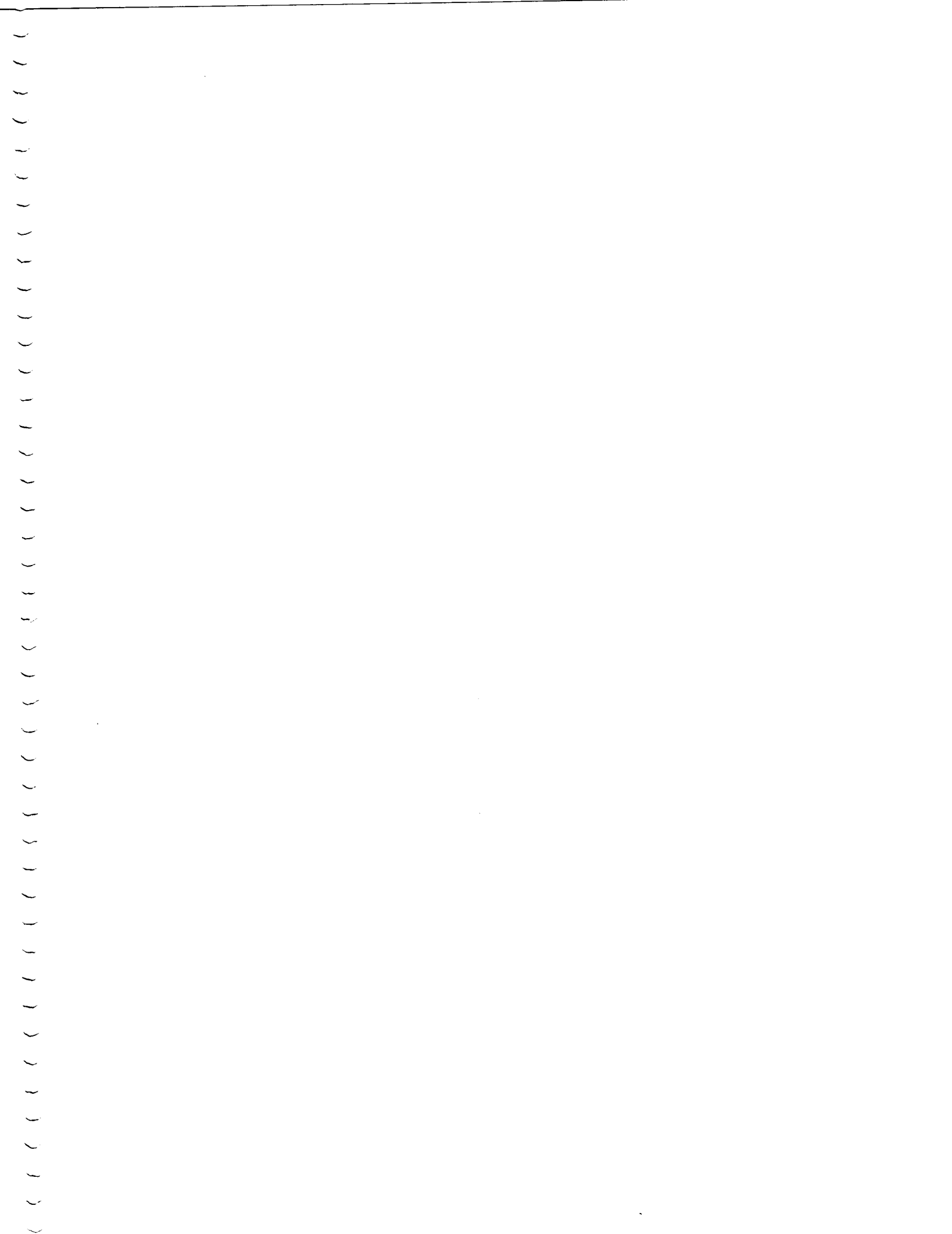


ABSTRACT

Jeffrey D. Morris. A HISTORICAL AND ARCHAEOLOGICAL INVESTIGATION OF THE CHICKAHOMINY SHIPYARD SITE. (Under the Direction of Gordon P. Watts, Jr.) Department of History, July 2000.

The purpose of this thesis was to locate, document, and identify underwater archaeological features at the Revolutionary War Virginia State Navy (VSN) shipyard site on the Chickahominy River. Previous research identified the location of the site, but completed no detailed historic or archaeological investigation. Review of data on the site suggested that it played an important role in the VSN and that there were remains of several dockyard features and two shipwrecks located near the site. This thesis determined that the Chickahominy Shipyard was an important facility to the VSN. Its primary role, however, changed from a shipyard to a naval base during the war due to downsizing. The investigations at the site located, documented, and identified the remains of a historic wharf, a slipway, and the remains of the VSN galleys *Lewis* and *Safeguard*. Those investigations also determined that strong tidal currents in the river have dramatically reduced the archaeological value of the features in the river.



A HISTORICAL AND ARCHAEOLOGICAL INVESTIGATION OF
THE CHICKAHOMINY SHIPYARD SITE

A Thesis
Presented to
The Faculty of the Department of History
East Carolina University

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts in History

by
Jeffrey D. Morris
July 2000

This thesis is dedicated to

Tanya & Sue

Thank you for
encouraging me to pursue my dreams.

ACKNOWLEDGEMENTS

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CHAPTER 1
INTRODUCTION

Shipyards produced the most complex machine of the pre-industrial age. The launching of each vessel represented the resolution of a unique and complex set of problems solved by a team with varying cultural backgrounds, education, and experiences. Therefore, historical documentation and archaeological remains of a shipyard site could yield diverse and unique information concerning the evolution of industrial technology, organizational structure, and the lifeways of those who built ships.

The Chickahominy Shipyard Site (44JC50) was an integral part of the Virginia State Navy (VSN) during the Revolutionary War, one of the largest and most active of the state navies. It is believed that the VSN began to use the site before ~~the~~ July 1776 and produced and repaired many vessels there. The shipyards of the Virginia State Navy constructed vessels specifically designed to defend Virginia's coasts against the much more powerful British Navy. Regionally, there are few intact eighteenth century shipbuilding sites, making each a valuable resource. Previous research suggests that the site contains, at a minimum, undocumented domestic, industrial, and shipwreck features that would add to our understanding of the Revolutionary War period.

The Virginia State Navy shipyard on the Chickahominy River is an archaeological site that reportedly played an important role in the navy during the Revolutionary War and is archaeologically intact. These theories are based upon limited primary historic

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search and cursory surveys of the site. This thesis will more thoroughly investigate the history and submerged archaeological features related to the site. The investigations will focus on determining the role the shipyard played in the VSN, the archaeological features that are present, which vessels remain at the site, and the overall condition of the archaeological remains.

Geographic Location

The Chickahominy Shipyard is located on the east bank of the Chickahominy River approximately seven miles above its confluence with the James, near Toano, Virginia (Figure 1). That location situated the shipyard approximately halfway between Norfolk and Richmond, and fifteen miles west-northwest of Williamsburg. The proximity of Norfolk and Richmond provided the shipyard access to the facilities available in those commercial urban centers such as the iron foundries in Richmond and the ships chandlers of Norfolk.¹ The location also provided the shipyard with direct access to large stands of good shipbuilding timber from the surrounding area.

Not only was the Shipyard located in an economically provident location, but also Virginia established the Chickahominy Shipyard at a strategically ideal location as well. Situated midway up the tidal James River between the centers of commerce and colonial activity offered the shipyard considerable protection. That site facilitated tracking of any naval force planning to attack the shipyard as it made its way up the James River, from the British base at Norfolk and Portsmouth. This reduced the possibility of a

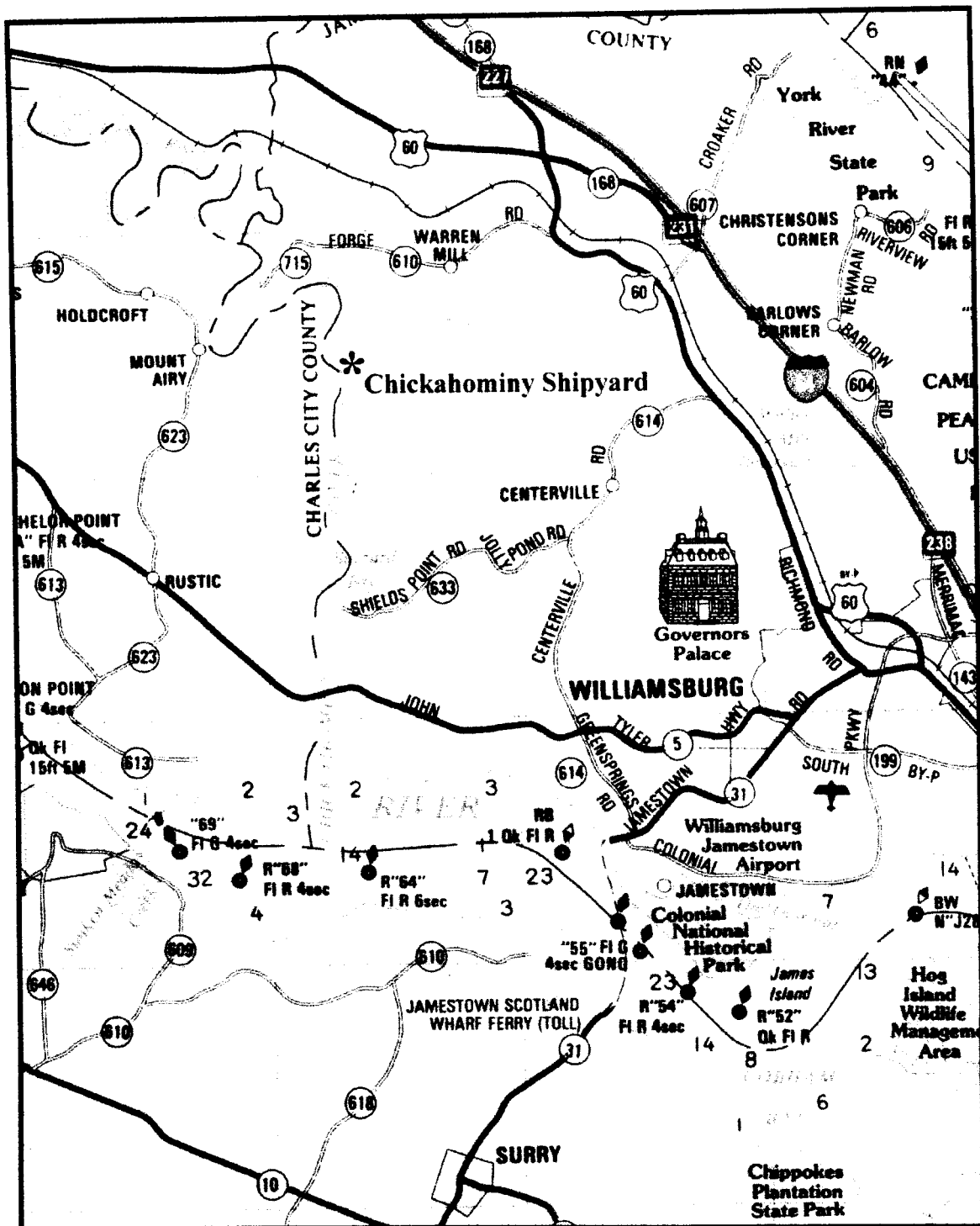


Figure 1: Map showing the location of the Chickahominy Shipyard. ADC The Map People® Used with Permission from ADC's Regional Map of the Chesapeake Bay. Copyright 1998.

British surprise attack, and allowed preventative action to remove colonial assets from the shipyard before an attack.

The Chickahominy River itself also provided safety and security for the shipyard. A complex series of shoals hide a naturally deep navigable channel. Anyone unfamiliar with those shoals ran a substantial risk of running a vessel aground attempting to enter the river. One of the Virginia State Navy vessels, the row galley *Dragon*, grounded for several days when a pilot accidentally struck one of the bars at the entrance to the river while sailing from the shipyard.²

Environmental Setting

Situated along the apex of a bend in the river, the Chickahominy Shipyard occupies one of the few stretches of high ground that directly fronts the water. To the north, south, and across the river from the shipyard there are swampy marshlands. The northern portion of the site fronts the river with a short bluff, while the central and southern portions gently slope to the edge of the water. The 119 acres that comprise the original shipyard tract today contain two private residences with multiple outbuildings, the remains of a commercial fishing operation with a large fish processing facility built over the water, a pier, and agricultural fields.

The sandy beach at the site gently slopes into the water where the bottom turns into a mixture of silt and sand. The gentle slope continues out to a depth of approximately eight feet mean low water (mlw) where the bottom dramatically drops off to the channel bottom at approximately forty feet mlw. The steep drop is the result of

erosion due to the high currents in the river that erode away the outside of the bend in the river where the shipyard is located.

The river bottom is hard packed clay with pockets of sand and silt. Currents in the river are tidal and peak at approximately three knots. Visibility varies based on seasonal rainfall but is usually less than a foot. One exception when visibility is good is during extended periods without any precipitation when it can reach approximately five feet.

Previous Investigations

Two surveys investigated the Chickahominy Shipyard Site during the 1970s. They included an initial investigation by the Virginia Research Center for Archaeology (VRCA) and another by Dennis Short, an intern with the Virginia Department of Historic Resources. Neither survey resulted in a detailed study of the site.

The first investigation of the site occurred in 1971. The primary purpose was to verify that the site was the location of the Chickahominy Shipyard discussed in the historic record. Consequently, VRCA only briefly visited the site. Most of the work focused on archival research to determine the historic location of the Chickahominy Shipyard.³ VRCA located documents related to the shipyard during the Revolutionary War that suggested the site played an important role in the Virginia State Navy. The historic research also tracked the ownership of the property both before and after the shipyard's existence.

The brief archaeological survey carried out in 1971 revealed several exposed archaeological features within the boundary of the historic shipyard tract. The VCRA located a foundation, what were thought to be two separate sets of slipways, and many artifacts dating to the Revolutionary War period.⁴ That archaeological evidence along with the historic records strongly indicated that the site was indeed the Chickahominy Shipyard.

A second investigation of the Chickahominy Shipyard Site, conducted in 1977 by Dennis Short, an intern with the Virginia Historic Landmarks Commission, tried to locate three vessels identified in the historic record as sunk nearby.⁵ Reportedly, the British destroyed those vessels during a raid on the shipyard in 1781. Short and his volunteer divers conducted the underwater survey by swimming a series of arcs off the beach to locate submerged archaeological remains that lay in the river. They found the remains of two vessels lying in forty-five feet of water near the northern edge of the site.⁶ They chose to investigate one of them and leave the other alone.

The shipwreck that Short and his team investigated was described as "well preserved, for over the years it had worked its way into the mud bottom, sealing itself from currents and other weathering factors. Wooden planking once attached to the frames now lay in scattered piles in all directions."⁷ Inside the hull of one vessel, the team found numerous artifacts, some of which they temporarily recovered, but returned after documentation.

The series of dives produced a handful of diagnostic artifacts capable of preliminarily dating the wrecks. Those artifacts included a pewter spoon, pig iron ballast,

cannonballs, and a bottleneck. Short's work also provided an initial indication of the size of one of the vessels. The team concluded that the vessel was approximately one hundred feet long with a beam of approximately thirty-five feet. The vessel had forty-three frame sets spaced approximately fourteen inches apart. The frame dimensions were eight inches sided, five inches molded and extended along a curve from the keel six to ten feet into the water column.⁸ The construction techniques and artifacts Short and his team found suggested that it dated to the third quarter of the eighteenth century.

Those two brief investigations provided enough information to nominate the site to the National Register of Historic Places in June 1979. No further investigations occurred until this project. The Program in Maritime History and Nautical Archaeology at East Carolina University planned an investigation during the late 1980s with the Virginia Underwater Archaeological Program, but the project was canceled.

Literature Review

Although no written history of the Chickahominy Shipyard exists, there are several secondary sources written about the Virginia State Navy that discuss the Chickahominy Shipyard. There are also several published historical studies that focus on shipbuilding in the southern colonies. Most are quantitative analyses of the shipbuilding industry in a particular region. Studies from other areas, such as New England, discuss individual shipyards and areas where shipbuilding became an important industry. The following synopsis includes some important secondary sources.

R.A. Steward's, The Virginia State Navy during the American Revolution,⁽¹⁹²³⁾ is a comprehensive source of information concerning the Virginia State Navy. A series of articles originally published anonymously by Dr. W. P. Palmer in the Southern Literary Messenger in 1857 provided Steward with the basis for his work.⁹ In this book, Steward thoroughly explored the history of the Virginia State Navy from its beginnings in 1775 through its rapid growth and decline to its formal end in 1783. The book not only examined the individual events, but also investigated the personalities and situations that shaped and molded the Virginia State Navy. Steward also explored and underscored the impact that the Virginia State Navy had on the course of the war in tidewater Virginia. While Steward does not discuss in any detail the daily activities of the Chickahominy Shipyard, he did document its role in the Virginia State Navy. The book also recorded the every increasing role as both a naval base and repair facility of the shipyard and its destruction. In summary, Steward's narrative placed the shipyard in a historical context, but did not provide details about the development of the facility or daily repair and shipbuilding activities.

While Steward wrote a comprehensive account of the Virginia State Navy, his work is not well referenced. Steward failed to document his text with footnotes making validation of his statements and further investigation of the events he detailed time consuming and tedious. Other secondary sources, however, have identified the primary collections upon which Steward relied. Steward used the original records of Virginia State Navy housed at the Virginia State Archives in Richmond. Analysis of those records

during the research for this thesis indicated that Steward used solid research methods in compiling the historical data and transforming them into a valuable narrative.

Another narrative written specifically about the Virginia State Navy of the American Revolution is A Navy for Virginia: A Colony's Fleet in the Revolution by Charles B. Cross, Jr. Cross' work is very similar to Steward's. The book documented the general history of the Virginia State Navy focusing on the situation, personalities, and location that influenced the development of this force. Cross argued that the Virginia State Navy was a product of its environment and struggled because of Virginia's lack of financial resources. Cross contended that the lack of sailors and captains willing to join and stay in the Virginia State Navy with its low pay and insufficient resources was its downfall. According to Cross's narrative, the colonial sailors were not driven by the noble values that the war was fought for, but by compensation. Cross did suggest, however, that the Virginia State Navy was largely successful, and that without it, the Revolutionary War in Virginia would have gone quite differently.¹⁰

Cross' book, much like Steward's, did not detail the history of the Chickahominy Shipyard, but discussed the significant events and the role that it played in the Virginia State Navy. The book did, however, provide the reader with Cross' insight into and interpretation of the various personalities who were responsible for the development and success of the Chickahominy Shipyard. Cross' work placed the Chickahominy Shipyard in context relative to the Revolutionary War in Virginia.

Cross wrote his narrative, much like Steward, in a format that lacked annotation. He included a short bibliography that referenced the same collection of primary Virginia

State Navy records housed at the Virginia State Archives in Richmond that Steward used. Data discussed in Cross' monograph coincide with data known to be within that set of primary documents. Overall, Cross' work is one of the few narratives that conveys the significance both nationally and regionally of the Virginia State Navy during the Revolutionary War.

A third secondary source on the Virginia State Navy and the Chickahominy Shipyard is The Chesapeake Bay in the American Revolution,⁽¹⁹⁸⁷⁾ edited by Ernest M. Eller. The chapter written by Joseph A. Goldenberg and Marion West Stoer discussed the development and history of the Virginia State Navy. The two authors argue that Virginia's colonial navy was the largest and most successful of the colonial navies. Goldenburg and Stoer agreed with Steward and Cross that the Virginia State Navy was successful. They suggested that the Virginia State Navy was effective at harassing British navy vessels, transporting men and supplies, and escorting merchantmen around the Chesapeake Bay and along the Atlantic coastline¹¹

Goldenberg and Stoer also agreed with both Steward and Cross that manpower and resources limited the success of the Virginia State Navy. They additionally argued that the British raid by Commodore George Collier in 1779 dealt a crushing blow to the state navy. During that raid Collier and his men captured and destroyed more than 130 vessels, including the frigate *Virginia*, which was under construction at the Gosport Shipyard in Norfolk.¹² They argued that Virginia lacked the resources to recover from such devastating losses. They point out that after Collier's raid, the Virginia State Navy went through a major reorganization that attempted to focus its efforts by dramatically

reducing the number of operational vessels yet maintaining all of its sailors. This was a change from the VSN's previous focus on continuing to increase its size and capabilities.

Goldenberg and Stoer provided little detailed information about the Chickahominy Shipyard. Their chapter only briefly mentioned the establishment, use of, and destruction of the shipyard. They did not discuss the day to day operations of the shipyard or the ships built or repaired there. Like Steward and Cross, Goldenberg and Stoer provided a narrative that places the Chickahominy Shipyard within the context of the Virginia State Navy but they failed to provide a comprehensive view of its regular activities.

While Goldenberg and Stoer's chapter in The Chesapeake Bay in the American Revolution did not have the detail of Steward's or Cross' narratives, it made a strong case for the significance of the Virginia State Navy. The chapter explored the roles that places such as the Chickahominy Shipyard played in the development of the state navy. Well referenced, Goldenberg's and Stoer's chapter provided an overview of the Virginia State Navy.

While there are few other sources that focus their attention on the Virginia State Navy in particular, there are several important works concerning the Revolutionary War, shipbuilding, wharf construction, and American ship designs of the period. Those studies address many of the individual subjects that together provide the overall historical context in which the Chickahominy Shipyard existed. They also documented the importance of the Virginia State Navy and its effects on the development of the shipbuilding industry in colonial America.

John E. Selby's The Revolution in Virginia 1775-1783 (1988) is one of the few books written solely about the Revolutionary War in Virginia. In this work, Selby presented the unique Virginia experience of the Revolutionary War. Selby's narrative related the political, administrative, and military histories of Virginia during the period from 1775 to 1783 discussing not only the events and circumstances, but the thinking and underlying objectives that shaped those events.

Selby theorized that Virginia's success in defending the state from the British during the conflict was the result of a set of powerful personalities who were able to pull together as a united front. That group of people effectively managed Virginia's vast yet less than optimum resources. While Selby presented the details of those events, he also investigated and analyzed them. In doing so, he provided a unique view of why Virginia successfully defeated the British.

While Selby's book did not specifically address the Virginia State Navy or its shipbuilding program, it did provide a comprehensive report of the events related to the Revolutionary War in Virginia. His study also provided insight into the course of action the Virginia leadership followed during the war. Selby's work is important for understanding what happened and why in Virginia. He wrote his narrative in a scholarly manner and provided the reader with an excellent top level view of the Revolutionary War in Virginia.

Historians recognize shipbuilding in colonial America as an industry that began in the first colonial settlements and slowly grew into a significant part of the colonial economy by the end of the eighteenth century. Historic records that document the

industry are scarce because the business did not require the generation of many public documents such as deeds or licenses. In the northern colonies where settlement patterns were more central and towns developed more rapidly, more private collections have survived. Those collections contained documents that not only recorded the number of ships built at a particular yard, but also contained details of the individual shipbuilding businesses, shipyards, and shipwrights. An example of a shipyard for which this kind of documentation exists is the Woodwell Shipyard in Newbury, Massachusetts.¹³ Studies of shipyards where those kinds of documents have survived provide a picture of the industry and the development of shipbuilding in a specific region.

Unfortunately, settlement patterns in the southern colony's tended to be more spread out and remote, and few private document collections survived. What survived in the southern colonies were newspapers and other public records that in turn have been used to study the southern colonial shipbuilding industry. Those types of records do not provide much insight into the shipyards themselves, how they developed or how they operated, but are an excellent source for understanding the overall patterns of the industry's development.

The most comprehensive study of the colonial shipbuilding industry published to date is Joseph Goldenberg's Shipbuilding in Colonial America⁽¹⁹⁷⁶⁾. Goldenberg attempted to document the development of the colonial shipbuilding industry from the early colonial days through the end of the eighteenth century. He also included both the northern and southern colonies. In order to complete that study, Goldenberg relied heavily on quantitative data drawn from newspapers, legal documents, and port records.¹⁴ By using

quantitative data in conjunction with surviving shipyard specific documents from the northern colonies, Goldenberg provided a more complete overview of the development and growth of the colonial American shipbuilding industry than any another single source. Goldenberg's work originally began as a doctoral dissertation and developed into a comprehensive study. Consequently, his footnotes are extensive, and his arguments are well documented with supporting evidence. Goldenberg's work provided the reader with a wealth of data on the development of the American colonial shipbuilding industry.

Another secondary source that provided a brief account of shipbuilding on the Chesapeake Bay prior to the Revolutionary War is Arthur Pierce Middleton's Tobacco Coast: A Maritime History of the Chesapeake Bay in the Colonial Era.⁽¹⁹⁵³⁾ Middleton focused on the development of shipbuilding along the Chesapeake arguing that it developed rapidly in the eighteenth century to meet shipping demands of British and colonial merchants.¹⁵ He additionally argued that many of the vessels built in the Chesapeake region were for the West Indian trade.¹⁶ He relied upon local newspapers and surviving port records to formulate statistics on the industry during the middle of the eighteenth century.

There are two master's theses available that focus on shipbuilding in Virginia. One addressed the eighteenth century, while the other addressed the nineteenth century. Both theses relied on the same type of evidence Goldenberg and Middleton used: they applied the few available documents from several shipyards to develop a picture of a generic shipyard of the period and discussed the importance and success of the industry through quantitative data supplied through port records, legal documents, and newspapers.

William M. Kelso wrote his thesis, "Shipbuilding in Colonial Virginia, 1763-1774," for the Department of History at the College of William and Mary. Kelso argued that the Virginia's shipbuilding industry grew rapidly between 1763 and 1774, becoming an important element of Virginia's economy before the Revolutionary War. Kelso stated that during the third quarter of the eighteenth century only the New England shipbuilding industry surpassed the Chesapeake in the number of ships built.¹⁷

Kelso gathered his data from a handful of incomplete but complimentary scattered sources, including the Virginia Gazette, the Virginia Naval Office Lists, and the Liverpool Plantation Register of Ships. These sources provided information on where ships were built that were trading in the British colonies. From those lists, Kelso developed a database of vessels built in Virginia from 1763-1774. That database in turn provided Kelso with a concrete foundation from which he was able to grasp the extent of Virginia shipbuilding and hypothesize that the industry was actually larger than historians are capable of documenting.

In writing this thesis, Kelso also addressed the reasons for the growth of the colonial shipbuilding industry. His discussion emphasized the economic advantages of building ships in America. The abundant quantities of timber and excellent shipbuilding locations with access to inland waterways provided the American colonial shipbuilding industry with a competitive advantage over the European shipbuilding industry.¹⁸ This advantage allowed the colonists to build ships at a fraction of the cost of those produced in Europe.

While Kelso's thesis significantly added to the study of colonial shipbuilding in the southern colonies, it only touched the surface in terms of the gaps in the historic record. Kelso relied on primary research to develop his thesis and limited secondary source material to flesh it out. For example, in describing eighteenth century colonial shipyards in America, Kelso relied entirely on the work of Howard Chapelle. By relying on only one source, Kelso limited his ability to form his own interpretation of what a colonial shipyard was. Overall, Kelso's thesis is a significant contribution to the early study of shipbuilding in the southern colonies because it was one of the first scholarly attempts to study the industry in a methodical and quantitative fashion.

Another thesis written on the subject of shipbuilding in Virginia is Peter Wrike's study, "Mathews County Shipbuilding Patterns 1780-1860."⁽¹⁹⁹⁰⁾ Wrike's thesis, like Kelso's, is a quantitative analysis of a selected portion of the Virginia shipbuilding industry. Wrike focused on a single county in Virginia during the end of the eighteenth and early part of the nineteenth centuries.

Wrike's thesis was inspired by a painting the Mariners' Museum in Newport News, Virginia, received in 1977. The painting depicted a vessel built in Mathews County, Virginia, in 1805. That vessel displaced 588 tons, an extremely large vessel for the time. The size of the vessel peaked Wrike's interest and motivated him to conduct additional research. Curious to find out more about shipbuilding in Mathews County, Wrike started a detailed search of various record groups at the National Archives and the Virginia State Archives.¹⁹ He discovered that Mathews County developed an extensive shipbuilding industry during the late eighteenth and early nineteenth centuries.

In addition to the previous work focusing specifically on shipbuilding in the southern colonies, there are several important works dealing with vessels, wharves, and archaeological sites of the period that are important to the study of a specific shipyard. While the source material on each of the subjects is extremely limited, these theses and monographs provide the construction and technical context into which the findings of an archaeological investigation of the Chickahominy Shipyard would likely fit.

