

# **A 19<sup>th</sup> CENTURY FISHING SCHOONER IN THE 21<sup>st</sup> CENTURY: PRESERVING VIRGINIA FOR THE NEXT HUNDRED YEARS**

By

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November, 2013

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*Virginia* is a mid-19<sup>th</sup> century, southern-built schooner owned by the National Civil War Naval Museum in Columbus, Georgia. The ship's career throughout the Gulf of Mexico spanned more than 140 years, first as an oyster schooner in Mobile Bay and ending as a commercial fishing vessel catching red snapper off of Florida's west coast. Presently, the ship remains in museum storage awaiting a well-developed plan for proposed restoration. Lack of historical evidence for the vessel's Civil War affiliated activities complicates present plans for the vessel at this institution.

Each facet of this project contributes to the overarching problem of addressing *Virginia*'s ongoing preservation. During its expansive working history, the schooner underwent countless repairs and modifications, some of which are discernible in contemporary material. Documenting these, while also noting preservation concerns, was the primary focus of fieldwork which combined traditional methods with advanced terrestrial recording equipment. Virtual representations of construction and historic forms were generated from measured sketches and collected three-dimensional data.



**A 19<sup>TH</sup> Century Fishing Schooner in the 21<sup>st</sup> Century:  
Preserving *Virginia* for the Next Hundred Years**

A Thesis

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East Carolina University

In Partial Fulfillment of the Requirements for the Degree of Masters of Arts

by

Nicole Wittig  
November, 2013

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## **DEDICATION**

This work is dedicated to my parents for their unfaltering support and to Jenna my inextinguishable inspiration.

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## Chapter 1: Introduction

### *Introduction*

Historic ships are a physical record of maritime culture and history. They represent evidence of shipbuilding techniques otherwise undocumented. Historic ships are typically products, of not just initial construction, but a conglomeration of modifications, repairs, and upgraded equipment or material. *Virginia*'s structure is surviving evidence of mid-nineteenth century shipbuilding and exhibiting qualities of changing American maritime tradition. Built near Mobile, Alabama in 1865, *Virginia* embodies the adaptability and durability of two-masted centerboard schooners, a vessel class ubiquitous during the nineteenth century. Speculation surrounds *Virginia*'s date of construction because of implied connections to Confederate blockade running. This possibility is compelling; however, examining only a presumed segment of the vessel's 145 year working career is inadequate. *Virginia* sailed almost continually from 1865 to 1989 and served as oystering schooner, fishing vessel, research vessel, and yacht. Currently *Virginia* awaits public display at the National Civil War Naval Museum in Columbus, Georgia. This thesis presents a holistic investigation of *Virginia* including historic research, field documentation, and a discussion about preservation. The primary concern of this study is to consider which attributes make a ship historically significant and analyzing how modern opinions of what the vessel "was" affect *Virginia*'s preservation. A secondary outcome of recording concerns creating an integrated historic ship recording strategy employing traditional measured sketches with modern surveying equipment to ascertain stages of construction and repair and inform future plans for the ship.

*Virginia*'s history extends across nearly a century and a half in Gulf Coast waters. Historic records indicate Southern shipbuilders constructed the schooner on Fish River in

Baldwin County, Alabama in 1865. The ship was constructed as a shallow-draft, two-masted, schooner common for the era and region (Delgado 1991:1). Schooners of this class were versatile, multi-purpose vessels intended for numerous tasks like local coastwise trade, fishing, or the oyster industry. During the Civil War intrepid pilots sailing similar schooners dared the Union blockade to exchange cotton for lucrative, high profit goods (Van Doren Stern 1962:225). *Virginia*'s previous owners speculated that the vessel's owner(s) took part in illicit trade during the Civil War based on proximity and timing. Their hypothesis rests on circumstantial evidence concerning shipbuilding so soon after war and *Virginia*'s owner Frank Richmond's supposed past as a blockade running pilot. The possibilities *Virginia* both existed before the Civil War and attempted blockade running during the war lacks sufficient evidence to substantiate their claim. A second hypothesis yet suggested for war time activities is *Virginia*'s continued application as a fishing vessel in Mobile Bay. The vessel's origin and potential Civil War ties will be examined in the following chapter.

An abstract of title, various licenses, and the *Annual List of Merchant Vessels of the United States* aided in tracking the vessel's career throughout the Gulf of Mexico. Through the end of the nineteenth century and into the early twentieth, the schooner was owned by numerous oystermen along both shores of Mobile Bay, Alabama. While off Florida's coast, *Virginia* operated initially for scientific research before returning to its primary trade of commercial fishing. In 1936, surveyors employed by the Historic American Merchant Marine Survey (HAMMS) documented *Virginia* as part of a short-lived initiative to account for America's historic wooden merchant vessels (Jackson 1983). Following the survey, *Virginia* once again exchanged hands until acquired by James Kirby of Jacksonville, Florida in 1954. Kirby's purchase began *Virginia*'s longest stint with one owner. He modified the wooden schooner to a

more modern commercial fishing vessel and caught snapper throughout the Gulf of Mexico (Piatt 1996:54). It remained in Kirby's service until 1989, retired after 125 years of almost continuous service. *Virginia*'s active career as a historic wooden schooner defied a modernizing twentieth century American merchant fleet.

After retirement, *Virginia* required an individual or institution capable of storing and maintaining the historic schooner. The National Civil War Naval Museum in Columbus, Georgia purchased the vessel in 2000. This museum collects Civil War ephemera and the collection contains portions of Confederate vessels *Jackson* and *Chattahoochee*. The possibility of *Virginia*'s role as a blockade runner during the Civil War influenced staff members' decision to invest in the vessel. *Virginia* has been stored in an open-air shed for thirteen years awaiting either preservation or restoration plans (Figure 1). Lack of appropriate funding and research has stalled museum planning for *Virginia*'s future.



FIGURE 1. *Virginia* in storage, National Civil War Naval Museum's main building in background (Photo by author, 2010).

### *Previous Research*

Previous owners, the McConnell-Harrisons, and museum staffers completed some degree of historical research prior to this thesis. The museum turned over all documents obtained either from the McConnell-Harrisons or museum employees. Documents ranged from newspaper articles to various photographs from *Virginia*'s past. Abstract of Titles and several licenses clarified *Virginia*'s different owners and movement throughout Alabama and Florida gulf waters. Another noteworthy document included the previous owner's report about *Virginia*'s origin. The report combined the couple's archival and anecdotal research. This document outlines their goals as the vessel's co-owners with former captain James Kirby, including finding a suitable buyer. Much of their work focused on local Floridian sources, but the couple also traveled throughout Alabama to discover the site where *Virginia* was built. Though the former owners expressed intent to write a formal article, their research remains unpublished.

Beyond historical research, a professional survey of the vessel was completed once prior to this thesis. *Virginia* was included in the Historic American Merchant Marine Survey, a Great Depression Era initiative to record the nation's historic watercraft. During this time, professionals and scholars recognized a shift in the national maritime commercial fleet from traditional wooden ships to more modern construction materials and techniques. In an effort to document this vanishing resource, surveys were organized in the Northeast, along the southern coast, throughout the Great Lakes, and along the West Coast. Efforts focused on recording ships built before the late 1800s and those most in danger of deterioration or nearly finished with working careers (Warren 1986:52). The survey of *Virginia*, completed in 1936, recorded plans (half-breadth, body, sheer, deck, and sails), a mid-ship section, outboard profile, and photographs as seen in Appendix B (Jackson 1983). No previous records or plans exist for *Virginia*, making

the HAMMS resources invaluable for comparison of ship structure in the early twentieth century to present features. Additionally, inclusion in HAMMS should be considered when assessing *Virginia*'s historical significance for preservation.

### *Research Questions*

The primary question focuses on inherent problems in the schooner's preservation. *Virginia*'s longevity meant it survived changes in shipbuilding, the favor of engine propulsion over sail power, and decline of wooden vessels active in American waters. As part of an evolving commercial merchant fleet, *Virginia* underwent several fundamental transformations. Though the hull remains intact, it shifted from a sail centerboard schooner, to an auxiliary vessel, finally to a modernized commercial fishing vessel. The ship's dynamic history confuses discussion of restoration because a decision must be made to place more historical significance on one phase of its history over another. Museum goals for restoration focus on rebuilding the ship as its former mid-nineteenth century schooner configuration. Museum staffers are motivated to display the ship in this regard because it is believed that as a schooner, *Virginia* was actively engaged in the Civil War. This solution is problematic due to insufficient evidence to support such an interpretation. Additionally, any restoration or preservation plan must be informed by the breadth of its history and any restoration excluding the vessel's entire career would be a disservice to the ship's narrative. Thus, the first question concerns the objective evaluation the ship's significance and how current restoration objectives might include a more comprehensive and accurate management plan for representing the entire life cycle of *Virginia*.

The secondary question addresses the role of digital modeling in historic ship recording and whether this practice has applications beyond visualization of ship construction. As a component of digital modeling, this thesis evaluates and applies geographical recording

technology to historic ship recording practices using the applications for recording the hull structure of *Virginia* as a case study. The relatively new technology applied is Terrestrial Laser Scanners, using the results which are compared and integrated with total station data, photographs, and manual measurements/hand sketches. Archaeologists and preservation experts have begun to apply Terrestrial Laser Scanners in recording terrestrial archaeological sites, architectural features, and other large-scale cultural heritage objects. Terrestrial Laser Scanners have been employed in several instances of ship recording including an Institute of Nautical Archaeology project to comprehensively record the *Evelyn* and Mystic Seaport's whaler *Charles W. Morgan* (Pollack 2007, Broad 2010). This thesis attempts to evaluate effectiveness of Terrestrial Laser Scanners both in the field, post-processing in the laboratory, and how the technology can be coupled with traditional ship recording methods. Additionally, the second research question is to explore whether the highly detailed laser scanner point cloud can be useful beyond visualization and applied as a planning technique for ship restoration.

### *Research Design*

A holistic approach to this project, including examination of the ship's history, construction, and current state of preservation, is necessary to address the research questions. Chapter 2 is a summation of *Virginia*'s history throughout the Gulf of Mexico. Within this chapter, assumptions about *Virginia*'s Civil War affiliation will be addressed along with other rumors of its rum running escapades. Despite these areas of intrigue, much of the chapter's focus emphasizes the entirety of the ship's career, inordinately long considering the average lifespan of a wooden ship is twenty-five years (Ansel 1993:4). Expounding the vessel's history is integral to understanding Chapter 4 which describes the ship's features and introduces problems in the vessel's physical preservation.

Chapter 3 details methodological procedures both for acquiring historical and archaeological information. To document *Virginia*, multiple recording methodologies are employed both to record the vessel and present a complimentary methodology of emerging technology with established practices. First a survey was completed using a reflectorless total station. A total station requires an operator aiming the machine's laser on a point on the object to be recorded. The point represents three-dimensional data in space and an accumulation of points creates a point cloud. From this collection of points, modeling in a digital space can be done and a virtual representation of the ship developed. A digital model then can be analyzed and manipulated virtually. The second survey was completed with a Terrestrial Laser Scanner commonly known as LiDAR (Light detection and ranging). Terrestrial scanners use a laser beam to scan an entire area defined by operator's parameters, range, and distance. Similar to a total station, the terrestrial scanner collects points on an object using a laser. Unlike a total station, the laser scanner is automated, indiscriminately collecting points within a specified area. Laser scanners also generate a point cloud but with greater amounts of data because of the equipment's automated function (Moser, et. al 2011).

Following fieldwork, post-processing for both sets of equipment differed because of distinct data set characteristics. Each data set demands separate software packages to view and manage different point clouds. Total station points are downloaded and viewed in Rhinoceros, design software used by a multitude of professions. Laser scanning data was viewed in two software packages, Cyclone and 3DReshaper. Cyclone allowed for initial fieldwork parameters to be determined and initial editing of the point cloud. 3DReshaper was used primarily to create a 3D model and manipulate the point cloud. The software is compared on several basic levels: learning curve, availability, clarity for users, and modeling capabilities. Measured sketches

complement the digital models and aid in recording ship structure not visible with either total station or Terrestrial Laser Scanner.

After two high-tech surveys, a third project focused primarily on measured sketches and detailed drawings of more minute features. The third survey focused on details of ship construction including ship modifications, and details of construction not visible or less apparent with technological data collection. Each method generates information and combined creates a more detailed record of *Virginia*'s features, explained in Chapter 4. The fourth chapter will discern which portion of the ship retains historic characteristics and materials and provides a ship description. Distinguishing between historic and modern components aids post-processing analysis of spatial data and facilitates a discourse concerning preservation and restoration. Additionally, the degree of preservation of these various elements of *Virginia* will be introduced by looking at major concerns of wood and metal degradation. Reporting on the vessel's current state should evaluate areas of degradation and the overall state of preservation.

Chapter 5 discusses *Virginia*'s current management and raises concerns for future preservation planning. Ultimately the historic research and fieldwork are integral to the final phase, preservation analysis. Combination of this information leads to restoration when funds and interests are available. Restoration must consider maintaining original form, material, and integrity of construction to maintain historical authenticity (Delgado 1987:8). Restoration implies returning *Virginia* to a previous form and removing material incongruous, for example plywood, with historic shipbuilding elements. *Virginia*'s long career and changing form challenges decisions about restoration because there is not simply one, but three historically significant eras embodied in this wooden ship. Considering the vessel's history, preservation or stabilization of *Virginia* may prove to be the most appropriate and applicable solution.

## *Conclusion*

*Virginia* presents a multi-faceted project and a complicated historical artifact. The ship encompasses more than one hundred years of American maritime history. The southern schooner sailed and motored through gulf waters for owners in both Alabama and Florida. Now, as a docked vessel in storage, *Virginia* has potential to continue not as a working ship but an educational tool for museum goers. Its longevity challenges typical restoration practices and retention of modern elements should be considered as part of preservation. Full potential as a museum ship can be realized if its entire history is objectively presented to the public and possible future researchers.

Recommendations for preservation goals require detailed recording of ship construction, material, and state of preservation. Multiple field surveys offer an opportunity to assess new technology in historic ship recording and contribute a case study for a dynamic methodology. This thesis combines historic research, fieldwork, and restoration protocols for responsible documentation and preservation of this vessel.

## Chapter 2: Historical Background

### *Introduction*

*Virginia*'s career spans 148 years and covers multiple trades in Gulf Coast maritime heritage. The nature of *Virginia*'s history divides neatly into its three major historic forms; as a late 19<sup>th</sup> century sailing vessel, an early 20<sup>th</sup> century auxiliary ship, and as a mid-20<sup>th</sup> century commercial fishing vessel. Historic documents indicate *Virginia* was constructed on the Fish River in Baldwin County, Alabama in 1865 - though that date has been disputed. A brief discussion of Mobile just prior to and during the Civil War addresses speculation concerning *Virginia*'s construction prior to conflict and potential activity in the war. Following Civil War related material, description of *Virginia*'s activities in Mobile Bay through the early twentieth century elaborates on her career in local fisheries. By the early 20<sup>th</sup> century, *Virginia*'s owners add an engine, following a trend of sail-powered ships converted to auxiliary vessels. In 1936, professionals from HAMMS recorded the vessel; a remarkable instance because their work constitutes the first record of construction plans and specifications for *Virginia*. Following HAMMS, *Virginia* remained in the Gulf of Mexico off Florida's west coast functioning in the nation's commercial fishing fleet. Retired in the late 1980s, *Virginia*'s final captain maintained the ship until its purchase by the National Civil War Naval Museum. Today *Virginia* remains at this Columbus, Georgia institution awaiting plans for display and possible restoration. The information presented in this chapter will not only elucidate the historical narrative but inform the recording methodology and preservation discussion.

### *Historical Research*

Historic methodology proceeded through travel to archives, long distance communication, and literature review. Personal research was conducted at the National Archives

Southeast Division near Atlanta, Georgia. This branch houses historic documents from Southern states and contains a great deal of documents from Mobile, Alabama. Documents reviewed included: bills of sales (1885-1902 and 1921-1936), Civil War admiralty cases, cargo manifests (1860-1869), port clearances and arrivals (1883-1887), crew lists (1861-1863 and 1865-1867), warehouse receipts, and ship licenses (1901-1939). The other research trip was to Mariners' Museum in Norfolk Virginia to view the 1983 publication of Historic American Merchant Marine Survey records. The museum supplied digital scans of five pages relevant to Virginia, emailed at a later date. Further in-person research and literature review were completed at Joyner Library, East Carolina University's Manuscript Collection.

When travel was not possible, emails were sent to several organizations within Alabama. Neither Special Collections Departments at University of Alabama and Southern Alabama University possessed primary information about Civil War era shipbuilding. The Mobile Museum was contacted but also supplied little information, only finding documentation pertaining to a steamboat *Virginia*. Foley Public Library responded with a packet of information with limited primary research, mostly secondary publications.

Internet resources were used to search newspapers and census data concerning previous owners. Historic newspapers online and on microfilm were a resource and several gulf coast papers were a significant source of material. The Mobile Daily Register provided local Mobile history for the Antebellum and Civil War period. The Daily Picayune, a New Orleans paper, contained shipping information for the pre-Civil War and Civil War era. The primary focus for both papers was marine lists to check for any indication of Virginia's potential activity. The Mobile Daily Register also supplied statistics for shipping and specifics about coastwise and riverine craft. Two websites provided census documents for information about Virginia's former

owners. The national archives site, [www.archives.com](http://www.archives.com), provided a basis for viewing census data. A second site, [www.ancestry.com](http://www.ancestry.com), allowed the author to access Alabama records not online at the former website. Compiled historical documents corroborate and/or disprove former preconceptions about *Virginia*'s past and also expand the narrative of the vessel's career.

### *Phase I: 1860s-1914*

#### Antebellum Mobile

An account of Mobile and surrounding waterways and associated craft prior to and following the Civil War frames the introduction to *Virginia*'s historical context. Antebellum Mobile matured into a thriving port on the American Gulf Coast, second only to New Orleans. Its cosmopolitan population and oyster shell paved streets earned Mobile the title 'Gem City of the Gulf' (Hearn 1993:10). Mobile's favorable position at the outlet of several large rivers and head of a lush bay transformed the city into a maritime center. Steamboats transported cotton from upstate Alabama and neighboring Mississippi. Trading vessels carried cotton and lumber to national and international ports. Smaller utilitarian ships and boats delivered oysters and fished throughout Mobile Bay. Prior to the Civil War, a vibrant array of ships conducted various trades in and around Mobile.

