Production Facility	1

Table compiled from information submitted by Newport News Shipbuilding, and in VDHR Archives File 121-0051

Newport News Shipbuilding facilities used during the Cold War were less focused on refitting and maintaining, and generally more focused on actual construction. Newport News Shipbuilding was instrumental in the construction of many ships in the Nuclear Fleet, especially the Nimitz class aircraft carriers. As noted earlier, by the 1980s, Newport News Shipbuilding was the only facility in the country that had the capability to build the largest ships that the Navy required.

Resource Details:

Dry Dock 1 (121-0051): Originally built in 1891, a 600 foot long, 130 foot wide on top and 50 feet wide on bottom and 93 feet wide at opening, wood framed dock. It was renovated to concrete prior to 1990 and expanded to 650 by 92 by 33 feet.

Dry Dock 10: Built just prior to World War II, this dock is 962 feet long. In 1969 a 310 metric ton gantry crane was erected, spanning this dry dock and Dry Dock 11.

Figure 1: The gantry crane today.

Dry Dock 11: Also built prior to World War II, this dock is larger than its neighbor at 1100 feet long, and is also spanned by the 310 metric ton gantry crane. This dock has the special distinction of being the dock that built every Newport News built Super-Carrier from the first, *Forrestal* (CV-59) in 1954, through 1980 with the launch of the *Carl Vinson* (CVN-70).

Figure 2: Newport News Shipbuilding Dry Dock #11

Dry Dock 12: Built in the early 1970s to accommodate ultra large oil "super tankers," this 2173 foot dry dock was and adjacent areas, covering over 640,000 square feet, were converted to modular aircraft carrier construction with construction of the fourth *Nimitz*-class carrier *Theodore Roosevelt* (CVN 71) in 1981. A 900 metric ton crane was also built, and later upgraded to 1050, metric tons. This dock and its crane are the largest in the Western Hemisphere.

Figure 3: The *USS Theodore Roosevelt* under construction.

Dry Dock 2: An 862 foot long dry dock. Confirmed to have been in use during the Cold War era. No further pictures or data are archived of this structure.

Dry Dock 3: A 459 foot long dry dock. Confirmed to have been in use during the Cold War era. No further pictures or data are archived of this structure.

Dry Dock 4: A 525 foot long dry dock. Confirmed to have been in use during the Cold War era. No further pictures or data are archived of this structure.

Engineering and Administration (121-0051): A three story, brick building with gable roof. Aluminum windows with segmental arches adorn the building. Originally 40 by 200 feet, the building has had numerous alterations over the years.

Inclined Shipways 5 and 6: Built in 1892, but modernized over the years. These structures were used for the construction of nuclear powered ballistic and attack submarines. The *Los Angeles*-class submarine USS *Albany* (SSN 753) launched June 13, 1987 was the last ship built on an inclined shipway at Newport News.

Land Level Facility: Built in the 1980s for the modular construction of nuclear submarines, this 130,000 square foot structure served as an indoor construction area for those submarines. Also included in this facility is a 600 foot long floating dry dock with a lifting capacity of 40,000 tons for launching submarines and ship repair.

Figure 4: The *USS Cheyenne* under construction

Figure 5: A view of the Module Outfitting Facility

Machine Shops: 300,000 square feet worth of brick structures. Three stories in height with metal gable roofs. Buildings generally have large bays at ground level and segmental arched windows on upper level. Three buildings built in 1890, with one building added in 1918. Numerous renovations over the years.

Outfitting Berth 1: 1371 feet in length. Confirmed to have been in use during the Cold War era. No further pictures or data are archived of this structure.

Outfitting Berth 2: 951 feet in length. Confirmed to have been in use during the Cold War era. No further pictures or data are archived of this structure.

Pattern Shop (121-0051): Constructed in 1919, a concrete block, stucco clad, two story building, with flat roof and parapet.

Piers 2, 3, 5, 6: Used for servicing ships in the nuclear fleet. Pier 2 is large enough to service the *Enterprise* (CVN-65), and Piers 5 and 6 are at least large enough to service the Virginia Class, nuclear powered Cruisers. Confirmed to have been in use during the Cold War era. No further data is archived of these structures.