Howard Chapelle's The History of American Sailing Ships⁽¹⁹³⁵⁾ discussed the design evolution of sailing vessels built in America. Chapelle began with the ships of the colonial period and then systematically discussed the evolution of American designs of naval craft, privateers, slave ships, revenue cutters, schooners, merchant craft, and sailing yachts. Chapelle theorized that the characteristics that defined American built ships evolved from America's need for fast, strongly built ships that operated efficiently in the differing marine environments found along the shores of the North America.²⁰

Of particular interest was Chapelle's discussion of the evolution of American warship designs. Chapelle detailed the adaptation of warship designs to the inland environments where the American and state navies of the Revolutionary War operated. Chapelle's documentation of those American warship designs provided comparative models for the archaeological remains of naval vessels of the Revolutionary Period.

One important vessel that Chapelle discussed is the *Washington* galley built by Benedict Arnold on Lake Champlain. The *Washington* was one of four American built galleys that operated on Lake Champlain during the Revolutionary War. The British recorded the lines of the *Washington* after they captured the vessel on 13 October 1776.

Arnold chose the galley design because he believed that the characteristics of the galley provided him with small, lightly manned vessels that could successfully operate against the much more powerful British warships in the region.

Underwater archaeological investigations have located the remains of several American built warships and merchant vessels of the late-eighteenth century. The remains of those vessels provide detailed information on American ship designs and construction techniques of that period.

During the mid-1970s, the Institute of Nautical Archaeology (INA) at Texas A & M University investigated the remains of the *Defence*, an American built privateer of the Revolutionary War period. The crew of the *Defence* scuttled it in Penobscot Bay in August 1779 during a battle with the British Navy. The ship was newly built, possibly on its maiden voyage. Over 40 percent of the *Defence's* hull was intact, providing archaeological evidence relative to the vessel's hull design and architecture.²¹ The investigation of the *Defence* determined that the vessel was a brigantine of 170 tons, armed with sixteen six¹/₂ pound cannon. The majority of the brig's structural members, its outer hull, and internal bilge ceiling were made from white oak, a quality shipbuilding timber. The vessel's two intact mast stumps and deck planking were fashioned out of pine.²²

Investigation of the *Defence* provided much needed information of American warship construction during the Revolutionary War period. Historical records indicate that many vessels of the period were fast sailers, but poorly constructed. Rough cut structural timbers and poorly fitting joints were evident on *Defence*, however, other

components displayed evidence of careful finishing. Design data collected from *Defence* were compared with another American built privateer brigantine, the *Swift*, which was known to have been a fast vessel. While the design of the two vessels was not identical, the *Defence* exhibited many of the same design characteristics that made *Swift* fast. The documentation of similar design characteristics on the *Defence* suggests that it was also probably designed for speed.²³

Joseph Gary Norman wrote his master's thesis entitled "Eighteenth century Wharf Construction in Baltimore, Maryland," for the Department of Anthropology at the College of William and Mary. Norman studied various wharf construction techniques available during the eighteenth century, surviving wharf documentation from the region, and a brief case study of the Cheapside Wharf in downtown Baltimore.²⁴ Norman argued that wharf construction in Baltimore used existing techniques to meet the demands of the environmental conditions found in the Chesapeake Bay region.

Norman investigated eighteenth century wharf construction of Baltimore primarily through remaining documents related to wharf construction, repair, and inspection. While not many of these documents survived, enough exist to conclude a general state of technology and the preferred methods of construction in the Chesapeake environment. Norman concluded that wharf construction in Baltimore during the eighteenth century used a modified crib design and that exact construction details varied from builder to builder.²⁵

By providing a primer on eighteenth century wharf construction and a comprehensive case study of the Cheapside Wharf, Norman has made a significant

contribution to the study of maritime structures in the Chesapeake region. Not only does his thesis analyzed and contributed to the knowledge of dockside structures in the Chesapeake region, but it also provided a clear and concise guide to wharf building techniques, which could be used to categorize different types of wharf and maritime related structures in the region.

Archaeologists have located only two other shipyards in the mid-Atlantic region, only one of which has been the focus of an in-depth study. Because of the lack of both historical documentation and comprehensive archaeological surveys the remains of few shipyards have been discovered. The addition of information from other investigations in the region will add much to the historical and archaeological record.

Historians identified documents that led to the discovery of the James West Shipyard in downtown Philadelphia in 1987. Archaeological evidence suggested activity at that site began in the seventeenth century and lasted throughout the eighteenth. Archaeological testing of the site uncovered an intact set of traditional stern launch slipways. Unfortunately, further testing of the site did not reveal any other intact features associated with the shipyard. While the investigation documented a traditional stern launch slipway configuration, little was learned about the shipyard from that single feature.

The Maryland Maritime Archaeological Program located the Stephen Steward Shipyard (18AN817), near Galesville, Maryland, in 1991.²⁶ This shipyard was in operation from 1751 to 1783 and engaged in both private and naval shipbuilding. The Maryland Historic Trust has been investigating the site since its discovery. Those

investigations located two sets of slipways, a wharf, and concentrations of artifacts on land indicating areas of shipbuilding, blacksmithing, and timber handling activity. One important discovery of the project was side-launching slipways for which there is currently no known contemporary comparative model in colonial America.²⁷ That discovery suggests that colonial shipbuilders in the region used adaptive techniques to overcome local environmental conditions such as the tidal range.

As with most archaeological investigations in the region, the Stephen Steward Shipyard project is on-going. Much has been learned from the investigation so far adding key pieces of data to the historic and archaeological record. Future investigations of the site should provide many more comparative models for findings from other shipyard investigations in the region.

Research Objectives and Methodology

The primary research objectives of the 1994 investigation of the Chickahominy Shipyard Archaeological Site were to document the history of the shipyard and to conduct an intensive survey of the submerged portions of the site. Those objectives provided a framework to facilitate additional feature specific investigations of the site. To build that framework the investigation conducted a rigorous program of historic research to identify and inspect all of the available primary documents. The design of the underwater archaeological investigations provided a method to locate all of the submerged components of the site and preliminarily document those physical remains.

While building a framework for future investigations was the primary objective of the investigation, a series of secondary objectives was established based upon the research

questions outlined in the thesis prospectus and research design. One of the secondary objectives was to collect enough data from the Chickahominy Shipyard site to allow an initial comparison with the other shipyard sites in the region. Comparison of the feature details with those collected from other sites could provide new insight into shipbuilding patterns in the Chesapeake region. A secondary objective of the historical investigations was to answer questions about the role the shipyard played in the Revolutionary War and the details and significance of the British destruction of the shipyard. All of the investigations both historical and archaeological filled significant gaps in both the archaeological and historical records relating to technology, manufacturing techniques, ship designs, and social practices.

The methodology employed for the historical research was to conduct an intensive literature review of the published source material on the Chickahominy Shipyard, the Virginia State Navy, similar sites in the region, and similar colonial built vessels. The bibliographies and source notes of those secondary sources were used to generate a list of primary sources to collect and review from the various repositories. The investigation next identified peripheral primary document collections for review. With the research questions and objectives in mind, all the primary documents were reviewed for any data potentially relevant to this investigation.

The archaeological methodology used modern remote sensing techniques, sonar and magnetometry, to locate and map features along a stretch of the river in front of the shipyard location. Along the shoreline, a survey was conducted to locate and delineate unknown features. The investigation mapped significant features to facilitate additional analysis. Comparison of the archaeological features with other historical and archaeological data sets provided context both historically and archaeologically.

¹Joseph A. Goldenberg and Marion West Stoer, "The Virginia State Navy," in Chesapeake Bay in the American Revolution, ed. Ernest McNeill Eller (Centerville, Maryland: Tidewater Publishers, 1981), 179.

²Charles B. Cross, A Navy for Virginia: A Colony's Fleet in the Revolution (Yorktown, Virginia: The Virginia Independence Bicentennial Commission, n.d.), 68.

³Martha McCartney and Nick Lucchetti, "National Register of Historic Places Inventory—Nomination Form (Chickahominy Shipyard Archaeological Site)" (MS on File at the Virginia Department of Historic Resources, Richmond, Virginia, 1978), 1.

⁴Ibid., 2.

⁵Dennis Short, "The Toano Report" (Ms on file at Virginia Department of Historic Resources, Richmond, Virginia, 1977), 1.

⁶Ibid., 20.

⁷Ibid., 21.

⁸Ibid., 25.

⁹Robert Armistead Steward, History of Virginia's Navy of the Revolution (Richmond, Virginia: Mitchell & Hotchkiss Printers, 1923), I.

¹⁰Cross, 80.

¹¹Goldenberg and Stoer, 198.

¹²Ibid., 187.

¹³William H. Woodwell, "The Woodwell Shipyard, 1759-1852" Bulletin of the Business Historical Society, Inc. 21 no.3 (June 1947): 58-74.

¹⁴Joseph A. Goldenberg, Shipbuilding in Colonial America (Charlottesville, Virginia: University Press of Virginia for the Mariner's Museum, 1976), xi.

¹⁵Arthur Pierce Middleton, Tobacco Coast: A Maritime History of the Chesapeake Bay in the Colonial Era (Baltimore, Maryland: Johns Hopkins University Press, 1953, reprinted 1984), 250, 255.

¹⁶Ibid., 260.

¹⁷William Kelso, "Shipbuilding in Virginia 1763-1774" (M.A. Thesis, College of William and Mary, 1964), v.

¹⁸Ibid., 6.

¹⁹Peter J. Wrike, "Mathews County Shipbuilding Patterns 1780-1860" (M.A. Thesis, Old Dominion University, 1990), vi-vii.

²⁰Howard I. Chapelle, The History of American Sailing Ships, (New York: Bonanza Books, 1935), 4-5.

²¹"The Defense Project 1975-1981" (Unpublished Manuscript, Texas A&M University, College Station Texas), 2.

²²Ibid., 5.

²³Ibid., 7-8.

²⁴Joseph G. Norman, "Eighteenth -Century Wharf Construction in Baltimore, Maryland" (M.A. College of William and Mary, 1987), viii.

²⁵Ibid., 35.

²⁶Bruce F. Thompson, "A Preliminary Report of Archaeological Investigations at the Stephen Steward Shipyard Site, 18AN817" (Ms on file, Maryland Historic Trust, Crownsville, MD 1993), 1.

²⁷Ibid., 21-22.

CHAPTER 2

HISTORICAL CONTEXT

The mid-eighteenth century was a turning point for the British Empire. The Treaty of Paris, signed in 1763, ended a series of wars that dominated the early and middle part of the century. Because of those wars, Great Britain had accumulated an enormous national debt and a vast empire that would proved costly to administer.¹ As the financial strain increased, the British government turned to the American colonies as a greater source of tax revenue. Having enjoyed a large level of financial and personal freedom up to that time, the American colonies vocally and physically protested the new financial burdens Parliament placed on them.

As armed conflict drew near, the American colonies turned to the local shipbuilding industry to supply vessels for transportation and to counter the British Navy. During the eighteenth century, the shipbuilding industry had become one of the most productive industries in colonial America. As a product, ships were the fifth largest export from the colonies by the Revolutionary War.² The Continental Congress commissioned its first vessels for service against in the British in the fall of 1775. Many individual colonies quickly followed suit turning to the local shipbuilding industry for vessels to defend America's waterways.

Virginia hired many colonial shipwrights to establish, manage, and direct state shipbuilding programs and shipyards. The vessels built by the colonial shipwrights for

use against the British consisted mainly of smaller vessels specifically designed to take advantage of the shoal environments found along the east coast of North America. In addition, many designs used by the colonial shipwrights incorporated faster hull forms that developed during the eighteenth century in the colonies for coastal and West Indian trade.³

Shipbuilding in Colonial America

Shipwrights built small boats and ships in the colonies from the first temporary settlements onward. Most early vessels replaced lost or damaged ships or were new vessels that facilitated the exploration of the regions surrounding the early settlements.⁴ Shipbuilding as an industry in the colonies did not grow rapidly. Throughout the early colonial period, shipwrights built a steady stream of small boats for local use and occasionally produced a large vessel for English merchants. It was not until the beginning of the eighteenth century that the American colonial shipbuilding industry began to flourish.

Colonial shipwrights used the abundant stands of timber found in North America to construct their vessels. While the British realized the value of some of the species of timber that grew in the colonies, especially white pine, they chose to import it to England rather than fund the development of a shipbuilding industry in the colonies. The reason for importation was that many species traditionally used for shipbuilding did not grow in the colonies. In particular, the species of oak that grew in the colonies were unfamiliar to English shipwrights. To develop a local shipbuilding industry, the shipwrights had to

learn the strengths and weaknesses of the local timber.⁵ Consequently, the lack of familiarity with the local timber delayed the development of the industry. As the seventeenth century progressed, the colonial shipwrights who were building ships quickly learned which North American species worked best. English merchants, however, were not as quickly convinced of the value of colonial-built ships.

During the first half of the eighteenth century, the shipbuilding industry in colonial America grew rapidly. Primarily wealthy colonial merchants, who were familiar with colonial built vessels, funded the growth of the industry. Multiple reasons account for the rapid increase in shipbuilding in colonial America. First, colonial merchants built ships to transport their own goods instead of relying on English shipping. Second, English merchants lost hundreds of ships to privateers during the War of the League of Augsburg and the War of Spanish Succession and they needed replacements. Because of the wars in Europe, the cost of producing ships had increased dramatically, so the British merchants turned to the colonial shipbuilding industry to replace their fleets.⁶

According to historian Joseph Goldenberg, "the desire of Chesapeake Bay merchants for their own trans-Atlantic vessels stimulated the local shipbuilding industry."⁷ Early in the colonial period English merchants owned most vessels used to transport goods to and from the colonies. By the early eighteenth century some colonial merchants had accumulated sufficient wealth to diversify their commercial holdings. The motivation for merchants to build their own vessels was the increase in profits that they could gain by transporting their own goods and from selling colonial built vessels in Europe.⁸

The colonial shipbuilding industry quickly expanded its markets to include English merchants as well as local planters and merchants. This expansion took place because of the abundance of good shipbuilding timber, land, and labor in colonial America. The availability of natural resources allowed colonial shipwrights to produce vessels far cheaper in America than in Europe. While many Englishmen initially considered colonial-built vessels inferior to European built vessels, colonial-built vessels drastically reduced the transportation costs of highly valued colonial products. English merchants also quickly learned that they could buy cheaper vessels in the colonies for trans-Atlantic trade and make a considerable profit.

By the time of the Revolution, ships had become the fifth largest colonial export to Britain.⁹ Colonial shipbuilders often built their vessels on speculation, without a confirmed buyer. Loaded with colonial goods and sailed to Europe, representatives for the colonial builder sold the vessel after selling the colonial cargo.¹⁰ Wealthy colonial merchants made an agreement with a shipbuilder where the merchant financed the shipyard. In return, the shipbuilder produced vessels on speculation for the European market. The merchant and the shipbuilder shared the profits once the vessel was sold.¹¹ This method of operation was advantageous to all parties: the shipbuilder had the means of production, the merchant had the financial capital, and the merchant's European representative had the business contacts to bring the product to market.

New England was the first region to develop a strong shipbuilding industry. During the seventeenth century colonial leaders recognized the value of a colonial shipbuilding industry and encouraged it. The colonial governments of New England

recruited English shipwrights to emigrate to the colonies and establish shipyards by offering them free land on which to build their shipyards, exemptions from militia duty, and other entitlements.¹² These practices facilitated the establishment of family businesses that lasted several generations.

Initially, New England shipwrights established their shipyards on the outskirts of towns near stands of quality timber. The early shipyard sites in New England had three similar characteristics, proximity to timber, gradually sloping beaches, and proximity to other artisans such as sail makers, blacksmiths, and ship chandlers.¹³ The prime lands for building ships in New England were not abundant. Consequently, those areas often developed into small shipbuilding communities with multiple shipyards.¹⁴ With the development of shipbuilding communities, timber was no longer locally available forcing the development of regional timber shipments along the local waterways. By the middle of the eighteenth century, New England shipyards had become centrally located in large port towns providing access to supplies and materials from the surrounding regions.

Throughout the seventeenth and well into the eighteenth centuries, shipbuilding in the southern colonies continued as it had from the earliest settlements. Shipwrights built small boats and ships locally to supply the needs of coastal and West Indian trade. The potential value of shipbuilding did not initially encourage the growth of the industry because of the potential prosperity offered by tobacco cultivation in the region.¹⁵ Consequently, few shipyards developed in the southern colonies to produce vessels for trans-Atlantic trade or British merchants during the seventeenth and early eighteenth

centuries. Many vessels built during this period were produced along the shores of plantations for local use.

By the second quarter of the eighteenth century southern planters and merchants had become aware of the benefits of owning their own ships and the lucrative British market for colonial built vessels. The European wars of the early and middle eighteenth century caused significant increases in the freight rates that planters and merchants had to pay to export their tobacco.¹⁶ Merchants and planters realized they could dramatically reduce their costs by providing their own shipping. As a result, shipbuilding in the southern colonies and in particularly in the Chesapeake Tidewater area increased substantially during the second and third quarters of the eighteenth century.¹⁷

Unlike New England, shipbuilding in the Chesapeake Tidewater did not tend to be concentrated in small shipbuilding communities. Significant shipbuilding centers did develop in Norfolk, Annapolis, Chestertown, Cambridge, and Baltimore during the second half of the eighteenth century along with the associated industries of sailmaking, iron work, and cordage manufacturing. At the same time, however, many large shipyards existed near the headwaters of large tributaries such as the West River and the Chester River.¹⁸ Those shipyards appear to have been located near stands of timber. This dichotomy may in part be due to the abundance of land suitable for erecting shipyards on along the Chesapeake Bay.¹⁹ It appears that it was just as easy to transport fittings, sails, and cordage from the commercial centers to the rural shipyards as it was to transport timber to the shipyards located in the commercial centers.

Another difference between Chesapeake shipyards and the shipyards of New England was the labor pools used to construct vessels. New England relied upon apprentices, free skilled labors, and occasionally upon slave labor.²⁰ Chesapeake shipyards, however, relied heavily upon slave and indentured labor.²¹

Chesapeake shipbuilding exhibited an unusual characteristic of the period. Unlike the New England shipbuilding, adaptive shipbuilding techniques appear in the documentation of shipyards in the Chesapeake region. Shipyards in New England tended to be very similar to the shipyards of Europe.²² Chesapeake shipyards, however, varied greatly from extensive operations in towns like Baltimore to single sets of side launching ways at the headwaters of small rivers. Those differences probably developed because of the different environmental conditions found in the southern colonies as compared to England or the northern colonies. Some of those environmental differences are the small tidal ranges and the narrow channels found on many of the Chesapeake tributaries. Those conditions were unusual to English shipwrights and seem to have encouraged the use of sideways launching techniques. Side launching enabled colonial shipbuilders to build large vessels along narrow creeks and streams.²³

The differences in New England and Chesapeake shipbuilding are important to understand because they suggest why there is a difference in the type and quantity of historical records available to study the industry. Because Chesapeake shipyards were often isolated, especially during the early colonial period, few observers had a chance to comment on what was happening at the shipyards and record it. Most historical evidence concerning shipbuilding in the Chesapeake Bay region is derived from the surviving port

records, whereas in New England there are many different types of records.²⁴ Port records, while critical to the study of shipbuilding in a specific region, only indicate the number of vessels built and registered in the area during a particular time. Those records do not record the character of the industry in a particular region.

British Coercion and the Colonial Response

By the spring of 1774, tensions between the colonies and the British government were increasing dramatically. The first Continental Congress convened in September and October 1774 to formulate a united response to the British and peacefully address the issues between the colonies and the mother country. The British, however, were not interested in negotiating with the colonies. In the spring and summer of 1775, military engagements between the two sides increased in frequency and magnitude. On 19 April 1775, colonial and British troops clashed at Concord and Lexington.²⁵

As the tension increased, the colonists responded by reluctantly organizing various committees and volunteer military units for the defense of their colonies. One of the first actions most colonies took was to establish a committee of safety. The committee of safety formed in each colony was a board tasked with addressing any issue related to the security of the colony. During the spring of 1775, many individual committees of safety stockpiled arms and formulated plans to defend cities against British invasion. Much of the material the committees of safety needed to support the efforts of the local militias, however, arrived by sea. With the armed clashes increasing, the British Navy tried to prevent the colonials from receiving shipments of arms and ammunition.

During 1774 and 1775, British men of war patrolled the New England coast to enforce British trade acts concerning the colonies. During the spring and summer of 1775, the HMS *Rose* patrolled the waters off Rhode Island enforcing various acts pertaining to trade and detained vessels and cargoes suspected of violating those acts.²⁶ In addition to enforcing the various trade acts, the British Navy now had concerted interest in preventing the American colonists from obtaining the materials they needed to fight a war. This activity infuriated the colonists, fueling their suspicion and outright defiance of the British. Many committees of safety thought of raising fleets to defend America against British aggression.

In response to the British actions off the New England coast, the Rhode Island General Assembly voted on 12 June 1775 to send a letter to the commander of the HMS *Rose* demanding an explanation of his actions and the return of the goods that the *Rose* had detained. During this same meeting of the General Assembly, the Rhode Islanders took the next step to defend themselves from British naval aggression and voted to fit out two armed vessels for the colony's protection.²⁷ In August, the Rhode Island General Assembly constructed new vessels for defense.²⁸ Rhode Island's actions were among the first events in the process of creating an armed fleet to defend the colonies.

On 13 June 1775, only one day after the Rhode Island General Assembly's resolution, the Massachusetts Provincial Congress reviewed a report, drafted at its request, that explored the possibility of establishing a fleet of armed vessels for the protection of its colony. Massachusetts was not, however, as quick as Rhode Island to establish a navy. After long debate on 13 June and later on 20 June 1775, the

Massachusetts Provincial Congress decided to let “the matter subside for the present.”²⁹ Shortly thereafter, the Provincial Congress of Massachusetts appointed a committee and approved a plan to secure whaleboats for the use of the colony against the enemy.³⁰ Later in August of 1775, Massachusetts took control of two ships fitted out by the committee of safety in Machias at its own expense. The Massachusetts Provincial Congress passed a resolution to provide commanding officers for the vessels and authorized those officers to enlist seamen for their ships.³¹

New Hampshire initially approached the problem differently. Instead of arming ships to protect the colony, the New Hampshire Committee of Safety resolved on 15 June 1775 to fit out two whaleboats to intercept incoming merchant ships carrying provisions, salt, or molasses. The whaleboat captains had orders to advise incoming colonial ships that the British would seize their cargoes if they were spotted and to redirect the ships to other ports.³²

Connecticut was the next colony to arm ships to protect its trade. On 1 July 1775, the General Assembly of Connecticut resolved to fit out two armed vessels to defend its coastlines from British aggression. The resolution specified that the ships were to carry cannon, swivel guns, and small arms. The vessels operated under the direction of the governor and a small board since the general assembly could not be in session daily.³³

Pennsylvania wasted no time addressing the British threat to its commerce and colony. On 30 June 1775, the Pennsylvania Assembly established a committee of safety to provide defense against invasion and insurrection.³⁴ Only days later, the Pennsylvania Committee of Safety passed a resolution to build vessels and other “machines” to defend

its shorelines.³⁵ The Pennsylvania Committee of Safety voted to build twelve boats for the defense of the colony on 15 July 1775.³⁶ Pennsylvania was also interested in blocking the Delaware River to navigation and solicited proposals for conducting such an operation.

The individual colonies led by Rhode Island responded to British naval policies during the spring and summer of 1775. Through the formation of committees of safety, those colonies prepared to defend their interests. Because British activities focused on enforcing the various trade acts and military policy on the sea, the colonies responded by arming vessels to protect their interests. In their responses to British aggression, the colonies laid the groundwork for an American navy.

Continental Navy and Shipbuilding Program

In October 1775, the need for a continental navy became clear. The British patrolled the North Atlantic harassing merchant shipping and disrupting commerce. In Narragansett Bay, HMS *Rose* virtually closed much of Rhode Island to commerce. As a result, Rhode Island began to lobby the congresses of other colonies to help persuade the Continental Congress that it was necessary to establish a navy to protect their common interests in August 1775.³⁷ The Rhode Island General Assembly recommended the construction of a continental fleet to protect colonial shipping and defend against the British. It submitted a resolution to the Continental Congress on 3 October 1775.³⁸ The Continental Congress, however, felt that the proposed resolution was too drastic and

appointed a committee to document the extent of the British Navy's hostilities in the colonies since the previous March before debating the resolution.³⁹

In the meantime, the Continental Congress found itself debating a similar topic. Two unescorted British brigantines loaded with arms and munitions sailed from England on 11 August 1775.⁴⁰ Lacking military supplies for General Washington's troops in Boston, the Continental Congress appointed a committee on 5 October 1775 to formulate a plan to intercept the two British vessels. The members of the committee included Silas Deane of Connecticut, John Adams of Massachusetts, and John Langdon of New Hampshire. Within hours, the committee reported back to Congress with a plan that authorized George Washington to obtain two armed vessels from the Massachusetts Council, outfit them, and intercept the two British ships. After the committee reported its proposal, a heated debate ensued concerning whether the Continental Congress should take such a decisive step. By the end of the day, Congress approved the first use of an offensive naval force against the British.⁴¹

The committee submitted an additional report to the Continental Congress on 13 October 1775, which recommended outfitting two more vessels to patrol and intercept British supply vessels in the North Atlantic. Once fitted out, the vessels would cruise the North Atlantic for an extended period intercepting British vessels supplying troops in the colonies. Congress approved the plan and asked the committee to prepare a cost estimate for a three-month cruise and to determine the appropriate armament the vessels required.⁴²

The committee reported to Congress on 30 October. As before, the committee gave further recommendations for arming vessels, along with delivering the plans that the Congress had requested. The committee's report proposed outfitting ten additional armed vessels for intercepting British supply ships and advocated a larger naval committee. In addition, it proposed establishing rules governing the capture of prizes and suggested a plan to finance the naval force.⁴³ The Continental Congress agreed to fit out two more vessels in addition to the vessels previously approved to intercept the British brigantines. The fledgling navy consisted of four vessels, one of 36 guns, one of 20 guns, one of 14 guns, and one of 10 guns. Congress also supported the committee's recommendation to enlarge the naval committee, adding four members.⁴⁴

In the meantime, the Continental Congress had drafted and sent to England the Olive Branch Petition. This document was a direct appeal to the king of England asking him to recognize Parliament's abusive governing of the colonies and asking him to intervene before the situation deteriorated. On 9 November 1775, King George III of Britain refused to receive the Olive Branch Petition.⁴⁵ The king's refusal marked the turning point in Congress's attitude towards establishing a naval force to protect America. Refusing to receive Congress's complaints and stating that the colonies were in open revolt, King George III eliminated any doubts members of the Continental Congress had about arming vessels.

Shortly after King George III refused to receive the Olive Branch Petition, the Continental Congress appropriated \$100,000 to the naval committee and organized it into a permanent naval board. In addition, Congress approved a set of rules to govern the

navy board's actions and extended the navy's authority, allowing it to capture British vessels employed against the colonies.⁴⁶ With these resolutions in place, the naval board rapidly bought, outfitted, and selected crews for the 30 gun *Alfred*, 28 gun *Columbus*, 16 gun brig *Andrea Doria*, 14 gun brig *Cabot*.⁴⁷

While the outfitting of four vessels as men-of-war brought the Continental Congress closer to establishing a navy for the defense of the colonies, it did not provide the kind of navy that the Rhode Island resolution had envisioned. On 11 December 1775, the original Rhode Island proposal was again debated in Congress. This time its many supporters quickly passed a resolution appointing a committee to "devise ways and means for furnishing these colonies with a naval armament."⁴⁸ The Congress instructed the committee to submit a proposal and return it as quickly as possible.

On 13 December 1775, the committee presented its plan to build thirteen ships by March 1776. The plan included five 32 gun frigates, five 28 gun frigates, and three 24 gun frigates. Those ships would be built in yards throughout the colonies "in New Hampshire one, in Massachusetts Bay two, in Rhode Island two, in Connecticut one, in New York one, in Pennsylvania four, and in Maryland one."⁴⁹ The Continental Congress passed this resolution and charged the newly created Continental Marine Committee to execute the resolution. In addition, the Congress instructed the Secret Committee, whose task it was to obtain war materiel from foreign countries, to obtain 7500 pieces of canvas for sails and one hundred tons of gunpowder to supply the ships.⁵⁰

In three days the Continental Congress through the Marine Committee debated and decided to create an American navy. These committees did not design the

Continental Navy for a fleet engagement against the British, however. No one believed that the Continental Navy could survive an engagement with the much more powerful Royal Navy. Instead, Congress enacted the resolutions to build a navy as Silas Deane had proposed on 30 October 1775, one that could intercept British supply vessels and challenge small contingents of British warships and privateers.⁵¹ The Continental Congress followed the lead of Rhode Island, Massachusetts, Connecticut, New Hampshire, and Pennsylvania by establishing naval forces to protect the American colonies' interests and defend against British aggression.