Mobile's natural surroundings provided both advantages and disadvantages to maritime commerce. Alabama and Tombigbee Rivers began in upstate Alabama and ran down into Mobile River. Mobile River divided and passed by the city into the bay west by Mobile River and east via Tensaw River (Amos 1990:114). These rivers opened inland agricultural centers for riverine trade between upstate planters and Mobile merchants. Besides rivers, Mobile Bay stretched approximately 30 miles between Mobile and Gulf of Mexico and twelve miles between eastern and western shores of mainland Alabama (Figure 2). The expanse of water was shallow as were

many of the passages opening gulf waters to the bay. A suitably deep channel was located between Mobile Point and eastern point of Dauphin Island (Mahan 1883:219). After deep draft vessels passed through, captains anchored ships at Mobile Point in the lower bay because of the shallow waters (Amos 1990:116). Only vessels, called lighters, with eight feet

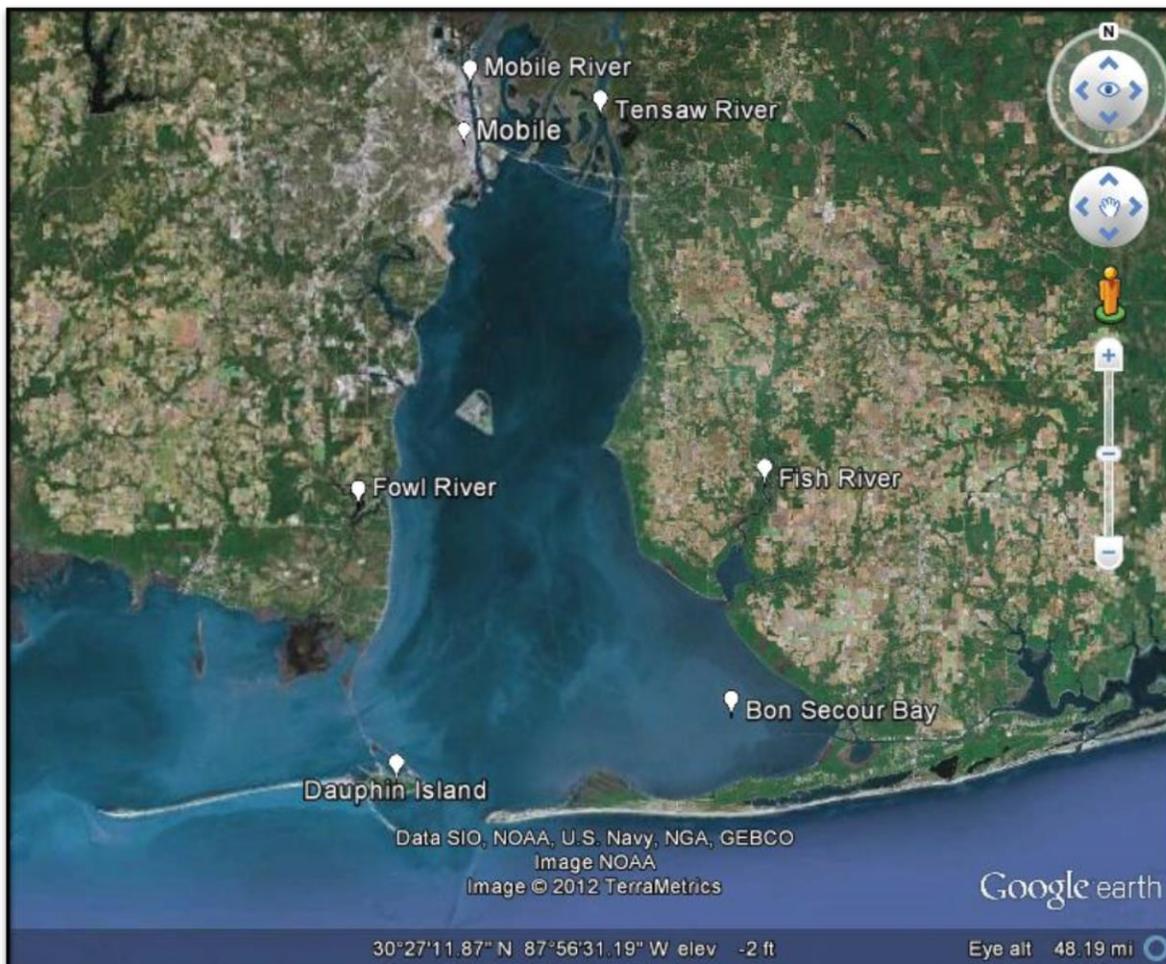


FIGURE 2. Mobile Bay with major geographical features marked (Image by author, 2012).  
draft or less successfully sailed goods between docked vessels at Mobile Point and the city's wharves (Wise 1988:20-21). Possessing only one deep water passage to the gulf and shallow bay waters slowed trade from Mobile to other ports.

Mobile, much like other southern cities, primarily exported cotton before the Civil War. In the Gulf region, Mobile became the second most profitable cotton trading port behind New

Orleans. The *Mobile Daily Register* printed a table of cotton exports to domestic and foreign ports for September-November 1859 demonstrating Mobile's pre-Civil War position as a developing port (Figure 3). Though distant second to New Orleans, Mobile merchants remained competitive with those of Charleston and Savannah, two major Southern harbors. Access to rich cotton growing regions, known as the 'Black Belt,' in northern Alabama and Mississippi accounted for Mobile's pre-war success (Amos 1990:114). Similar to the Crescent City, Mobile

PORTS.	Date	STOCK on hand 1st September.		RECEIVED since 1st September		EXPORTED From the 1st of September, 1859, to dates.					
		1859.	1858.	1859.	1858.	To G. Britain.	To France.	On For. Ports.	Total Fr. P'ts	U. S. Ports.	To G. Britain.
		NEW ORLEANS	Nov 1	26022	30230	440729	344694	136569	40925	21204	198698
MOBILE	Nov 4	20106	10673	166912	115407	37900	22640		60540	14647	18631
SAVANNAH	Oct 27	9320	684	74235	101795	10704			10704	23940	3595
CHARLESTON	Oct 27	17592	11715	80900	99042	23858	2447	2000	28305	18765	19688
FLORIDA	Oct 15	207	80	5313	5201					388	
VIRGINIA	Oct 1	375	600	420	1500					428	
N. CAROLINA	Oct 22	300	300	285	1725					235	
TEXAS	Oct 29	2785	1899	38783	31941	4702			4702	8651	
NEW YORK	Oct 25	43452	25942			23460	3353	3847	30660		10524
OTHER PORTS	Oct 21	29479	19380			564		1	565		

FIGURE 3. Table reproduced from *Mobile Daily Register & Advertiser* Sunday, 6 November 1859.

was capable of exporting great amounts of cotton because of access to rich agricultural areas further inland. New Orleans prospered in the Mississippi Delta and Mobile credited its internal trade with the convergence of Alabama-Tombigbee River system into the Mobile River (Amos 1990:114). Planters shipped cotton to Mobile on river steamboats, which carried varied cargoes of imported goods and passengers upstream and returned loaded with cotton and other agricultural products. Before the war seven steamboats advertised space for passengers and freight: *Marengo* and *Jeannette* to Demopolis, *Coquette*, *Eclipse*, and *Flirt* to Montgomery, *Hudson* to Selma, and *Tiger* to Selma and Montgomery (*Mobile Daily Register* 1859:2). Despite upstart railways, steamboats hauled the majority of inland cotton to Mobile during the pre-war economy (Robison 1955:54). Cotton from steamboats arrived in Mobile to be transferred to

lighters. These shallow draft vessels sailed cotton to ocean-going vessels which waited to be loaded at Mobile Point just inside the bay (Delaney 1953:71-72). Advantageous river connections between abundant cotton growing regions and Mobile transformed the city into a successful antebellum port, despite impediments in bay waters preventing large vessels from reaching city wharves directly.

Cotton constituted Mobile's primary export but other products and activities supplemented the city's maritime commerce. Timber and other forestry related products developed into an integral part of Mobile's export trade (Figure 4). Resources from timber rich lands throughout Alabama complimented cotton trade and Mobile's lumber trade eclipsed neighboring New Orleans (Eisterhold 1973:84). Quoting statistics from 1859, lumber exported to domestic ports equaled 1,436,929 feet and to foreign ports 1,120,429 feet (*Mobile Daily Register Supplement* 1859:1). Larger schooners Sawmills appeared along the Mississippi coastline and Pensacola and produced lumber products for Mobile (Eisterhold 1973:94).



FIGURE 4. Timber waiting to be loaded at Campbell Lumber Company (Courtesy The Doy Leale McCall Rare Book and Manuscript Library, University of South Alabama, Mobile, AL.).

Similar to cotton trade, lumber products were lightered to vessels in the lower bay for export because outgoing vessels could not be loaded to capacity at city wharves (Land 1884:20). Naval stores and turpentine were secondary forestry products exported (Figure 5). The source for this trade was timber rich Baldwin County described as “a vast pine forest” (Brewer 1872:124). Trade of these products remained within local markets of Pensacola and Mobile during pre-war era (Burnette 2007:23). Schooners carried naval stores to another local market running from Fish River to New Basin, New Orleans (*Daily Picayune* 1860:2). Export of these goods were not as great as that of lumber but added another facet to Mobile Bay’s maritime activity.



FIGURE 5. Barrels of turpentine in front of A. M. Moses and Company (Courtesy The Doy Leale McCall Rare Book and Manuscript Library, University of South Alabama, Mobile, AL.).

Mobile prospered as an antebellum port with a variety of vessels engaged in maritime activities. Prewar industry centered on cotton and timber exports with fishing and oystering adding another dynamic to the bay’s activities. Bustling maritime economy and Mobile Bay’s physical geography promoted adoption of dynamic, shallow draft schooners akin to *Virginia*.

Despite being an active class of vessels, smaller schooner application remained largely undocumented or briefly described in historic text.

Schooners, smaller vessels with one or two masts, both fore and aft rigged and without yards, were the real workhorses of the coasting trade, but were little admired because of their size and rigging (Owens 1968:199).

Ships similar to *Virginia* were versatile and sailed around Mobile Bay and along the gulf coastline fishing, lightering, and trading; yet remained largely unrecognized in historic records. This remained largely true during the Civil War when pilots adapted comparable schooners for blockade running, to varying degrees of success.

Antebellum Mobile's significance grew as an important port city and bustled with various vessels types. Leading up to war, Mobile citizens appreciated a maturing harbor city approaching the prestige of other southern ports like New Orleans. Riverine connections inland opened up cotton rich regions of Georgia and Mississippi. Timber from the bay's eastern shore provided lumber, naval stores, and turpentine to create a strong secondary market to cotton export. Natural impediments limited Mobile's potential to rival New Orleans in significance and size because shallow waters throughout the bay hindered antebellum trade. *Virginia's* size and shape adapted well to these conditions and similar ship forms were prevalent throughout the bay. These geographical limitations would prove both detrimental and beneficial during the Civil War.

### Mobile during the Civil War

During the war, Mobile became the gulf's premier port after the capture of New Orleans capture in 1862. Mobile fared favorably well during the Civil War compared to other southern cities; remaining relatively sheltered until the end of conflict. Mobile's protection was provided by a combination of factors: more pressing Union targets in nearby gulf waters, ease of

blockading Mobile, an opposing system of fortifications protecting both the bay and the city, and natural obstructions. Movement of cotton slowed but continued despite the blockade especially out of Mobile which transformed into a primary destination after Admiral Farragut captured New Orleans. Continued Union focus on complete dominance of the Mississippi spared Mobile from attack until 1864. The Battle of Mobile Bay occurred 5 August 1864 and Union ships overpowered the four Confederate defenders the same day. Delayed attacks on the bay contributed to persistent blockade running from Mobile throughout the war. During this period, motivated by personal profit or loyalty to the cause, pilots with their cotton laden ships attempted the run to Havana returning with goods for the Confederacy or personal consumption.

Initially Mobile residents hesitated to join the Confederacy because the city's prosperity depended on northern cotton markets. Mobile merchants and diverse citizenry did not initially rally support for the Confederate cause (Bergeron Jr. 1991:5). Without northern buyers, Mobile cotton exports and sales would greatly decrease; nevertheless, mired in southern patriotism, Alabama seceded on 11 January 1861 (Smith and Smith 1964:1). Immediately, enthusiastic Mobilian men took up arms and formed regiments. Governor A. B. Moore called for volunteer squads to protect the city and began appointing men to arm and fortified military works around the city and at the head of the bay (Owsley 1989:40). Citizens braced for warfare and resigned themselves to the fate of the state despite whatever outcome (Hague 1888:4).

The first effect of war felt by Mobilians was caused by Union blockading of southern harbors. Though blockading was not immediately effective, by conflict's end, citizens of Confederate states were deprived of imported goods or could not afford those delivered by an occasional blockade runner. President Lincoln extended an active blockade on shipping for its southern foes along Confederate coasts on 27 April 1861 and it went into effect at Mobile on 28

May 1861 (McKearney 1971:9-10). Nicknamed the ‘Anaconda Plan,’ the blockade’s objective was to strangle its opponents shipping, essentially cutting off imports and exports from Texas to North Carolina. Blockading exploited two Confederate dependencies: one, the South’s need to export cotton and two, its reliance on imported manufactured goods.

Stationing Union vessels along the entire southern coastline, 3,549 miles, was not feasible, so strategists focused on closure of prominent southern ports. These locales included: New Orleans, Mobile, Savannah, and Charleston (Wise 1988:24). At the opening of the war, Union blockading forces gathered a mere 76 vessels to blockade southern ports, of that total 42 were commissioned while the rest were abroad (McKean 1864:338). Lack of ships and extent of southern coastlines necessitated a strategy of prioritizing the closing of southern ports over attempts to guard more than 3,000 miles of coast riddled with inlets, rivers, and swamps. Management of coastlines and division of significant ports split Union naval forces between the Atlantic Ocean and the Gulf of Mexico. The Atlantic theater forces targeted trade at Charleston, Savannah, and Wilmington. In the Gulf of Mexico, Union forces concentrated on New Orleans, Mobile, and Pensacola because of the formers’ trading capacity and the latter’s naval yard. Initially Union strategists considered the gulf a singular entity before forces were divided, just east of Pensacola, between the East and West Gulf Blockading Squadrons in early 1862 (Buker 1993:2). Within these designated areas, the Blockade Strategy Board further subdivided the Gulf Coast into a hierarchy of military and naval objectives.

Priority went to New Orleans and the Mississippi Delta, followed by the Mobile Bay and the Florida Keys. The west coast of Florida was fourth, Cedar Key to the Perdido River fifth, and, finally the west coast of Louisiana and all of the Texas coastline... (Buker 1993:6).

Before the war, New Orleans was the principal gulf port but with the Crescent City's fall 25 April 1862 Mobile became the most feasible destination for blockade runners.

Blockading was distinctly different between the Atlantic coast and the Gulf of Mexico primarily due to geography. Shorelines along the east coast varied from that of the Gulf Coast which created markedly different blockade running tactics. Throughout the Gulf Coast numerous inlets and shallow coastlines necessitated the use of schooners and sloops, unless the steamers were light enough draft (Price 1952:263). However, less than desirable conditions also allowed shallow draft vessels to evade large blockading ships (Van Doren Stern 1962:225). Though smaller vessels continued to be used in the gulf for the duration of war expectations for success remained low. Often a schooner captain or owner intended to make one run expecting high profits (Block 2007:158). These odds became even bleaker as the Union blockade strengthened during the war. As the Federal fleet gained more steamers during the war, sailing vessels became "sitting ducks" (Price 1952:262).

Through the above circumstances, pilots adapted schooners to gamble on successfully running the blockade. These vessels could hug the often shallow shorelines of the Gulf Coast, ducking in and out of inland waterways to avoid larger blockading vessels (Cochran 1958:201). After following the coastline either to the east around Florida, or to the west down through Texas, schooners could make a desperate dash to Havana, the preferred destination in the Gulf (Bradlee 1974:31). Other tactics employed by schooner captains including clustering enough schooners together so that when they ran out of port the vessels scattered and blockaders were forced to decide which vessel to chase. Four to eight schooners synchronized their run out of port "crow-footing out in all directions" and resulted in a blockader only being able to chase one giving others an opportunity to escape (Block 2007:33). Sailing during inclement weather or at

night also aided the small schooners in eluding blockaders, though presented increase risk to the crew (Owsley 1989:46). Success of small schooners was not maintained during the war. The number of Union vessels blockading increased and mechanized with faster steam powered vessels, plus the fall of New Orleans, placed greater pressure on blockade runners through the close of conflict.

Tightened Federal blockading concentrated on Mobile after the Union secured New Orleans. Union naval officials declared a formal blockade of Mobile on 28 May 1861. Initially only a few Union vessels blockaded Mobile Bay, which Federals would learn very quickly was an adequate number to successfully blockade the port. The bay's geography proved both an asset and a detriment. Shallow waters both deterred a Union naval advance but also limited blockade running to smaller, lighter draft vessels (Bergeron 1991:116). The main shipping channel was narrow and shallow and though other passes were open to the west and east, only the shallowest draft vessels could escape through these treacherous avenues.

Though narrow shipping channels prevented larger blockade runners these could also be defended with strategically placed defenses. A number of forts protected Mobile (Figure 6) and the bay throughout the war and because of these land installments made Mobile "one of the best defended positions in the Confederacy" (Owsley 1989:38). The main shipping channel was protected by two forts; Fort Morgan on Mobile Point and Fort Gaines on Dauphin Island. Mississippi Sound was under Fort Powell's protection and Grant's Pass covered by a small earthwork on Tower Island (Mahan 1883:219). Spanish Fort defended the entrance to the Appalachian River at the head of the bay (McKearney 1971:2). Despite fortification, Union occupation first of the bay and then Mobile proved inevitable.