Semi-submerged Shipways 8 and 9: Built in 1919 along with a significant gantry crane trestle complex to construct a post World War I class of 1000 foot long battle cruisers. The battle cruisers were ultimately cancelled due to treaty in 1922. The shipways were then used for the construction of battleships, cruisers, and commercial vessels until demolished in the 1980s. Contributions to the nuclear fleet include construction of ships in the *California* and *Virginia* classes of nuclear powered cruisers.

Figure 6: Shipways 8 and 9, along with the trestle above.

Ship Shed #1(121-0051): Constructed in 1890, but expanded. By 1958 this building was 105 by 421 feet. No further pictures or data are archived of this structure.

Ship Foundry (121-0051): A massive 150,000 square foot foundry, constructed in 1898. The building itself is a 6-course American brick bonded building with steel frame, corrugated metal roof. The building is a 1 story building, but with very high ceilings, and has 3 bays in the front.

Steel Fabrication Shop: Built in the 1970s, this facility covers 11 acres. Confirmed to have been in use during the Cold War era. No further data is archived of these structures.

Steel Production Facility: Built in the 1960s, and covers 6.5 acres of land. Confirmed to have been in use during the Cold War era. No further data is archived of these structures.

VI. Figures

Figure 1: Newport News Shipbuilding's 310 metric-ton crane, spanning dry docks 10 and 11, displays the new Newport News logo, 7/2/2011. Photo by Chris Oxley, Newport News Shipbuilding.

Figure 2: Newport News Shipbuilding Dry Dock #11, 4/8/2009. Photo by Chris Oxley. Note: The keel block arrangement in this image has been digitally retouched for security purposes.

Figure 3: The first modularly constructed island is lifted aboard the aircraft carrier Theodore Roosevelt (CVN 71) on 8/30/1984. The Theodore Roosevelt is the first Nimitz-class nuclear powered carrier to be built by Newport News Shipbuilding using the modular construction method in Dry Dock 12.

Figure 4: The Los Angeles-class submarine Cheyenne (SSN 773) rolls out of the module outfitting facility at Newport News Shipbuilding on 4/19/1994.

Figure 5: Aerial view of the Module Outfitting Facility MOF, 8/29/07.

Figure 6: The Newport News Shipbuilding Shipway 8 & 9 complex, in an aerial view on 11/4/1963. The two inclined shipways were built specifically for the construction of a class 1000 foot-long of US Navy battlecruisers. The ships Constellation and Ranger were started, but scrapped on the ways, as a result of the Washington Naval Disarmament Treaty of 1922. These shipways were the construction site for many of Newport News Shipbuilding's early aircraft carriers. The complex was demolished in the early 1980s to make way for the construction of the submarine Modular Outfitting Facility.

VII. Bibliography

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5. Coming in from the Cold, Military Heritage in the Cold War
6. Public Law 105-85, Section 1084 (a) *Commendation of Members of the Armed Forces and Government Civilian Personnel Who Served During the Cold War: Certificate of Recognition*
7. http://nnsa.energy.gov/ourmission/poweringnavy#Shipyards

VIII. Further Reading

1. Lavin, et al., 1998. Thematic Study Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties
   - This Guide is a good resource for those interested in stepping forward and focusing on other areas of research.
2. Michael and Smith, 2011. The Architecture of the Department of Defense
   - Of the architectural guides, this one is the most focused for DoD and Military buildings, and is already part of the Legacy project.
3. McDonald and Michael, 2008. Design Guidelines for Department of Defense Historic Buildings and Districts
4. McAlester and McAlster, 2009. A Field Guide to American Houses. New York: Knopf.
   - These two architectural guides are also quite good, with the former giving another DoD centric eye, while the McAlster Field Guide offers a civilian look at the subject.
5. Francis Duncan, Rickover and the Nuclear Navy, 1990
   - Both a history of the Nuclear Fleet and a biography of Admiral Rickover, who's efforts shaped it.
6. Rear Admiral R.W. King, Naval Engineering and American Sea Power
   - An excellent history of the Navy in general, though the emphasis is placed on the ships rather than their service buildings.