The Birth of the Virginia State Navy

Virginia established and built the largest state navy. At its peak, the Virginia State Navy included seventy-seven commissioned vessels.⁵² Although the VSN bought some of its vessels, it built most of them at private shipyards within the Virginia tidewater. Once it had established its own shipyards, the VSN continued to build and repair its own vessels.

The Virginia State Navy shipyards established during the Revolutionary War exhibited many similar characteristics as those of the colonial period. Often located in isolated areas, near good stands of shipbuilding timber, those shipyards served as multi-purpose facilities. Most shipyards functioned as landings and repair facilities as well as shipyards.

The Virginia legislature realized the threat to the colony from the sea as early as the spring of 1775. That threat became reality on 8 June 1775, when Royal Governor John Murray, Lord Dunmore, fled the capital at Williamsburg and boarded the HMS

Fowey stationed in the York River.⁵³ From HMS *Fowey*, Dunmore commanded numerous campaigns throughout 1775 and early 1776 attempting to reestablish British control over Virginia.

Virginians distrusted Lord Dunmore when, under the instructions of William Legge, Earl of Dartmouth, he seized the gunpowder in Williamsburg's public magazine. Dunmore ordered men from HMS *Magdalan* to seize the powder and place it on board the ship on 21 April 1775.⁵⁴ The distrust ignited by Dunmore's actions gradually escalated into a series of hostile events between Virginians and the royal governor that caused the collapse of the government in Virginia.

In response to Dunmore's seizure of Williamsburg's gunpowder, the Virginia Colonial Convention appointed a committee of safety to establish rules and regulations concerning the defense of the colony in August of 1775.⁵⁵ Shortly after Congress resolved to fit out armed vessels to defend the colonies, Virginians talked more openly about the security of their colony. Francis Lightfoot Lee detailed the early British efforts in Virginia and discussed how Dunmore, then in control of Norfolk, had issued a proclamation "declaring military Law in Virga & offering freedom to all servants & slaves, who shall repair to the King's standards."⁵⁶ Lee suggested sending a military force to drive out Dunmore and commented that the state convention should fit out "small vessels, to prevent small tenders from infesting the bays & rivers," in the spring.⁵⁷

In late 1775, while Lord Dunmore was in control of Norfolk, a fledgling Virginia State Navy quickly developed by purchasing used merchant vessels and outfitting them with weapons.⁵⁸ The colony established a shipbuilding program to produce vessels for

river and coastline defense. The first two vessels to sail under the flag of the Virginia State Navy were the schooners *Liberty* and *Patriot*. Commissioned in December 1775, the *Liberty* and *Patriot* patrolled the Hampton Roads area, seizing a number of enemy vessels.⁵⁹

George Washington discussed the problems Virginia faced preventing British naval activity on the Potomac River and reviewed a plan by William Ramsay to resolve them.⁶⁰ Ramsay's plan was to construct a series of obstructions in the river to prevent navigation and to outfit two privateers. Washington responded that he did not believe that creating obstructions in the river would work because of the river's depth and width. Instead, he suggested establishing a land battery as far down the Potomac River as possible in a location with a commanding view. Washington also suggested that along with two privateers, Ramsay should deploy several row galleys, possibly built along the design developed for Pennsylvania.⁶¹ The combination of a land battery and armed vessels, Washington argued, might be sufficient to defend against a sizable British force.

These two accounts discuss the problems that Virginia faced in protecting its shorelines. Lee and Washington believed that Virginia should establish a fleet of small armed vessels. Virginia faced many problems because of its deep navigable rivers and its proximity to the Atlantic Ocean. To compound this problem, the British realized that the combination of deepwater rivers and proximity to the sea allowed them to mount a campaign against Virginia. In 1778, when the British planned the first southern campaign, they based their strategy on using naval forces to supply, transport, and protect their

army.⁶² Such tactics were easy to implement in the Virginia where deep navigable rivers penetrated far into the interior.

The colony's situation rapidly became a greater concern to the Virginia Colonial Convention in the early months of 1776. Once Lord Dunmore was driven out, the convention turned its attention to establishing more extensive forces to defend itself. The Virginia Convention requested help from the Continental Naval Committee and received a written response on 5 January 1776. The letter stated that the armed vessels fitted out by the Continental Navy Board were on their way to the Chesapeake to aid in protecting Virginia.⁶³ Apparently realizing that the Continental forces would not always be able to protect them, the Virginia Convention, passed a resolution to "raise an additional number of forces for the defense and protection of this colony" on 11 January 1776.⁶⁴ Part of that resolution pertained to naval matters, and officially empowered the Virginia Committee of Safety to establish a navy for coastal defense.⁶⁵

This resolution did not specifically address the establishment of state shipyards. After this resolution, however, Virginian officials focused on building armed ships. A letter George Mason wrote to John Dalton discussed the activities taking place on the Potomac. Mason and Dalton outfitted three armed cruisers and two row galleys for defending the Potomac. Mason stated in another letter "We are building two Row-Gallies, which are in considerable forwardness; & have purchased three Sloops for Cruisers."⁶⁶ His letter was the first to mention the construction of vessels specifically for the protection of the colony. On 6 May 1776, the Virginia Convention formed the Board

of Naval Commissioners to direct the building and repairing of vessels.⁶⁷ Over the next several years, the Board dramatically expanded the size of the Virginia State Navy.

Description of the Vessels Designs Built for the Defense of the Colonies

During the summer of 1775, the colonies were concerned with defending their coastlines from British attack and protecting their shipping. To facilitate those objectives, several colonies established fleets of armed vessels. Those vessels were not designed to engage a large British fleet, but rather to harass and British ships and distract them so that merchant vessels could safely proceed to their intended ports. In addition to hampering the efforts of the British Navy, the armed vessels helped to defend the individual colonies from invasion by providing transportation for troops.

While many early vessels used by the individual colonies and later the Continental Congress were converted merchantmen, both groups realized that they needed vessels specifically designed and built for the purposes they were intended. To this end, a variety of shipwrights designed vessels specially to meet the tasks that those vessels needed to accomplish. Those vessel designs provided colonial shipbuilders an opportunity to incorporate many features and characteristics that they developed during the eighteenth century to facilitate trade with the West Indies and for operating in the shoal estuaries along the east coast of North America.

Pennsylvania was one of the first colonies to construct new vessels for defense. The Pennsylvania Committee of Safety chose a row galley design “forty-seven to fifty feet keel, thirteen feet broad, & four and a half feet deep.”⁶⁸ They constructed twelve

vessels designed to fight in the confined estuaries of the Delaware Bay and River. When confronted with a poor tactical situation, the row galleys could make their escape via oar power into shallow waters.

The Pennsylvania Committee of Safety received a variety of designs from colonial shipwrights when it requested aid in planning the defense of Philadelphia. Many designs the committee of safety received could be characterized as floating batteries. They incorporated extensive armament, substantial armor to protect the ship and sailors, and oars to keep them highly maneuverable.⁶⁹

Virginia built several vessel types to suit the variety of environmental conditions found there. Those designs ranged from traditional frigates to fight off the Virginia Capes to armed flat-bottomed boats to operate in the shoals along the shores of the James River. Most vessels commissioned by the Virginia State Navy, however, were row galleys. The majority of the row galleys built by Virginia met common design specifications of "eighty feet keel, twenty feet beam, and six feet clear hold between the upper part of the keelson and the lower part of the beam."⁷⁰ These row galleys had gunports for ten cannon and used a modified ship rig.

In addition to building row galleys, the Virginia State Navy constructed a number of flat boats to facilitate the transportation of troops. Those vessels also met common design specifications established by the Naval Board. The Virginia State Navy flat boat design called for dimensions of "forty foot keel, fourteen foot beam, three feet four inches deep to the top of the gunnall, eight inches wash board."⁷¹

Most vessels produced for the Continental Navy were traditional warships. The Continental Navy was built to defend the interests of all the colonies. Those vessels operated in open seas along the coastlines and in the large bays and rivers. The Continental Congress passed a resolution on 13 December 1775 to construct thirteen frigates ranging in size from thirty-two to twenty-four guns. The design for the thirty-two gun frigates specified dimensions of 132 feet one inch on deck, a keel of 110 feet ten and three-quarters inches, a beam of thirty-four feet five and a half inches, and a hold of eleven feet.⁷² The design for the twenty-four gun frigates specified dimensions of 120 feet six inches on deck, a keel of ninety-five feet six inches keel, a beam of thirty-two feet six inches, and a hold of ten feet six inches.⁷³

The colonists built ships in response to the deteriorating relationship with Britain to fight in a variety of environments. In addition, the colonial naval commanders relied upon unorthodox tactics to defend against the much larger British navy. Therefore, the colonial shipbuilders who participated in the design and construction of vessels for the defense of the colonies relied upon a variety of permutations that suited the particular purpose of a specific vessel. In doing so, they incorporated many features and designs that evolved in the colonies during the eighteenth century to facilitate West Indian and coastal trade.

¹John E. Selby, The Revolution in Virginia, 1775-1783 (Williamsburg, Virginia: The Colonial Williamsburg Foundation, 1988), 7.

²John J. McCusker and Russell Menard, The Economy of British America 1607-1789 (Chapel Hill, North Carolina: University of North Carolina Press, 1991), 320.

³Arthur Pierce Middleton, Tobacco Coast: A Maritime History of Chesapeake Bay in the Colonial Era (Baltimore, Maryland: Johns Hopkins University Press, 1953, reprint 1984), 238.

⁴Cerinda W. Evans, Some Notes On Shipbuilding and Shipping in Colonial Virginia (Richmond, Virginia: Garrett and Massie, 1957), 1.

⁵Joseph A. Goldenberg, Shipbuilding in Colonial America (Charlottesville, Virginia: University Press of Virginia for the Mariners' Museum, 1976), 15-16.

⁶Alfred Thayer Mahan, The Influence of Sea Power upon History, 1660-1783 12th ed. (Boston, 1918), 229.

⁷Goldenberg, 118.

⁸Middleton, 282.

⁹McCusker & Menard, 320.

¹⁰Walter E. Minchinton, "Shipbuilding in Colonial Rhode Island" Rhode Island History, 20 (1961), 120.

¹¹Bruce F. Thompson, "A Preliminary Report of Archaeological Investigations at the Stephen Steward Shipyard Site, 18AN817" (Ms. on file, Maryland Historic Trust, Crownsville, Maryland 1993), 11-12.

¹²Goldenberg, 12.

¹³Ibid., 12

¹⁴William H. Woodwell, "The Woodwell Shipyard, 1759-1852" Bulletin of the Business Historical Society, Incorporated (Boston, 1947), 58.

¹⁵William M. Kelso, "Shipbuilding in Virginia 1763-1774" (MA Thesis, College of William and Mary, 1964), 8.

¹⁶John M. Hemphill, "Freight Rates in the Maryland Tobacco Trade, 1705-1762" Maryland Historical Magazine 54, no 1 (1959), 40.

¹⁷Middleton, 264.

¹⁸Ibid., 254.

¹⁹Ibid., 253.

²⁰Goldenberg, 61.

²¹Thompson, 11.

²²C. Stevens Laise, "Interpreting the Colonial Shipyard" (New York: The Society of Naval Architects and Marine Engineers, 1976), 5, advance copy.

²³Ibid., 21-22.

²⁴Goldenberg, xi.

²⁵Edmund S. Morgan, The Birth of the Republic, 1763-89 (Chicago: University of Chicago Press, 1992), 61-68.

²⁶Kenneth J. Hagan, This People's Navy: The Making of American Seapower (New York: Free Press, 1991), 1.

²⁷Barlett, ed., Rhode Island General Assembly, "June 12, 1775" Records of Rhode Island. Hereafter RRI, vol. VII, 337-338, 346-347, cited in William Bell Clark, ed., Naval Documents of the Revolution. Hereafter NDAR, vol. 1, (Washington D.C.: United States Government Printing Office for the Naval History Division, Department of the Navy, 1964), 664-665.

²⁸Ibid., 367, cited in NDAR vol. 1, 1230-1231.

²⁹Provincial Congress of Massachusetts, "June 20, 1775" Massachusetts Archives. Hereafter Mass. Arch., vol. 32, cited in NDAR, vol. 1, 724.

³⁰Ibid., 795-796.

³¹Ibid., vol. 206, 221, cited in NDAR, vol. 1, 1195-1196.

³²New Hampshire Committee of Safety, "June 15, 1775" New Hampshire Historical Society Collections. Hereafter NHHSC vol. 7, 5, cited in NDAR, vol. 1, 683.

³³J.H. Trumbull and C.J. Hoadley, eds., General Assembly of Connecticut, "1 July 1775" Public Records of the Colony of Connecticut 1636-1776. Hereafter PRCC, vol. 15, 99-100, cited in NDAR vol. 1, 796.

³⁴Hazard et al., Journal of the Pennsylvania Assembly, "June 30, 1775" Pennsylvania Archives. Hereafter Penn. Arch., vol. 8, 7247, cited in NDAR vol. 1, 788.

³⁵Minutes of the Pennsylvania Committee of Safety, "July 6, 1775" Penn. Arch., vol. 10, 283, cited in NDAR vol. 1, 830-831.

³⁶Ibid., 287, cited in NDAR vol. 1, 892.

³⁷RRI, vol. 7, 368-375, cited in NDAR vol. 1, 1236.

³⁸Ford, ed., "October 5, 1775," Journal of the Continental Congress. Hereafter JCC, vol. 3, 274-275, cited in NDAR, vol. 2, 285.

³⁹JCC, vol. 3, 298-299, cited in NDAR, vol. 2, 509.

⁴⁰Ibid., 278-279, cited in NDAR, vol. 2, 307-9.

⁴¹Ibid.

⁴²Ibid., 293-94, cited in NDAR, vol. 2, 441-42.

⁴³Silas Deane, "Account Book," No. 18c, cited in NDAR, vol 2, 647-652.

⁴⁴JCC, vol. 3, 311-312, cited in NDAR, vol. 2, 647.

⁴⁵Morgan, 69-71.

⁴⁶JCC, vol. 3, cited in NDAR, vol. 2, 798.

⁴⁷Butterfield, ed., Diary and Autobiography of John Adams, vol. 3, 350, cited in NDAR vol. 2, 1305.

⁴⁸JCC, vol. 3, 420-424, cited in NDAR, vol. 2, 59-60.

⁴⁹Ibid., 425-427, cited in NDAR, vol. 2, 90.

⁵⁰Ibid.

⁵¹Silas Deane, "Account Book," No. 18c, cited in NDAR, vol. 2, 647-652.

⁵²E. M. Sanchez-Saavedra, comp., A Guide to Virginia Military Organizations in the American Revolution, 1774-1787 (Richmond, Virginia: Virginia State Library, 1978), 11.

⁵³Selby, 43.

⁵⁴Ibid, 2.

⁵⁵Virginia Convention, 22, 45., cited in NDAR, vol.1, 1229.

⁵⁶Francis Lightfoot Lee, "Francis Lightfoot Lee to Robert Wormsley Carter, December 2, 1775," Francis Lightfoot Lee Letters (Richmond, Virginia, Virginia Historical Society), cited in NDAR, vol. 2, 1236-1237.

⁵⁷Ibid.

⁵⁸Joseph A. Goldenberg and Marion West Stoer, The Virginia State Navy, in Chesapeake Bay in the American Revolution, ed. Ernest McNeill Eller (Centerville, MD: Tidewater Publishers, 1981), 199.

⁵⁹Ibid., 171.

⁶⁰George Washington, "George Washington to William Ramsay, December 8, 1775" in John C. Fitzpatrick, ed., The Writings of George Washington (Washington, 1931-44), vol. 4, 200-2, cited in NDAR, vol. 3, 5-6.

⁶¹Ibid.

⁶²John O. Sands, Yorktown's Captive Fleet (Charlottesville, Virginia: University of Virginia Press for the Mariner's Museum, 1983), 2.

⁶³Naval Committee, "Naval Committee to the Virginia Convention, January 5, 1776," in Hopkins Papers, vol. 2, 18, cited in NDAR, vol. 3, 640-1.

⁶⁴JCC, vol. 4, 49-50, cited in NDAR, vol. 3, 736-37.

⁶⁵Ibid.

⁶⁶George Mason, "George Mason to George Washington, April 2, 1776," in Washington Papers (Library of Congress), cited in NDAR, vol. 4, 634.

⁶⁷Martha McCartney and Nick Lucchetti, National Register of Historic Places Inventory-Nomination From: Chickahominy Shipyard, 44JC50 (Richmond, Virginia: Virginia Department of Historic Resources, 1978), 3.

⁶⁸Minutes of the Pennsylvania Committee of Safety, "July 6, 1775," Penn. Arch., vol. 10, 284, cited in NDAR vol. 1, 842.

⁶⁹"Nathan Irish to the Pennsylvania Committee of Safety," Penn. Arch., vol. 9, 638, cited in NDAR vol. 1, 977.

⁷⁰"August 14, 1776," Virginia State Navy Board Journal, hereafter NBJ, (Richmond Virginia: Virginia State Library)

⁷¹NBJ, "September 16, 1776,"

⁷²Captain J.G.M. Stone Private Collection, Annapolis, Maryland, cited in NDAR vol. 3, 130.

⁷³Marion V. Brewington, "Designs of Our First Frigates," The American Neptune, VIII, No. 1, January 1948, 16, cited in NDAR vol. 3, 130.

CHAPTER 3

THE CHICKAHOMINY SHIPYARD

Virginia faced building a naval force to defend itself in the fall of 1775. Since it did not have a navy until this time, the province had to rapidly assemble a force and build the infrastructure to support it. One of the facilities that Virginia established to support the development of its navy was the Chickahominy Shipyard. The shipyard was constructed as a Virginia State Navy (VSN) facility to build and repair navy vessels. Historic records indicate that while Virginia expended a large amount of money and manpower on the shipyard, it never fulfilled its intended purpose. Because of unanticipated economic and manpower limitations within the VSN, the role of the Chickahominy Shipyard changed. Instead of building vessels, the Chickahominy Shipyard became an unofficial base for repairing and storing equipment and supplies.

In the spring of 1776, the Virginia Committee of Safety rapidly assembled a fleet of armed ships to form the state navy. The vessels obtained by the committee of safety were either existing vessels modified to suit the purpose or vessels built in local shipyards. In the meantime, the committee decided that it would benefit from establishing a state owned and operated shipyard to produce additional vessels and to modify and repair the existing fleet. The Virginia Committee of Safety began the process of establishing its own facility in the late spring of 1776. To expedite this process, the committee hired John Herbert, empowering him to “engage any number of ship carpenters

he can procure” and to “view and examine all such places upon the James River or its branches as he may think proper and convenient for erecting shipyards at.”¹ While little of the correspondence between Herbert and the committee of safety survives, it is apparent that Herbert located the property that later became the Virginia State Navy Shipyard on the Chickahominy River.

Herbert chose a site approximately twelve miles above the confluence of the Chickahominy and James rivers. That property is a section of high ground fronting the eastern shore of the Chickahominy River, which has a deep, navigable channel. The location was isolated, but well suited for shipbuilding site encompassing a large stand of good shipbuilding timber at the time. In addition to its location, the water was only slightly brackish offering protection to vessels from wood boring marine worms. The Virginia Navy Board described the locations it had chosen for constructing ships at in a letter to Richard Henry Lee. The board stated: “the vessels now on the Stocks are at places most convenient to timber &c. and inaccessible to the Enemy except by Land or in Boats where the River is very narrow.”² The description fits the location of the Chickahominy Shipyard.

The Chickahominy Shipyard did not officially become state property until April 1777. There is evidence, however, that the state navy began to use the property during the fall of 1776. Early references indicate that John Herbert may have begun building vessels at the Chickahominy Shipyard shortly after he was empowered to locate the land and hire shipbuilders for the navy. When the Virginia Navy Board placed an order for several flat-bottomed boats in September 1776, they specified that the boats should be

similar to those “lately built by Mr. Herbert.”³ Although no mention is made of the Chickahominy Shipyard, the reference to Herbert in conjunction with the Navy Board’s journal entry suggests that Herbert probably constructed those flat boats at the site on the Chickahominy River.

Additional evidence recorded in the correspondence of the Virginia Navy Board confirms that the Chickahominy Shipyard was operating before its purchase and documents the establishment of the yard. The first letter that specifically mentions the Chickahominy Shipyard was written by Captain James Maxwell on 25 February 1777. That letter ordered rope and spun yarn delivered to the Chickahominy Shipyard.⁴ Other letters that followed shortly after ordered “one pott, two kettles and four frying pans” and “such Provisions and supplies as he (a shipwright) may be in want of for the use of the Shipyard on Chickahominy.”⁵ Other correspondence suggests some of the early activities at the shipyard. In a letter to John Herbert, Thomas Whiting wrote that the board had approved money “for him to build, with the help of several negro men, buildings at the Chickahominy Shipyard.”⁶

While John Herbert and his men were busy setting up the shipyard, the Navy Board completed its purchase of the land. In March 1777, the Navy Board requested “William Norwell, Henry Southall, and Francis Riddlehurst to View and appraise A Parcel of Land lying on Chickahominy River.”⁷ Finally, on 3 April 1777 the Virginia Navy Board “ordered a warrant issued to Philip Johnson, James Bray Johnson, and William Johnson for £595 for 119 acres in Charles City County.” That order further stated that the land was “for the use of a Shipyard on the Chickahominy River.”⁸

Period of Active Shipbuilding at the Chickahominy Shipyard

Unfortunately, little documentation exists of the activities that took place at the shipyard. There are a variety of reasons for the lack of documentation, but the most apparent is that the British likely destroyed the majority of the papers concerning operations at the shipyard when they burned it in 1781. In addition, James Maxwell, who became the state superintendent of shipbuilding, resided at the shipyard when the British burned it. The shipyard documentation that survived is contained within the incomplete volumes of the Journal of the Virginia Navy Board, the Navy Board Letter Book, the Board of War Journal, the Commissioner of the Navy's Journal, and the Officers, Seamen, and Vessels Ledger, all of which are housed at the Virginia State Library in Richmond. These documents primarily discuss the appointment and discharge of men from the navy and orders for the delivery of supplies to individual naval units. Concerning the Chickahominy Shipyard, these document collections contain information related to the delivery of shipbuilding supplies, personal supplies, and provisions. Only occasionally do they discuss specific projects or vessels.

Shortly after the Virginia State Navy purchased the shipyard, the Navy Board's journals begin to record almost on a daily basis entries related to the shipyard. On 23 April 1777, the Navy Board ordered William Holt to deliver to John Herbert "two thousand pounds of Bacon, one thousand pounds of bread, one thousand pounds of Flour, four barrels of Pork, and one hogshead of Whiskey, for the use of the Shipyard on Chickahominy."⁹ The next day, the Navy Board ordered the careening fall at Portsmouth

delivered to Herbert.¹⁰

Between the middle of April and the end of July 1777, the Navy Board sent a significant amount of provisions to the shipyard. In those four months alone, 9,109 lbs. of bacon, 10,135 pounds of bread, 9000 lbs. of flour, thirty-seven barrels of beef, six barrels of pork, four barrels and 140 gallons of whiskey, two hogsheads and 102 gallons of rum, nine bushels of salt, and one box and twelve pounds of candles were delivered to the shipyard.¹¹ Nothing suggests that the provisions were for anything other than the direct use of the shipyard, however, the large quantity may indicate that the shipyard was distributing the provisions to other groups.

The Navy Board also recorded orders for shipbuilding supplies sent to the shipyard during this period. In addition to the carrening fall shipped from Portsmouth, the Navy Board ordered rope, tar, pitch, cloth, iron, steel, and files sent between April and July.¹² Anchors were also landed at the shipyard from the VSN sloop *Scorpion* on 15 May.¹³

The orders for supplies sent to the shipyard may correspond with a letter recorded on 10 July 1777. In that letter, the Navy Board ordered Captain Westcott to “take the four flat bottom boats now lying at the College Landing and remove them to the Shipyard on Chickahominy River and deliver them to Mr. Herbert who hath desired to have them put into proper order.”¹⁴ No details are presented as to what repairs Herbert conducted on those vessels, but it is evident from the documentation that the shipyard was completing work.

The Virginia Navy Board Journal also recorded personnel issues related to the

operations at the shipyard during this period. On 26 June 1777, the Navy Board appointed John Brown clerk and paymaster at the shipyard.¹⁵ Later in July, Thomas Whiting, the commissioner of the Navy, wrote a letter to John Herbert stating: "The Board are of Opinion that you cannot be Permitted to leave the Shipyard at this Time..."¹⁶ The letter did not indicate whether Herbert was attempting to resign or he simply needed to make a business or personal trip.

During July of 1777, the Navy Board continued to develop the infrastructure necessary to supply the shipyard with provisions and supplies. On 4 July 1777, the board agreed to a contract with William Holt to deliver "as much sifted meal as maybe wanted at the said Yard" from July to November of 1777. The Navy Board agreed to pay Mr. Holt, ten shillings per hundred weight for the meal including delivery.¹⁷ That agreement was one of the first attempts the Virginia Navy Board made to automate the delivery of supplies to the shipyard without the its intervention.

No records exist in the Navy Board Journal related to the Chickahominy Shipyard for August and September 1777. The Navy Board Letter Book, however, records some activity at the shipyard during this period. On 26 August, Thomas Whiting wrote to John Herbert informing him that a load of cordage intended for the galleys building on the Eastern Shore was on its way to him. Whiting further stated that he wanted Herbert to keep the cordage at the Chickahominy Shipyard until the board felt it proper to ship the material to the Eastern Shore.¹⁸ On 26 August, Whiting again wrote to Herbert informing him that the "Protector Galley is now on her way to the Yard in Order to be sheathed, you are therefore desired to have a sufficient Quantity of Plank Cut for that Purpose."¹⁹

The journal entries between April and September 1777 suggest the pace of activities taking place at the Chickahominy Shipyard, but little else. From those documents it is apparent that the shipyard was conducting repair work and may have served as a depot for provisions and supplies. No mention of new construction is made during that period.

Between October and December 1777, the character of the entries in the Navy Board Journal related to the Chickahominy Shipyard changed slightly. The journal entries now focused more on the shipment of shipbuilding supplies and personal supplies for shipyard workers than on the delivery of provisions to the shipyard. Several journal entries during that period offer new insight into the activities and management of the Chickahominy Shipyard.

Between October and December, the Navy Board ordered twine, lead, saws, tar, turpentine, pitch, a frying pan, augers, iron, and gunflints delivered to the Chickahominy Shipyard.²⁰ On 21 November 1777, the Navy Board ordered Caleb Herbert to send seven shipyard workers to College Landing to move plank lying there to the Chickahominy Shipyard.²¹ A few hypotheses can be made from the limited data presented. The supplies such as tar, pitch, turpentine, and spirits suggest finishing activities such as cleaning, caulking, and painting. The saws and augers suggest a possible increase in the amount of work or personnel at the shipyard.

During this same period, the Navy Board Journal only recorded four entries for provisions sent to the shipyard. That reduction may coincide with the appointment of Richard Henley as clerk and paymaster of the Chickahominy Shipyard on 31 October.

Mr. Henley's appointed duties, as detailed in the Navy Board Journal, included purchasing fresh provisions for the shipyard.²² The change in the method of supplying the shipyard suggests that the Navy Board attempted to remove themselves from the daily management of the shipyard during this period.

Other changes to the management of shipyard occurred between October and December. On 21 November 1777, the Navy Board appointed Caleb Herbert "Master Builder" at the Chickahominy Shipyard replacing John Herbert. The Navy Board hired Caleb Herbert at the rate of fifteen shillings a day.²³ Then on 4 December 1777, the Navy Board appointed James Maxwell, already a Commissioner of the Virginia State Navy, as superintendent of shipbuilding. That appointment directed Maxwell to live at the Chickahominy Shipyard and to superintend it and the other shipyards building vessels for the State Navy. The Navy Board set Mr. Maxwell's salary for completing those duties at £500 a year.²⁴

Between October and December 1777, the Navy Board ordered the keeper of the public store to deliver various types of cloth, clothing, shoes, and salt to the workers at the shipyard. It does not appear that the navy supplied the workers with all of their necessities. The journal entries always stated that the workers should receive those items "upon paying for them."²⁵

Small quantities of provisions and shipbuilding supplies were sent to the shipyard during the first three months of 1778. Provisions ordered to the yard included beef, pork, flour, salt, brandy, and whiskey.²⁶ Orders for supplies included only paper and iron and an entry on 10 February for Isaac Mercer to land "what cargo he has on Board for the

said yard.”²⁷ One possible explanation for the decrease in shipbuilding provisions and supplies ordered during this period could be the season. Winter weather could have hampered activity at the shipyard that was not urgent.