Mobile Bay's safety fell after Admiral David Glasgow Farragut's attack in 1864. Admiral Farragut led Union ships against Captain Franklin Buchanan's outnumbered and out powered Confederate forces at the entrance of the bay on 5 August. Confederate fleet consisted of the ram *Tennessee* and three gunboats (*Morgan*, *Gaines*, and *Selma*) and Admiral Farragut's of fourteen vessels lashed together: *Brooklyn/Octorara*, *Hartford/Metacomet*, *Richmond/Port Royal*, *Lackawanna/Seminole*, *Monongahela/Kennebec*, *Ossipee/Itasca*, *Oneida/Galens*, and four

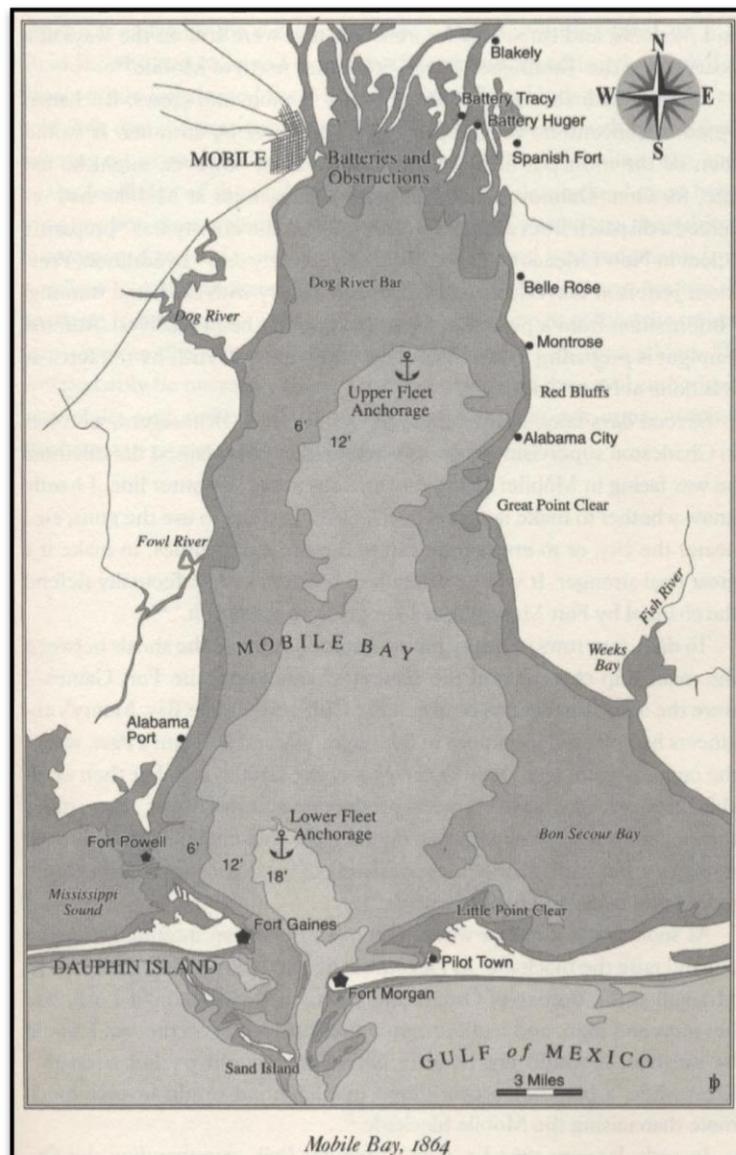


FIGURE 6. Map showing Mobile Bay fortifications (Friend 2004:11).

monitors: *Tecumseh*, *Manhattan*, *Winnebago*, *Chickasaw* (Hearn 1993:81). Admiral Farragut directed these vessels against the Main Shipping Channel, but also sent gunboats to the southeast of Fort Morgan: *Sebago*, *Genessee*, *Pembina*, and *Bienville*, while he also deployed five gunboats to Grant's Pass: *Stockdale*, *Estrella*, *Narcissus*, *J.P. Jackson*, and *Conemaugh* (Hearn 1993:81-82). Union vessels sailed under Fort guns and through underwater torpedoes and engaged Captain Buchanan's monitors (Figure 7). The Union force officially captured the mouth of the bay the same day, 5 August, after neutralizing the *Tennessee* then proceeded to neutralize Fort Gaines, Morgan, and other defenses through 20 August (Mahan 1883:245).

Capturing the bay did not result in immediate action against Mobile itself. Controlling the bay was more significant to Union forces than the city because control of the bay shut down blockade-running (Hearn 1993:9). Mobile remained one of the most protected Confederate locales because of extensive fortification and more pressing battles elsewhere. Despite this fact, movement against Mobile began because an occupied Mobile meant boosted morale for President Lincoln and his war effort (Dougherty 2010:163). Operations moved up the bay and focused on other fortifications and upland outlets into the bay. Union leaders determined the eastern shore prime for moving troops north because of the underdeveloped defenses and general remoteness. Much of the activity focused on confiscating supplies, destroying any integral installations that may assist the Confederate cause, and monitoring ship activity to prevent any further blockade running. One of the final engagements occurred at Fish River where Union forces hoped to rid the shore of any remaining rebel soldiers (United States Navy Department 1987:65). Eventually Federal sailors and soldiers engaged Mobile once resources and men could be redirected from more pressing northern battles (Hearn 1993:139). The city did not fall until

three days after Appomattox, one of the last Confederate strongholds to be captured (Owsley 1989:38).

Virginia: Pre or Post-Civil War Vessel

Given this historical context, examining the question of *Virginia's* suspect origins and possible activity during the war is crucial. First, the pro-Civil War evidence will be presented,

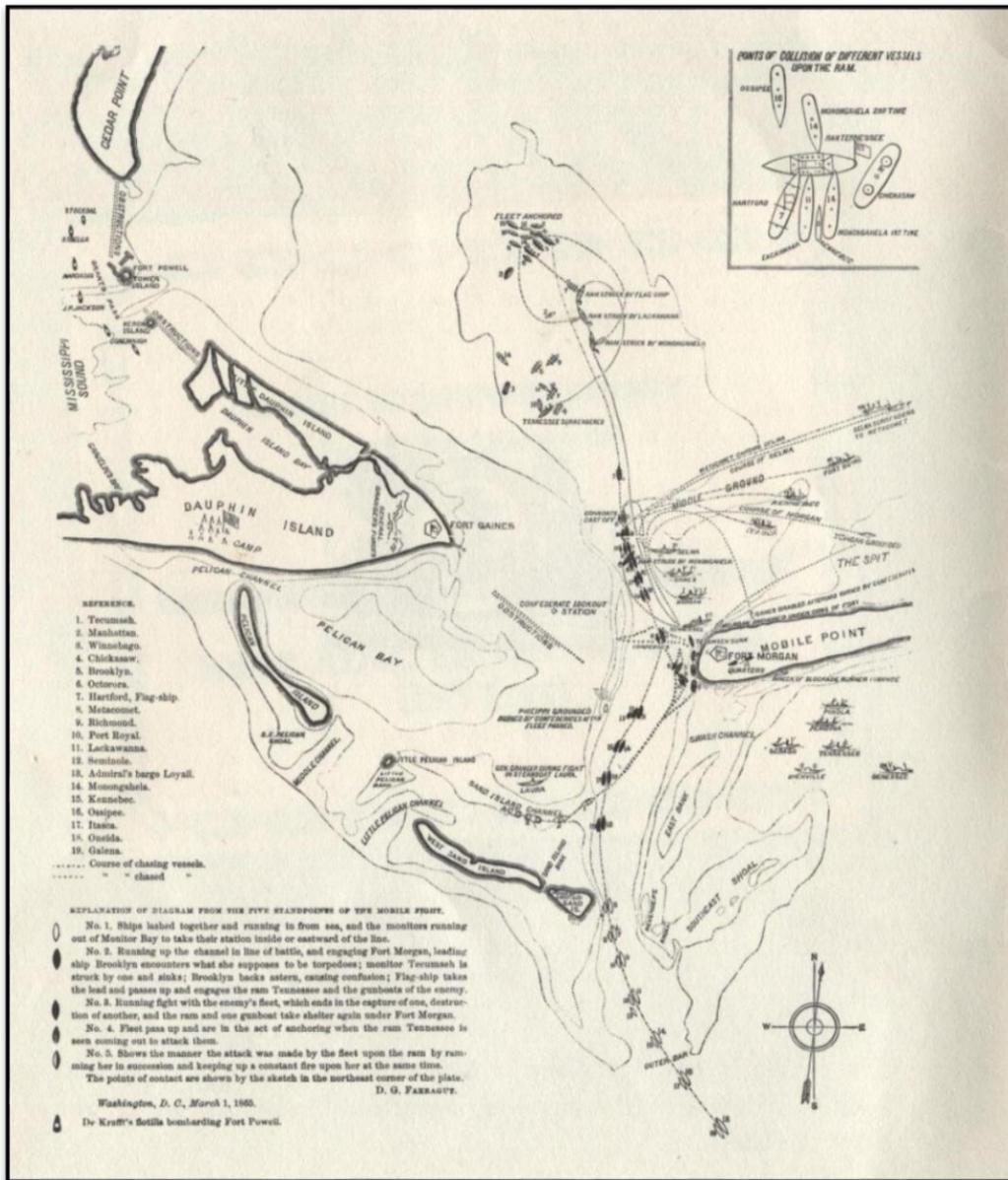


FIGURE 7. Diagram of the Battle of Mobile Bay (Naval Historical Foundation 1964).

both to establish if *Virginia* was built before the conflict and to address alternate, more nuanced explanations for its activity. Second, information negating these assumptions about when the ship was built and her role in the war will be examined. Any conclusive explanations remain tenuous, but based on present evidence it is likely *Virginia* did not take part in the war. A number of historic documents substantiate a post-war timeframe, but first clarification of why the blockade runner hypothesis exists is necessary.

Speculation about *Virginia* being built before and active during the war arise in the mid-19<sup>th</sup> century but become persistent when the final co-owners began their research in the late 1990s. Reasons for assuming *Virginia* existed before the war and tested the blockade include: references to a *Virginia* running the blockade in several key sources, questioning the timing of building a ship directly following war, and a discrepancy in the original admeasurement. The sources mentioning a *Virginia* during the war include one correspondence in the Official Records of the East Blockading Squadron and Marcus Price's encompassing work on blockade runners in the Gulf. In the official records, commanding officer, Rear-Admiral Theodorus Bailey, suspected ten ships to be in the Bayport, Florida area, reporting seven steamers, one schooner, one pilot boat, and one unspecified ship to be potential runners (United States Navy Department 1987:405). Unfortunately, *Virginia* is the unidentified ship type in this record. Yet this record from 24 March 1863 does match with a *Virginia* reported in Price's work. In his tabulation of ships which attempted to run the blockade a schooner *Virginia* made one successful trip (Price 1952:161). A later article by the same author indicates that a schooner *Virginia* was piloted by a Mr. Brown and that the ship's home port was St. Marks, Florida (Price 1961:87). This would be a rational place to find a Mobile-based schooner making a run to Havana. Most likely the vessels dodged in and out of inlets, streams, and other bodies of water along the coast avoiding Union

ships and waiting for an opportunity for safe passage to Havana. Yet none of these records elaborate on vessel specifics, name alone being the only correlation.

Further questioning of the vessel's build date stems from an assumption that vessel construction would be impossible so soon after war and also from a clerical mistake. Addressing the former, though the bay was occupied beginning in 1864 and Mobile did fall to Union troops much of the area was not decimated to the same degree as other parts of the Confederacy. Reports from Union troops moving along the bay's eastern shore stated the army's concentration on clear objectives to remove army bases and salt works from the shores with little devastation to private property (United States Navy Department 1987:635). Mobile itself escaped a great deal of devastation because Mayor Slough surrendered the city unconditionally three days after the Appomattox treaty was signed (United States Navy Department 1987:94). Though Mobilians suffered during the war, the area did not experience total devastation and conditions were perhaps favorable for ship construction following the Civil War. The latter argument concerns a discrepancy which appears on the 1865 admeasurement document and concerns an error stating *Virginia* was built on Fowl River in Baldwin County, Alabama. The problem being that these two rivers are on opposite sides of the bay, Fowl River being in Mobile County on the western side of the bay and Fish River in Baldwin County on the eastern side. Some believe this error exists because the record was falsified to avoid the ship's confiscation after war. This explanation seems speculative and further documents from 1866, discussed further following this section, substantiate the authenticity of this paperwork.

A final possibility for the vessel's war time career is that it carried on as a fishing vessel in the safety of Mobile Bay. The bay remained largely unaffected during the war, even after

increased presence of Union vessels just outside the Main Shipping Channel. Advertisements and opinion columns in local Mobile papers reported abundant supplies furnished by the bay.

Absolute starvation is still some distance off. If vegetables dry up – which with such weather as we have lately had its not probably – and the cattle are all killed, the resources furnished by the bay and its tributary waters area inexhaustible: and no blockade can keep the fish out neither. On Saturday, at the Southern Market we saw a specimen of what the river can turn out. In the shape of big fat roe sturgeon, and selling at prices that made it actually, the cheapest article in the market (*Mobile Daily Register* 1862:2).

One debacle concerned fishermen selling to “hucksters, peddlers, and extortioners” who then charged exorbitant prices at market (*Mobile Daily Register* 1863). Mayor John T. Slough was accused of creating a monopoly on fish and vegetable market for profit. Higher prices “kept the city half hungry” (Fornell 1961:43). Despite these politics, fishing vessels maintained a steady food supply to the city, even after the Union blockaded Mobile. Bay fishermen not only continued to work but were allowed to register with Union officials to gain access to a three mile area outside of the bay from Grants Pass to fish (Bergeron 1991:100). Considering these circumstances, if evidence proves *Virginia* was built prior to 1865 it is quite possible it served Mobile not by running the blockade but rather by bringing a fresh catch for the bay’s citizens.

These hypotheses, though engaging, remain unsubstantiated by definitive historical documents. Current evidence corroborates the 1865 date and post-conflict construction of the vessel. The earliest document is the admeasurement completed at Mobile on 8 December 1865 (Figure 9). The document reports Frank Richmond as sole owner but the “Abstract of Title” states the vessel was co-owned by Richmond and Michael Ballette. An 1866 license dated 16

January 1866 also lists Richmond and Ballette as co-owning the vessel and stating proof of the admeasurement December 1865. A newspaper ad from the *Mobile Daily Register* further affirms this information. The ad appeared on 22 March through 25 March 1866 in the Marine News section and describes the newly built schooner *Virginia* of about 12 tons (Figure 8).

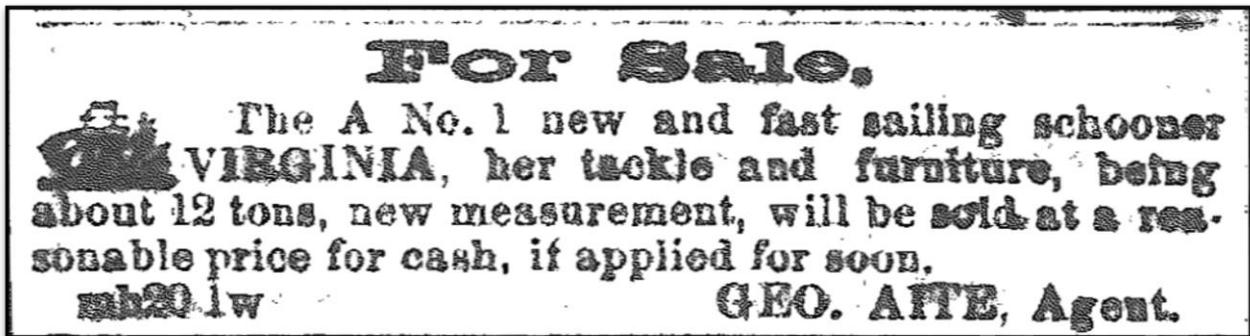


FIGURE 8. Advertisement for the new schooner *Virginia* (*Mobile Daily Register* 25 March 1866).

Appearing three months after the admeasurement, this advertisement confirms tonnage, vessel class, and recent measurement of *Virginia*. A series of licenses, the *Annual List of Merchant Vessels of the United States*, and the Historic American Merchant Marine Survey ascribe *Virginia*'s origin to 1865 and not prior to the war. The 1865 admeasurement, despite error, confirmed by this newspaper advertisement and further documented in licenses and government publications establish a strong case against speculation of the schooner's pre-Civil War career.

Civil War along the Gulf Coast differed from the Atlantic theater. Blockaders still focused on closing vital ports but the permeable gulf coastline allowed shallow draft vessels to escape through numerous inlets, streams, and swamps. Pilots taking advantage of these natural features utilized small centerboard schooners already prevalent before the war. From this research, any indication of *Virginia*'s role throughout the Civil War remains circumstantial at best. The vessel should be considered a fishing boat first and not a blockade runner. Though possible that it did test Union vessels outside of Mobile waters, its primary role was not to run

**TONNAGE MEASUREMENT OF**  
*Schooner Virginia of Mobile*  
 Port and District of Mobile, *December 5, 1865*  
 1865

Built at *Franklin, Ala.* by *Head of Ford*  
*Franklin, Ala.* *Stearns & Co.*

No. of decks *One*  
 No. of masts *Two*  
 Register length *40.6* feet  
 " breadth *14.8* " "  
 " depth *3.5* " "

Class *Brig*  
 Common interval between sections *6.73* feet

**MEASUREMENTS AND PRODUCTS, EXPRESSED IN FEET AND TENTHS OF A FOOT.**

Tonnage & pole	Section 1.		Section 2.		Section 3.		Section 4.		Section 5.		Section 6.		Section 7.		Section 8.		Section 9.	
	Breadth.	Product.																
1	9.9	4.9	13.4	13.4	13.5	13.5	13.8	13.8	12.8	12.8	11.9	11.9	11.9	11.9				
2	9.4	37.6	12.8	51.2	13.5	54.1	12.5	50.0	12.5	50.0	19.9	43.6	19.9	43.6				
3	8.3	16.6	11.6	33.2	12.2	24.4	9.2	15.4	9.2	15.4	9.0	18.0	9.0	18.0				
4	8.5	33.2	7.6	30.4	7.8	31.2	5.5	22.0	5.5	22.0	5.6	22.4	5.6	22.4				
5	1.1	1.1	1.4	1.4	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7				
Total		55.4	119.6			126.2			106.0			95.6						
Common interval between breadths		3.5	3.1	2.9				2.9	2.9			2.5						
Carried to "Summary" square feet		24.172	37.076	36.895				30.740	24.650									

**SUMMARY.**

ENCLOSED SPACES ON UPPER DECK.

FIGURE 9. Virginia's Admeasurement from Mobile, 1865 (Courtesy the National Civil War Naval Museum Columbus, GA).

supplies. Most likely pilots steered *Virginia* for one successful trip and cashed in on war time inflation. Though plausible, known documentation counters the idea of any connection to the Civil War. Despite no direct activity during the war, *Virginia* serves as a contemporary example of centerboard schooners used throughout the gulf and for the war's duration.

### Oystering

Beyond speculation about blockade running, *Virginia*'s activity in Mobile Bay's oyster fleets during the late 19th and early 20th century can be stated with certainty. The bay offered plentiful beds and quality oysters during this era. The oyster fishery supplied local markets in Mobile, neighboring communities in Florida and Louisiana, and those further away by rail line. *Virginia* likely sailed fresh product from the oyster beds back to docks as part of a fleet of schooners, sloops, and smaller boats. Catching, consuming, and delivering oysters accounted for a major portion of Mobile's culture, economy, and traditions.

Visitors to Mobile documented the residents craving for oysters. During the war, outsiders remarked on the citizens' insatiable appetite for oysters serving them "in the form of natural fish puddings, fried in batter, roasted, stewed, devilled, broiled, and in many other ways, *plus* [emphasis in original] raw" (Russell 1863:275). Oyster saloons were a favored place to consume the bivalves, popular establishments in and around Mobile (Figure 10). Oysters could also be purchased by the dozen directly from boats or restaurants for 50 cents (Mobile Daily Register 1866). Popularity of bay oysters was due to their purported superior flavor being, "...some of the finest oysters in the world, there being a universal demand for the Bon Secour "Plants" (Albers and Comings 1928:85). As their reputation spread, markets outside of Alabama developed establishing oystering as a fundamental industry for Mobile.