Between January and March 1778, the Navy Board also continued to order a variety of personal provisions delivered to the Chickahominy Shipyard. Those personal provisions included shirts, cloth, gimlets, and salt for workers at the shipyard.²⁸ Again the journal entries indicate that the workman had to pay for the items before they would receive them.

One of the Navy Board’s entries regarding personal provisions that appeared during this period provides information about the capabilities of the shipyard. On 20 March 1778, the Navy Board ordered cloth delivered to the Chickahominy Shipyard “for the use of the negro smiths.”²⁹ This entry suggests that at least some fasteners and fittings for the work conduct at the yard were forged there. Unto itself, this reference is not particularly interesting, but it suggests the capabilities and possibly the extent of activity taking place at the shipyard.

Personnel issues also shed some light on the activities of the shipyard. On 20 March 1778, the Navy Board hired William Nicholson as a foreman at the shipyard.³⁰ In addition, the Navy Board agreed to a new contract with Richard Herbert on 13 March to work as a foreman along with his apprentices Markham Wood, William Wood, and Malachie Manning for one year.³¹ The appointment of two foremen suggests that activity was increasing or expected to increase, requiring more managerial personnel. The reference to apprentices is also a first in the documentation of the shipyard.

Between April and June 1778, the records of the Virginia State Navy record the usual transactions of the Navy Board relative to the Chickahominy Shipyard, but indicate that that shipbuilding activity had increased. Entries related to personal provisions provide an indication of the size of the workforce at the shipyard in June. The documentation of the shipyard during this period provides a more complete understanding of the role the shipyard played in Virginia State Navy.

Again, the Navy Board ordered only a limited amount of food provisions sent to the Chickahominy Shipyard between April and June 1778. The Navy Board ordered bacon, rum, and whiskey during this period.³² The small quantity of provisions ordered by the Navy Board may suggest that during this period it handled only certain provisions such as alcoholic beverages and meat relying on Richard Henley to obtain other provisions for the shipyard.

The Virginia Navy Board ordered large quantities of a variety of shipbuilding supplies for the shipyard between April and June 1778. Those supplies included twine, fabric, sail needles, palm irons, tar and paint brushes, paint, linseed oil, files, and steel.³³ Such orders indicate that a new ship was under construction. The types of material ordered may correspond to the specific construction activities taking place. A large quantity of cloth, sail needles, and palm irons suggests that the shipyard made sails for the vessel. Delivery of paint and paintbrushes to the shipyard could indicate that the workers were preparing to complete finishing work on the vessel under construction. Orders for files and steel suggests that the shipyard's blacksmiths were fabricating ship's fittings.

In addition to the shipbuilding activities, the journal entries provide an indication of how many workmen the shipyard employed. On 15 June 1778, there were eleven entries for personal provisions sent to the shipyard. The provisions included cloth for clothes, shirts, pants, suits, and shoes. Those entries indicate that Caleb Herbert and ten of his Negroes, Mr. Smallwood and seven of his Negroes, Mr. Daniel Dudley, Mr. Joseph Woodard and two of his Negroes, Mr. Malcom Grant, Mr. Malcom Wood, Mr. William Chancey and his hands, Mr. Stubblefield's Negroes, Mr. William Weaver, Mr. Edmund Sweeny, James Maxwell, and Richard Henley were employed at the Chickahominy Shipyard. At a minimum, those entries indicate that the shipyard employed at least thirty-four people in June of 1778.

An unusual set of entries in the Navy Board Journal on 30 May records the movement of two Virginia State Navy vessels to the shipyard. The board ordered Captain Lilly of the ship *Glouster* to proceed to the shipyard. Then the board ordered Captain Elliot of the *Safeguard* galley to "protect and assist" the *Glouster* in sailing to the shipyard.³⁴ While those orders did not state the reason for the *Glouster's* visit to the shipyard, the orders for the *Safeguard* to "protect and assist" suggest that the *Glouster* was damaged.

Between July and September 1778, the entries in the Virginia Navy Board Journal record a reduction in the amount of provisions and supplies sent to the yard. In those three months only two entries for provisions, one for bacon and another for spirits are recorded in the Navy Board Journal.³⁵ During that same period only one entry for shipbuilding supplies is entered in the journal, an order for "a bolt of canvas for the use of

the Chickahominy Shipyard” on 28 July.³⁶ The lack of provisions and supplies delivered to the shipyard may indicate a lack of new projects for the shipyard at that time.

On 16 July 1778, the Virginia Navy Board rewrote its contract with some of the ship carpenters working at the Chickahominy Shipyard. Malcom Grant, Edmund Sweny, Maximilian Etheridge, and Markham Wood agreed to “continue to work at the Chickahominy Shipyard till the 25th day of December next at the daily wages of twelve shillings each.”³⁷ The agreement suggests that while there may have been little immediate work at the shipyard, the Navy Board envisioned new work for the shipyard in the fall of 1778.

In addition to the normal entries in the journal related to the Chickahominy Shipyard during this period, the Navy Board recorded two unusual entries in their journal. First, on 27 July 1778, the board noted the delivery of cloth for “a negro woman” working at the Chickahominy Shipyard.³⁸ That entry is the only reference to a woman at the shipyard in the surviving documents. The second is the naming of the ship under construction at the shipyard. On 20 August 1778, the Virginia Navy Board “Resolved, that the Ship now Building at the Chickahominy Shipyard be called by the name of the *Thetis*.”³⁹ This is the only entry that names a vessel built at the Chickahominy Shipyard. Additional entries on 20 August appointed Edward Travis captain of the *Thetis* and ordered a warrant issued to him “for two hundred pounds for the purpose recruiting men for the Navy.”⁴⁰

Between October and December 1778, the Navy Board Journal recorded even fewer deliveries of provisions or shipbuilding supplies to the Chickahominy Shipyard

than it had before. The Navy Board Journal recorded only one order for provisions between October and December 1778. That entry on 7 November ordered that “Mr. Holt deliver Mr. Henley five Bushels of salt for the use of the Chickahominy Shipyard.”⁴¹ Again, as recorded between July and September, Mr. Henley, the shipyard’s paymaster and clerk, was the designated receiver of the provisions. The Navy Board Journal recorded no orders for shipbuilding supplies delivered to Chickahominy Shipyard during this period. The lack of deliveries suggests that shipbuilding and repair activities at the shipyard were in decline. On 17 October, however, the Virginia Navy Board ordered Isaac Mercer “to proceed with the Boat Nicholson to the Chickahominy shipyard and have her cleaned as soon as possible.”⁴² That entry reveals the some activity did take place at the shipyard between October and December 1778.

Between January and March 1779, the Navy Board ordered large quantities of a variety of food delivered to the Chickahominy Shipyard. The board ordered pork, beef, flour, and corn sent to the shipyard.⁴³ The dramatic change in the provisioning of the shipyard may be related to the absence of references to Richard Henley, which may indicate he had resigned his commission as paymaster and clerk. It may also indicate that the shipyard was supplying some of the VSN vessels during this period.

Only one entry in the Navy Board’s Journal between January and March 1779 records the delivery of shipbuilding supplies to the yard. On 19 March 1779, the Navy Board ordered that “Mr. Anderson deliver Mr. Sacy half a ton of iron and one Hundred weight of steel for the Chickahominy Shipyard.”⁴⁴ The lack of shipbuilding supplies sent to shipyard corresponds with the lack of any documentation renewing the contract of

many of the ship carpenters at the end of December 1778. These changes suggest that the workload at the shipyard may have decreased.

While it appears that the Virginia Navy Board did not renew contracts with several of the ship carpenters and Richard Henley, it did renew its contract with James Maxwell on 14 January 1779. Maxwell agreed to continue living at the Chickahominy Shipyard and the Navy Board agreed to pay Maxwell "One thousand pounds per annum to be paid quarterly, two rations per day, and forage for one Horse."⁴⁵

The Virginia Navy Board Journal recorded even fewer entries concerning the Chickahominy Shipyard between April and June 1779. Provisions for the shipyard were again the topic of several of the journal entries. After entering a single order for pork on 12 May 1779, the board ordered "Mr. Belcher and Putney be requested to deliver to captain Maxwell's order, such provisions as he may want from time to time for the use of the Chickahominy Shipyard."⁴⁶ That entry suggests that the Navy Board wanted James Maxwell to oversee the task of ordering food for the shipyard.

Between April and June 1779, the Navy Board ordered the delivery of supplies to the Chickahominy Shipyard only twice. The board ordered a barrel of powder and cloth for one of the sail makers at the shipyard.⁴⁷ The importance of the second entry is that it again suggests that the Chickahominy Shipyard produced sails for vessels.

In May 1779, there was a dramatic change in the organization of the Virginia State Navy. The Virginia legislature abolished the Virginia Navy Board and created the Board of War in its place. The new Board of War had the authority to appoint a commissioner of the navy, to which it appointed James Maxwell, formerly the superintendent of

shipbuilding.⁴⁸ The change affected the records of the Virginia State Navy immensely. The Navy Board had kept an almost daily journal that recorded a variety of information about the Virginia State Navy and the Chickahominy Shipyard. The new Board of War met infrequently and recorded little information about the activities of the navy and more directly the Chickahominy Shipyard.

Between July 1779 and March of 1780, there are only a handful of references to the Chickahominy Shipyard in the Virginia Board of War Journal. Those references discuss provisioning and supplies for the shipyard and orders for the shipyard to gather up materials belonging to the navy. The entries suggest that the Board of War gave the responsibility of provisioning the Chickahominy Shipyard to James Maxwell. On 8 November 1779, the Board of War ordered "that a warrant be issued to Captain James Maxwell for one Thousand four hundred pounds on account to purchase provisions for the shipyard."⁴⁹ Five months later on 12 March 1780, the Board of War ordered "that a warrant be issued captain James Maxwell for two thousand pounds on account for the purpose of purchasing necessary for the shipyard."⁵⁰ Those orders provided no guidance to Maxwell, suggesting that he was responsible for obtaining and transporting whatever supplies were needed for the shipyard on his own.

Other entries in the Board of War Journal provide little insight into the activities taking place at the Chickahominy Shipyard. On 27 July 1779, the Board of War ordered, Captain Maxwell to send either the *Manley* or *Safeguard* galley to Portsmouth to bring planking at Great Bridge, an anchor on the sands at Portsmouth, bricks, and lime belonging to the navy to the shipyard.⁵¹ On another occasion, the Board of War ordered

Captain Maxwell to repair one of the state's flat bottomed boats as soon as possible.⁵²

Those entries indicate that in late 1779 the Chickahominy Shipyard was still actively repairing vessels and serving as a depot for equipment and supplies belonging to the Virginia State Navy.

After March 1780, the only information about the Chickahominy Shipyard is the surviving portions of James Maxwell's journal. That journal only contains entries for the period between August and December 1780. In it, Maxwell recorded some information about the shipyard, but not as frequently or as detailed as the Virginia Navy Board Journal had between 1776 and 1779.

On 13 October 1780, Maxwell noted an order for "Mr. Samuel DuVal Junior furnish one hundred and fifty Bushells of Coals for the use of the shipyard."⁵³ On 16 October, the Commissioner's journal detailed an order for "four hogsheads of Spirit for the use of the shipyard."⁵⁴ Then on 9 December 1780, Maxwell recorded the delivery of six barrels of flour to the shipyard.⁵⁵

In terms of shipbuilding supplies, Maxwell noted several orders that provide an indication of activities taking place at the shipyard. On 6 September 1780, Maxwell recorded an order "given to Mr. Lively - Manager of the foundry undertake to the casting of twenty nine-Pounders, two thousand Ball, and forty-Tun of pig Iron for the use of the *Thetis*."⁵⁶ On 8 December 1780, Maxwell wrote an order for "eighteen Whipsaw files & six Cross Cut Ditto for the Shipyard."⁵⁷

Maxwell also noted some information relative to personnel at the Chickahominy Shipyard. On 16 September 1778, Maxwell made an agreement with Mr. Isaac Smith to

act as Commissioner and Paymaster of the Chickahominy.⁵⁸ Other references in the commissioner's journal include entries for the shipment of cloth, blankets, and other personal supplies to the shipyard.⁵⁹

The documents pertaining to the Chickahominy Shipyard suggest that the Virginia State Navy constructed only one or two large vessels there. Those documents also suggest that the shipyard never had an opportunity to fulfill its intended purpose. Other records of the Virginia State Navy provide possible reasons for that failure. Sailors were hard to recruit, and the Virginia State Navy had a difficult time keeping those sailors it had.⁶⁰ While the VSN constructed only a few vessels at the Chickahominy Shipyard, the facility played a significant role as a naval base and repaired many vessels.

The building and repairing of vessels for the state was originally the main purpose for establishing the shipyard on the Chickahominy. The 20 gun ship *Thetis* was built there and verbally christened in 1778, but is recorded as still on the stocks when the British destroyed the shipyard in 1781.⁶¹ There is no other evidence that the Virginia State Navy built any other large vessels at the shipyard. There is a variety of evidence, however, that it built many smaller vessels at the facility and completed repair work on vessels already in the state service. For example in 1781, as Thomas Jefferson was attempting to pull Virginia's resources together to defend against British movement up the James River, the state brig *Jefferson* was at the shipyard being heaved down and refitted.⁶² The shipyard also converted the state galley *Lewis* to a schooner in 1779.⁶³

Desertions, ran high in the Virginia State Navy because the state could not pay the sailors on a regular basis. For example, on 7 December 1780, James Maxwell

informed Governor Jefferson that “the Lieutenant of the *Jefferson* thinks it will take Fourteen thousand pounds to pay her up to the present time.”⁶⁴ Without the ability to pay its sailors, the Virginia Navy quickly became a ghost fleet. By April 1781, when Jefferson and the marquis de Lafayette were planning the defense of the James, many state vessels were crewless at the Chickahominy Shipyard.

The Chickahominy Shipyard also played an important role as a navy base. When Jefferson and Lafayette were planning their defense strategy, Jefferson indicated that the *Jefferson*, *Tempest*, *Tartar*, *Dragon*, *Thetis*, and *Safeguard* were stationed at the Chickahominy yard.⁶⁵ The choice to use the shipyard as place to keep those vessels indicates that the Virginia State Navy viewed the Chickahominy Shipyard as a safehaven that the British could not attack without warning.

A shortage of cannon also hindered the Virginia State Navy after the Chickahominy Shipyard’s establishment. Several letters in the spring of 1781 indicate that the British had destroyed the foundry that supplied cannon to the shipyard.⁶⁶ Jefferson's letter indicates that the lack of cannon was one of the problems that slowed the efforts to outfit the VSN ship *Thetis*.

Although much of the detailed history of the Chickahominy Shipyard has not survived, a good picture of the role of the shipyard can be surmised from the remaining information. The Chickahominy Shipyard played several roles during the Revolutionary War. The shipyard was used for building of vessels, repairing and refitting of vessels, and served as a central protected base for the Virginia State Navy.

Arrival of the British in the James River

In the spring of 1781, anxiety in the Virginia tidewater area increased when a British fleet arrived in the James River. Because of the growing tension, activity at the shipyard increased. Repair work was completed on all of the usable vessels at the shipyard and an effort was made to remove anything of value from the site.

In February, Edgar Joel received permission from Thomas Jefferson to outfit the row galley *Dragon*, then at the Chickahominy Shipyard, as a fireship.⁶⁷ Joel planned to send the vessel into the British fleet. When Joel arrived at the shipyard, he found that the *Dragon* had sunk and was in terrible condition. Since no other suitable vessels were available, Joel repaired the *Dragon* and attempted to sail it down the river. His attempt failed. While sailing down the river, Joel's pilot ran the *Dragon* hard aground on a sand bar, where it lay for three days before it could be floated off. After this blunder, the effort was abandoned.⁶⁸

As the British continued up the James River, the Virginia State Navy tried other efforts to protect the shipyard. On 20 March 1781, Jefferson ordered that all the vessels at the shipyard be equipped and manned immediately.⁶⁹ Jefferson felt that the British had targeted the shipyard and would shortly destroy it. He ordered all the available vessels to load the naval stores from the shipyard and proceed up the Chickahominy River to a place of safety.⁷⁰

Destruction of the Chickahominy Shipyard

The British began their campaign up the James River on 18 April 1781. They

wanted to eliminate all American forces and establish a firm foothold in the southern colonies. Major General William Phillips directed the operation in conjunction with Brigadier General Benedict Arnold. The fleet used for this campaign consisted of four ships, eight flat boats, and one gunboat.⁷¹ The campaign's first objective was a surprise attack against the colonial troops at Williamsburg.⁷² To accomplish that task Arnold landed a party below Williamsburg, while Lt. Colonel Abercrombie commanded a second landing party above Williamsburg.

Beginning on 18 April 1781, the British sailed from Portsmouth to Hampton Roads and up to Burwell's Ferry. On the nineteenth, a force commanded of Lt. Colonel John Graves Simcoe landed at Burwell's Ferry and secured a beachhead. Simcoe's troops marched toward Williamsburg and then onto Yorktown.⁷³ Jefferson and Lafayette's intelligence reports allowed them to move the Virginia State Navy vessels *Jefferson*, *Tempest*, *Tartar*, and several other small-armed vessels out of the Chickahominy and up the James River.⁷⁴ The American forces in the area retreated offering the British little resistance during the Williamsburg operations.

Abercrombie's troops proceeded up the Chickahominy River on 21 April 1781.⁷⁵ James Innes informed Jefferson at three o'clock on the twenty-first that the British had "14 square rigged vessels and 16 flat bottomed boats" three miles from the Chickahominy Shipyard.⁷⁶ A second letter from Innes dated 22 April 1781 at seven o'clock carried the news that the British had proceeded to the yard and destroyed it about four o'clock on the twenty-firstst.⁷⁷

No one recorded exactly what happened when the British arrived at the shipyard

on 21 April 1781. Arnold's report to General Sir Henry Clinton on May 12th stated only that "Lieut.-Colonel Abercrombie with the light infantry, who had been ten or twelve miles up the Chickahominy and destroyed several armed ships, the state shipyard, warehouses, etc."⁷⁸ Jefferson confirmed that several vessels were still at the yard prior to the British attack including the ship *Thetis* and the galleys *Lewis* and *Safeguard*.⁷⁹

After receiving some intelligence on what occurred at the shipyard, Jefferson reported that the British "Possessed themselves of the Ship Yard about 4 o'clock yesterday and I am apprehensive from the fire discovered in that Quarter last night they have totally destroyed it."⁸⁰ In another report Jefferson stated, "The upper party proceeded to the Shipyard. What injury they did there is not yet known to me. I take for granted that they burnt the *Thetis*. The stores had been all removed 8 or 10 miles higher up. The two small galleys also retired up the river. Whether by this they have been saved is not yet known."⁸¹

The most informative description of the destruction of the Chickahominy Shipyard is recorded in the pension claim of Lieutenant Joseph Saunders. James Maxwell, then commissioner of the Virginia State Navy, promoted Saunders to lieutenant and gave him command of the *Lewis* galley on 20 March 1781.⁸² Saunders wrote in his pension claim:

their vessels began to come higher up James River, they sent a number of gunboats up to our shipyard to destroy what was there. I had filled my Gallies with naval stores to take up the River to conceal them but wind and tide being against me

could not go on. Came too put a spring on my cable, and awaited their arrival. It was not long before they came in sight and as soon as near enough I discharged my cannon at them. Sunk my vessels, and made my escape to shore with the men I had with me. This was the last active service I had in the Navy.⁸³

Saunders's description indicates that the *Lewis* and *Safeguard* galleys failed to escape up river with the naval stores as Jefferson had urged for several weeks. The description suggests that at least two vessels were caught at the shipyard when the British attacked.

Chickahominy Shipyard After the British Raid

The Chickahominy Shipyard appears to have been used for a short time after the British raid. Jefferson mentioned that Captain Maxwell was "building some small boats with wheels," an idea suggested to Jefferson by George Washington in May 1781.⁸⁴ Other than that reference, no other evidence has surfaced to suggest that the Chickahominy Shipyard operated again.

References to the State Shipyard on the Chickahominy do not appear again until early in the nineteenth century when Virginia attempted to collect cannon lying at various locations throughout the tidewater area. John Clarke, in a report to the governor of Virginia, stated that "there are several pieces of iron ordinance at the Shipyard." The letter goes on to say that Clarke was told that several cannon were thrown into the sawpit by the British when they destroyed the shipyard.⁸⁵ Whether those cannon were ever recovered from the shipyard is not recorded.

Deeds pertaining to the ownership of the land are the only references made after 1804 to the Virginia State Navy Shipyard on the Chickahominy River. The Warren family purchased the shipyard property from the State of Virginia sometime in the early nineteenth century. The Warrens owned the property until 1894 when George Menzel, a German immigrant, bought the property. The Menzel family and their descendants continue to own the property today.⁸⁶

¹ Virginia State Papers, Hereafter VSP, vol. 8, 183-84, cited in James William Morgan, Naval Documents of the American Revolution, (Washington D.C.: United States Government Printing Office for the Naval History Division, Department of the Navy, 1970), vol. 5, 342

²Navy Board Letter Book, hereafter NBLB, (Richmond Virginia: Virginia State Library), cited in NDAR, vol. 7, 91.

³Navy Board Journal, hereafter NBJ, (VSL), 63-65, cited in NDAR, vol. 5, 1016-1017.

⁴ James Maxwell, "Captain James Maxwell to Captain Charles Thomas, February 25, 1777," in Public Rope Walk Papers (Richmond Virginia: Virginia State Library), cited in NDAR, vol. 7, 1290.

⁵Ibid., 193.

⁶Thomas Whiting, Virginia Papers Concerning the State Navy, "Letter from Thomas Whiting to John Herbert, March 22, 1777, (Richmond Virginia: Virginia State Library), vol. 2, 513.

⁷NBJ, 189.

⁸Ibid., 201-2.

⁹Ibid., 210.

¹⁰Ibid., 211.

¹¹Ibid., 210-241, 246, 252, 255.

¹²Ibid., 223; NBLB, 91, 255, 257.

¹³Ibid., 220.

¹⁴Ibid, 257.

¹⁵ NBJ, 241.

¹⁶NBLB, 96.

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- ¹⁷Ibid., 245.
- ¹⁸Ibid., 103.
- ¹⁹Ibid., 110.
- ²⁰NBJ, 295, 298, 299, 301, 320, 331.
- ²¹Ibid., 317.
- ²²Ibid., 307.
- ²³Ibid., 318.
- ²⁴Ibid., 324.
- ²⁵Ibid., 320.
- ²⁶Ibid., 338, 359, 363.
- ²⁷Ibid., 351.
- ²⁸Ibid., 338-373.
- ²⁹Ibid., 356.
- ³⁰Ibid., 339.
- ³¹Ibid., 341.
- ³²Ibid., 384, 385, 394.
- ³³Ibid., 389-390, 395, 403, 412.
- ³⁴Ibid., 408.
- ³⁵Ibid., 426.
- ³⁶Ibid., 436.
- ³⁷Ibid., 429.
- ³⁸Ibid., 436.
- ³⁹Ibid., 450.
- ⁴⁰Ibid.
- ⁴¹Ibid., 495.
- ⁴²Ibid., 488.

⁴³ Ibid., 539, n.p.n., n.p.n., n.p.n..

⁴⁴ Ibid., n.p.n.

⁴⁵ Ibid., 530.

⁴⁶ Ibid., n.p.n.

⁴⁷ Ibid., n.p.n., n.p.n.

⁴⁸ Charles B. Cross, A Navy for Virginia: A Colony's Fleet in the Revolution (Yorktown, Virginia: The Virginia Independence Bicentennial Commission, n.d.), 53.

⁴⁹ Board of War Journal, hereafter BWJ, (Richmond, Virginia, Virginia State Library), 18.

⁵⁰ Ibid., 27.

⁵¹ Ibid., 7.

⁵² Ibid., 11.

11. ⁵³ Commissioner of the Navy Journal, hereafter CNJ, (Richmond, Virginia, Virginia State Library),

⁵⁴ Ibid., 12.

⁵⁵ Ibid., 31.

⁵⁶ Ibid., 6.

⁵⁷ Ibid., 30.

⁵⁸ Ibid., 7.

⁵⁹ Ibid., 11.

⁶⁰ Joseph A. Goldenberg and Marion West Stoer, "The Virginia State Navy," in Chesapeake Bay in the American Revolution, ed. Ernest McNeill Eller (Centerville, MD: Tidewater Publishers, 1981), 181-82.

⁶¹ Robert Armistead Steward, History of Virginia's Navy of the Revolution (Richmond, Virginia: Mitchell & Hotchkiss Printers, 1923), 83.

⁶² Ibid.

⁶³ Sanchez-Saavedra, 157-58.

⁶⁴ Julian P. Boyd, The Papers of Thomas Jefferson vol. 4 (Princeton, New Jersey: Princeton University Press, 1951), 186.

⁶⁵ Boyd, vol. 5, 344.

⁶⁶ Boyd, vol. 4, 354, 426.

⁶⁷Boyd, vol. 4, 569-70

⁶⁸Ibid, 569-70.

⁶⁹Boyd, vol. 5, 186.

⁷⁰Ibid.

⁷¹Lieut. Col. J.G. Simcoe, A Journal of the Operations of the Queen's Rangers (New York: New York Times and Arno Press, 1968), 190-91.

⁷²Ibid, 189.

⁷³Ibid.

⁷⁴Boyd, vol. 5, 344.

⁷⁵K.G. Davies, ed., Documents of the American Revolution 1770-1783, vol. XX Transcripts, 1781, (Dublin, Ireland: Irish University Press, 1979), 142-43.

⁷⁶Boyd, vol. 5, 521.

⁷⁷Ibid., 532-533.

⁷⁸Davies, 142-143.

⁷⁹Boyd, vol. 5, 533-534.

⁸⁰Ibid., 532.

⁸¹Ibid., 545-6.

⁸²Joseph Saunders, Revolutionary War Pension and Land Warrant Application Files, (US National Archives; Washington D.C., Micro-Film), Record Group XX, Microfilm 804, Roll 2123, 395-404.

⁸³Ibid.

⁸⁴Boyd, vol. 5, 645.

⁸⁵John Clark, "John Clarke to the Governor, June 8, 1804" in Calendar of Virginia State Papers, vol. 9, (Richmond Virginia: Virginia State Library), 9.

⁸⁶ Martha McCartney and Nick Lucchetti, "National Register of Historic Places Inventory—Nomination Form (Chickahominy Shipyard Archaeological Site)", (Richmond, Virginia: MS on File at the Virginia Department of Historic Resources, 1978), 8.

CHAPTER 4

1994 REMOTE SENSING AND SHORELINE SURVEYS

The 1994 archaeological investigation of the Chickahominy Shipyard (44JC50) intensively surveyed the site to locate and preliminarily document any submerged or tidal archaeological features. Based upon historical accounts of the activities that took place at the shipyard and information about other eighteenth-century shipyards, the site should contain several archaeological features, including a structure for launching vessels, a wharf or pier where supplies could be unloaded and newly constructed vessels fitted out, and the remains of at least three vessels destroyed during the British attack on the yard in 1781. Artifacts and construction methods associated with those features should indicate their age and intended use.

To locate and investigate the archaeological features believed to be associated with the site, the field investigations were broken into four parts, a remote sensing survey of the river, a pedestrian survey of the shoreline, an investigation of shoreline features, and an investigation of the vessels reported sunk near site. This chapter focuses on the remote sensing survey, shoreline survey, and the investigation of the shoreline features, while the next chapter documents the investigation of the vessel remains.

The field crew investigated the site throughout the spring of 1994 with a period of intensive fieldwork between 7 and 22 May 1994. Volunteers from the Maritime Archaeological Historic Society (MAHS) and graduate students from East Carolina

University's Program in Maritime History and Nautical Archaeology completed the fieldwork. During the intensive investigation of the site, the field crew ranged from ten to thirty people. Grants to fund the project were provided by the Professional Association of Diving Instructors (PADI) and the Secor Group.

Methodology

Remote Sensing Survey

The survey of the submerged portions of the site deeper than three feet used remote sensors towed from a small survey vessel. That method was chosen to cover a large area in the near zero visibility environment. The survey used acoustic and magnetic sensors since they are reliable for detecting man-made objects on the surface or imbedded in the seabed.

The survey used side scan sonar to generate a near-photographic image of the river bottom. That instrument generates an image by transmitting and then receiving sound waves. The sound waves are deflected back to the sonar transducer when they encounter a hard surface such as the river bottom or man-made objects. That acoustic energy is range processed into an image of the bottom for a predetermined distance perpendicular to the path of the towfish. Controls on the sonar processing unit allow the user to determine the width of the image recorded and the timing of the sonar's acoustic transmissions.

Acoustic data were collected with a Klein model 531 side scan sonar operating at five hundred kilohertz. The range scale on the sonar was set to fifty meters during the

broad area survey and twenty-five meters when imaging specific targets of interest. Maximum acoustic resolution of the Klein 531 is approximately three centimeters along track and one and a half centimeters across track.¹ To eliminate any chance of entanglement with the prop, the sonar was towed off the stern quarter of the vessel at an altitude equal to approximately 10-15 percent of the sonar's range scale setting. A constant speed of one to two knots was maintained during all survey operations to provide towfish stability and to limit distortion in the acoustic record. Event marks were periodically recorded on the paper sonar printout to correlate the imagery to specific geographic locations.

The survey used marine magnetometer to locate ferrous objects on, or embedded in, the river bottom. A magnetometer measures the earth's magnetic field near the sensor. Any sharp deviations in the background magnetic field indicate the presence of ferrous material near the sensor. Controls on the magnetometer processing unit allow the user to determine how often the magnetometer takes readings and also allow the user to set the scale settings for the paper printout.

Magnetic data were collected using an EG&G Geometrics model 866 marine proton precession magnetometer. The magnetometer sensor was towed approximately fifty feet behind the survey vessel just below the surface of the water. The survey crew completed the magnetic survey at the same time as the side scan sonar survey. The magnetometer was set to sample once per second and the paper printout range scale was set to generate a trace at one hundred and one thousand gamma's sensitivity at the same

time. Data collected with the magnetometer were recorded on a paper printout that was periodically marked to correlate it to specific geographic locations.

The remote sensing survey covered an area along the river from a point approximately one-half mile downstream to a point approximately one-half mile upstream of the modern fish house at the Chickahominy Shipyard site (Figure 2). The field crew conducted the survey along a series of parallel lanes spaced approximately fifty feet apart. Sensor resolution and the anticipated target signature of the man-made objects thought to be associated with the site determined lane spacing requirements.

The survey vessel was outfitted with a Navstar Global Positioning System (GPS) to determine an accurate position of remote sensors when they detected anomalous targets. GPS uses signal travel times from a constellation of twenty-four satellites in order to triangulate the position of a remote receiving unit. A minimum of three satellites must be visible to the receiving unit to calculate its position. The US Department of Defense deployed and maintains the satellite system for military purposes. Since the system can be used to guide missiles and other weapons with precision, the accuracy of GPS is deliberately altered to provide an absolute position accuracy of approximately one hundred meters.

Shoreline Survey

Along the shoreline, in water less than approximately three feet, the team conducted the survey using metal probes approximately eight feet long and hand held metal detectors. This method was chosen to locate features not visible in the water or

because they are buried in the bottom sediments. That survey began near the modern fish house and proceeded north to the beginning of a small creek. Once that section was completed the shoreline survey proceeded south from the fish house to a jetty near the southern edge of the Menzel property (Figure 2).

The team completed the shoreline survey by forming the personnel into a line perpendicular to the shoreline, each person spaced about two feet apart. Crewmembers were equipped with a metal probe that they pushed into the bottom sediments every foot to a depth of approximately five feet as they moved forward parallel to the shoreline. If the probe hit a solid object, the crewmembers marked the point with a probe, and used another to delineate the shape of the object. If the object was small, the crewmembers attempted to get their hands on the object to determine if the it was of archaeological interest. All objects thought to have archaeological value were marked with a survey flag for later mapping.

Walking in a line perpendicular to the shoreline in front of the team probing the bottom, were crewmembers equipped with waterproof metal detectors. Those personnel marked with survey flags all metal objects they located. The team investigated each metal detector "hit" with their probe and then hands to determine if the object was of archaeological interest. The team marked all objects deemed to possess archaeological value with a survey flag for later mapping.

Field personnel recovered diagnostic artifacts located during the shoreline survey that possessed archaeological value after their locations were mapped. All objects recovered during the shoreline survey were individually bagged, labeled, and stored in

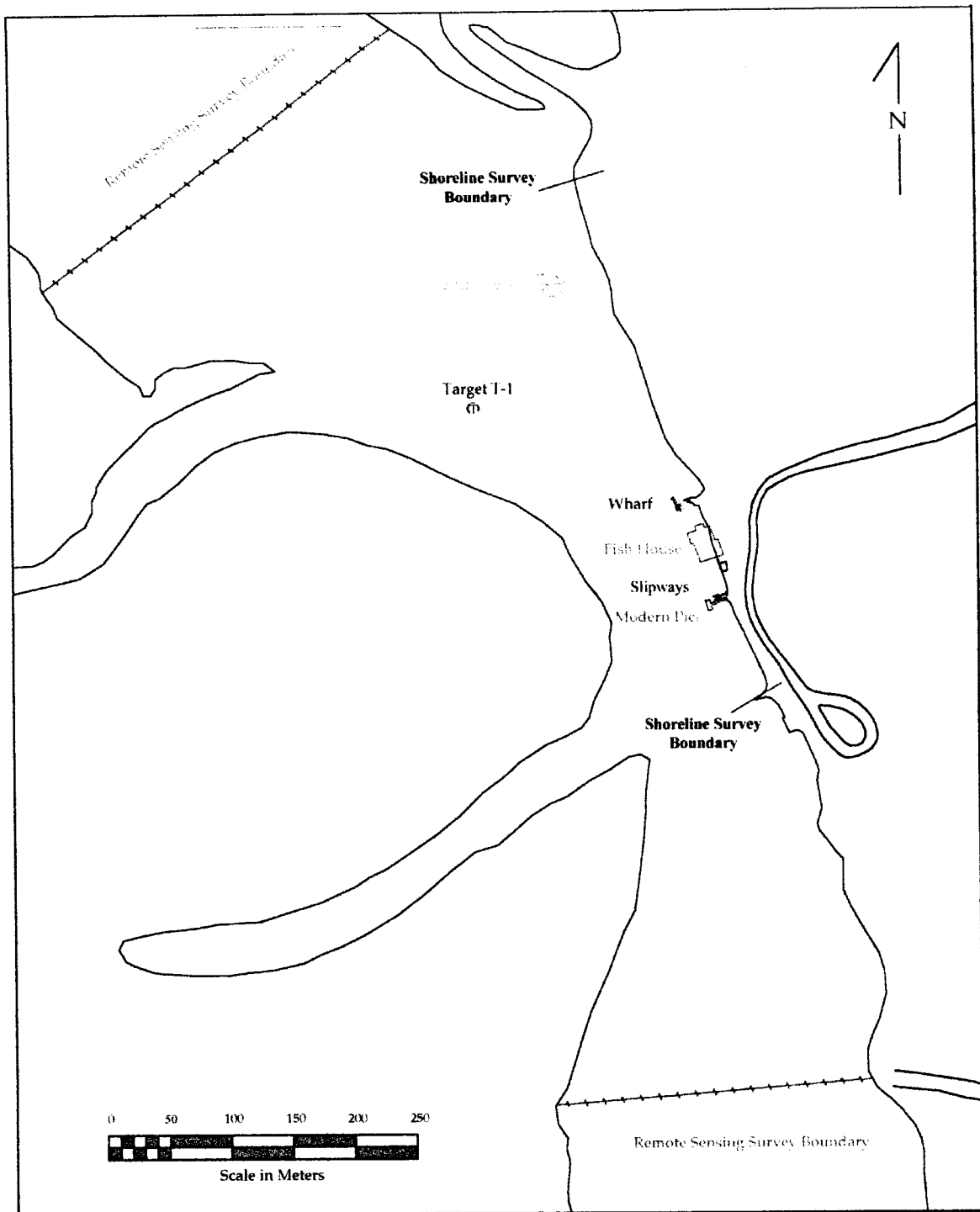


Figure 2: Overview map of the Chickahominy Shipyard Archaeological Site showing remote sensing and shoreline survey boundaries and features..

watertight containers partially filled with river water for later conservation and analysis by the Virginia Department of Historic Resources.

During one of the early visits to the site, the survey crew established two benchmarks along a magnetic north-south axis to facilitate mapping of all archaeological features and artifacts. The team established Universal Traverse Mercator, Zone 18 coordinates in meters, based upon the 1927 North American Datum (NAD27), by triangulating the location of those benchmarks from objects plotted on the United States Geological Survey, 7.5' *Norge* Quadrangle map. Those benchmarks were established at:

North Datum	334029E	4134726N
South Datum	334049E	4134574N

All targets, features, and artifacts located during the remote sensing and shoreline surveys were marked with either a survey flag or a buoy. The survey crew used a transit and electronic distance meter (EDM) setup up on a series of survey control points offset from the primary datum to measure the geographic location of those markers. Those measurements were then used to plot the location of each item on a site plan using a computer aided drafting program (CAD). Since the UTM coordinate system is the standard for archaeological provenience, all locations and maps were completed in metric units. The survey crew completed all feature drawings in English measurement units since that was the system used to build those structures.

The crew investigated the archaeological features located during the shoreline survey by first using the metal detectors and probes to delineate the boundaries. Crew members then used tape measures from survey control points to triangulate and plot the

position of key points on an individual feature map. The crew then recorded those structures with limited scale drawings

After the mapping each feature, the crew laid out several one-meter square archaeological test units around each feature at strategic points. The purpose of the archaeological test units was to locate key components to the features and to locate diagnostic artifacts. To facilitate the excavation of the test units, the crew used a polyvinyl chloride (PVC) frame to delineate the sides of the unit. Once positioned a crewmember leveled the frame to generate an artificial plane from which all recording could be completed. The crew excavated each test unit with a four inch water induction dredge in ten centimeter levels. To collect any artifacts pulled into the dredge head, the crew diverted the exhaust into a box with one-quarter inch wire screen in the bottom. The crew bagged all artifacts recovered in an individual level together. Once the team completed the excavation of a level they made a drawing of the archaeological features present and began a new level. The crew repeated the process until they encountered sterile subsoil.

Findings

Remote Sensing Survey

The remote sensing survey provided a unique perspective of the Chickahominy Shipyard Archaeological Site. The side scan sonar imagery indicated that the river channel is approximately forty feet deep and characterized by steep channel side walls only a short distance from the shore (ten to fifty feet). Most of the river bottom appeared from

the sonar imagery to be featureless and to consist of hard clay and sand. The side scan sonar detected only three significant features in the survey area. Those targets included the remains of an extensive timber structure extending from the shoreline, which is probably a wharf, two ships hulls, and an unidentified feature that appeared man-made a short distance away from the ship remains.

The remains of the timber structure lie just north of the modern fish house and are visible above the water surface at low tide (Figure 3). The side scan sonar imagery clearly shows pilings driven into the river bottom, an extensive debris pile that begins at the pilings and extends nearly halfway across the river, and a small mound of stone or rubble (Figure 4). Any magnetic signatures generated by components of this feature were masked by the extensive ferrous material contained in the modern fish house just downstream.

The additional feature detected with the remote sensing equipment proved to be the remains of two vessels lying approximately 230 meters north of the modern fish house on the eastern side of the river (Figure 2). Side scan imagery clearly displayed the remains of hulls lying side by side on the eastern channel side slope (Figure 5). One end of each vessel lies in the vicinity of the toe or bottom of the channel side slope, while the other end lies near the top. Both vessels are exposed above the bottom with little sediment inside. The frames of each vessel can be counted on the side scan sonar imagery. Hull planks and disarticulated timbers that have fallen away lie scattered around each vessel. Magnetometer data collected over the site of the vessel remains indicated the presence of a large ferrous object near the southeastern end of the larger vessel. That

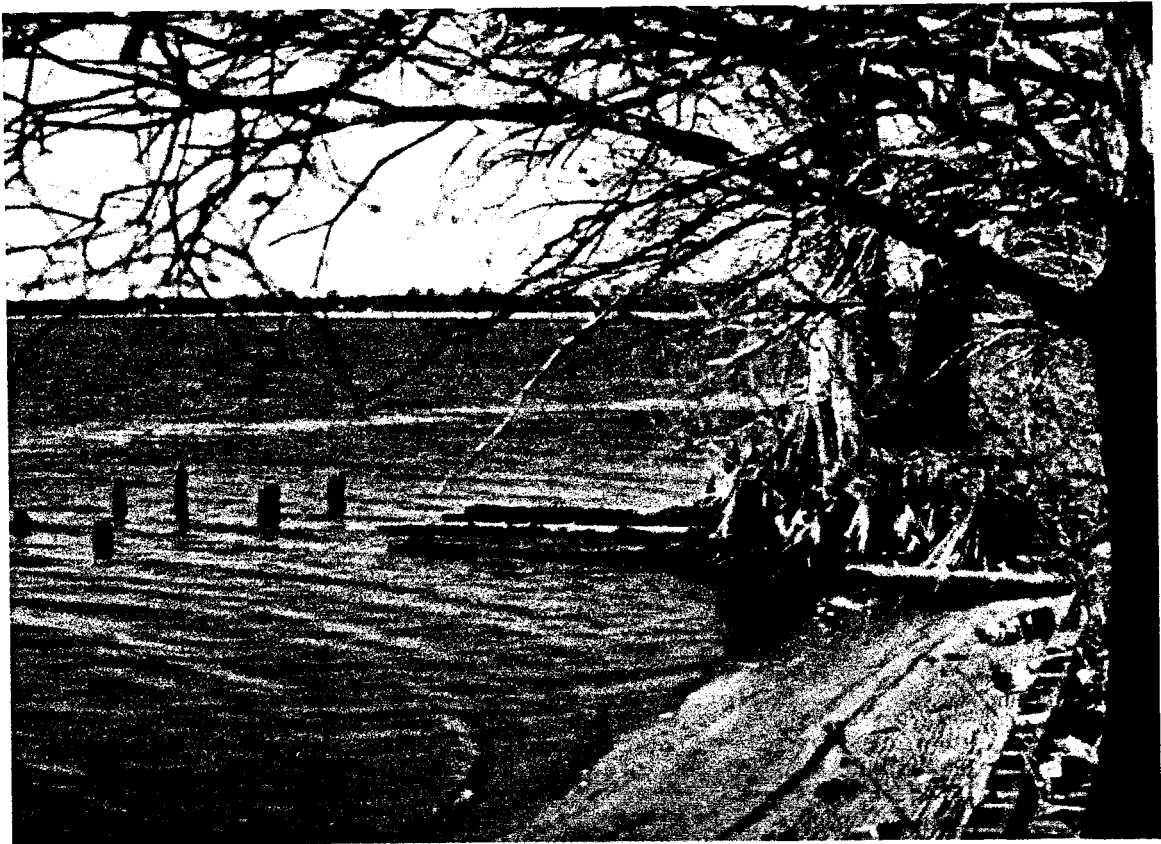


Figure 3: Photograph of the suspected wharf feature north of the modern fish house during lowtide. Photograph by Tanya Scavo.

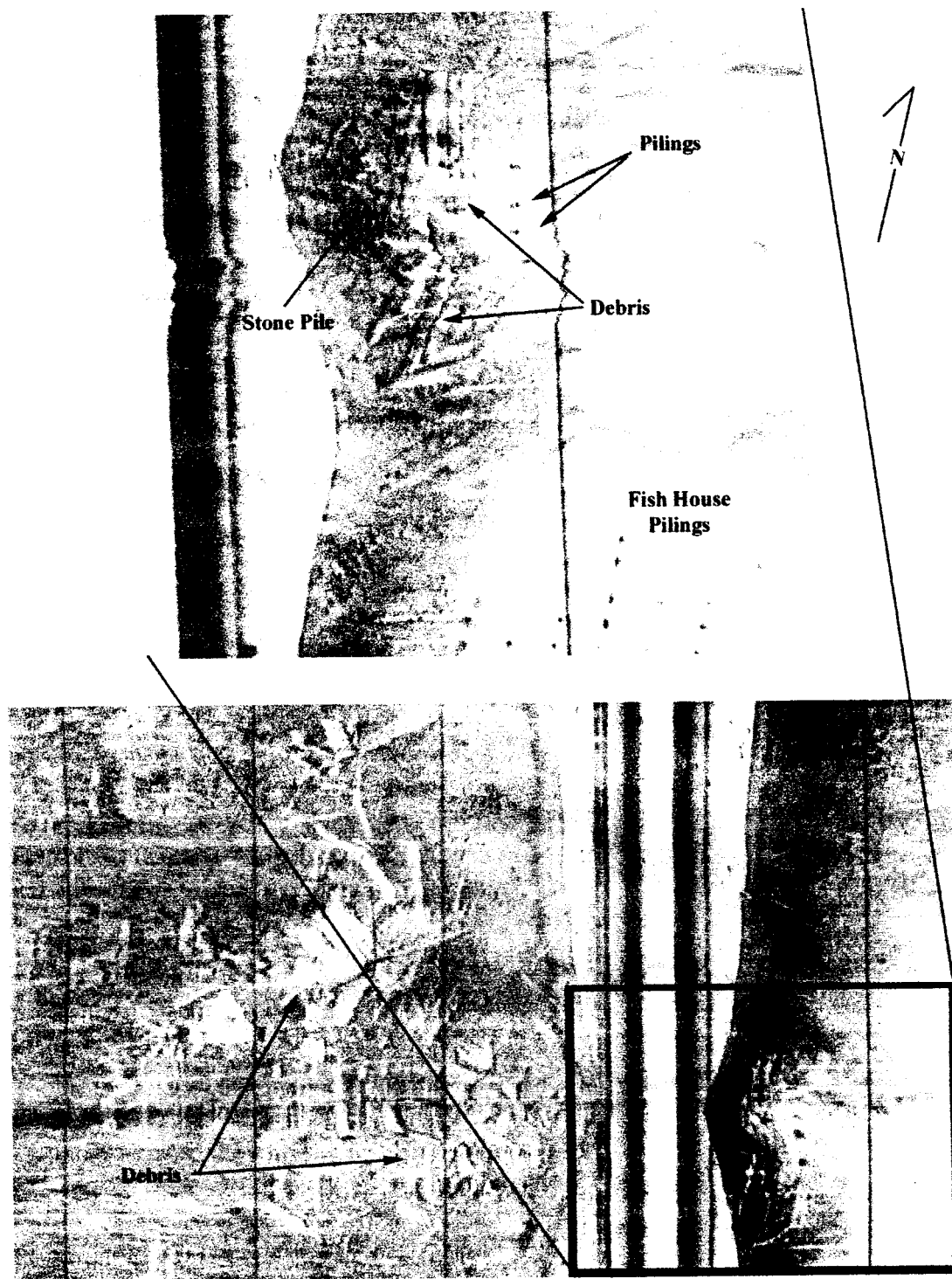
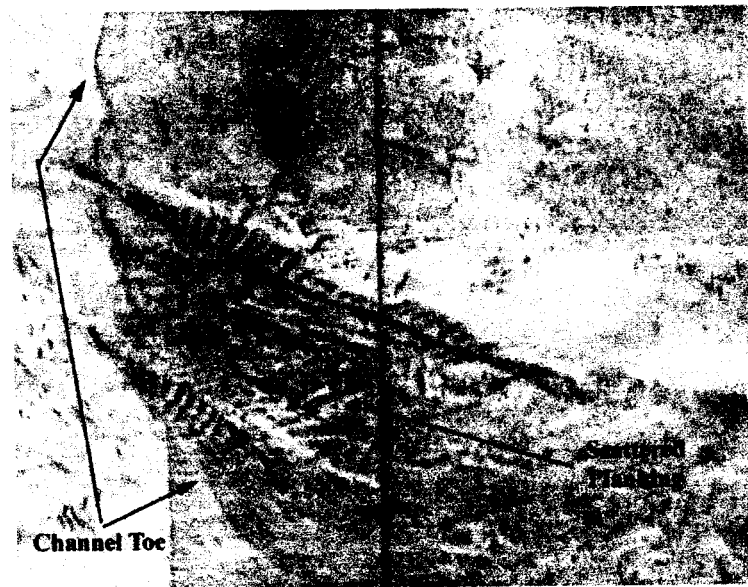


Figure 4: Side scan sonar imagery of the timber structure believed to be a historic wharf north of the modern fish house.



Scuttled Vessel Remains

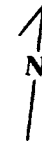


Figure 5: Side scan sonar imagery of two vessels located off the northern end of the Chickahominy Shipyard Site.

object generated a dipolar magnetic signature with an amplitude of 321 gammas over a period of nineteen seconds. An object generating a signature of that magnitude should be a large ferrous object such as an anchor or cannon.²

The third target detected during the remote sensing survey was a complex object articulated in the shape of a cross (Figure 6). The object was located a short distance east of the western channel toe across the river from the vessel remains. The angular formation of this object on the river bottom suggests that it could be man-made. Magnetic data collected over the target did not record the presence of ferrous material. The survey crew deployed a buoy from the survey vessel to mark the location of the target. Divers later located the object on the bottom, determined that the target was an articulated wooden structure, but were unable to identify it conclusively. The location and composition of the object suggest that it may be a disarticulated portion of one of the vessels.

Shoreline Survey North of the Modern Fish House

The shoreline survey north of the fish house located hundreds of historic artifacts. The scatter of artifacts was fairly dense near the fish house and the timber feature, then it slowly dissipated (Figure 7). The only archaeological feature identified in this area was the timber feature believed to be a wharf extending from the shoreline.

North of the fish house, the artifact scatter consisted of prehistoric, historic, and modern items mixed together. No distinct concentrations of historic or prehistoric

artifacts were discovered in the area. Most items were iron with an occasional ceramic or glass shard. The iron artifacts included a cannon ball, a horseshoe, iron fasteners (wrought and wire), a small section of chain, and several metal hoops. Many iron artifacts can be attributed to the modern fishing activities that have taken place from the property. The ceramics included a single shard of English brown salt glazed stoneware (1690-1775), several shards of gray salt glazed stoneware (1700-1900), several shards of ironstone (1840-1855), and several shards of whiteware (1820-1900).³ Glass found during the survey consisted mostly of modern bottle glass, the occasional nineteenth-century medicine bottle fragment, and a few green mould blown wine bottle fragments. In addition to the historic artifacts, two prehistoric artifacts were located in this area. Those artifacts were a shard of quartz tempered earthenware and a hafted axe head.

The wide variety of artifacts discovered in the area north of the fish house, suggest that the area has been actively used since prehistoric times (Appendix A). Those artifacts suggest the types of activity that took place nearby, but do not pinpoint the location of any archaeological features. The single cannonball is evidence that ties archaeological findings to the historic record.

Feature Investigation

Inshore from the pilings identified during the remote sensing survey, the shoreline survey investigated seven timbers protruding channel-ward from underneath the knees and root system of a large cypress tree (Figures 3 & 8). The longest of the timbers protruded approximately nineteen feet channel-ward from the tree roots. Upon further

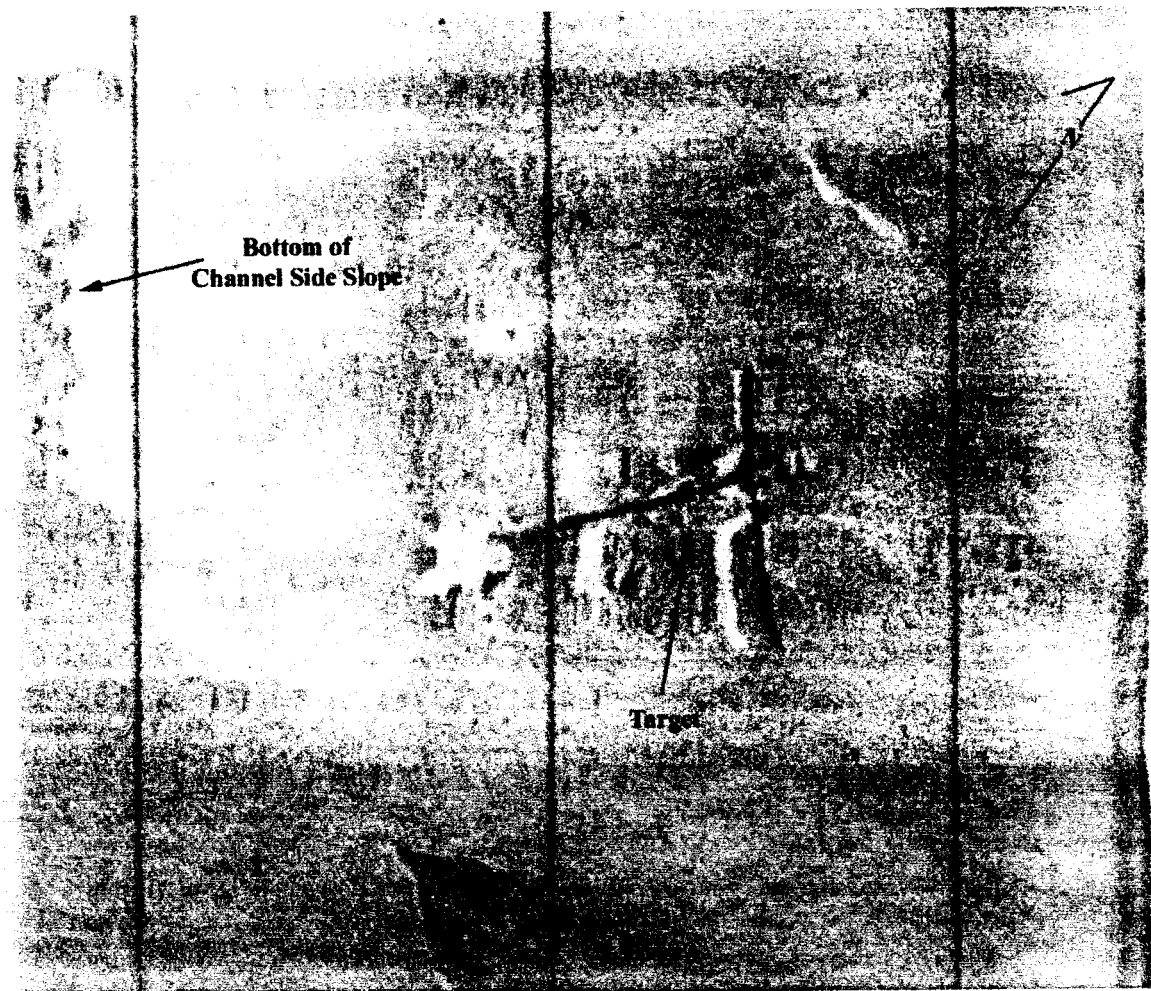


Figure 6: Side scan sonar imagery of an unidentified target lying near the western channel toe across the river from the vessel remains.

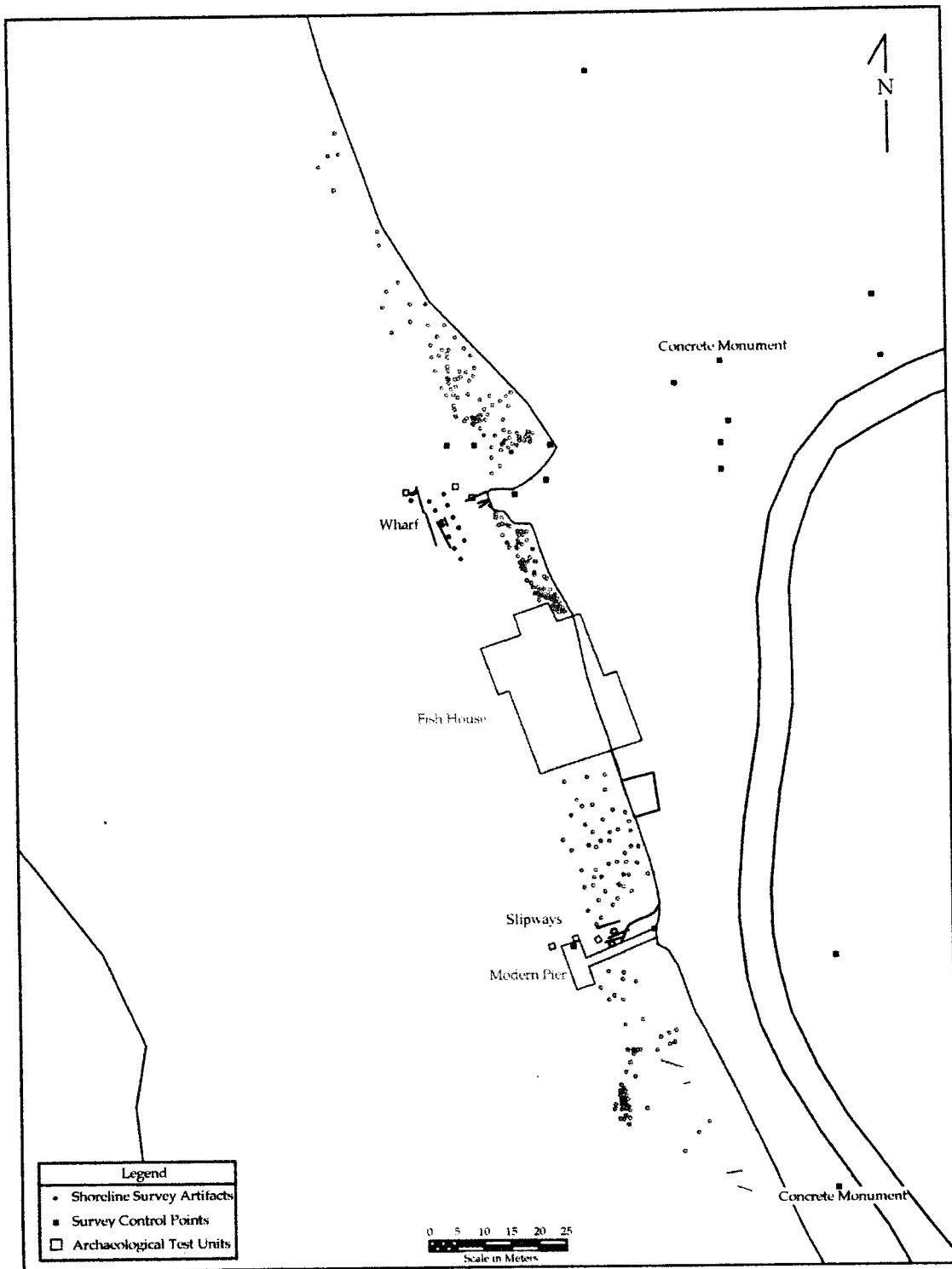


Figure 7: Enlarged site plan showing the extents of the shoreline surveys artifact hits, the wharf and slipway features, and the modern structures.

investigation the survey crew discovered that underneath the northern most timber was an eighth timber fastened directly underneath it with a one and a half inch diameter iron spike driven vertically through the two timbers.