**Battle House Oyster Saloon.**

 **HENRY J. JENKINS,** 

**8**.....ROYAL STREET.....**8**

Has always on hand the very best of Oysters. Pickled, Spiced, Cooked in every way, or served on the Shell at any moment.

Breakfast, Dinners or Suppers of the choicest Fish, the finest Oysters, the best of Venison, and every Game Bird, Duck, or Wild Turkey, cooked in first rate style and served at the shortest notice.

Oysters by the barrel carefully put up for city or country orders.

Private Rooms elegantly fitted for the accommodation of families and parties.

Thankful for former favors he respectfully solicits their continuance.

nov 23 1859

FIGURE 10. An ad for a popular oyster house in Mobile (*Mobile Daily Register & Advertiser* Tuesday, 1 November 1859).

Bay waters supplied consumers with ample amounts of oysters, whether natural or planted. The northern extent of beds was marked from Fowl River on the western shore across to Great Point Clear on the eastern shore and covering southern portions of the bay (Ritter 1896:328). These beds consisted of both naturally occurring (reefers) and cultivated (plants) oysters (Ingersoll 1881:195). Harvesters were legally bound to only use tongs as dredging was outlawed in Alabama waters (Alexander 1905:444). Thus oystering operations included smaller boats used by men with tongs along the beds and larger schooners sailing between the oyster grounds and docks (Figure 11 and 12). Typical oystering required men on smaller boats with the tongs collecting the oysters, transferring their catch to larger schooners, and finally these schooners returning to shore and offloading to agents or wholesalers. Hauls delivered to shore by

these schooners either went to canneries and/or wholesalers for packaging or to local markets and restaurants for consumption. Packaged oysters were sent to destinations in the Midwest and westward by railway.



FIGURE 11. Oyster boats loading an unidentified, two-masted schooner in the background, 1911 (Courtesy of the Library of Congress, Washington, D.C.).

Oystering became a dependable industry for baymen and their families both in Mobile and Baldwin County. Through the late 19<sup>th</sup> and early 20<sup>th</sup> century, a consistently sizeable fleet of schooners, sloops, and smaller boats engaged in planting, harvesting, and hauling oysters (Figure 11). Sixty-two vessels operated by 250 crewmembers sailed as part of the oyster fleet in the early

1880s (Ingersoll 1881:197). By 1905, the fleet increased to 77 vessels operated backed by 714 fishermen and 384 shoremen (Alexander 1905:415). In 1910, the first official oyster



FIGURE 12. Mobile oyster boats, 1905 (Courtesy The Doy Leale McCall Rare Book and Manuscript Library, University of South Alabama, Mobile, AL.).

commission organized by the state kept statistics on the fishery from 1910 to 1914. Looking at Mobile and Baldwin County, 84 schooners operated in 1910, 105 in 1911, 28 in 1912, and 48 in 1913 (Alabama Oyster Commission 1915:19-20). Schooners in this fleet consisted of “small, light-draft vessels ranging from 3-20 tons, rigged in the American style as schooners or sloops,” an apt description of *Virginia* itself (Ingersoll 1881:196). It likely functioned as a carrier of fresh oyster back to shore, serving as a runner for fishermen on the oyster reefs as seen in Figures 11 and 12. Most of *Virginia*’s owners operated within the bay’s oyster fleet through the early twentieth century.

Between 1865 and 1936, twenty-two different individuals owned or partially owned *Virginia* seven of them confirmed oystermen (Table 1). These men lived in areas such as Bon Secour and Shell Banks in Baldwin County, noted spots for harvesting fine oysters, and Mobile proper the main point of distribution for the bay's fisheries (Alexander 1905:444). Amongst the oystermen only the Deans were born in Alabama, with the others hailing from Germany, Holland, France, and Maine, a diverse group of men operating the schooner at this time. Functioning within this industry projected incomes can be gleaned from historic documents. J. H. A. Miller likely earned \$20 to \$25 per month, approximately less than a dollar per day. Almost thirty years later, the Deans working in Mobile County expected to make between \$1.50 and \$2.00 per day (Alabama Oyster Commission 1915:19-20). Compiling historic documents presents a more detailed understanding of this schooner's history and a more vivid depiction of its historical context within Mobile Bay.

Oysters remained a delicacy for Mobilians, and across the country, during this period. Mobile oysters were highly regarded for quality and flavor and as demand increased the fleet remained busy. Tongs, the traditional method, were still being used throughout, dredging being illegal in the state, and often involved a solitary man in a small boat using the tool to procure oysters. Once filled, these little boats transferred their catch onto larger boats that sailed out to the oyster reefs to transfer their cargo. The ships would then return to port with their fresh catch. For nearly fifty years, this schooner operated within this industry which experienced growth throughout the end of the 19<sup>th</sup> century. *Virginia* carried the freshly harvested oysters back to market from the men harvesting on the reefs. Its owners labored both in Mobile and Baldwin County, procuring oysters from reefs on both sides of the bay. In the next chapter of the boat's

career, it remained a fishery vessel into the early 1900s but also became a recreational vessel, research vessel, and was documented as part of the Historic American Merchant Marine Survey.

<b>Owner Name</b>	<b>Years Owned</b>	<b>Census Record</b>	<b>County</b>	<b>Occupation</b>
Frank Richmond	12/1865-05/1866	None	-	-
Michael Ballette	12/1865-05/1866	None	-	-
Richard Hill	05/1866-04/1867	1860	Mobile	Bayman
Charles Runwich (Rhunwich)	05/1866-04/1877	None	-	-
Peter Thompson	04/1867-05/1875	None	-	-
C. James Campbell	05/1877-09/1878	1880	Mobile	Bar Pilot
John H. A. Miller	09/1878-03/1892 & 1914-1930	1910	Baldwin	Oysterman
William W. Kruse	03/1892-06/1899	1900, 1910	Baldwin	Oysterman
F. Nelson	06/1899-05/1901	None	-	-
Bayou La Batre Pkg. Co.	06/1899-?	None	-	-
John H. Steiner	05/1901-10/1901	1900, 1910	Baldwin	Oysterman
Charles G. (C.) Styron	10/1901-03/1902	None	-	-
Thomas H. Benton	03/1902-?	1900	Baldwin	Oyster Captain
D. A. Ramsey	? – 1912	None	-	-
Richard S., John H., Levi E. Deans	1912-1914	1910	Mobile	Boatmen, Oysters
John C. O’Gwynn	1930-1931	1910, 1930	Mobile	Physician, Specialist

TABLE 1. Information on *Virginia*’s Owners through 1931 compiled from Census Information (Created by author, 2012).

## *Phase II: Auxiliary and HAMMS*

At the turn of the century through the 1930s, *Virginia* underwent several noteworthy changes both in construction and application. The first change concerns the addition of an engine, changing the ship's primary propulsion and second, a fire was documented onboard the ship in 1931. Both of these events are important to mark as each altered construction to a certain degree. During this era, the schooners activity shifted not only from oystering to personal use but also geographically from Mobile Bay to Florida's west coast. Much like the previous period, rumors encircled the schooner and possible connections with running rum during Prohibition, another unsubstantiated narrative attributed to *Virginia*. What can be confirmed is that members of the Historic American Merchant Marine Survey documented the schooner and recorded her plans for posterity.

During this period an engine was added, a general trend for sailing craft in the late nineteenth, early twentieth century sailing vessels. Gas and diesel engines added to small craft supplemented sails and ultimately become the primary means of propulsion. Engines especially shaped the fishing industry and by 1930 engines were predominant in Atlantic and Gulf Coast fisheries (Baumer 1991:61). Following this trend, sailboat owners converted their vessels by installing engines, largely phasing out sail in American fisheries by the 1940s (Church 1961:28). The first report of *Virginia* retrofitted for an engine was in the 1914/1915 edition of the *Annual List of Merchant Vessels of the United States* (Government Printing Office 1915). Further information from this publication indicated *Virginia* was designated a gas screw until 1930/1931 when it changed to an oil screw and the next year to a gas yacht, see Table 2 in Chapter 3. In 1914, John H. A. Miller repurchased *Virginia* and owned it for the duration the schooner was classified as a gas screw vessel. A known oysterman from Baldwin County, Miller could have

felt the pressure of a changing industry and followed a national trend of converting purely sail powered ships to auxiliary vessels. A change in propulsion also had implications for *Virginia*'s construction since it was most likely modified to both house and endure the effects of an engine.

Another event impacting *Virginia*'s construction concerns a fire reported in 1931. From the Abstract of Title, *Virginia* caught fire 23 September 1931 in Mobile and abandoned 31 November 1931 (Appendix A). Three years later, the craft was reportedly salvaged and reported as a motorboat of less than 16 tons and used solely for pleasure (Abstract of Title). The ship does not reappear in the *Annual List of Merchant Vessels of the United States* until 1938, indicating it functioned as a pleasure craft for four years (Government Printing Office 1939). The extent of damage does not appear in either of these sources. A later captain, James Kirby, believed the vessel was scuttled to save the hull and majority of the ship (Piatt 1996:53). Understanding this event is limited to these sparse notes, with no specifics about her rebuild or subsequent commission as a motorboat. Further details, if any, concerning these events must be gleaned from the ship itself, see Chapter 3.

Through the 1930s *Virginia*'s primary purpose shifted away from the fisheries for a brief period. Its owners used the ship for personal applications first as a recreational yacht and then as a research vessel. Several forms of evidence confirm this information. The annual list of vessels reports it as a yacht, the first and only year it was ever categorized as a yacht. Her owner at the time, Charles O'Gwynn practiced specialized medicine in Mobile at the turn of the century; refer to Table 1 (Government Printing Office 1931). O'Gwynn, the first non-bayman to own *Virginia*, reconfigured the schooner into a yacht, presumably sailing the vessel for pleasure throughout the bay. A picture depicts the schooner in 1930 as a yacht (Figure 13). By 1931, after the burning described above, it reentered the records as a motorboat used purely for pleasure. Then in 1936,

the schooner was documented as a research vessel by members of the Historic American Merchant Marine Survey. Following these events, *Virginia* returned to fishing but instead of oystering in Mobile Bay the ship's owners were Florida fishermen caught red snapper in the waters of the Gulf of Mexico.



FIGURE 13. Several women enjoying an afternoon on the yacht *Virginia*, 1930 (Courtesy of the University of South Alabama Archives, Mobile, AL).

Some attribute a second phase of blockade running of sorts to the *Virginia*. Such stories concerning the schooner begin to appear in later publicity articles from the second half of the 20<sup>th</sup> century. During Prohibition, illicit transport and sale of liquors occurred throughout the Gulf of Mexico. Rather than the Union naval fleet, the United States Coast Guard was tasked with the

duty of deterring ships. For a schooner of *Virginia*'s size to be involved, it likely purchased alcohol from larger vessels anchored offshore similar to this account,

...we dropped anchor in twenty-two fathoms. Much to my surprise, we made a sale to a small fishing boat that came to us about 7:30 and took the large number of five cases of Bisquit brandy away with him in exchange for what I hope are 125 perfectly good dollars (Moray 1929:181).

Daring fishermen sometimes attempted to smuggle liquor under their catch or in specially crafted compartments throughout the ship (Willoughby 1964:72). Transactions between runners and smaller fishing vessels operating along the coast remain undocumented unless caught by the Coast Guard, and thus *Virginia* involved in such a scenario was possible but no definitive evidence found. Its age likely enticed such romantic tales of adventure and, though extremely unlikely remains, an intriguing facet of the ship's story for further analysis in Chapter 4.

#### Historic American Merchant Marine Survey

In 1936, maritime scholars included *Virginia* in the Historic American Merchant Marine Survey (HAMMS). HAMMS' objective was to record and collect information on historic American vessels otherwise undocumented. Eric Steinlein, credited with HAMMS conception, realized the imperative to document America's historic watercraft before wooden ship structures deteriorated beyond recognition. The program imitated initiatives like Historic American Buildings Survey (HABS) and Historic American Engineering Survey (HAES), responsible for preserving historic buildings and industrial structures, but experienced a shorter career terminating in 1939 (Delgado 1991:75). HAMMS surveyors documented and photographed historic vessels within major American maritime regions.

The survey found support from a coordinated effort between the Works Progress Administration (WPA) and Smithsonian Institute. During the Great Depression scarcity of jobs for American workers was not limited to blue-collar individuals. There were initiatives to employ white-collar workers also inactive during the depression. As part of this movement, architects were hired to record historic buildings, a program known as HABS. Programs like this inspired the HAMMS work. Unemployed draftsmen, historians, maritime experts were recruited to complete survey work on a national scale.

Considering HAMMS scope, survey work required planning for vessel types to be recorded, regional divisions within the survey area, and documentation standards. The survey focused on historic vessels because ships were the greatest source of information “and that most subject to deterioration and loss” (Warren 1986:52). Historic at the time of survey meant ships built prior to late 1800s. Age was the first determinate in electing appropriate subjects followed by three other factors: features of evolutionary shipbuilding stage, when half-models and other plans did not exist, and small classes of boats representing changes in aboriginal or European types (Warren 1986:104). To undertake these survey objectives, program coordinators recruited regional personnel to locate appropriate vessels. The nation was portioned into major maritime hubs, mostly coastal waters and Great Lakes, with great emphasis on New England and Mid-Atlantic states because of the regions extensive seafaring heritage (Warren 1986:34).

The scale of HAMMS and great array of material necessitated a rubric for recording each vessel. Though some basic survey requirements existed these were not always followed by surveyors. At times, the guidelines were manipulated or even disregarded by personnel and directors alike (Warren 1986:112-113). Generally though, teams created numerous drawings which could include lines drawings, half-breadths, deck plans, and rigging plans. Photographs

supplemented drawings and an average of five shots were taken. Historic accounts pertained to vessel origin and past/current function when records were available.

Despite inconsistent survey results, *Virginia*'s surveyors completed a thorough documentation. Information pertaining to *Virginia* was printed in the 1983 compilation of HAMMS records edited by Melvin H. Jackson. *Virginia*'s records fill five pages of this volume. Documentation includes a brief historical sketch, photographs, and body, deck, half breadth, midsection, outboard, sail, and sheer plans. The team responsible for *Virginia*'s survey included H.L. Capdevielle, Gerard Smith, Tom Wishart, and Laurie Gates functioned as team supervisor. H. L. Long, regional director, and Eric J. Steinlein, project director, approved the plans (Jackson 1983:81). The team collected 23 pages of offsets and five negatives (Jackson 1983:82).

At the time of survey, it was owned by a Dr. John F. Bass, a scientist living in Florida. Bass moved *Virginia* to Englewood, Florida and conducted his laboratory research aboard the schooner. The survey stated *Virginia* was built on Fish River Mobile, Alabama 1865 by an unknown designer for an undetermined purpose. Frank Richmond and M. Balletteare cited as original owners with no further information about the numerous owners between 1865 and 1936, though mentioned its miscellaneous functions as fisherman, pilot boat, freighter, dispatch boat and yacht (Jackson 1983:82). Dimensions at time of survey *Virginia* measured: length 53' 4", beam 14' 6", depth 4' 10", draft 4' 6", and 12 gross tons. Recorders noted her current condition was good with no signs of hogging or other damage despite cypress keel and frames. It was rigged as a staysail schooner with a 40 horsepower Lathrop engine (Jackson 1983:82).

HAMMS documentation of *Virginia* is significant for several reasons. Records provide the first and only known plans for *Virginia* before the current study. Drawings and photographs capture a glimpse of *Virginia* as an auxiliary schooner before its conversion to a commercial

fishing boat (Figure 14). Beyond preserving physical evidence, the schooner's addition to HAMMS means it was considered an endangered historic vessel in 1936. Though not as stringent as current standards for historic ship preservation, HAMMS protocol was to record



FIGURE 14. Photo from HAMMS (Courtesy of the National Civil War Naval Museum, Columbus, GA.).

historic vessels that were either going to disappear leaving no record or considered a part of an evolutionary stage in shipbuilding.

### *Phase III: Commercial Fishing and Museum Vessel*

Already regarded a historic ship in 1936, *Virginia* once again became a fisheries ship. Continuing as a recreational boat during the 1940s, *Virginia* took deep sea fishing expeditions out of Bradenton Beach, Florida (Miller 1996:20). Maintaining her structural integrity, the last captain took her to the offshore fisheries to catch snapper in the 1950s through retirement in the late 1980s. During this period, *Virginia* transformed from auxiliary ship to motorized vessel, losing both masts and bowsprit sometime between the late 1930s and early 1940s. James F. Kirby, the final owner to operate *Virginia*, appreciated his vessel's long history, which influenced his decision to continue vessel maintenance after retirement. Kirby's efforts preserved *Virginia* until an appropriate buyer, in this case the National Civil War Naval Museum, presented adequate resources for preservation and research.

According to the *Annual List of Merchant Vessels of the United States* five owners are documented following the HAMMS survey to its retirement. James L. Frasher, L. H. Shilling, Francis C. Bidwell, Robert J. Taaffe, and James F. Kirby in succession owned *Virginia* and operated off Florida's west coast. *Virginia* was categorized as a fishing vessel under Frasher, Shilling, and Bidwell and later reclassified as a yacht while owned by Robert J. Taaffe (Government Printing Office 1956/1957). During a five year period various individuals possessed shares of the vessel. Francis C. Bidwell and Bruce Bidwell each owned a share in the *Virginia*. Robert J. Taaffe and Francis J. Slocum were the other two individuals with a share in the *Virginia* during this period (Appendix A). Kirby gained full ownership in 1961 and proceeded to adapt the vessel for his needs when fishing. Throughout this period its standing as a fishing vessel consisted of charters for private parties (O'Connor 1963:2B). The ship's final captain, James Kirby, transformed the vessel into a fulltime commercial fishing vessel after he

purchased it in 1956. Oddly the merchant list categorizes *Virginia* as a passenger vessel when owned by Kirby, despite his well-documented fishing career. He remarked in an interview that he changed little if anything below deck except for installing a fish hold; most of his modifications appeared above deck (Figure 15).



FIGURE 15. Depiction of *Virginia* as a commercial fishing vessel (Piatt 1996:53).

Kirby took *Virginia* throughout the gulf, fishing primarily for red snapper. This fishery was concentrated on Florida's west coast at the turn of the century but over fishing pushed populations further into the gulf (Baumer 1991:32). Red snapper was an integral part of Florida's fisheries and consistently this fishery took in between 1,000 and 3,000 metric tons (National Oceanic and Atmospheric Administration 2011). During the majority of Kirby's career with *Virginia* the captain lived in Tampa, Florida with a major snapper ground just west of the coast (Figure 16). He recalls running 50-80 miles out into the Gulf; staying out there for ten or more days at a time (Hyman 1988:G1). For these expeditions he occasionally hired a crew of

three to four men but often fished from Virginia by himself. Kirby modified the cabin layout, adding a single cabin constructed of plywood. He rigged *Virginia* for bottom fishing, an improvement on the pre-1950s method fishing with hand lines and carried on as a commercial snapper fishing boat for 33 years (Baumer 1991:61).

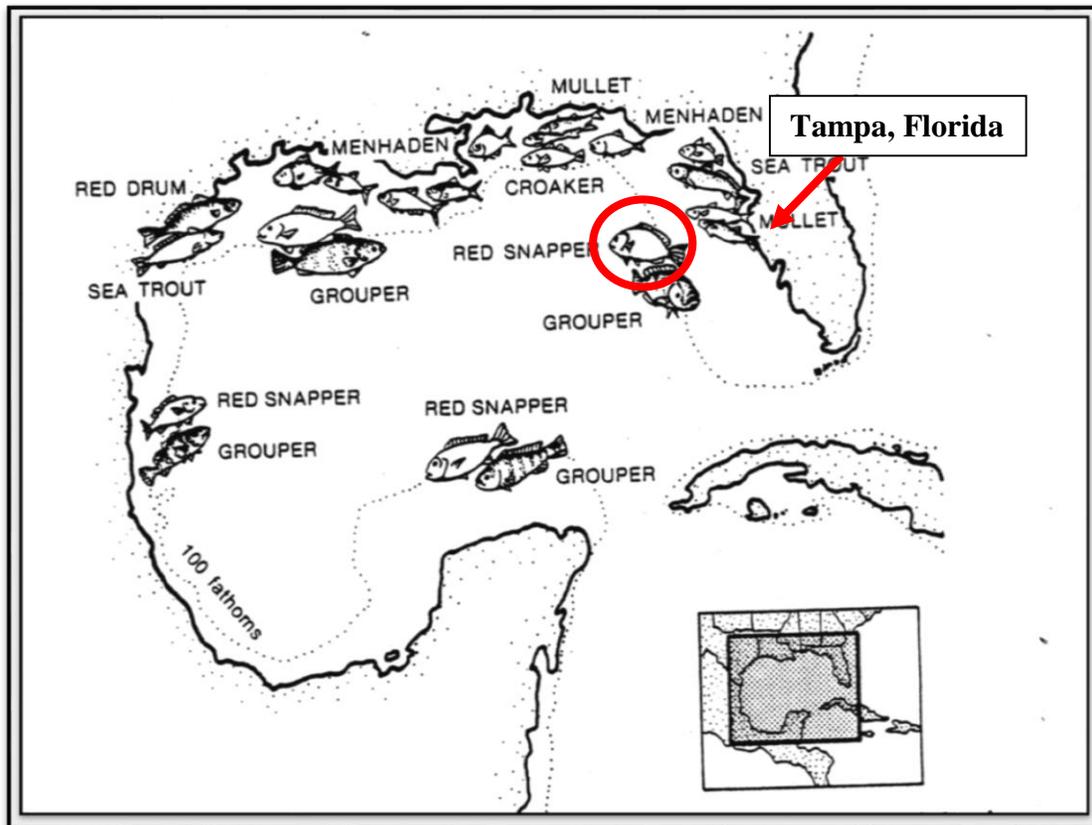


FIGURE 16. Map showing the Gulf of Mexico's major fisheries (Patterson 2007:74).

James Kirby was the last owner of *Virginia*, longer than any other individual. Kirby's ownership accounted for the second best documented era for the vessel. Between the 1960s and 1980s, several articles appeared following the Bureau of Fisheries' 1963 survey, indicating that Kirby he possessed the oldest commercial fishing vessel in America's fleet (Hyman 1988:G1). The organization took stock of its current commercial vessels and discovered the *Virginia* to be the oldest vessel in the fleet. A number of Florida newspaper articles addressed *Virginia*'s age.

These articles report on possible, but more romantic, tales of the ship's past. Reporters made connections with blockade running during the Civil War in addition to rum running during Prohibition. Kirby acknowledged that though the ship may have had a more glorious and intriguing past, its current application was as a utilitarian vessel. A newspaper reporter shared Kirby's sentiment and described *Virginia* as follows:

It's no sleek and elegant lady riding gracefully on the tide. *Virginia* is a rough-looking old broad of a boat, a boat that's worked for its living - and not always respectably – for a long time (Hyman 1988:G1).

The ship was meant to supply Kirby and his family with a livelihood but in retirement he planned for continued care of the vessel, appreciating its historical value.

Maintaining the vessel was beyond the retired captain's capabilities of the retired Kirby. The captain pulled the vessel out of the water in 1996 (Piatt 1996:54). During this period he found investors, a Florida couple called the McConnell-Harrisons, to assist financially in maintenance and restoration of the ship (Miller 1996:20). The Harrisons began research into the Civil War blockade runner theory, which sparked an interest amongst museum officials at the National Civil War Museum. After the museum's purchase of the ship, *Virginia* was placed in an open-air shed upon a specially crafted cradle system. *Virginia* remains in the same position today, awaiting further plans for restoration.

### *Conclusions*

*Virginia*'s history can be summed up by its use as a utilitarian vessel applied throughout the Gulf of Mexico's waters. The schooner's activities neither warranted exhaustive narrative in historic record nor detailed plans at time of construction. The modest vessel sailed then motored through a changing maritime industry, adapting to new environments and technologies. Its

continued service and adaptation serves as a testament to those shipbuilders of the Mobile Bay region and to nineteenth century materials incorporated into the structure. *Virginia*'s durability is astounding withstanding such a long career, not just in protected waters of Mobile Bay but ending its career fishing red snapper throughout the Gulf of Mexico. The vessel is a testament to early ship construction and presents an interesting, but complicated example of ship adaptation. *Virginia* sailed around Mobile Bay oystering from late 1865 until the opening of the early twentieth century. Thereafter, it moved to Florida where it completed odd jobs and later included in the landmark survey of America's watercraft. The schooner's prolonged career was a significant influence on the direction of this thesis' fieldwork and the status of the vessel as a museum exhibit.

## **Chapter 3: Methodology**

### *Introduction*

Recording for this project consisted of coupling total station data, digital photographs, measured sketches, and Terrestrial Laser Scanner (TLS) point clouds. The primary objective of fieldwork was to collect data about the vessel's contemporary construction and state of preservation. A secondary goal for using multiple methods was to compare the two digital recording technologies, total station versus TLS. The goal of the comparison focused on the development of an integrated plan for historic ship recording. The final product included a description of construction and both 2D and 3D visualizations of the ship's current form. Fieldwork occurred in three different sessions. First, using a reflectorless total station, digital points marked and measured locations of construction features and captured hull shape. Simultaneously, other crewmembers took field notes, scaled photographs, and measured sketches. The second, a survey conducted with two Terrestrial Laser Scanners, measured hull shape and components on deck in greater detail. In the third and final session, observations and additional photographs and sketches noted construction features not apparent on the surface and elements concerning preservation. From this fieldwork preliminary documentation of the ship's construction and current state of preservation was accomplished and was covered in Chapter 4.

### *Fieldwork/Ship Recording*

Objectives for archaeological survey included gathering construction details, identifying incongruous materials, and assessing the ship's current state of preservation. Information from recording produces a 'stratigraphy' to determine the addition of equipment and structural modifications within a preliminary chronology of the vessel throughout its 148-year existence. Doing so created a basic record and general description of the ship's contemporary construction

features. A physical record fulfilled a second objective of determining proposed vessel preservation by illuminating areas of deterioration and non-historic components to be removed in the event of restoration. A non-invasive restoration plan was established with the aid of computer models generated from field survey results.

Three surveys were completed to achieve an account of ship construction elements and evaluate applicability of differing technologies employed in historic ship recording. Total station, a frequently used piece of survey equipment for such projects, involved a human operator selecting points to record of construction features. These points contained 3D information (x, y, z values) and when downloaded and manipulated with appropriate software, points created a profile of the ship. Terrestrial Laser Scanners (TLS), also known as LiDAR (light detection and ranging), constituted the second set of equipment incorporated in surveying. These scanners were automated and operated with limited human operator involvement. Operators simply assigned scanning parameters and registered scans post-recording. Laser scanners collected 3D point data also, however, did so indiscriminately within a scanning range and with greater rapidity. Further disparities were examined in greater detail and presented later in this chapter.

Lastly, documentation of vessel construction through measured sketches, photography, and annotations completed the survey work. A tactile approach allowed for greater understanding of construction features which may not be apparent or exposed. Observations made by the human eye enhanced understanding of construction features not visible on the surface; data which neither a total station nor TLS captured. Incorporating three different techniques established a comparative study of known methods (total station, observation) with newer equipment and more importantly recorded relevant information about the ship to generate a general record of ship construction and relative state of preservation.

## Total Station Survey

Methodology for total station survey incorporated both recording of 3D points and use of sketches and digital images. There were several phases for total station methodology. Phase I consisted of pre-plotting survey points to expedite collecting data. During the second survey phase, crewmembers recorded information with a total station and data logger. During this survey, sketches and digital images of diagnostic features complemented 3D data.

The approach was influenced by techniques utilized while assisting in the recording of Swedish warship *Wasa*. This method involved having visual aids for identifying total station points typically acquired by sketching the ship feature being recorded and labeling the points' location on said sketch. Expanding upon this idea, predetermined points were established using photographs taken of *Virginia* in 2009. As part of a different field project at the National Civil War Naval Museum, the field crew took cursory measurements and images of *Virginia*. To assign points before survey, 2009 photographs were adjusted in Adobe Photoshop to decrease the image opacity. Reducing opacity made pre-assigned points clearer and permitted use of in Adobe Illustrator, allowing for easier identification of point specific information collected during survey (Appendix C). This technique was applied to the outer hull because the museum did not grant access to the ship's interior in 2009. These pre-planned sheets were either slightly modified or complemented with hand sketches to adapt additional, necessary points.

Three East Carolina University Maritime Studies students (Nicole Wittig Principal Investigator, Stephanie Gandulla, and Valerie Rissel) recorded *Virginia* during three fieldwork days between the 5<sup>th</sup> and 7<sup>th</sup> of March 2010. Completing the survey required the following equipment: Topcon GPT-3000LW reflectorless total station, TopCon FC 2500 data logger, prism pole, prism, measuring tapes, scales, and metal stakes. The team recorded points along the vessel

by taking advantage of the total station's reflectorless capabilities. The prism was used to total station control points and for gaining shots on deck. The remainder of the vessel was recorded in reflectorless mode, except for features on deck. Reflectorless recording was accomplished by having a total station operator follow a second crewmember selected the desired points. To minimize time in the field, only the starboard half of the exterior hull was recorded with the intent to mirror the data during the post-processing stage. The starboard half was more accessible for survey, but the port side near the exterior of the storage shed was obstructed by the enclosure fence. Only the port section of the interior was recorded, because less ceiling remains were extant, exposing more structural features. In the same manner as the outer hull, interior data was mirrored to complete inner hull documentation. Before recording a labeling system was established based on construction features (Table 2). This system assigned each point a code referencing the construction item recorded, and provided a beneficial measure in differentiating points in the post-processing stage.

On 5 March, 2010 the crew began fieldwork. Three total station control points were established in relation to the ship, one amidships, bow, and stern, which are designated as A-D in Figure 17. GPS coordinates for these control points were not recorded, because the equipment was not available for survey. Arbitrary coordinates were entered for easting, northing, and elevation (1,000, 1,000, and 500 m). These were later determined an unnecessary step and corrected during post-processing. A metric measuring tape served as a baseline along the length of the vessel to establish survey lines. Survey lines were spaced further apart along the length of the hull to gain the overall shape of the schooner, with the exception of those lines at the bow and stern.

Outer Hull		Inner Hull	
Feature	Designation	Feature	Designation
Control Point	CP	Centerboard Trunk	CB
Deadwood	DW	Frames	FM
Gunwale	GU	Limber Hole	LM
Hawsehole	HH	Post Timber	CR
Keel	KL	Riders	RI
Keel Scarph	KF	Stringers	SR
Metal Fastener	MF	Stuffing Box	PP
New Hull	NH		
Old Hull	OH		
Patch (Hull)	PA		
Plank Joints	BJ		
Propeller	PR		
Rubrail	RR		
Rudder	RD		
Scuppers	SC		
Shoe (Keel)	SH		
Stem	SP		
Transom	TR		
Waterline	WL		
Wooden Fastener	WF		

TABLE 2. Construction designations assigned by author.

Distance between survey lines narrowed to better capture drastic hull shape changes. Points for these survey lines were taken at hull plank seams. Survey lines at nine and fifteen feet and through the center of the forward hawsehole were recorded from control point A. Amidships and stern survey lines were recorded from control point B at three foot intervals beginning at eighteen feet on the baseline.

Detailed shots focused on diagnostic features, like the stem and features along the keel, and were taken independently of survey lines. The stem was shot with a great amount of detail due to its diagnostic features, such as the gripe, from control point A. The same procedure was followed to record the transom, another potentially diagnostic construction feature. The shape of the transom, hull plank seams, and hardware features of the transom were recorded from control point C. On deck, the prism was used to shoot points from control point A, a precautionary measure to ensure crew safety. Survey on deck focused on cabins and points along deck planks, especially those planks forward, which potentially had more historic value than the plywood sheets aft. The total station recording procedures were time consuming and to expedite data collection process other diagnostic features, deck, cabins, and interior structure were recorded with a combination of measured sketches, and digital images that were spatially located from points recorded with the total station. The rudder and propeller were recorded in this way, because sketching was an adequate method to garner detail of these features. Total station points recorded from control point c provided spatial reference in the digital model.

Recording interior structure followed a similar methodology, and diagnostic features were recorded with measured sketches noting spatial relationships recorded with the total station points. Pre-planned total station points were not plotted, because access to *Virginia's* inner hull

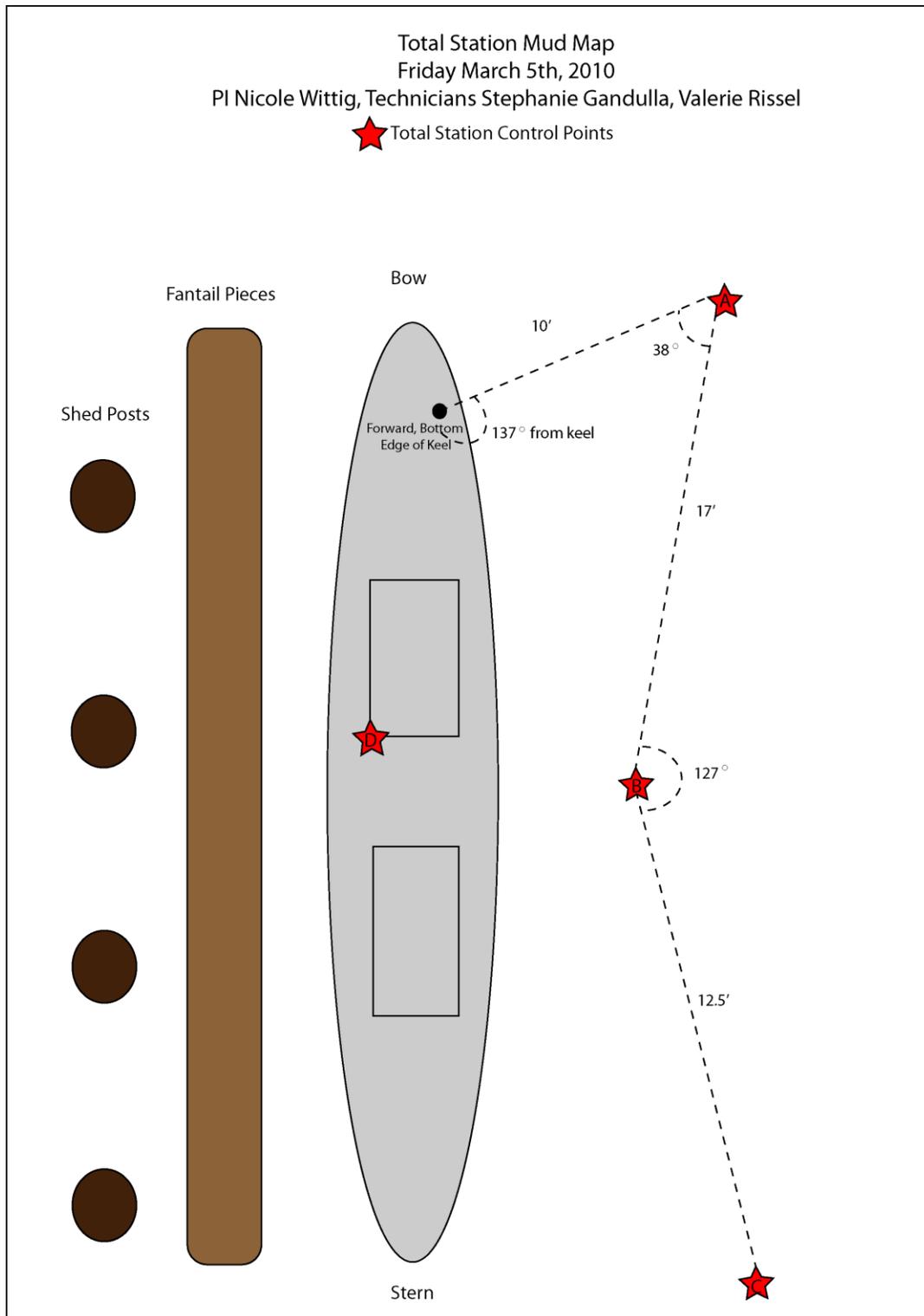


FIGURE 17. Position of total station control points in relation to *Virginia* (Illustration by author, 2011).

was denied in 2009. One control point, D, was set-up at along the aft, port side of the centerboard trunk. This locality was chosen due to the amount of shots visible from this position and limitations of the ship's confined interior space. Priority was given to recording spatial relations between frames and construction features along the keel. Points recorded for the frames were taken from the forward, inboard edge of each framing pair. The most complete set of frames, set 22, was shot in great detail because other frames were heavily modified. Other shots were taken along the stringers, centerboard, riders, mast steps, and remaining modern additions to record positioning of each feature within the overall construction. Some of these shots were not visible from the total station and offsets were recorded and rectified during post-processing. Offsets were recorded by using a folding-ruler adjusted to a right angle. The location of the total station laser along the ruler determined the horizontal value, and the height of the ruler determined the vertical value from the desired point recorded. Construction features inboard were recorded with a series of codes to distinguish each within the point cloud (Table 2).