Mapping the structure determined that seven of the eight timbers were roughly parallel while one of the timbers ran perpendicular to the others. All the beams had heavily eroded sides but appeared to have originally been at least partially sided. The timbers measured between seven and a half and twelve inches wide and six and eleven inches thick. They were spaced between two feet four inches and eight feet apart. A single lap joint rebate was exposed on the timber that ran perpendicular to the others. That rebate measured approximately fifteen inches long, four inches deep, and was cut across the width of the timber. Probing on the shore-side of the large cypress tree determined that the timbers did not extend inland. Slopes calculated for the timbers ranged between eight and twelve degrees.

The investigation of the feature next focused on mapping the location of the pilings and attempting to determine if there was any physical connection between the pilings and the timbers extending from the shoreline. No direct link was found, but a near vertical wall of timber was discovered on the shore-side of the pilings closest to the beach. The water depth at that location increased from approximately seven feet to eighteen feet, suggesting that the area behind the near shore pilings was filled to extend the sloping beach to that row of pilings.

Twelve pilings in two parallel lines formed the offshore portion of this feature (Figure 8). No stringers, beams, or braces were found connecting the pilings together.

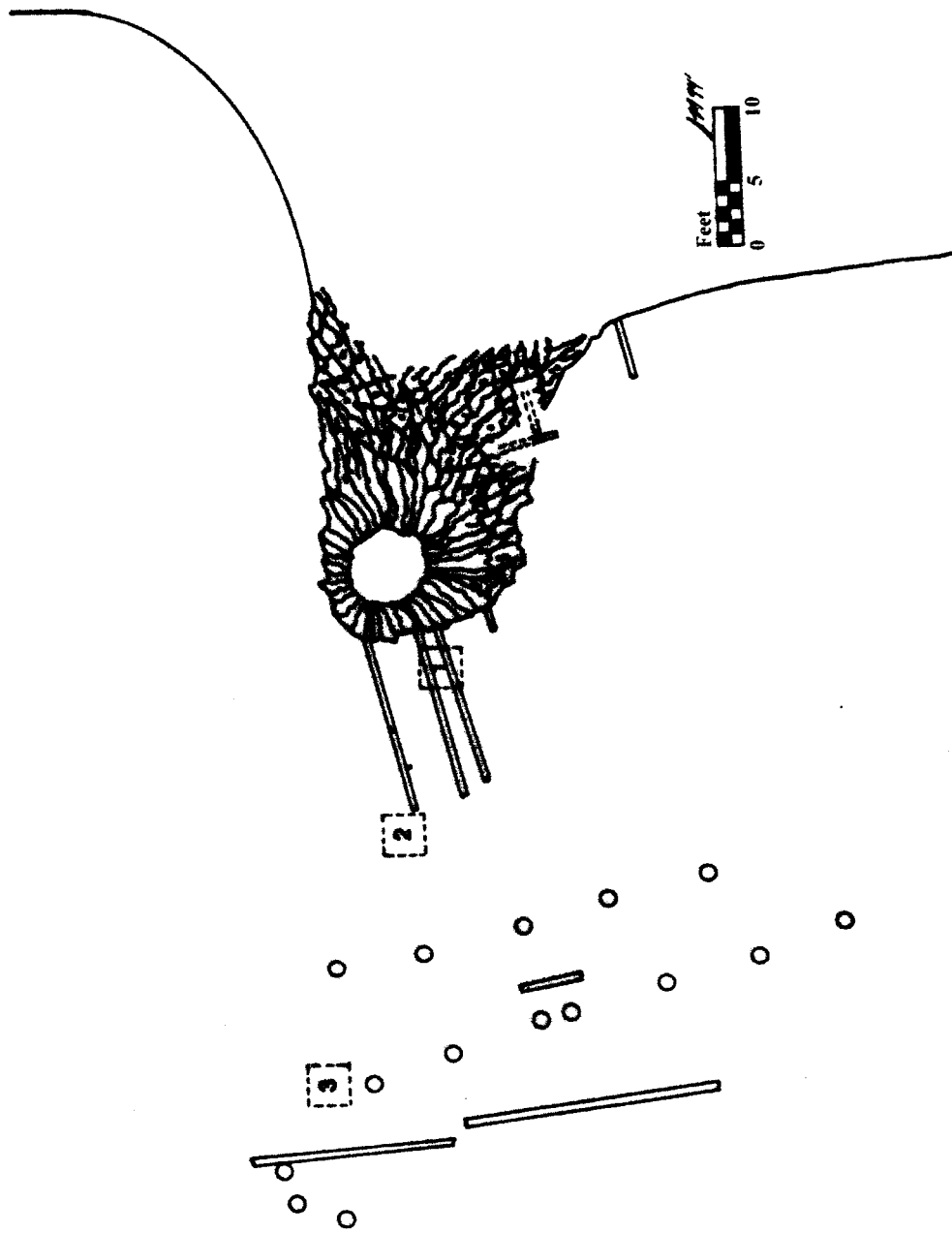


Figure 8: Detailed drawing of the timber feature north of the modern fish house believed to be a historic wharf.

The pilings all had diameters between eight and ten inches. In addition to the pilings in line, there were three pilings grouped together at the northwest end of the feature (Figure 8). Those pilings appeared to form some other structure such as a "dolphin," which is used to keep large vessels from coming into direct contact with a wharf and damaging it.

On the river bottom, around the pilings lay several large disarticulated stringers that likely held the deck of the wharf (Figure 8). Those timbers had finished sides and measured twelve inches high and six inches thick. One of the stringers had a halved lap joint that measured thirty-eight inches long connecting it to another stringer. The joint between the two timbers was fastened with two one and a half inch diameter iron spikes. While investigating the timbers around the base of the piling a six pound cannonball measuring three and a half inches in diameter was discovered wedged between two of them.

To locate buried portions of the structure and diagnostic artifacts, the investigation completed three one meter square test excavation units. The survey crew excavated the first test unit inside of the perimeter of timbers extending out from under the large cypress tree in hopes that it would reveal the foundation of that portion of the structure. They excavated the second test unit at the western end of the northernmost timber extending out from the shoreline in an attempt to locate any timbers connecting the shore timbers and the pilings. They excavated the third test unit at the northern end of the pilings to locate artifacts that may have fallen off the wharf during its use.

The test units determined that the area has been heavily scoured by the strong tidal currents in the river. Each excavated level contained a mix of artifacts from various

time periods (Appendix A). In each of the three test units hard, sterile clay was encountered only a few centimeters below the bottom surface, suggesting that the bottom stratigraphy is not intact above the sterile clay layer.

The investigation of the feature revealed that it is likely two distinct parts that form a single structure constructed using two techniques. The shoreline portion of the structure consists of a timber framework that was fastened together with large iron spikes and lap joints. The offshore portion consists of series of pilings driven into the river bottom and the remains of sided stringers fastened together with iron spikes. Those two techniques are known as individually as crib and pile construction.

Crib construction consists of a series of grid-frames that are stacked on top of each other and fastened together with treenails, iron bolts, or spikes. The technique creates numerous compartments that are filled with stone, rubble, or earth once the structure is properly positioned. The fill anchors the structure to the bottom.⁴ Crib wharf construction was common throughout colonial America, and many descriptions of wharves constructed in that fashion have survived, including descriptions for the Virginia tidewater area during the eighteenth century.⁵

Pile construction consists of sharpened vertical members driven into the river bottom. The piles are driven with a large weight rigged to boom or screwed into the bottom through threads cut into the piling. Once those bearing members are in place, the pilings are cut off level with each other and a series of stringers are fastened to them. A deck is then attached to the stringers. In many cases diagonal bracing is used between the piles to provide lateral stability.⁶ While these techniques were used in colonial America

during the eighteenth century, archaeological evidence suggests they were not the preferred method for wharf construction.⁷ Most wharves of the period were likely constructed using timber cribs instead of piles because of the ease of construction and the requirement of some sort of pile engine to construct pile wharves. Pilings were probably only driven in cases where environmental factors prevented the use of timber cribbing.⁸

These two different techniques may have been used in combination at the Chickahominy Shipyard site for a variety of reasons. The step channel wall and swift currents were two environmental factors that hindered the construction of a timber crib wharf. It is also possible that the two sections were completed at different times. Perhaps the piled portion of the structure was a later addition to the crib structure.

Archaeological evidence suggests that feature just north of the modern fish house is a wharf constructed using two techniques, crib and pile construction. No data were collected indicating that the structure extended inland beyond the cypress tree. The steep slope of the timbers suggests that the structure was not some form of slipway used for launching or careening vessels. Several artifacts found in the vicinity of the wharf provide occupational dates that include the time when the Chickahominy Shipyard was active. The construction techniques used to build the structure are also consistent with methods in use during the eighteenth century.

Shoreline Survey South of the Modern Fish House

The shoreline survey south of the modern fish house located a scatter of prehistoric, historic, and modern artifacts that extended along the shoreline and channelward for a distance of approximately seventy-three meters then quickly dissipated (Figure 7). One concentration of artifacts was located approximately twenty-three meters south of a modern "T" shaped pier, but probing and the excavation of a test unit, labeled test unit seven, did not reveal the presence of an articulated archaeological feature. The only feature positively identified in this area was a timber feature extending from the shoreline adjacent to the modern "T" shaped pier.

Most artifacts located during the shoreline survey south of the fish house were iron with the occasional ceramic or glass shard, prehistoric lithics and pottery, and disarticulated planks. The iron artifacts included several cannon balls, a piece of pig iron, a variety of wrought iron and wire fasteners, a large rod with a handle, a cleat, an oarlock, and several iron hoops (Figures 9 & 10).

The piece of pig iron is similar in size and shape to a bar found during the investigation of the Stephen Steward Shipyard near Galesville, Maryland, in 1991.⁹ That shipyard was active between 1753 and 1783.¹⁰ The three cannon balls found in this area consisted of two solid six pound balls measuring three and a half inches in diameter and a solid twelve pound ball measuring four and a half inches in diameter.¹¹ Many other iron artifacts can be attributed to the modern fishing activities that took place at the site.

The crew found only a few ceramic and glass artifacts in the area surveyed south of the modern fish house. The glass located in this area was modern bottle glass. The

ceramics included a shard of gray salt glazed stoneware (1700-1900), a shard of whiteware (1820-1900), and a shard of coarse redware probably from a modern flowerpot.¹² In addition to the modern and historic ceramics, the survey crew also located two shards of prehistoric quartz tempered earthenware in this area.

The survey crew found several disarticulated wooden planks south of the "T" shaped pier near the concentration of artifacts. One of those planks had adze marks along one surface and a treenail hole (Figure 11). The adze marks suggest that the plank dates from the period when the shipyard was active. The other wooden artifacts located in this area did not display any markings or joints that would suggest their age or use.

The wide variety of artifacts discovered in the area south of the fish house again suggest that the area has been actively used since prehistoric times. Those artifacts identify the types of activity that took place nearby, but do not pinpoint the location of any archaeological features. The cannonballs, oarlock, pig iron, wrought iron fasteners, and wooden plank with adze marks are all artifacts that can be correlated to use of the property as an eighteenth-century naval installation. Some of those artifacts are specifically mentioned in the historic records pertaining to the Chickahominy Shipyard.

Feature Investigation

The survey crew discovered one archaeological feature south of the modern fish house. That feature consisted of three parallel timbers extending perpendicular from the shoreline (Figure 12). From north to south those timbers were fifteen, thirteen, and fourteen inches in diameter with no fasteners or joint features observable. The overall

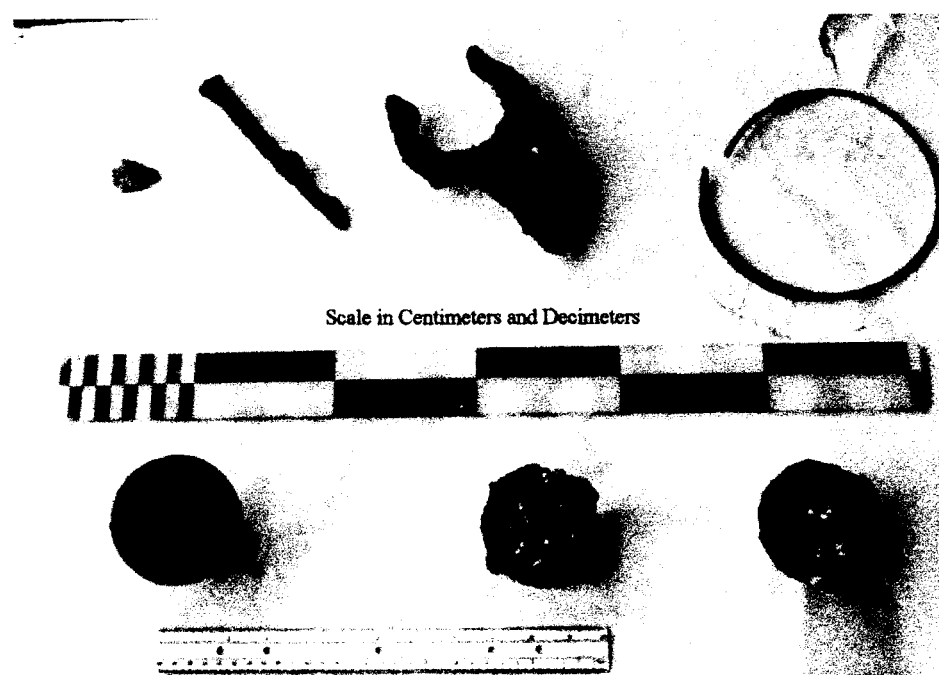


Figure 9: Photograph of artifacts located during the shoreline survey south of the modern fish house. Those artifacts include three cannon ball, an oarlock, an iron spike, an iron hoop, and a prehistoric projectile point. Photograph by William Utley.

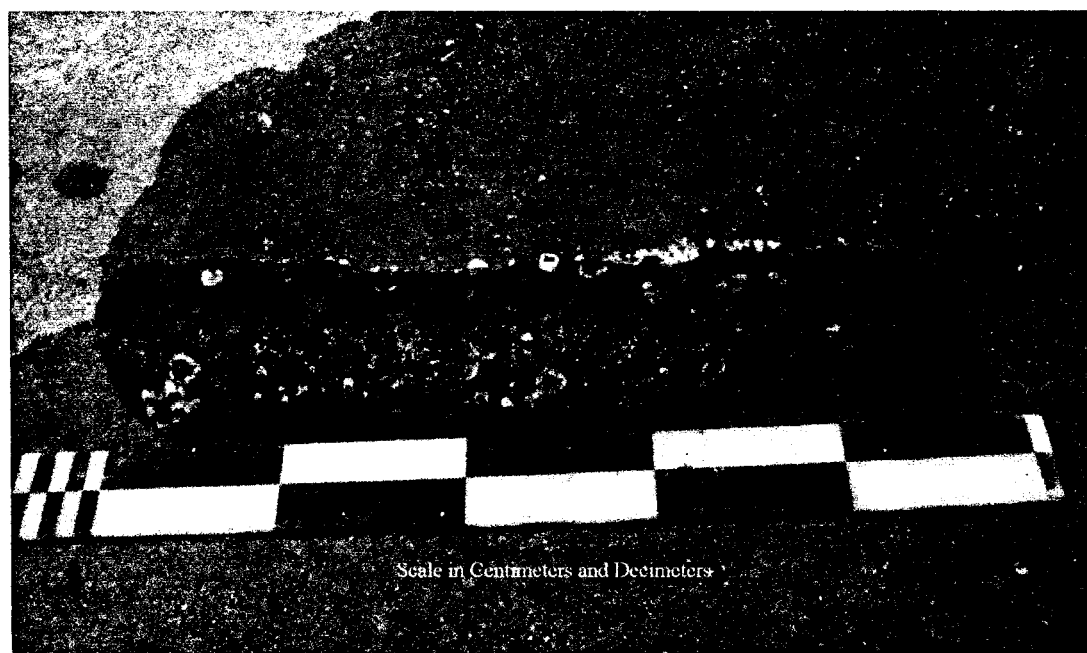


Figure 10: Photograph of pig iron bar discovered south of the modern fish house in a concentration of artifacts. Photograph by William Utley.



Figure 11: Plank located during the shoreline survey south of the modern fish house that displays adze marks and treenail holes. Photograph by William Utley.

width of the feature was eleven feet three and a half inches. All three timbers were round and appear to have been broken or sawn off at their channel-ward end. They extended from the bank between twelve feet six inches and fifteen feet ten inches. Conversation with the property owner revealed that the timbers extended much further channel-ward, but were sawn off when the modern "T" shaped pier was constructed in the early 1970's.¹³ The northernmost timber was also broken or sawn off at its shore-ward end while the middle and southernmost timbers extend into the riverbank for an undetermined distance. Two large cypress trees grew around these timbers. The middle timber appeared displaced by one of those trees. Using a transit and stadia rod, slopes were calculated for each of the three timbers. Those measurements determined that the timbers slope downward into the river between approximately four and five degrees.

The field-crew used metal probes to investigate around and between the timbers in an attempt to locate other structural members and any possible foundation remains. There is a dense scatter of brick near the channel-ward end of the timbers, but no other structural members. While the property owner did not indicate that other parts of the structure were removed, it is evident that the construction of the modern pier heavily impacted the archaeological remains there.

To locate diagnostic artifacts and buried structural components of the feature, the investigation completed three one meter square test excavation units, numbered four, five, and six around the structure (Figure 12). The fourth test unit was excavated at the channel-ward end of the middle timber, in the brick scatter. This location was chosen to test for foundation components of the structure. The fifth test unit was excavated off the

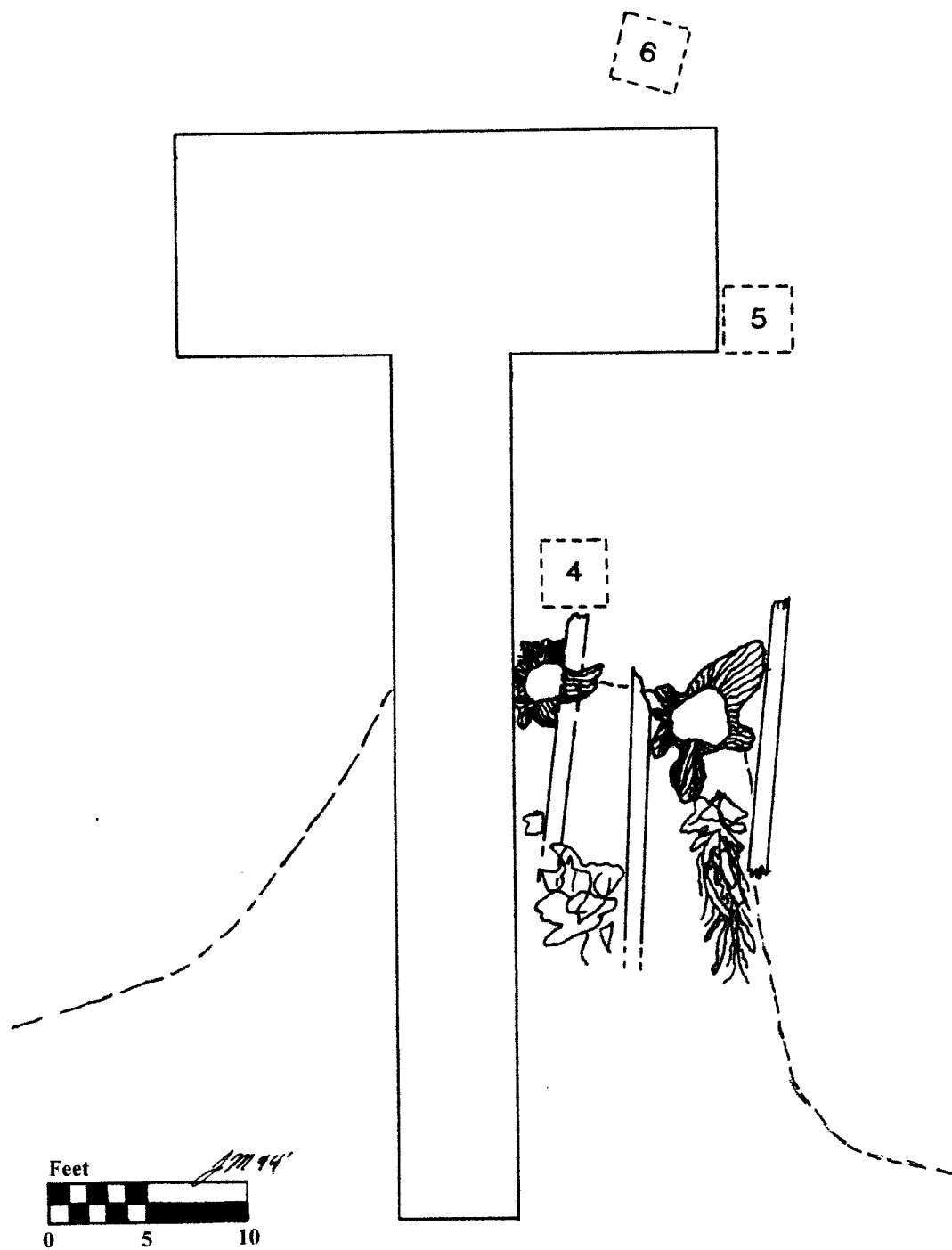


Figure 12: Detailed drawing of the possible slipway structure south of the modern fish house.

northern side of the dock, inline with the timbers extending from shore. This test unit was selected to locate buried structural components of the feature. The sixth test unit was excavated on the western side of the modern pier, inline with the timbers extending from the shoreline and just east of the top of the channel sideslope. That location was selected because it was believed that the structure originally extended to the edge of the channel.¹⁴

The three test units excavated in the vicinity of the feature south of the fish house again revealed that the area has been heavily scoured by the strong tidal currents in the river. Each excavated level contained a mix of artifacts from various time periods (Appendix A). In each of the three test units hard, sterile clay was encountered only a few centimeters below the bottom surface, suggesting that the bottom stratigraphy is not intact above the sterile clay layer.

Test unit four was the only unit that revealed anything suggestive of an articulated archaeological feature. The first level of the test unit consisted of a layer of sand with large brick fragments. Just below the brick was the hard sterile clay layer.

Archaeological investigation of the feature south of modern fish house revealed three articulated timbers extending perpendicular from the shore. Mapping and documentation of that feature determined that it is approximately eleven feet wide and built on a slope of approximately four degrees. A conversation with the property owner determined that much of the feature was removed during the construction of the modern pier. A scatter of brick exposed at the current channel-ward end of the feature suggests that the structure could be built on a bed of brick or the space between the timbers could have been filled with brick.

The archaeological evidence and the report that the timbers extended much farther offshore than they currently do, suggests that this feature could be the partial remains of a slipway. Slipway is a term that can apply to a variety of structures used for launching or careening vessels. Historical descriptions of slipways indicate that they were typically built using crib construction on some form of foundation or bed to prevent the rails from settling under the weight of a vessel.¹⁵ The typical slope of slipways varies between two point two and four point five degrees depending on the size of the vessels they are intended for, but steeper grades can be used with additional equipment such as braking mechanisms.¹⁶

Several dockyard structures associated with hauling and launching vessels have been archaeologically investigated in North America. In 1976, Huronia Historical Parks investigated the remains of a British navy slipway built on Penetanguishene Bay in Canada. That structure was very similar to a modern marine railway where vessels are hauled in and out of the water on a car designed to hold the vessel. The naval slip was built using crib construction and held in place with stone fill between the crib frames. The structure sloped into the water at an angle of seven and a half degrees.¹⁷

A second archaeological site that contained dockyard structures for the launching and repairing of vessels is the Stephen Steward Shipyard located near Galesville, Maryland. The investigation of that site has revealed two structures. The first consisted of a series of parallel poles extending from the shoreline lying on a bed of brick rubble. The second more complex structure consisted of a set of slipways constructed using crib techniques and a possible careening station consisting of a series of parallel poles

extending from the shoreline. Both features at the Steward Shipyard were built on a slope of four to five degrees.¹⁸

Archaeological evidence suggests that the feature south of the modern fish house could be a portion of a slipway. The primary evidence for this preliminary conclusion is the slope of the structure and the report that the timbers extended much farther into the river prior to the construction of the modern pier. Historic documents related to the Chickahominy Shipyard suggest that the facility included both a set of launching ways and a careening station. No diagnostic artifacts were found in-situ associated with this feature, but the few remaining construction characteristics are consistent with methods used at similar sites from the same period and artifacts found in the vicinity of the structure date from the period when the Chickahominy Shipyard was active.

The remote sensing and shoreline surveys revealed many of the features that were believed to be located at the Chickahominy Shipyard site. Those surveys located the remains of two vessels, a wharf, and a probable slipway structure. Only one vessel hull has yet to be accounted for, but historic records suggest that it might have been burnt on land by the British when they attacked. Preliminary documentation of the structures located along the shoreline suggested that they were constructed using techniques standard for the eighteenth century. Investigation of those structures has also revealed that much of the archaeological evidence once hidden by the river has been destroyed by the swift currents present at the site.

¹Klein Associates, Inc., Side Scan Sonar Record Interpretation (Salem, New Hampshire: Klein Associates, Inc., n.d.), n.p.n.

²S. Breiner, Applications Manual for Portable Magnetometers (Sunnyvale, CA: Geometrics, 1973), 46.

³Ann R. Brown, Historic Ceramic Typology with Principal Dates of Manufacture and Descriptive Characteristics for Identification, Archaeology Series No. 15 (Delaware Department of Transportation, 1982), passim.

⁴Brysson Cunningham, A Treatise on the Principals of Dock Engineering (London: Charles Griffen & Company Limited, 1904), 287.

⁵Gary J. Norman, "Eighteenth Century Wharf Construction in Baltimore, Maryland" (Master's Thesis, College of William and Mary, 1987), 8-17.

⁶Edward Cressy, An Encyclopaedia of Civil Engineering: Historical, Theoretical, and Practical (London: Longmans, Coreen, and Company, 1847), 1070-1071.

⁷Norman, 19-21.

⁸Ibid.

⁹Bruce Thompson, A Preliminary Report of Archaeological Investigations at the Stephen Steward Shipyard Site 18AN817 (Galesville, MD: Maryland Historic Trust, 1993), 22.

¹⁰Ibid, 1.

¹¹Spencer Tucker, Arming the Fleet: U.S. Navy Ordnance in the Muzzle Loading Era (Annapolis, Maryland: United State Naval Institute, 1989), 125.

¹²Brown, passim.

¹³Eileen Menzel, Personal Communication with Author, May 1992.

¹⁴Ibid.

¹⁵Jean Boudroit, The Seventy-Four Gun Ship: A Practical Treatise on the Art of Naval Architecture, vol. 1, trans. David Roberts (Annapolis, MD: The Naval Institute Press, 1986), n.p.n.

¹⁶Charles Colson, Notes on Docks and Dock Construction (London: Longmans, Green, & Co., 1894), 313-314.