#### Terrestrial Laser Scanner Survey

A second survey used TLS units to collect 3D points. Laser scanners run on the Time of Flight (ToF) principle, essentially measuring the time it takes for a point reflected off an object to return to the scanner based on the constant velocity of light through a given medium (Beraldin, et al. 2010:2). Like total station, reflected points contain 3D information or values along an x, y, z axis. Basic operation consists of a technician inputting scan parameters including range (how far and the angle of survey) and resolution (distance between points). Scanners then run independently of operators based on selection of range and density by running a laser beam over the designated area to collect 3D point data. These particular TLS models are equipped with a high resolution camera, used to capture images of the survey area before scanning. These

images aided in registering scans post-survey because locations of targets are confirmed within the images. Laser scanning survey differs from the previously mentioned total station survey because scanners collect more points in a shorter amount of time.

East Carolina University's Department of Geography, Planning, and Environment collaborated on the project by supplying machines and technicians to complete a laser scan survey of *Virginia*. On Friday September 24, 2010, the author and two students from the Department of Geography, Planning, and Environment (Thad Wester and Cal Scheinert) completed a laser scan of *Virginia*'s decking and outer hull. Survey equipment included two Leica C-10 Terrestrial Laser Scanners, two laptop computers, and six scanning targets on tripods. Ideally, achieving the most data in the fewest scans is an optimal surveying strategy. Understanding and visualizing the site before scanning can achieve this goal by planning for placement of scanners and targets. Vital to operation is placement of stationary targets, familiar to total station survey (Figure 18). These targets become control points within the point cloud and act as references for aligning scans. Six tripods with attached bulls-eyes were placed on deck and along the outer hull (Figure 19).



FIGURE 18. Scanning Target Set-up Amidships, Starboard of *Virginia* (Photo by author, 2011).

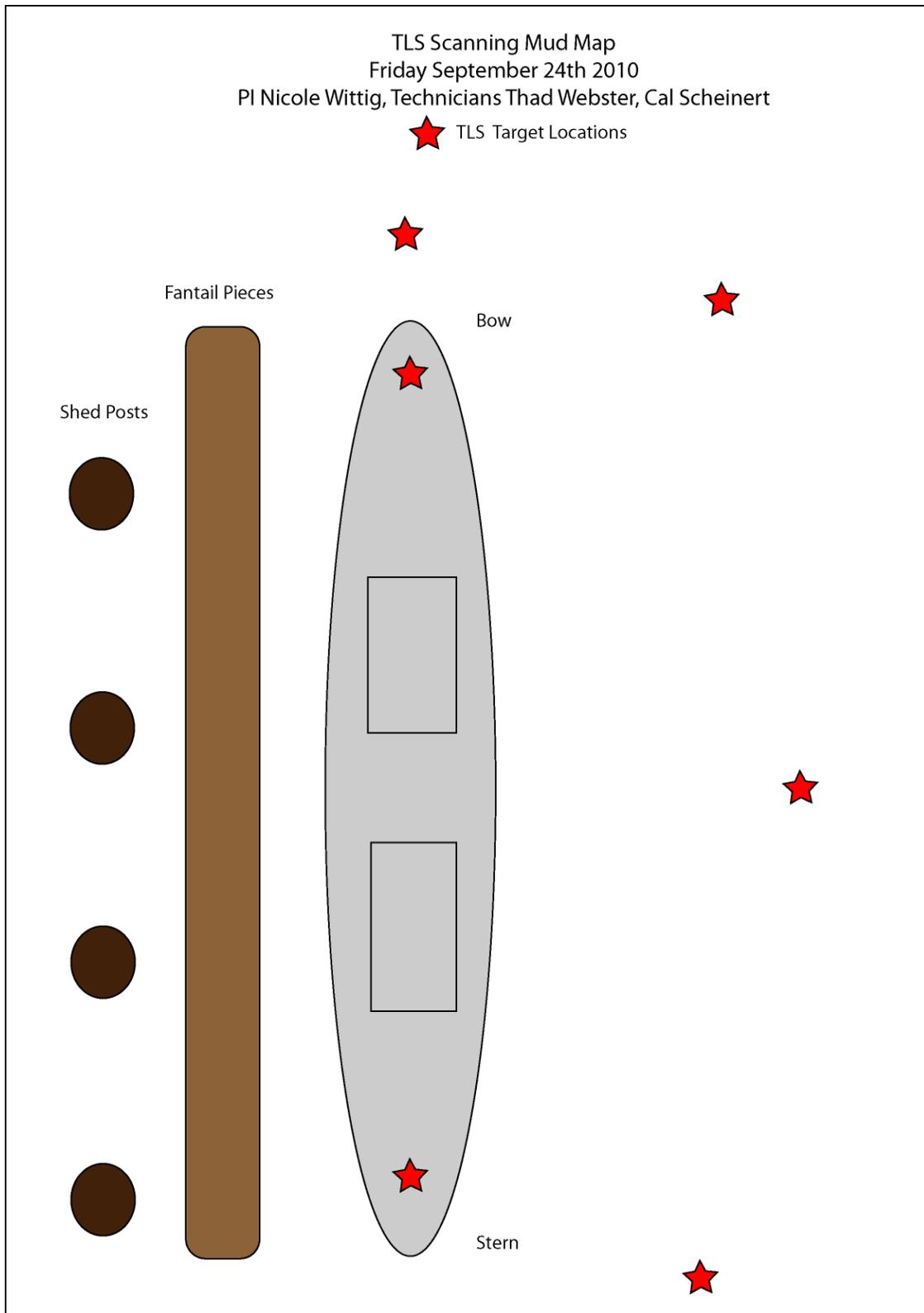


FIGURE 19. Position of TLS targets in relation to *Virginia* (Image by author, 2011).

For each scan a minimum of three targets must be captured to ensure precise alignment of scans in the computer but four, or more, is preferable for increased assurance of accuracy. Parameters for this survey included ranges between eight and twenty meters and resolutions between 0.20cm and 0.25cm. Range differences depended on proximity of scanner to schooner and changes in resolution were experimental to test the quality of scan data return to determine the necessary range values. Resolution could be set much finer; however millimeter measurements were not deemed necessary for this survey. These conditions were established after opening computer software called Cyclone, software which also operates the laser scanners. A total of 73 million points were collected and captured *Virginia's* outer hull and deck configuration. Collectively, these points were an average of 1cm apart and accurate to within 4mm. The scanners were set-up in nine different locations to ensure complete coverage of the ship; one head-on from the bow, one directly behind the transom, four amidships, and three scans on deck (one amidships, forward, and aft). Despite the quantity of points, areas of the vessel remain unrecorded using these scanners. Part of the problem was the nature of the scanners as a result of the cluttered storage area surrounding the ship. The confined space prevented physically placing the scanners or necessary positions within the ship, leaving the interior undocumented by laser scanners. If more of the decking been removed, as in the aft portion, it would have been possible to scan the ship's interior and connect with the existing target network. Obstructions not only prevented full coverage of the interior but also portions of the outer hull (Figure 20). Iron plates from the CSS *Chattahoochee's* fantail blocked a direct line of sight along *Virginia's* port side. Cradle arms that support *Virginia* obscured scans along the hull. Because the scanners shot indiscriminately within the parameters, points were taken on the obstructions rather than the vessel itself.

Essentially this resulted in gaps within the digital image that were corrected within software programs as part of post-processing methodology.



FIGURE 20. Starboard, stern section of *Virginia* with survey obstructions noted in the background (Image by author, 2012).

### Construction and Condition Survey

Technology greatly benefited the recording process but could not completely replace detailed notes, measured sketches, and photographs. These methods were essential to record and explore features not exposed on the surface. Survey work with sketches and photographs concentrated on understanding construction components and establishing a preliminary construction chronology. Components integral to understanding *Virginia*'s construction included structures along the keel, framing pattern, and noted types of fasteners. The relative chronology focused on ship construction additions or replacement of materials to understand building

sequence, modification, and repair events. Understanding these qualities of the vessel was important for both the historic record and also for preservation discussion.

These objectives were accomplished with a third survey completed in September 2011. Two days were spent making observations of both outer and inner hull features. The first day focused on outer hull details. Work focused on noting different fasteners and fastener patterns in hull planking and along structural features like the keel, stem, and deadwood. Any distinct pieces were measured and photographed. Areas of repair proved beneficial for comparing fasteners and caulking materials, sometimes side-by-side with older techniques and material.

On the second day, attention shifted to the inner hull. Much of the work focused on construction, the ship's layout, and fasteners in the frames, keel, engine block, mast steps, and centerboard trunk. In noting and comparing material in a newer element of ship construction, for example the motor mount aft of the centerboard, elements along the keel, formed the basis for determining different stages of ship modification.

Throughout both surveys, attention was focused on both specific and overall preservation concerns. Though appropriately stored, years of disuse and irregular maintenance affected the ship's structural integrity. Deterioration problems both large and small-scale were observed and recorded either with sketches or photographs.

### *Data Processing*

Details of construction and preservation were recorded and both topics are discussed more thoroughly in Chapters four and five. This section explains the process of data interpretation following fieldwork. A combination of software programs became necessary to handle differing data sets with the ultimate outcome of an accurate virtual rendering of the ship.

Specifics for the processing of these data sets and methods regarding the software are presented, beginning with the measured sketches.

### Measured Sketches

Final illustrations from field sketches and notes were digitally inked. This technique was preferable to traditional inking because of the flexibility to manipulate drawings without redrafting. Adobe Illustrator software was utilized to complete drawings, either from field notes of surveys, or to reproduce HAMMS drawings. Each Illustrator file was exported as a Portable Network Graphics (.png) file at the highest resolution with anti-aliasing turned off to produce and retain the best detailed drawings.

### Total Station

Total station points were saved in multiple formats including .csv, .dxf, .shp, and .idx to ensure that the data was properly saved with adequate back-up files. The points were initially imported as a .csv, or comma delineated Excel spreadsheet, file into Foresight DXM. An error had occurred with inputting the arbitrary coordinates upon viewing the results in Excel. The values entered during fieldwork (1,000 easting, 1,000 northing, and 500 elevation) were corrected by subtracting these values accordingly from the data. This process corrected the total station control point values to 0 easting, 0 northing, and 0 elevation. Lastly, data was imported into ArcGIS to form a tin; a pre-rendering step to conceptualize and visualize the 3D data before importing into CAD software.

Rhinoceros was used for manipulating total station data both for a set of lines and to construct a rendered model of major structural features along the keel of the interior. Further corrections of the data problems mentioned previously were corrected in this program. Midship points were realigned with the bow and stern data sets by using the rotation tool under the

transform menu. Since only half of the ship was recorded, the points were then mirrored to fill in the port side of the vessel. With the outer hull points aligned, lines were created using the various line tools. To extrapolate curves both at the arbitrary stations and to connect planks along the length of the hull was the *curve through points* tool. Connecting all of these 3D points resulted in a wire frame model of the outer hull (Figure 21).

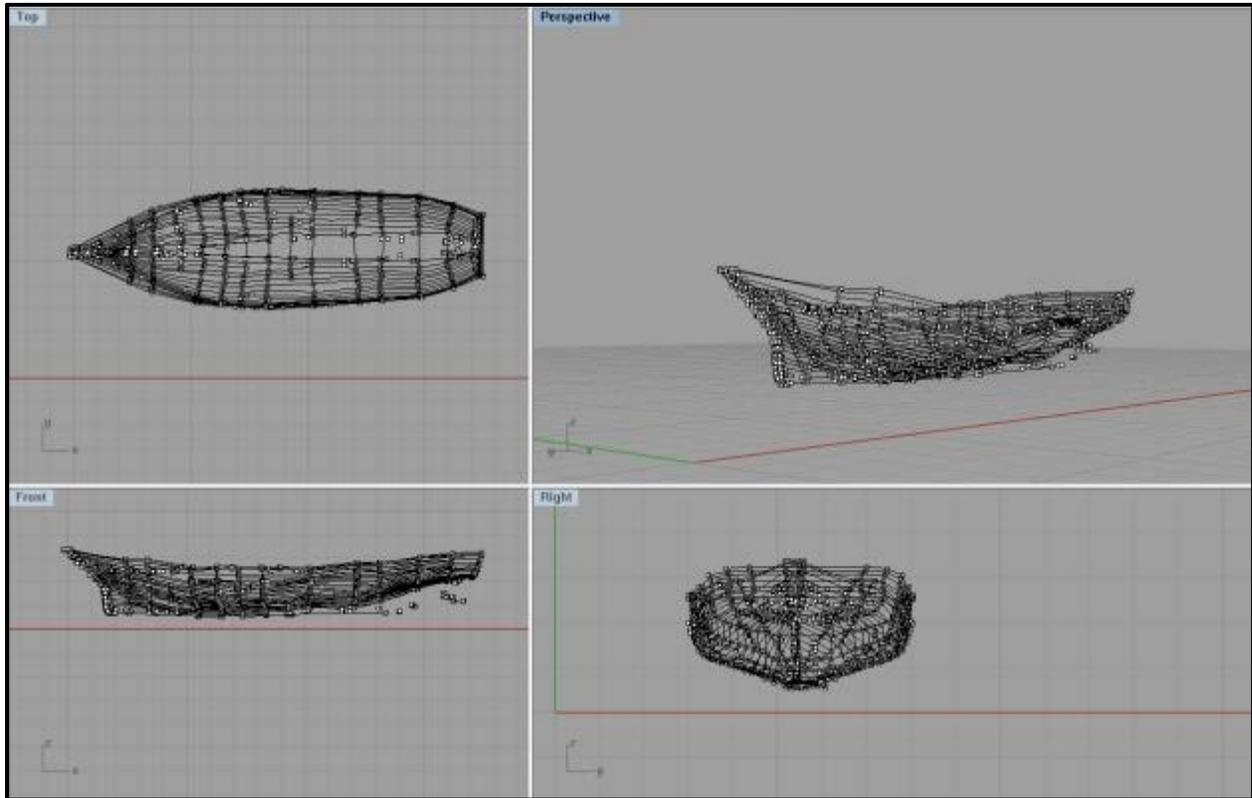


FIGURE 21. Four perspectives of the lines created in Rhinoceros (Image by author 2013).

Adobe products were the final software tools used in this project. Both Photoshop and Illustrator were used limitedly and in less of an analytical capacity. First, a photo of the bow was opened in Photoshop. Using this program the photo was cropped and the opacity decreased from 100% to 50%. The photo was added to a layer in an Illustrator project. Data from Rhinoceros was exported as another layer and overlaid on the manipulated photo (Figure 22). The

information gleaned from this was not highly accurate, but intended as a rough visual margining of datasets from the total station information and digital photographs.



FIGURE 22. Rhinoceros lines overlaid on to an image of the starboard bow (Image by author, 2011).

There were not enough total station points to adequately render a finished model, an issue later rectified by the TLS survey (Figure 23). However, a rendered model of a partially reconstructed interior was possible using both total station data and measured sketches. Data from the total station survey was used to locate and orient structure of the interior. Features were created from measurements gathered manually. Building upon the keel, the forward and aft mast steps, centerboard trunk, one partial floor where the propeller shaft was placed, and post timbers were created (Figure 24). This task was completed using the *solid* tool to build-up their basic geometric shapes. Further reconstruction of frames and other interior components was not completed due to inadequate data, a problem later corrected with extensive measured sketches and photographs.

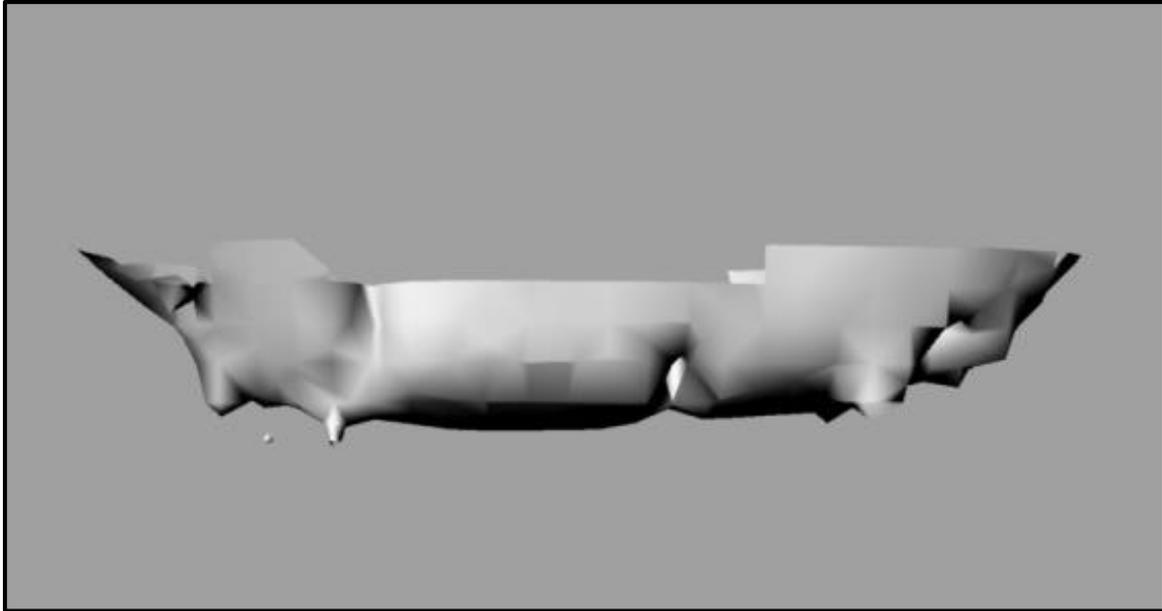


FIGURE 23. Rendered outer hull model from total station data (Image by author, 2013).

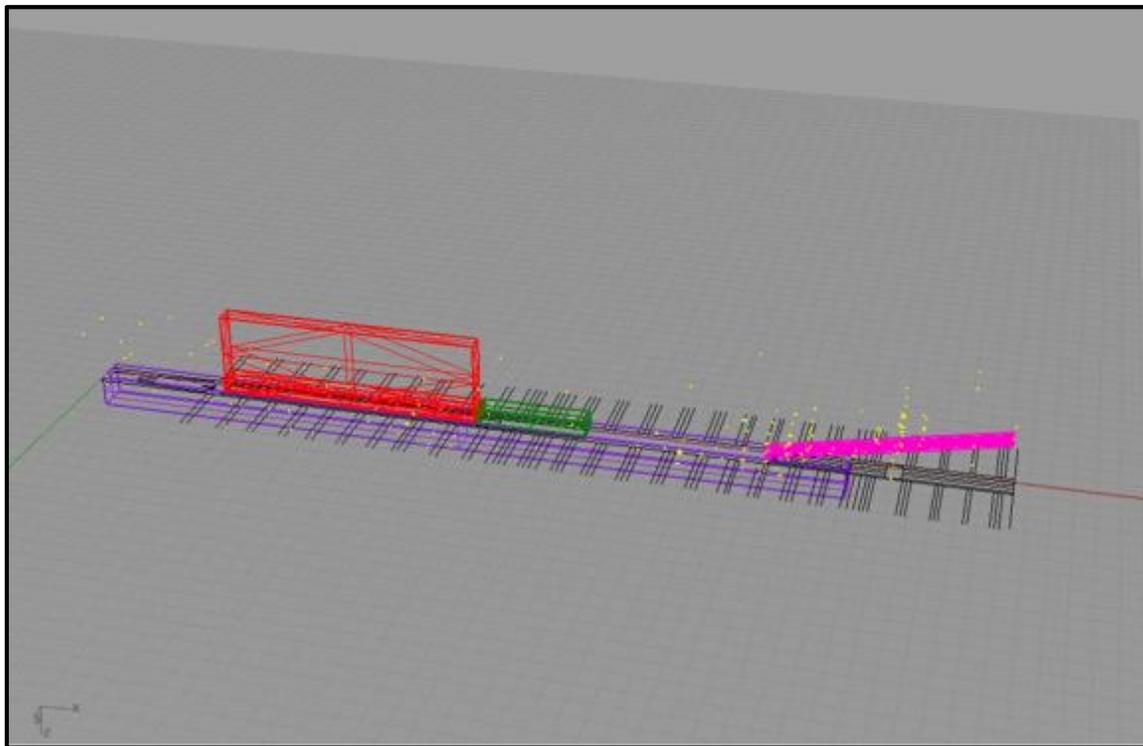


FIGURE 24. Combination of total station points, measured sketches, and reconstructed structural elements in Rhinoceros (Image by author 2013).

## Terrestrial Laser Scanning

Managing data from TLS fieldwork varied, primarily from total station data because of the sheer amount of points to edit. The difference between processes was generally extracting information from the TLS point cloud while reconstructing the total station data elements were reconstructed. Cyclone and 3DReshaper were used to edit the TLS point cloud. Cyclone was the primary program used to register scans and 3DReshaper to render the model.

Scanner data was imported into the 3DReshaper program after initial data management and post-processing in Cyclone. Points collected from the nearby objects, the shed, and the support cradle under the *Virginia* were initially eliminated in Cyclone (Figure 25). 3DReshaper was used to further edit the point cloud and to create a surface mesh.

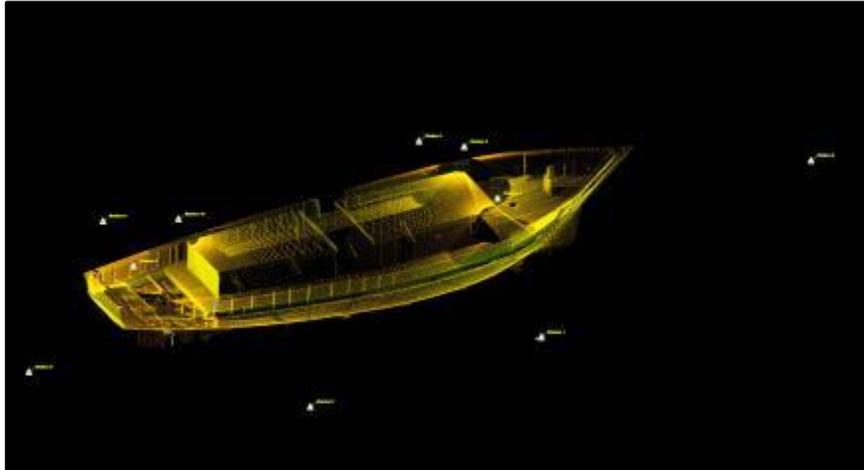


FIGURE 25. TLS point cloud after editing points to eliminate obstructions (Image by Thad Wester, 2010).

The first stage of managing data was to make it useable within 3DReshaper. The point cloud was turned into a 3D mesh. By interpreting the point cloud, a series of triangles are formed from the existing points to produce a surface mesh. The mesh was segmented allowing the software to run more efficiently and reduce the processing time. If the ship were left as one

contiguous mesh it would slow the operating system. Of course, segmenting the vessel contributed to further breaks in the hull scan.

Modeling started by removing the support system from underneath the ship. The bulk of points not relevant to the ship were removed in Cyclone. The base of the support system holding up the hull was a detailed element to remove in 3DReshaper. The *clean/separate mesh* tool eliminated the model of these unwanted features. A pop-up window allowed for a variety of options for removing data. The two most common applications used for this scenario was to draw a polygon around the mesh for data removal. The second option was to remove points selected or select through the mesh. The operator had to be careful of select through, because points not intended to be eliminated could be lost. A second more tedious but more precise option, allowed the operator to remove triangles singly.

Problems with the data included holes from surveying. These gaps in data existed because scanners could not gather information from parts of the ship where portions were obscured by other items stored, the storage shed, and the cradle system supporting *Virginia*. These holes represent areas of data not gathered during fieldwork. The *fill hole* tool was the only option to correct data voids. If the open space was lacking borders two things happened; either an error messages appeared stating that the action was impossible or too much surface because it is interpreted resulting in loss of surface shape. The final output was a mostly complete rendered model of the ship's outer hull, propulsion elements, and deck features (Figure 26). Further elimination of information was to remove elements of the ship, which were not historically significant. For this model images captured by the survey equipment were overlaid to show color of the painted hull (Figure 27).

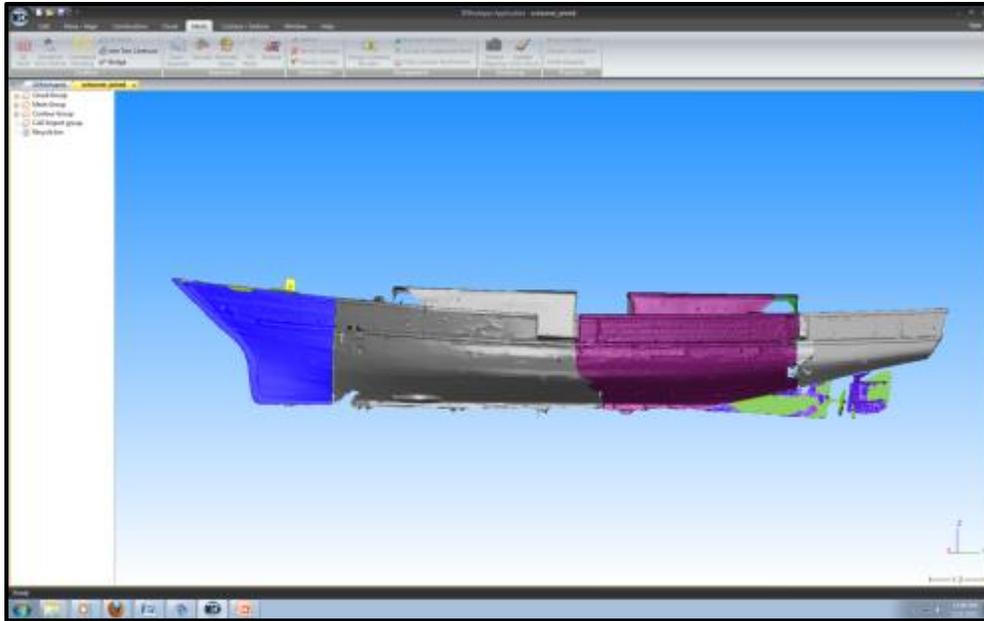


FIGURE 26. Rendering of *Virginia* port side from TLS data in 3DReshaper (Image by author, 2011).



FIGURE 27. *Virginia*'s port-side stem with photograph layered over the model's surface (Image by Thad Wester, 2011).

### *Conclusions*

Fieldwork utilized an array of techniques with the ultimate goal of accurately and thoroughly recording *Virginia*'s contemporary structure. Data collected from the different surveys combined to create a detailed account of structure and preservation presented in the next

two chapters. Incorporating surveying equipment added the realistic 3D renderings of the ship in a virtual setting which complemented the 2D drawings. By using both total station and TLS equipment some preliminary comparisons can be made concerning the technology in the application of historic ship recording and the integration of different computer applications.

Comparing the time spent in the field and resulting data sets, there is a clear distinction between the survey equipment. Total station survey was an effective recording method. Six hundred sixty-six points were gathered in three days of fieldwork accounting for 22 hours. Six of those hours were lost to technical errors. The errors presented technical glitches as well as to the limited experience of the crew in using this equipment. The positive aspect of reflectorless technology was the increased speed in accomplishing the total station survey. Comparatively, TLS expedited the process further than reflectorless total station. The four hour survey gathered more data than several days of total station survey. However the procedure did eliminate the archaeologist from the process and relied more heavily on the technicians in this instance. The outcome, however, was a very complete point cloud of 73 million points with a higher degree of accuracy than the total station data.

With these disparate data sets, a range of software applications were used to maximize the final record of *Virginia* which allows for some preliminary observations concerning the usability of each. The Adobe products were fairly intuitive and the learning curve was much less than some of the other specialized software. For the author, the least user-friendly software was Rhinoceros. Interface and actual tools were quite daunting for the novice practitioner. Despite the increased learning curve with differing software applications, digital data was far more preferable to more antiquated methods. The positives of digital representations were the flexibility to swap between the different programs. By using three differing software

applications it made data output more dynamic. If the information were drafted with pen and paper the results would have taken an increased amount of time, without gaining the 3-dimensional aspect. The digital information offered a more interactive experience recording the *Virginia*. Various tools both in Foresight DXM and Rhinoceros allowed the researcher to determine distances and areas between selected points, thus an analytical tool beyond the scope of traditional drafting methods. One negative aspect of increased interactive and flexible modeling, was the temptation to over extrapolate data. The technology made it easy to fair points, but the author proceeded with caution so as not to produce inaccurate results.

Initial removal of data in the Cyclone application presented few problems. However this software was insufficient to complete more complicated surfaces such as the ship's hull. Operating 3DReshaper was a less intuitive process just from lack of general experience with 3D modeling techniques. Basic functions were performed in terms of manipulating the data into the anticipated model. Removal of data had to go with an intuitive understanding of the ship structure to determine the separation between incongruous modern features.

The advantage of applying these three techniques in one survey highlighted strengths and weaknesses of each, whether the trade-off was quantitative or qualitative in either outcome or time spent in the field. For this project, each set of data complimented the others to illustrate different facets of the ship. TLS captured the complicated hull shape more comprehensively and efficiently. Resulting surface data from the TLS point cloud compensated for the initial, abbreviated total station survey undertaken in 2010. Speed of the TLS equipment diminished time in the field and required a comparable amount of hours post-processing. The total station survey provided a means to access and record the ship's interior. Trying to minimize time in the field, the survey focused on recording spatial relationships between construction features. The

total station point cloud of the outer hull failed to generate a detailed surface, but did provide a preliminary model of important interior structural elements. Comparatively, the total station work took longer and generated fewer data points, however these points also corresponded to a specific element being recorded. Using the coded total station points in Rhinoceros, construction elements, which comprise the core of the vessel, were reconstructed digitally. To further build upon total station data, field notes and drawings recorded dimensions of construction features. Additionally, this method captured sub-surface details of construction and degradation inaccessible to either set of surveying machinery. Such observations were necessary for completing both the construction description and preservation observations in Chapter 4.

Beyond documentation, the capabilities of TLS to capture a holistic view of hull shape also provided a means to anticipate restoration. Initial modeling of *Virginia* with the TLS point cloud included the entirety of the vessel. Available software capabilities offered an opportunity to model the vessel virtually with the removal of non-historic elements. Unlike modeling techniques used in chapter 4 to reconstruction construction features; this process involved a deconstruction of the ship. The process eliminated incongruous material from a former restoration attempt, which failed to follow professional preservation standards. On deck, the majority of the structure was plywood and modern lumber. These aspects of the ship were removed digitally to anticipate ship appearance without these elements. Deleting these elements created a visual aid for anticipating the outcome of restoration. Modeling in a digital space proved beneficial because it offered a non-invasive technique to inform restoration in lieu of physical alteration. The motivation for removing these elements and the potential for introducing non-damaging techniques to the preservation stage of this project are discussed further in Chapter 5.

## Chapter 4: Survey Results for *Virginia*

### *Introduction*

This chapter addresses specific elements of construction with the intention of determining a relative chronology for the existing structure. Deconstructing ship elements lays the foundation for the following chapter concerning preservation analysis and presents a general description of the ship's features. Detailed accounts of each major construction component and corresponding specifications are discussed first. All measurements were recorded in feet and inches since *Virginia* is an American vessel. Illustrations and photographs supplemented descriptions and clarify details of construction. These drawings were completed using Adobe Illustrator and are either completed from information gathered during fieldwork or reproduced from HAMMS documentation. Each Adobe Illustrator file was exported as a Portable Network Graphics (.png) file at the highest resolution with anti-aliasing turned off to generate and retain the clearest drawings details. Description of the ship began with overall specifications and progresses to specific features with much of the vocabulary to identify these elements referenced from *Boats: A Manual for Their Documentation* by the Museum Small Craft Association (1993). Following the descriptions, a brief synopsis of structural elements describes a relative chronology for construction and modification. Construction changes contributed invaluable information pertaining to preservation, details of which will be reserved for Chapter 5. The chapter ends with an overview of degradation concerns affecting the ship's metal and wooden elements. Explaining ship construction enriched the historical record and created a contemporary record prior to deterioration or proposed modification inevitably changed the ship's configuration. The intention for this chapter is to present a detailed, if not thorough, account of the ship's current construction elements and their degree of degradation to inform preservation planning.

### *Ship Description*

Overall specifications for *Virginia* are 55 ft. 2 in. length overall and 14 ft. 7 5/8 in. beam. These dimensions changed throughout its history and those specifications are outlined in Table 2. An accurate depiction of the starboard side of the hull was rendered from TLS survey data (Figure 28). Seen in the rendering are the major features of the outer hull including stem pieces, deadwood aft, propulsion set-up, rudder, two cabins, and kingpost. The outer hull consists of 13 strakes, 9 of which are historic and 4 above the rubrail which are modern material. Plank thickness at the bow is 1 in. and at amidships 1.5 in. with the maximum width of the older hull 4.5 in. One plain scarph exists in the hull planking on the starboard side 37 ft. 6 in. aft of the bow, remaining hull planks are butt joined. A rubrail runs the length of both sides, but is damaged along the forward, starboard quarter. The waterline measures 3 ft. 7 in. high above the keel and is distinguished from the rest of the hull by the red bottom paint (Figure 28).

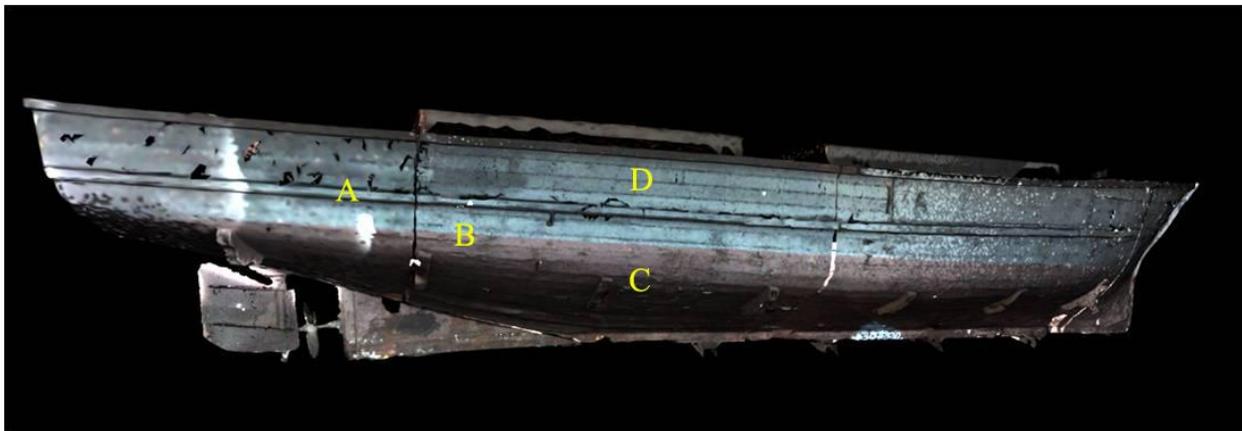


FIGURE 28. Complete outer hull, depicted in Clyclone, with digital images overlaid on TLS point cloud data showing the starboard side. Rubrail (A), waterline (B), and older (C) and newer hull planks (D) are visible (Image by Thad Wester, 2012).

Major interior construction elements consist of the centerboard trunk, mast steps fore and aft of the centerboard trunk, six cant frames forward, 30 sets of closed frames along the length, and two stringers. The majority of ceiling planks have been removed, especially on the port side.

The only evidence of the vessel's former engine is two mounts aft of the main mast step running between frames 17 and 20. A Rhinoceros reconstruction of these major components (keel, centerboard trunk, mast steps, post timbers) was generated from total station data and measured sketches information gathered in the first field season (Figure 29). Detailed images and specifications for construction seen both along the inner and outer hull are outlined in this chapter.