¹⁷Bureke Penny, Ken Cassavoy, and Arthur Amos, The Archaeological Investigation of the Naval Slip (Huron Historical Parks, 1976), 29-34.

¹⁸Thompson, 21-22.

CHAPTER 5

1994 VESSEL INVESTIGATIONS

In 1977 Dennis Short, an intern with the Virginia Department of Historic Resources, organized and executed a survey off the Chickahominy Shipyard Site to locate the remains of several vessels suggested by secondary source material as sunk in the area. Short's survey located two vessels lying on the channel side slope off the northern end of the site. His investigation recorded the basic dimensions of those remains. In addition, Short and his team recovered several artifacts from the vessels including cannon balls, a pig iron ingot, an eighteenth century wine bottleneck, and a pewter spoon.¹ The construction details and artifacts Short recorded suggested that the vessels lying off the northern end of the Chickahominy Shipyard Site were the vessel remains discussed in the historic literature related to the Virginia State Navy (VSN) of the Revolutionary War.

The vessel remains located by Dennis Short at the shipyard site are believed those of the Virginia State Navy row galleys *Lewis* and *Safeguard*. The *Lewis* was one of the first galleys built for the VSN, while the *Safeguard* was one of the first vessels built to the standardized galley dimensions set forth in August 1776.² If this hypothesis is correct, then construction details of one of the vessels should closely match the standardized row galley dimensions recorded in the Journal of the Virginia Navy Board. The remains of two row galleys built by the Virginia State Navy in good condition would provide a

wealth of information to the archaeological record regarding early American warship design.

Methodology

The 1994 archaeological investigations of the vessel remains were designed to relocate and preliminarily document them through measured drawings. Those investigations were conducted with the intent of trying to determine what kind of vessels they were, document design and construction details, and evaluate the overall condition of the remains. This plan was intended to form a basis from which future intensive documentation efforts could be initiated.

Because the wrecks are located in a tidal river with strong currents and near zero underwater water visibility, it was important, yet difficult, to develop an overall plan of the wreck sites without expending a significant amount of time. To develop a conceptualized overall site plan relatively quickly, the field crew used a high resolution side scan sonar imagery in conjunction with drawings of specific construction features. The result is an artistic interpretation of the wreck sites (Figure 13).

The crew began mapping the vessel remains by attaching buoys to the stem and sternpost of each vessel. Those buoys provided a safe means for the divers to descend to the wrecks and translated the ends of the wrecks to the water surface where their positions could be measured using a transit and electronic distance meter (EDM). The crew then plotted on the overall archaeological site plan the positions for the bow and stern of each wreck.

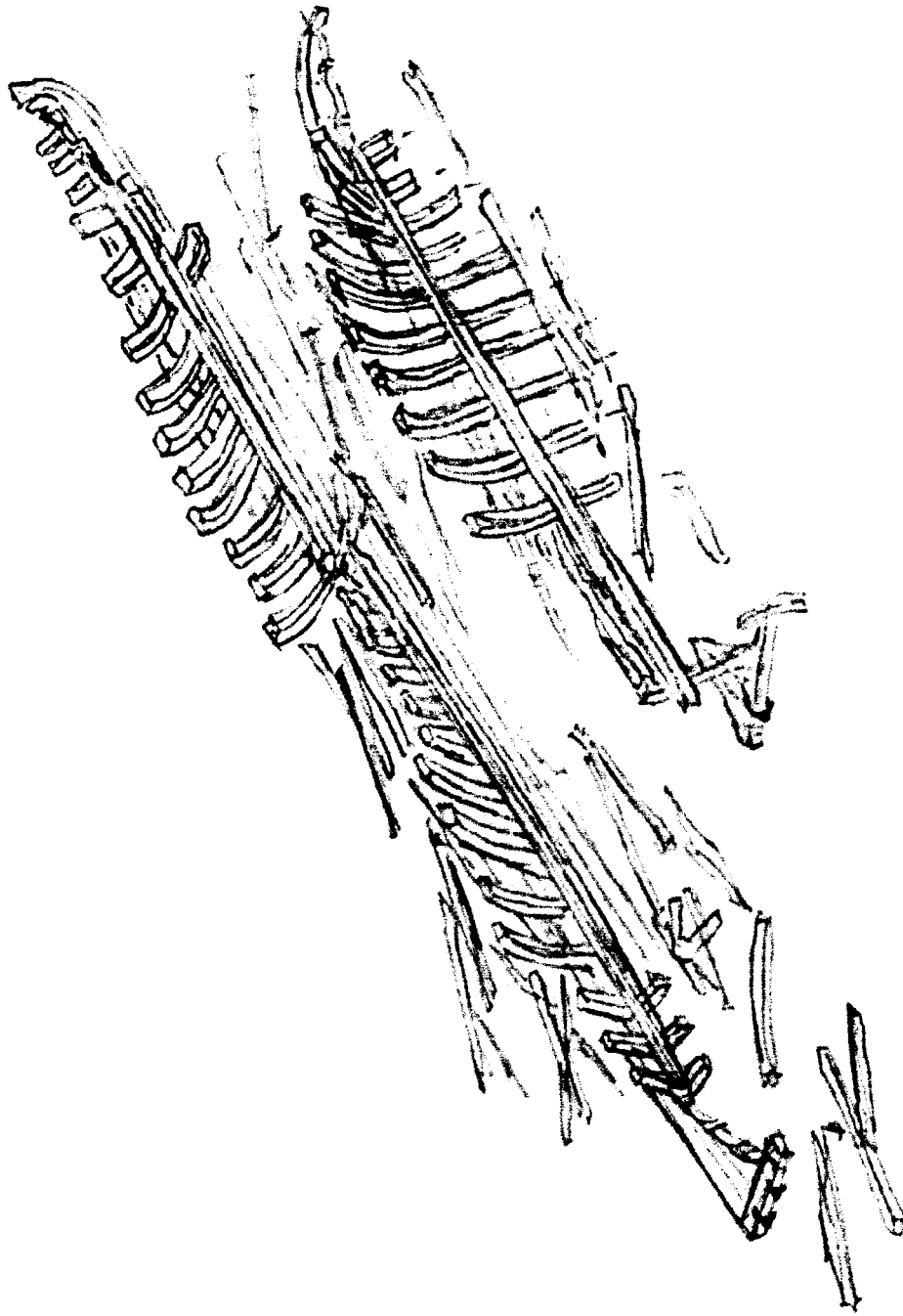


Figure 13: Artist interpretation of the the vessel remains located off the northern end of the Chickahominy Shipyard Archaeological Site. Drawing by Gordon P. Watts.

To facilitate mapping, the field crew stretched a taught baseline along the longitudinal axis of each vessel between the stem and sternpost. Attached to that baseline was a measuring tape to provide the divers with a system to orient themselves and provide measurements between specific construction features. That baseline was left in place throughout the duration of the project.

Divers used wireless underwater communications equipment to map the wrecks. Those divers communicated to a person on the surface the location and dimensions of timbers and features. The person on the surface recorded those measurements in a logbook. At the end of each dive, the divers completed a sketch of the portion of the vessel they had mapped to clarify their communications. The field crew then then input measurements into a computer aided drafting program (CAD) daily. Any uncertainties or missed measurements were addressed the next day. This method was employed because the environmental conditions prevented traditional underwater recording techniques using a leveled grid system over the site.

Environmental conditions at the site proved difficult to overcome and surely affected the quality of the data recorded. The extremely low visibility coupled with the strong currents in the river and the encrustation of the timbers made mapping of complex structures difficult at best. As a result, the findings presented in this chapter should be considered a preliminary documentation of the vessel remains.

The investigation of each vessel included recording the dimensions of the principal structural members, framing pattern, and the stem and stern configurations. On the larger inshore vessel a single hull profile was recorded. The field crew recorded the

location of specific features relative to the stem post of each vessel using the baseline established along the centerline of each vessel. The crew documented construction details by measuring the dimensions of timbers and joints and generating scaled drawings. They recorded hull profiles and stem curvatures using triangulation techniques.

Findings

Side scan sonar imagery collected during the remote sensing survey off the shipyard site confirmed the presence of the remains of two vessels off the northern end of the site. That survey in conjunction with dives on the wrecks determined that the vessels lie approximately ten feet apart along the eastern channel side slope of the river. The bow of the larger vessel, designated vessel "A," lies a short distance above the top of the side slope, while the stern is near the bottom of the slope. A second vessel, designated vessel "B," also lies with its bow towards the top of the channel side slope with its stern lying near the channel-toe. Both vessels lie completely exposed above the bottom surface heeled over on their starboard sides with little sediment inside. Exposure to the brackish river water has left the timbers of both vessels in good condition since the water is too fresh to support marine wood boring worms. The water, however, contains enough salt to support the growth of barnacles which have encrusted all the exposed timbers. Scattered around the remains are hull planks and timbers that have fallen off over time.

Vessel "A" lies pointing towards the shoreline with its bow in approximately thirteen feet of water. It measures eighty-nine feet ten inches between the front edge of the stempost and the outside edge of the sternpost. Thirty-nine feet nine inches from the

front edge of the stempost there is a dramatic bend in the hull structure. At that point a scarf joint in the keelson is partially separated. This damage corresponds to the location where the bottom changes from a gently sloping beach to the steep channel sidewall. It is apparent that at one time the forward end of the vessel protruded significantly upwards into the water column and that eventually the vessel's backbone broke. The vessel remains slope steeply downward from the damaged area towards the channel-toe. The stern of the vessel lies in approximately thirty-five feet of water. Currents in the river have scoured a large hole underneath the stern of the vessel approximately five feet from the end of the keel leaving this section hanging in the water column. The vessel remains extend off the bottom approximately nine feet with the floor timbers on the port side midships extending the furthest towards the surface. A single frame consisting of a floor timber and first and second futtock is intact on the starboard side of the vessel to a point just beyond the turn of the bilge. All second and third futtucks on the port side of the vessel have fallen away.

The vessel was constructed principally of American white oak using traditional plank on frame construction techniques.³ The keel is a single piece of white oak measuring eighty-three feet eleven inches long, sixteen inches molded, and ten inches sided at its forward end, twelve inches molded and twelve inches sided near the midship, and twelve inches molded and nine and a half inches sided at the stempost. A rabbet for the garboard strake is let into the keel creating a two and a half inch bearding line. Attached to the bottom of the keel is a shoe measuring two inches thick.

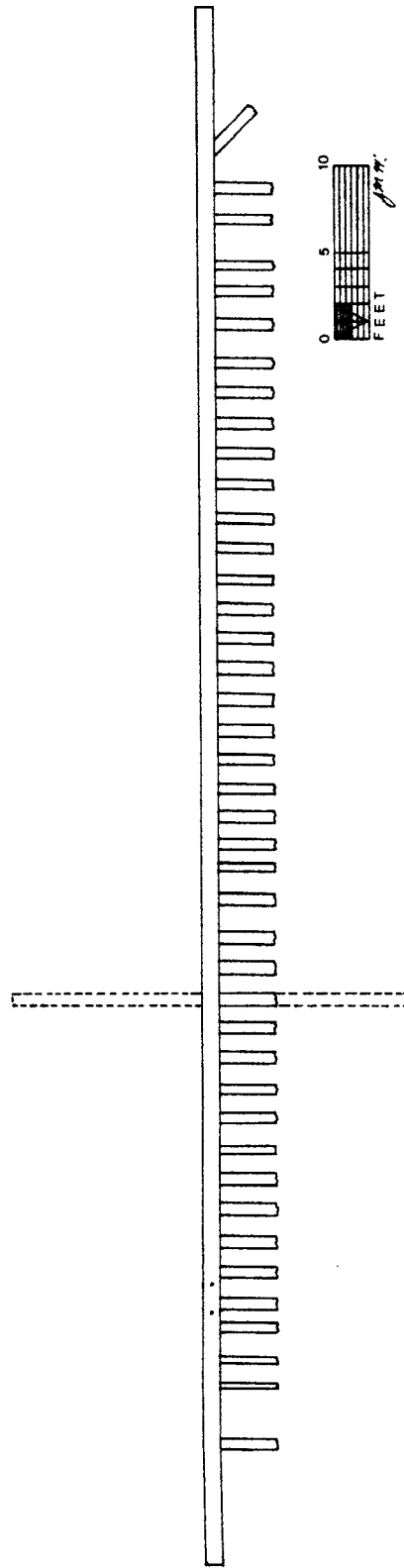


Figure 14: Floor plan for vessel "A" .

Frames on vessel "A" consist of white oak floor timbers and futtucks joined together with trunnels. First futtucks are attached to the sides of the floor timbers six inches outboard of the keelson. A total of forty-two floor timbers are in place (Figure 14). Sided dimensions of the floors measured between five and nine inches, while the molded dimension is eleven inches between the keel and keelson at frame fifteen. Space between the frames varies from nine to eighteen inches. Limber holes on the floor timber at frame fifteen are eight inches from the side of the keelson and are three and half inches wide and two inches deep.

The vessel has a single keelson consisting of at least four sections of white oak joined via flat scarf joints. It extends from the stempost along the length of the vessel and abruptly ends five feet from the sternpost. Near the stem of the vessel the keelson measures fifteen inches molded and eight inches sided, at the midship it measures eleven inches molded and ten inches sided, and in the stern it measures eleven inches molded and ten inches sided. A scarf joint in the keelson forty-seven feet from the stem measures three feet five inches long and a second located sixty-three feet from the stem measures two feet ten inches long. Iron drift bolts were used throughout the vessel to fasten the keel, frames, and keelson together.

No mast steps were found cut into the keelson of vessel "A" nor were there any points where the keelson is rebated for an inverted mast step. Evidence suggestive of the placement of mast step consists of two iron bolts protruding from the top surface of the keelson. A bolt is located fourteen feet ten inches aft of the stempost and the second is

located two feet six inches farther aft. The forward bolt protrudes three and a half inches from the face of the keelson while the aft bolt protrudes eight inches.

The stern of vessel "A" consists of the sternpost, keel, and deadwood (Figure 15). Approximately eleven feet three inches of the white oak sternpost is intact complete with two iron gudgeon straps. Iron pins extending from the inside face of the sternpost and from the top of the deadwood suggest the location of a stern knee that is no longer in place. The sternpost measures eighteen inches molded and ten inches sided at its base and tapers to a molded dimension of thirteen inches and five and a half inches sided just above the second gudgeon strap. Triangulation of the surviving timbers in the stern of vessel "A" indicate that the stern post is raked backwards at an inclination of twelve degrees.

The stem of vessel "A" began ten feet two inches behind the forward end of the keel and extended forward approximately another nine feet five inches (Figure 16). The stempost is made from white oak and measured eight inches molded and ten inches sided. An inner post is present behind the stempost that measures three inches molded and ten inches sided. At the forward end of the keel there are two iron fish plates thirteen inches long and three inches wide fastening the keel, stempost, and deadwood together. Two fourteen inch long iron bolts extend from the outer face of the stempost one foot six inches from the end of the keel that probably fastened the gripe. Frames in the bow of vessel "A" are let into the deadwood five inches and the keelson is rebated to fit over them. No cant frames or hawse pieces are present in vessel remains.

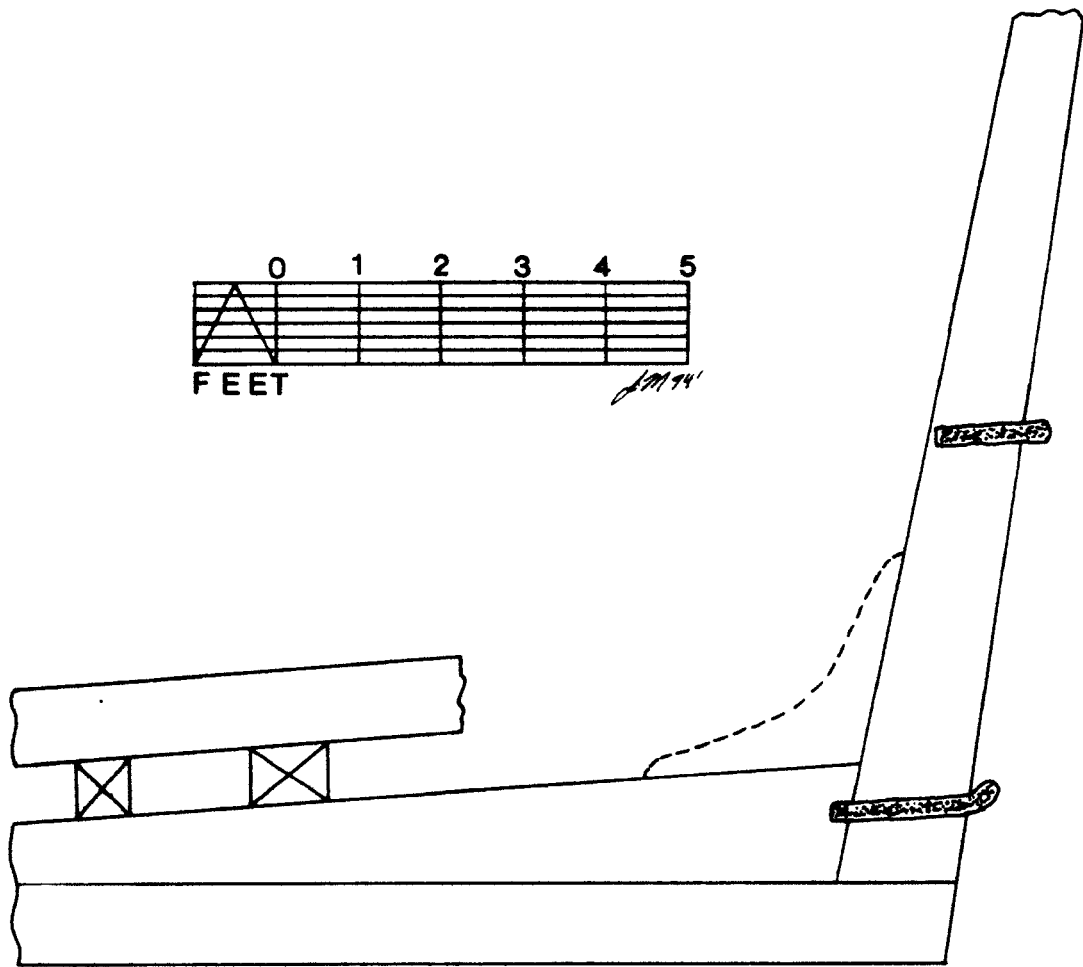


Figure 15: Detailed drawing of the stern configuration for vessel "A".

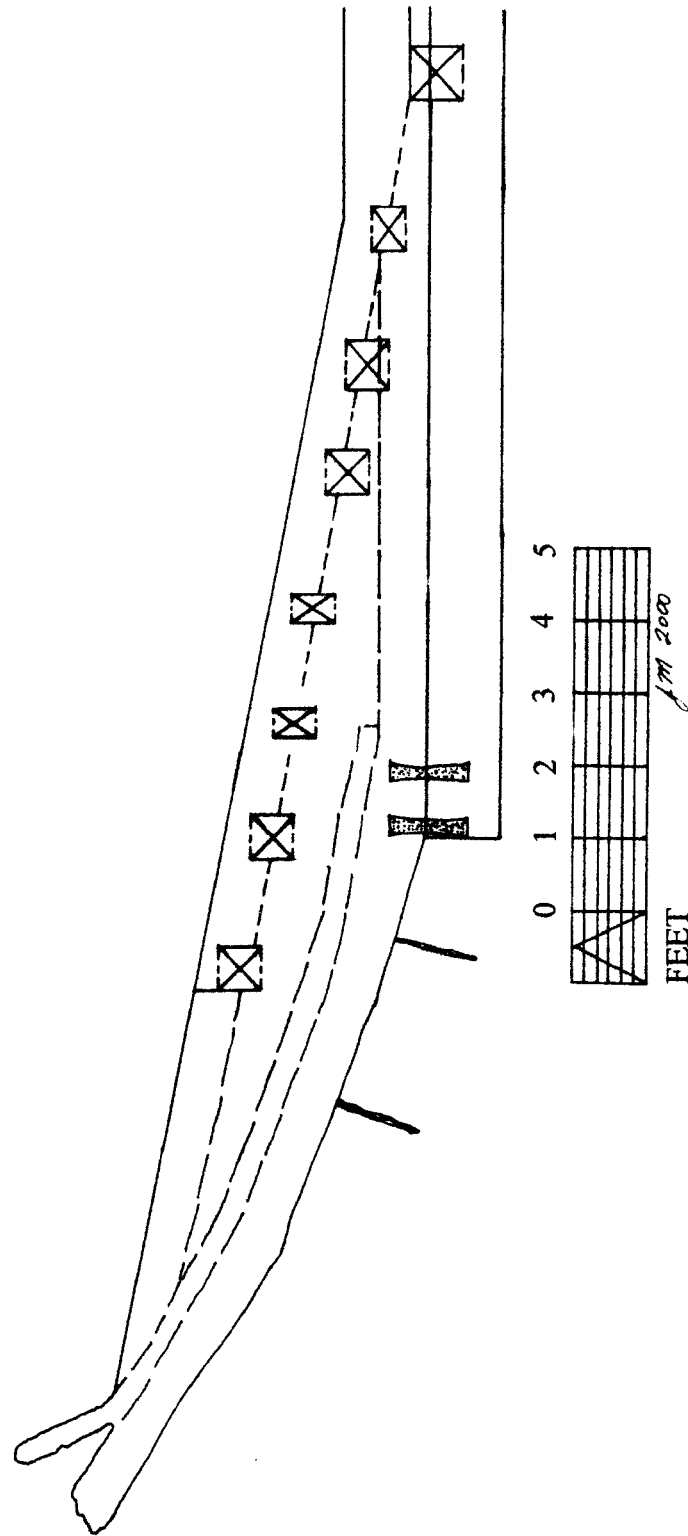


Figure 16: Detailed drawing of the stem configuration of vessel "A".

Vessel "A" was planked with two and a half inch thick oak planks fastened to the frames with trunnels and square iron nails. Bilge ceiling was found intact along portions of the starboard side of the vessel. That planking also measures two and a half inches thick and is fastened with trunnels and square iron nails.

The starboard half of frame fifteen, located thirty-two feet three inches aft of the stempost, was the only portion of a frame still intact beyond the turn of the bilge. A profile of that frame was taken using triangulation techniques in order to project the beam of the vessel and record the hull shape at this section (Figure 17). The frame profile was produced by generating a half profile and then mirroring it along the centerline of the vessel. That exercise produced a hull profile with a maximum beam measurement of twenty-one feet four inches, two feet eleven inches above the bottom of the hold.

The investigation of vessel "A" at the Chickahominy Shipyard located numerous artifacts. The artifacts included several six pound cannonballs, pig iron ballast, a dark green glass wine bottle base, a wrought iron hook, and the head of an adze. The crew located cannonballs near the bow of the vessel in the bottom sediment no longer in-situ. They also located pig iron ballast on top of the bilge ceiling on the starboard side of the vessel at frames eighteen, nineteen, and twenty (Figure 18). It was recovered from the vessel, documented, and then returned. The crew located a wine bottle base and the wrought iron hook lying on the bilge ceiling on the starboard side of the vessel (Figure 19). They also found an adze head lodged between the fifteenth and sixteenth floor timbers underneath the keelson (Figure 20).

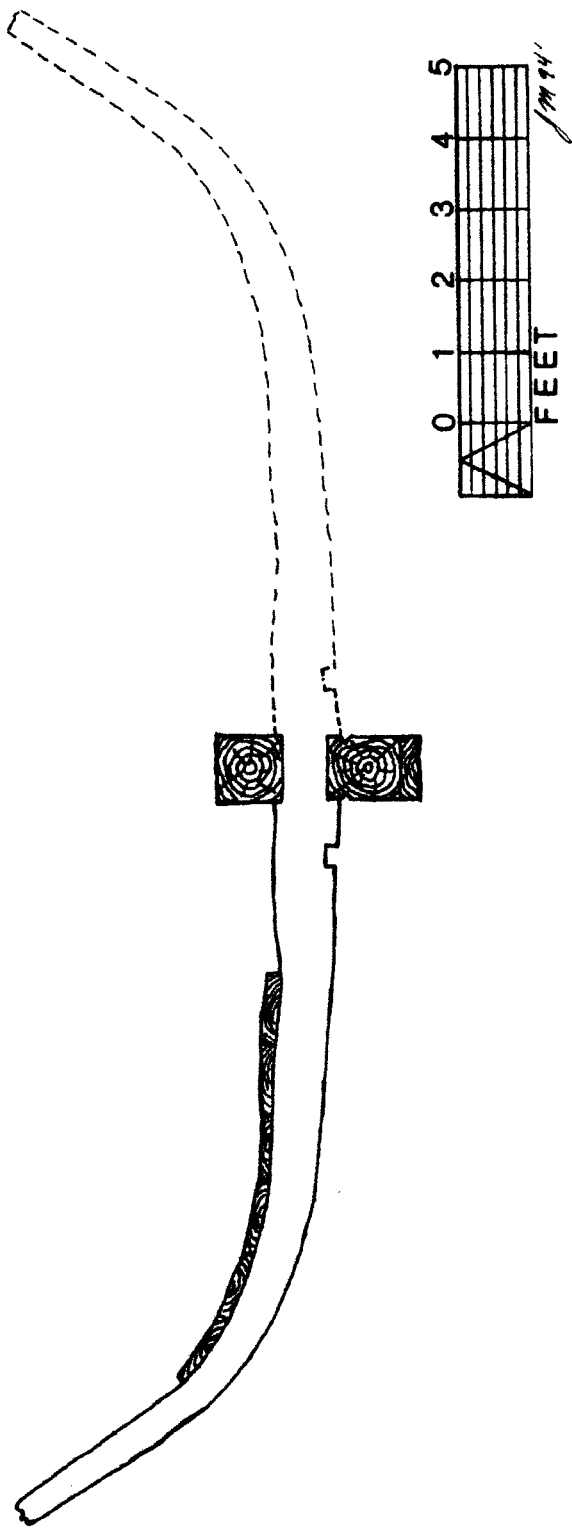


Figure 17: Profile of vessel "A" at frame 15. The measurements for this drawing were recorded for only half the profile, then projected to complete the image.



Figure 18: Photograph of pig iron ballast with attached ceiling plank discovered on the starboard side of vessel "A". This artifact was recovered from the vessel, documented and returned. Photograph by William Utely.

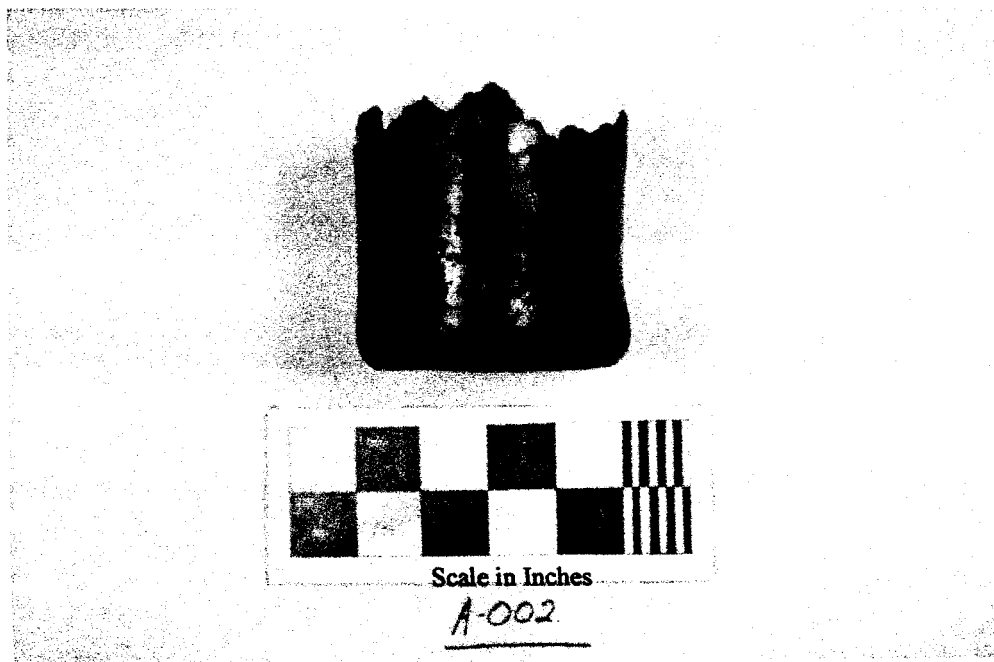


Figure 19: Photograph of mold blown wine bottle base found on vessel "A".



Figure 20: Photograph of iron adze head discovered on vessel "A" wedged between the fifteenth and sixteenth floor timbers.

Vessel "B," lies on its starboard side roughly parallel to, but approximately ten feet further down slope than vessel "A." All of the vessel's remains are exposed above the bottom surface. The bow lies in approximately twenty feet of water and its stern in approximately thirty-five feet. It measures sixty-two feet one inch between the front edge of the stempost and the end of the keel. The stempost along with the bow deadwood is intact along with the keel, many of the floor timbers, and a portion of the keelson. The stern of the vessel is no longer articulated with the sternpost and stern knee hanging off the keel attached only by a single iron bolt driven through the stern knee into the keel.

Currents in the river have also scoured a hole underneath the stern of this vessel leaving the end of the keel hanging in the water column. The vessel remains extend off the bottom approximately six feet with the floor timbers on the port side midships extending the farthest towards the surface. All futtucks on this vessel have fallen away from the floor timbers, leaving only the backbone of the ship.

Vessel "B" was also constructed primarily of American white oak using traditional plank on frame construction techniques.⁴ The keel is a single piece of oak measuring fifty-one feet ten inches, long, sixteen inches molded and ten inches sided at its forward end and thirteen inches molded and seven inches sided at the sixteenth floor timber. The rabbet for the garboard strake is let into the keel creating a two inch bearding line.

The frames of vessel "B" consist of white oak floor timbers with no articulated futtocks. A total of sixteen timbers are in place (Figure 21). Sided dimension of the floor timbers measure between six and ten inches, while the molded dimension is ten inches at

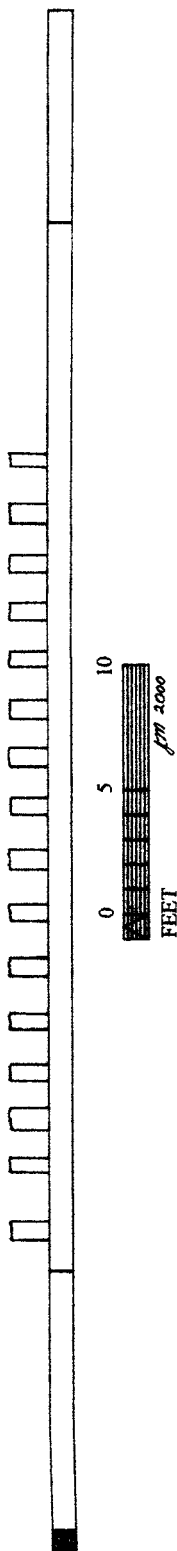


Figure 21: Floor pattern for vessel "B".

frame nine. Space between the frames varies from fourteen to eighteen inches. Limber holes on the floor timber at frame nine are seven and a half inches from the side of the keelson and are five inches wide and four inches deep.

The vessel has a single keelson that extends from the beginning of the stem deadwood to a point eight feet six inches before the after end of the keel. At that point the keelson appears to be broken as evidenced by the ragged end of the timber. The keelson measures ten inches sided and ten inches molded throughout its length. Iron drift bolts were used throughout the vessel to fasten the keel, frames, and keelson together. Neither mast steps nor any indications of the placement of mast steps were found along the length of the keelson of vessel "B."

The projected stern configuration of vessel "B" consists of the sternpost, keel, and stern knee (Figure 22). Approximately nine feet five inches of the white oak sternpost is present complete with the attached stern knee and a single iron gudgeon strap. The sternpost measures eight inches molded and seven inches sided throughout. Neither the sternpost nor the stern knee are still articulated with the keel.

The stempost of vessel "B" began two feet five inches behind the forward end of the keel and extended forward approximately another ten feet four inches (Figure 23). It is made from white oak and measures twelve inches molded and six inches sided at its forward end. A gripe is lapped to the keel four feet one inch behind its forward end and extends along the stem four feet four inches. Fastened to the top upper surface of the stempost is deadwood that is stepped to accept frames that are no longer present. No cant frames or hawse pieces are articulated in the vessel remains.

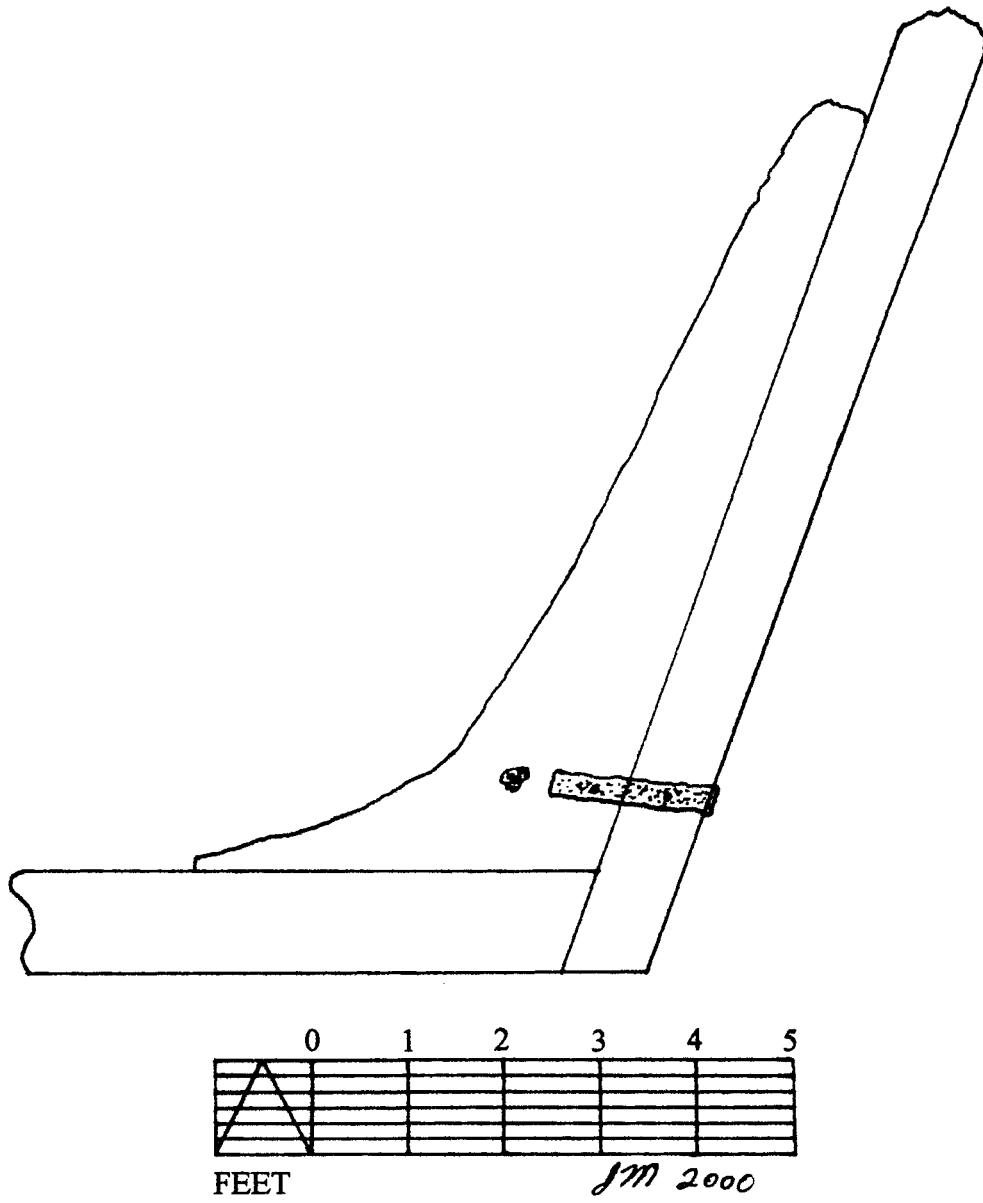


Figure 22: Stern Configuration for vessel "B".

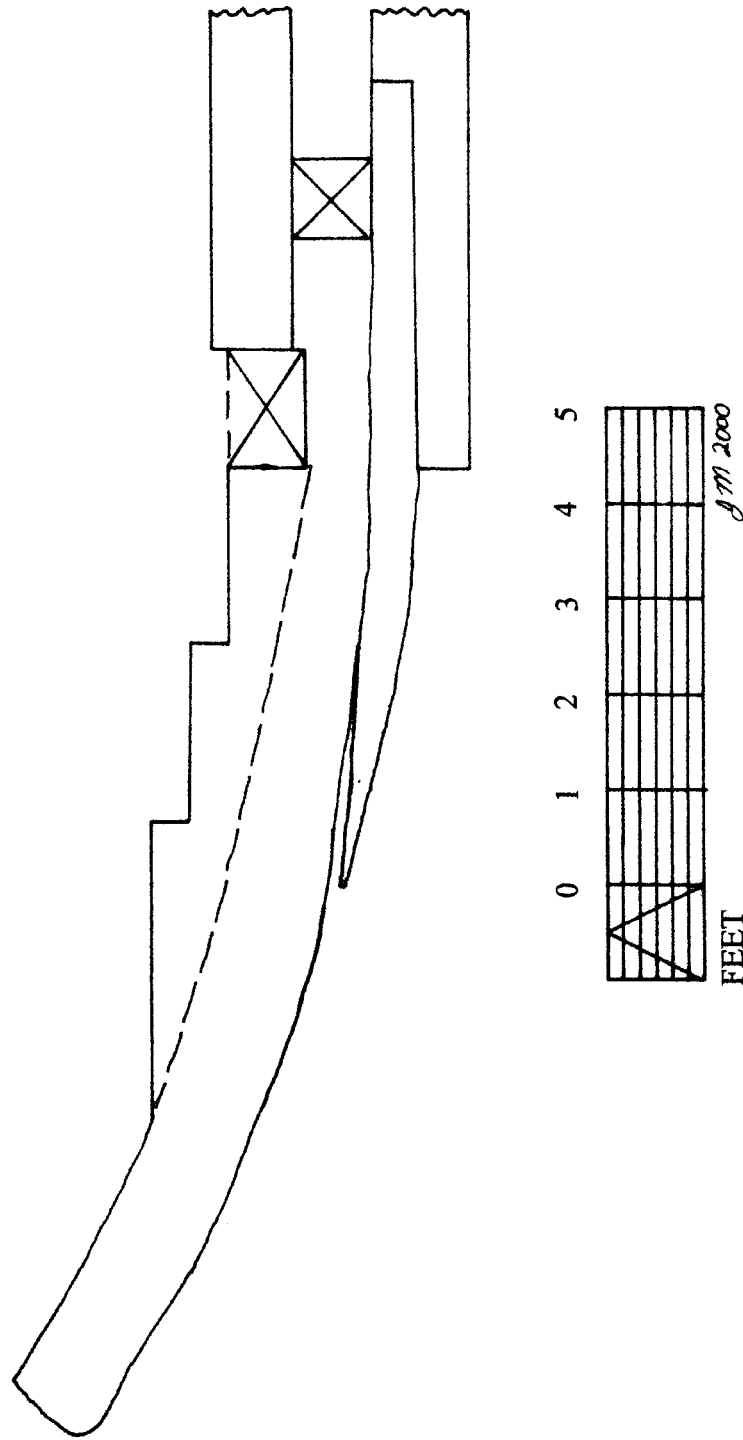


Figure 23: Stem configuration for vessel "B".

Vessel "B" was planked with two and a half inch thick oak planks fastened to the frames with trunnels and square iron nails. Bilge ceiling is intact on the outer edge of the starboard side frames and fastener holes for trunnels and square nails were observed along the top surface of the floor timbers. Only two artifacts were found in association with the remains of vessel "B," an iron pin and a piece of pig iron ballast.

The wooden timbers of both vessels are well preserved most likely due to the brackish water in which they rest. The Chickahominy River is fairly fresh and does not support shipworms that would have quickly reduced exposed timbers to nothing. Unfortunately, the location of the vessels will be their end. The exposure of the hull remains to the high currents in the river are undoubtedly helping to disassemble them. In addition, the steep inclination, the gradual deterioration, and the undercutting of the hulls threatens to allow what remains of the vessels to tumble down the channel side slope.

The construction features of both vessels "A" and "B" were very similar and are consistent with those of previously documented eighteenth century vessels. The fastener types and patterns, tool marks, and timber sizes used throughout both sets of remains are similar to those found on other vessels from the period. Vessels with similar construction details include the American privateer *Defense* found in Penobscot Bay, the British sloop *Boscawen* found along the shores of Lake Champlain, and the *Betsy* a British collier found off Yorktown, Virginia.⁵ The few artifacts found in association with vessel "A" also suggest that these vessels date from the eighteenth century and are naval vessels.

The dimensions of vessel "A" closely match the dimensions the Virginia State Navy established for row galleys in August of 1777. The standardized dimensions for

row galleys were eighty-one feet keel, twenty feet beam, and six foot hold.⁶ The keel of vessel "A" measures eighty-three feet ten inches, and the hull profile recorded at frame fifteen provided a beam of twenty-one feet four inches. The dimensions recorded in-situ likely have error in them induced by the warped condition of the hull lying of the channel side slope. While not a perfect match, these measurements are close enough to strongly suggest that the larger vessel is a VSN row galley.

The archaeological investigation determined that the vessel remains off the northern end of the Chickahominy Shipyard site are those of two similarly constructed vessels. Vessel "A" measured approximately ninety feet long overall, was relatively flat in the midsection, and had a projected beam of approximately twenty-two to twenty-four feet. One potential location for a mast step was located on the remains of this vessel. Vessel "B" was smaller and measured approximately sixty-five feet long, but neither a beam nor a hull profile could be measured due to the absence of any articulated futtucks. No evidence was found on vessel "B" to suggest the location of any mast steps. Historic records suggest that the larger vessel "A" closely resembles the standardized dimensions established by the Virginia State Navy for row galleys.

¹Dennis Short, "The Toano Report" (Richmond, Virginia: The Virginia Department of Historic Resources, 1977), *passim*.

²"August 14, 1776," Virginia State Navy Board Journal, hereafter NBJ, (Richmond Virginia: Virginia State Library).

³Lee Newsom, "Wood Analysis of Samples from the Chickahominy Shipyard Site" report prepared for the Chickahominy Shipyard Project by Dr. Lee Newsom of the Center for Archaeological Investigations at Southern Illinois University at Carbondale, 1996, 1.

⁴*Ibid.*

⁵ J. Richard Steffy, Wooden Ship Building and the Interpretation of Shipwrecks (College Station, Texas: Texas A & M University, 1994), 171-178; and John William Morris, "Site 44YO88: The Archaeological Assessment of the Hull remains at Yorktown, Virginia" (Master's Thesis: East Carolina University, 1991), 51-73.

⁶"August 14, 1776," Virginia State Navy Board Journal, hereafter NBJ, (Richmond Virginia: Virginia State Library), n.p.n.

CHAPTER 6

CONCLUSION

Shipbuilding on the Chesapeake Bay during the colonial period developed into a thriving business by the time of the American Revolution. As tension mounted between the colonies and Great Britain, the colonists turned to that industry to build navies for their own defense. In Virginia, the committee of safety followed the lead of the other colonies, establishing the largest of the colonial navies. Once Virginia established the state navy, the committee of safety realized that it needed a facility to build additional vessels and repair those that it had. In April of 1777, the Virginia State Navy (VSN) purchased land for the Virginia State Shipyard on the Chickahominy River.

The Chickahominy Shipyard was built during a period when the leaders of Virginia's military envisioned a large well armed navy. Although the large numbers of ships were constructed for the VSN, two things prevented the navy from becoming the success the leaders of Virginia envisioned: a lack of money to pay the wages of the seamen needed and a lack of cannon to arm all the ships. As a result, the VSN appears to have gone through a period of downsizing in the fall and winter of 1778 and early 1779. It was at this time that the Chickahominy Shipyard was becoming fully operational.

Because of the downsizing of the Virginia State Navy, the Chickahominy Shipyard never became the facility that the committee of safety had intended. The shipyard only built one ship, the *Thetis*, which never became operational. The facility

shipyard only built one ship, the *Thetis*, which never became operational. The facility did, however, play an important role in the VSN as a navy base and repair facility. The VSN refitted and repaired a number of ships at the shipyard. The Chickahominy Shipyard's location made it ideal for storing location vessels that were not in service. The water at the site was only slightly brackish and the location was removed from the centers of commerce making it less likely that the British would find it.

In the spring of 1781, the British established a military foothold in Virginia. During those campaigns they destroyed many facilities that aided the colonists in their fight. As a result on 21 April 1781, the British destroyed the Virginia State Navy Shipyard on the Chickahominy River.

Cursory archaeological investigations of the site over the years suggested that the dockyard structures and several of the vessels that were at the Chickahominy Shipyard when the British attacked were still intact at the site. Archaeological investigation of the site during the spring of 1994 determined that was indeed the case. A remote sensing and shoreline survey of the site were conducted to locate any submerged features related to the site. That survey located the remains of a wharf, slipway, and two vessels along the shores of the Chickahominy Shipyard. While those investigations determined that the submerged archaeological features off of the shipyard site have been severely damaged by strong tidal currents, the survey identified and preliminarily documented all of those features.

The wharf feature was identified through construction features and a few diagnostic artifacts. It is constructed using two techniques, crib and pile construction.

Those methods were likely used because of the strong currents in the river and the steep channel side slope present in the Chickahominy River. The artifacts found in association with the wharf include cannonballs and ceramics that date from the late eighteenth century.

The slipway feature was identified by two construction characteristics and several diagnostic artifacts discovered nearby. The structure consists of three parallel poles extending from the shoreline into the river. The slope of the structure provided the biggest clue as to its identity. All three timbers lay on a slope between four and five degrees. A brick bed, or foundation, was found to lay underneath the timbers. A foundation of that sort was needed to prevent the slipways from sinking in the sediments when a large, heavy vessel was being built. Diagnostic artifacts recovered from this area include iron ship fittings, cannonballs, and ceramics and bottle glass that date from the late eighteenth century.

Historic evidence associated with the Virginia State Navy and the Chickahominy Shipyard in conjunction with the archaeological information collected from the wrecks provided clues as to the age, identity, and design of the vessel remains. A letter from Thomas Jefferson on 22 April 1781 indicates that three ships were caught at the shipyard when the British destroyed it.¹ The VSN galleys *Lewis* and *Safeguard* had been in the process of removing shipbuilding supplies, and the ship *Thetis* was not in condition to be moved from the shipyard. According to Lieutenant Joseph Saunders, the commander of the *Lewis* galley, during the British approach he attempted to escape upstream with the vessels under his command but was unsuccessful and scuttled them a short distance from

the shipyard.² Those two documents indicate that the remains of three vessels should be associated with the Chickahominy Shipyard site. From the surviving evidence the *Lewis* and *Safeguard* galleys should be in the river near the yard since they were attempting to escape upstream. The *Thetis* should be either on land, if it was still on the stocks or near the wharf if it had been launched, but it was still fitting out.

Finding the remains of two vessels slightly upstream from the main portion of the shipyard alone suggested that those remains were the *Lewis* and *Safeguard* galleys. The vessel's location and orientation match Lt. Saunder's description. Additional historic and archaeological evidence, however, was needed to positively identify the hull remains.

Crew lists for the *Lewis* and *Safeguard* galleys were recorded in Virginia State Navy's Ledger of Officer's, Seamen, and Vessels. The ledger recorded that in 1776, the crew of the *Lewis* galley consisted of twelve men. In July 1778, seventeen more were added to the *Lewis*' complement, bringing the total to twenty-nine.³ The crew list for the *Safeguard* in 1777 numbered eighty-three men.⁴ This suggests that the larger of the two vessels lying on the bottom of the Chickahominy River is likely the *Safeguard* galley, while the smaller vessel is the *Lewis* galley.

Another piece of evidence that suggests the identity of these vessels is their dimensions. The *Lewis* galley was the first row galley built for the VSN in April 1776.⁵ Its dimensions are not recorded in the records of the VSN. However, the *Safeguard* was built during the fall and winter of 1776 after the Virginia Navy Board standardized the dimensions of the row galleys to eighty-one feet keel, twenty feet beam, and six foot hold.⁶ The remains of the vessel "A" closely match those dimensions. The keel measures

eighty-three feet ten inches and the hull profile recorded at frame fifteen provided a beam of twenty-one feet four inches. These measurements suggest that the larger vessel is at a minimum a VSN row galley and more specifically that those remains are those of the galley *Safeguard*.

The investigation of Chickahominy Shipyard site determined that the site played an important role in the Virginia State Navy as a navy base and located the remains of a wharf, slipway, and two vessels. Historic information in conjunction with the archaeological data identified each of those structures. That data strongly suggest that the smaller vessel is the *Lewis* galley, the first row galley built by the Virginia State Navy, while the remains of the larger vessel are those of the galley *Safeguard*. Unfortunately the investigation also determined that much of the submerged features associated with the site have been severely damaged by the strong currents in the river. None of the historic structures in the river are any longer intact, and the environmental conditions will likely continue to destroy them.

¹Boyd, vol. 5, 533-534.

²Joseph Saunders, Revolutionary War Pension and Land Warrant Application Files (US National Archives, Washington D.C., Micro-film), Record Group XX, Microfilm 804, Roll 2123, 395-404.

³Officers, Seamen, and Vessels, hereafter OSV, (Richmond Virginia: Virginia State Library, 1776-1783), 22.

⁴*Ibid.*, 11.

⁵*Ibid.*, 22.

⁶"August 14, 1776," Virginia State Navy Board Journal, hereafter NBJ, (Richmond Virginia: Virginia State Library), n.p.n.

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APPENDIX A

ARTIFACTS RECOVERED FROM THE CHICKAHOMINY SHIPYARD, MAY 1994

Shoreline Survey (Metal Artifacts)

Number	Providence	Description
SS-01	North	1 iron horseshoe, 2 pieces
SS-05	North	1 iron shot, 1 pound
SS-07	North	3 links of iron chain
SS-09	North	1 misc. iron 2 x 1 inches
SS-11	North	1 cast iron plate 8 x 4 inches
SS-12	North	1 iron spike
SS-13	North	1 piece iron banding with a joint and two rivets
SS-14	North	2 iron bolts, 2 pieces of misc. iron
SS-18	North	1 piece angle iron
SS-19	North	1 iron bolt, 2 pieces misc. iron
SS-21	North	1 piece iron with a slight cup shape
SS-22	South	1 iron stantion post mount
SS-24	South	10 links of iron chain
SS-25	South	1 iron hook
SS-27	South	1 circular piece of iron
SS-31	South	1 iron cleat
SS-32	South	1 brass harmonica plate
SS-36	South	1 iron hoop
SS-47	South	1 lead fishing weight
SS-50	South	1 pair of iron pliers
SS-60	South	1 valve handle with brass center
SS-61	South	3 wrought iron nails, 1 large iron bolt, 2 iron bolts, 1 piece of iron strapping, 4 pieces of misc. iron
SS-62	South	1 iron cannon ball, 12 pounds, 4.5 inch diameter, 1 large iron bolt
SS-66	South	1 misc. round iron
SS-67	South	1 copper nail
SS-69	South	1 iron cannon ball, 6 pounds, 3.5 inch diameter
SS-70	South	1 iron cannon ball, 6 pounds, 3.5 inch diameter
SS-71	South	6 pieces misc. iron, 1 iron spike
SS-80	South	1 large piece of iron, 1 quartzite projectile point
SS-83	South	1 iron spike

SS-100	South	2 pieces of misc. iron
SS-101	North	1 large misc. iron
SS-102	North	1 iron thimble
SS-103	North	1 iron shot, 1 pound
SS-104	North	2 iron cannon ball, (1) 2.5 inches, (1) 2 inches
SS-105	North	2 fishing sinkers, 1 piece of lead, 3 wrought iron nails, 1 misc. round iron

Shoreline Survey (Ceramic and Glass Artifacts)

SS-2	North	1 iron stone shard with blue transfer print
SS-3	North	1 clear mold blown case bottle fragment
SS-16	North	1 light grey salt glazed stoneware shard
SS-20	North	1 light grey salt glazed stoneware shard
SS-23	North	1 light grey salt glazed stoneware shard
SS-26	North	1 gray salt glazed stoneware shard with "S" and "VA" lettered in blue
SS-28	North	1 ironstone shard
SS-30	North	1 salt glazed stoneware shard
SS-33	North	1 ironstone shard
SS-34	South	1 gray salt glazed stoneware shard, 1 green glass fragment, 1 ironstone shard
SS-35	North	1 prehistoric hafted hatchet head
SS-41	South	1 whiteware shard
SS-48	North	1 whiteware shard

Test Unit (All Artifacts)

TU-1/Level 1	1 piece of lead, 1 bullet, 1 wire nail, 3 pieces of clear glass, 2 wood chips, 3 small brick fragments
TU-2/Level 1	1 prehistoric ceramic shard, 2 lead sinkers, 1 fishing lure, 1 misc. brass, 1 piece of misc. iron, 1 piece of round brass (1 7/8 inch diameter), 1 iron washer, 7 wire nails, 1 iron screw, 1 large spike bent into a "J", 1 piece of iron shot (1 inch diameter), 4 misc. iron fragments, 1 ceramic doll face, 27 pieces clear bottle glass, 1 piece light green glass, 19 brick fragments, 8 piece of misc. ceramic.

TU-2/Level 2	1 square iron spike, 1 round bolt, 1 iron spike (8 inches), 9 misc. iron pieces, 9 clear glass fragments, 5 light green glass fragments, 3 ceramic fragments, 13 brick fragments
TU-2/Level 3	1 round shot (1 inch diameter), 1 square iron spike, 1 cut nail, 2 lead sinkers, 10 brick fragments, 1 iron spike (8 inches, 3 misc. iron, 2 fragments brown glass, 1 fragment light green glass, 4 clear glass fragments, 5 lithic flakes
TU-3/Level 1	1 shotgun shell, 1 misc. brass piece, 6 clear glass fragments, 3 light green glass fragments, 1 brown glass fragment, 11 brick fragments, 1 piece of aluminum, 2 ceramic fragments, 2 fragments of blue/green glass, 2 fragments of clear glass.
TU-3/Level 2	1 dark green glass fragment, 1 light green glass fragment, 1 steel fish hook, 1 piece brown bottle glass, 2 pieces clear bottle glass, 2 pieces clear flat glass, 1 shotgun shell, 1 piece of brown salt glazed stoneware, 2 pieces of misc. metal, 2 fragments of white earthenware with blue transfer print, 7 brick fragments
TU-3/Level 3	1 lead fishing weight, 1 fragment clear bottle glass, 1 fragment brown bottle glass, 1 fragment light green bottle glass, 1 whiteware rim shard, 1 coarse redware shard
TU-4/Level 1	1 fish bone, 1 quartzite point, 2 fragments clear bottle glass, 1 iron nut, 1 brass rivet
TU-4/Level 2	1 misc. wood (possible pipe stem, 1 iron concretion)
TU-5/Level 1	No Artifacts Found.
TU-5/Level 2	1 piece of wood with iron bolts and brass nuts, 1 gray salt glazed stoneware, 1 small quartzite point, 1 fragment clear bottle glass
TU-6/Level 1	No Artifacts Found.
TU-6/Level 2	No Artifacts Found
TU-7/Level 1	No Artifacts Found

TU-7/Level 2	1 wire nail, 1 iron slag, 14 brick fragments, 1 fragment brown bottle glass, 1 quartz point base, 3 misc. iron concretion, 1 wood chip, 1 possible scraper (prehistoric), 14 flakes, 1 possible lithic core, 1 large iron concretion, 1 iron bolt, 2 piece iron bar stock
TU-7/Level 3	3 brick fragments, 1 piece of iron slag

Artifacts Recovered from Vessels A & B

Number	Providence	Description
A-1	Vessel A	1 shard of lead glazed, red bodied earthenware
A-2	Vessel A	1 dark green mold blown wine bottle base
A-3	Vessel A	1 iron adze or pike head. Found 10 feet of starboard side.
A-4	Vessel A	1 iron cannonball (3 inch diameter). Found on the bottom near the bow.
A-5	Vessel A	4 iron spikes and 1 iron bolt. Found at frame 38 in brick scatter on starboard side ceiling planking.
A-6	Vessel A	1 iron pin. Found at frame 38.
A-7	Vessel A	1 iron adze head. Found between floors 15 and 16, between the keel and keelson.
A-8	Vessel A	1 iron fitting. Found between frames 9 and 10, between keel and keelson.
A-9	Vessel A	1 piece of iron pipe. Found between frames 15 and 16.
A-10	Vessel A	1 iron cannon ball (3 inch in diameter). Found under keel 6.5 feet from the bow.
A-11	Vessel A	1 piece of pig iron ballast. Found on starboard ceiling planking.
A-12	Vessel A	1 iron fastener, 1 iron fastener concreted to an iron hook, 1 iron hook with eye. Found on starboard side bilge ceiling.
B-1	Vessel B	1 iron pin. Found off starboard stern.
B-2	Vessel B	1 piece of pig iron ballast. Found off starboard side of vessel.