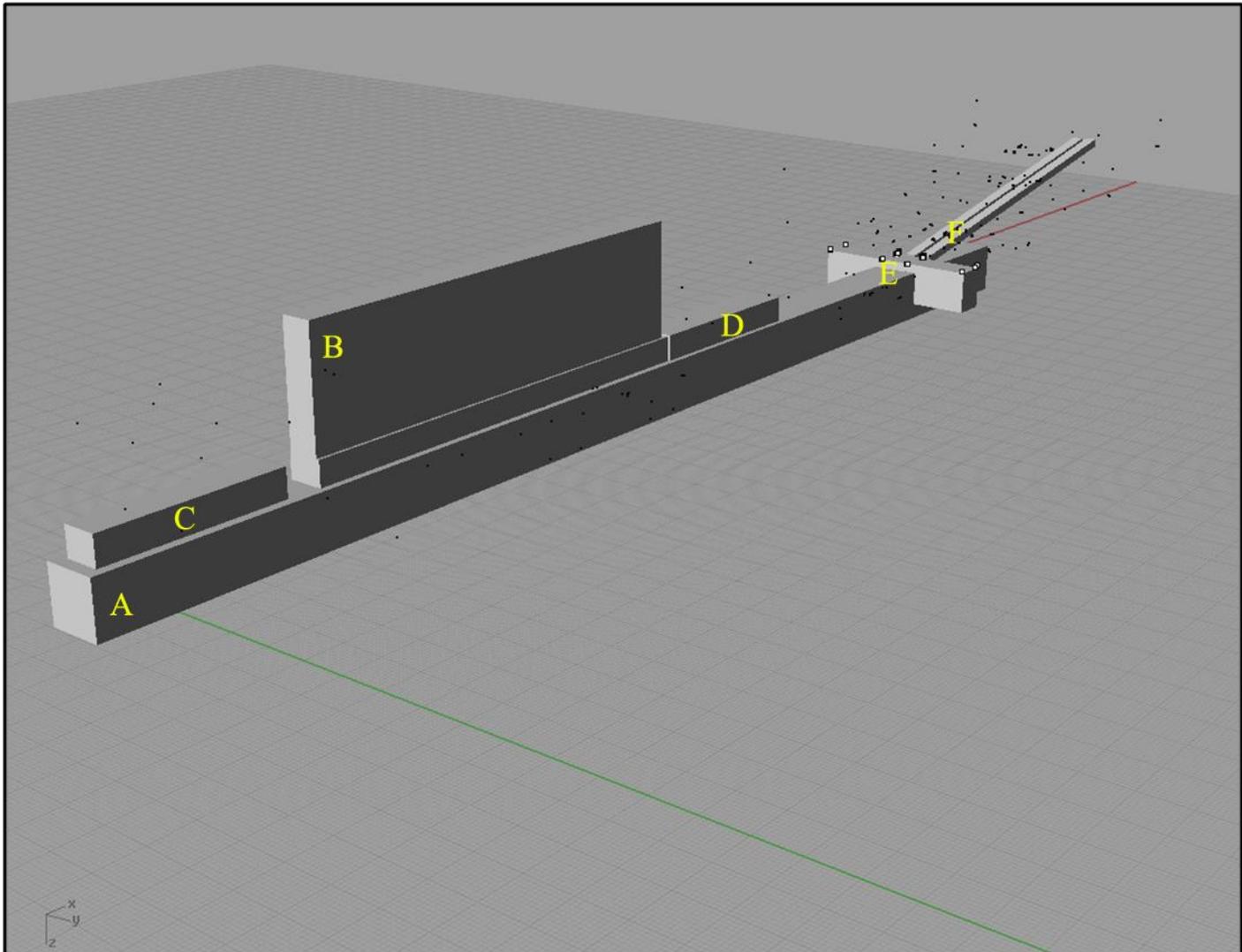


FIGURE 29. Rhinoceros rendered reconstruction of interior construction features along the keel: (A) keel, (B) centerboard trunk, (C) forward mast step, (D) aft mast step, (E) frame that the

propeller shaft sits in, (*F*) post timbers. Scale is 1 Rhinoceros unit equals 1 ft. (Image by author 2013).

### Keel

The keel is a single yellow pine log 39 ft. 11 in. long and 1 ft. 4 in. wide (Miller 1996:20). Molded measurements decrease from 8.8 in. forward to 5.5 in. aft. A rabbet in the keel accepts the garboard strake at 4 in. from the keel's bottom at amidships (Figure 37). A multi-piece shoe covers the majority of the keel's length beginning 4 ft. 10 in. from the stem and running approximately 26 ft. The shoe is made up of eight boards, four pairs to cover the width of the keel. These are attached with three nails at the butt joints and pairs of nails along the body of the planks. Between the shoe and keel is a tar paper-like material. Aft, under the skeg, are traces of an iron shoe. Further metal remnants can be traced along the port side of the keel where copper plating fastened with copper nails appears sporadically along the length. A more complete copper plate appears at approximately 32 ft. where a 22 in. long by 8 in. wide plate molds to the line between the keel and garboard as the hull turns upwards toward the transom. Another keel feature starboard is a semi-circular fiberglass unit protruding from the keel, 8 ft. 8 in. aft, measuring 21 in. by 4 in. (Figure 30). At 4 ft. 9 in. from the forward end of the keel are two metal plates, on both port and starboard, 16 in. by 3 in., with u-bolts in their forward edges (Figure 31).



FIGURE 30. Port feature along keel (Photo by author, 2011).



FIGURE 31. U-bolt plate detail port (Photo by author, 2011).

### Stem

The bow is a classic clipper shape with the stem comprised of four pieces designated in the illustration as B-E from the base upward (Figure 32). The base or foot of the stem is not scarphed to meet the keel; rather, the foot of the stem is cut to accept the keel. A scarph, 1 ft. 2 in. in length, connects the base and the second timber and the top two timbers join end to end with butt scarphs. Measurements for each timber are 4 in. sided and 3.5 in. molded with approximated lengths as follows: timber B 2 ft., timber C 3 ft. 6 in., timber D 2 ft. 2in., and timber E 5 ft. 8in. Large bolts through the face of the stem connect it with the keel, and through the scarph. Those stem pieces butt joined are fastened with large metal plates seen inboard. A number of different fasteners are visible on either side of the stem base including wrought iron bolts and trenails. Absent metal plates were once attached to the forward face of the stem, as seen on timber A, based on impressions left in the wood.

### Stern

Two large pieces of deadwood connect the keel to the sternpost (Figure 33). The bottom deadwood measures 1 ft. 8 in. sided by 5 in. molded and the top 8 in. sided by 5 in. molded. The sternpost is 1 ft. 4 in. long, 5 in. molded, and 5 in. sided below deck. Three iron plates protect the

aft, port, and starboard face of the sternpost. The metal bearing box for the propeller attaches to the middle of the stempost.

The transom forms a classic fantail shape, 7 ft. 1 in. in breadth (Figure 34). The only knee in the structure, a standing knee, is in the extreme aft end of the interior as part of the transom structure. Plywood decking made accessing this feature impossible. The knee is notched over post timbers, each 6 in. square. Bolts, two of which are driven horizontally, connect post timbers to either side of the knee. One additional bolt is driven vertically through the center of the knee. Two post timbers provide structural strength aft of the engine bearers aft through the transom.

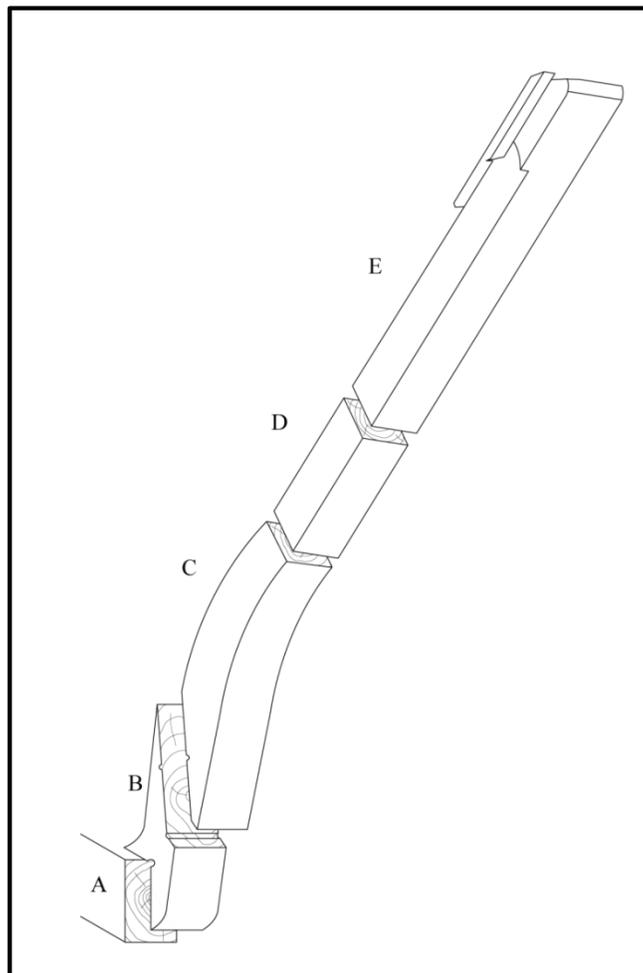


FIGURE 32. Exploded stem illustration, not to scale (Illustration by author, 2013).

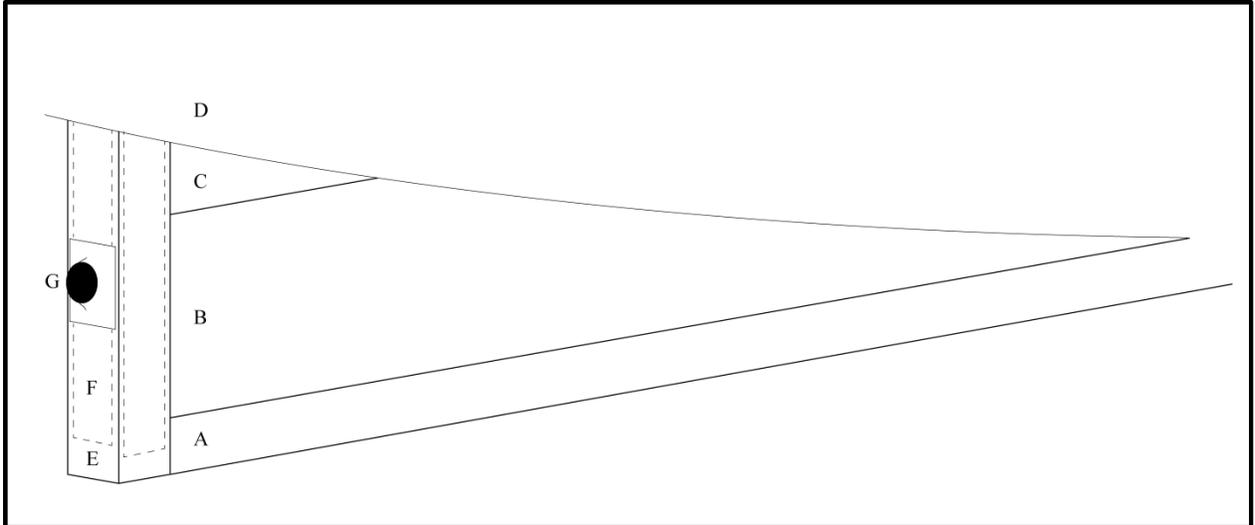


FIGURE 33. Deadwood and sternpost detail; (A) keel, (B) first deadwood piece, (C) second deadwood piece, (D) garboard strake, (E) sternpost, (F) iron plates, (G) bearing box, scale 1 in. = 4 in. (Illustration by author, 2013).

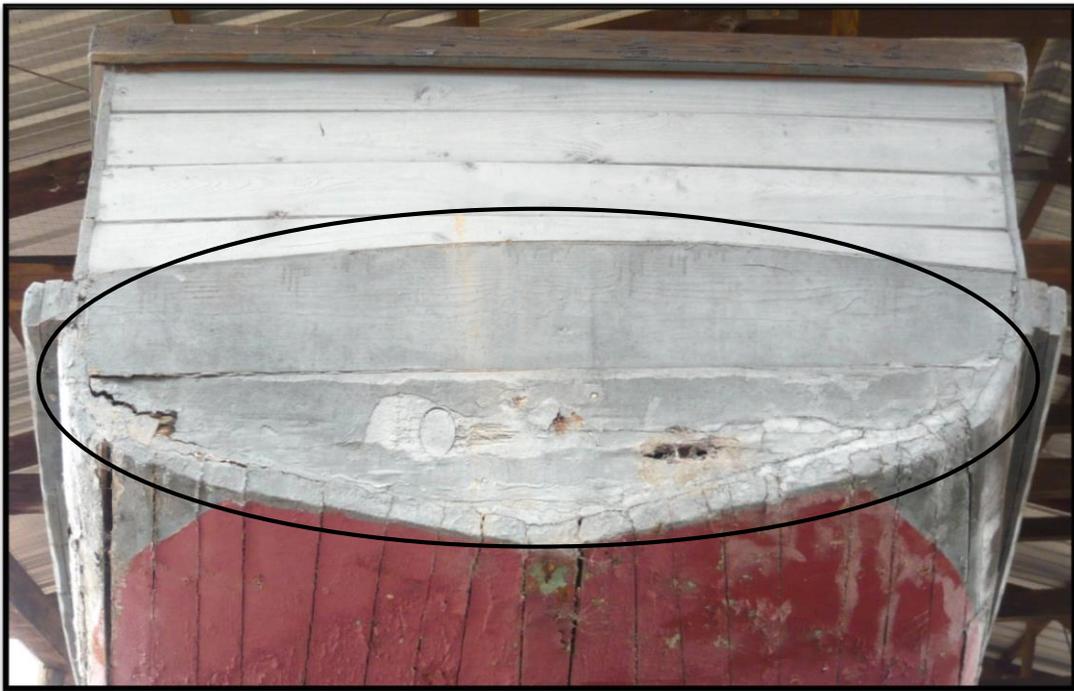


FIGURE 34. Transom detail with fantail shaped highlighted (Photo by author, 2011).

Each timber is 6 in. square and runs between frame 22 aft to the transom knee. These timbers are bolted through the hull to the aft frames and notched to fit over each set of frames (Figure 35). Between frames 27 and 28 the rudder stock is secured with cement poured between the frames and additionally by a board nailed to the top of both post timbers. Additional features include a

square timber notched to the inboard faces of the timbers and sawn off flush between frames 25 and 26 and two cut circular impressions, one between frames 26 and 27, and the other forward of frame 23. The purpose or intent of these features has not been identified, but the forward most (G) is either a pump shaft or water intake for the engine.

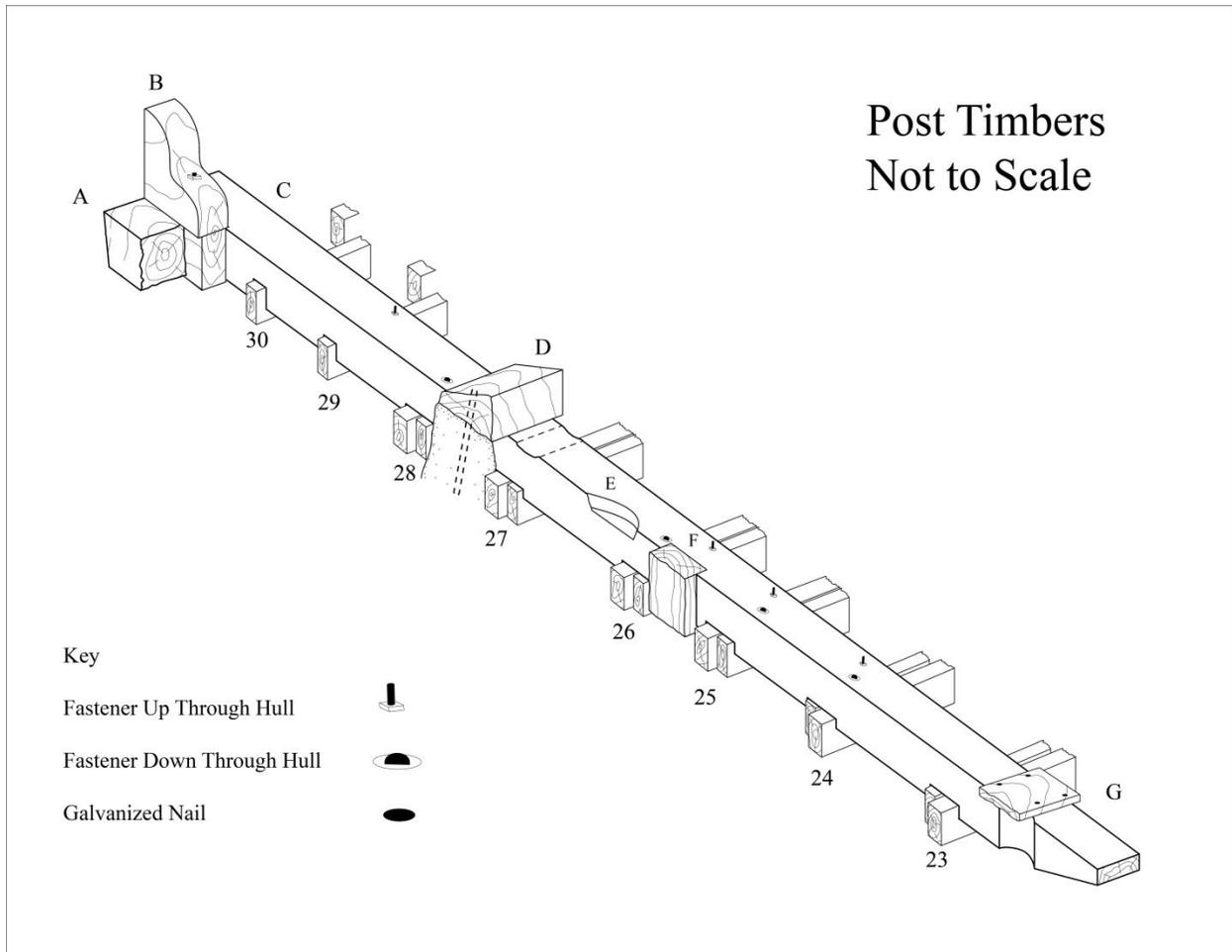


FIGURE 35. Port post timber, with numbered frames, construction illustration; (A) partial starboard post timber, (B) knee, (C) port post timber (D) rudder stock support, (E) circular impression, (F) square timber between post timbers, (G) circular cut covered by small board, not to scale (Illustration by author, 2012).

### Frames

In the bow there are six cant frames. Cant frame lengths and dimensions for two frames in the extreme forward of the bow dimensions are undetermined because the bow's confined

space did not afford space for measuring. Molded and sided measurements are 4 in. each for starboard cant frames and 4.5 in. molded, 4 in. sided for port frames. The second forward starboard frame is actually two pieces joined by a scarph and the other three are from a single timber. The third frame on the port side has a second smaller timber forward.

There are thirty sets of closed frames, not all visible due to some intact ceiling (Figure 36). Additional ceiling once covered the interior as shown by empty nail holes along the inboard faces of the frames. Frame spacing is typically 1 ft. 6 in. Forward molded and sided dimension of frames at keel are 7 in. and 4 in., decreasing aft to an average of 3.5 in. and 2 - 2.5 in. Limber holes are 1 in. by 2 in. rectangular cuts 3.25 in. from the keel through frames. These limber holes can be found in the ten frames visible along the centerboard trunk. Iron bolts fasten floors and futtocks together through the forward face, but galvanized nails fasten top timbers to strakes of the freeboard above the rubrail. The master frame is either frame 14 or 15, near the aft end of the centerboard trunk beneath the second mast step, determined by the additional members and heavier construction of these frames. Frames 5-12 do not have floors; rather, the futtock is cut off flush with the keel. The keel is notched to accept narrowed ends of frames. This aspect of construction became apparent when it was noted that frames four through thirteen are missing floors along the port side. These floors have been cut flush with the keel, only the floor end embedded in the keel remains (Figure 37). Frames 13-22 have floors, all of which have been heavily modified to permit room for the additional engine and accompanying machinery. Frames 23-30 also lack floors; here the futtocks simply cross to build-up the transom.

Bilge stringers, attached to inboard frame faces, consist of pairs of planks running the length of the vessel. Amidships, planks are 9 in. sided and 1.5 in. molded. Notches in the bilge stringer accept deck stanchions for both cabins. Similarly, the shelf clamp attached to the second

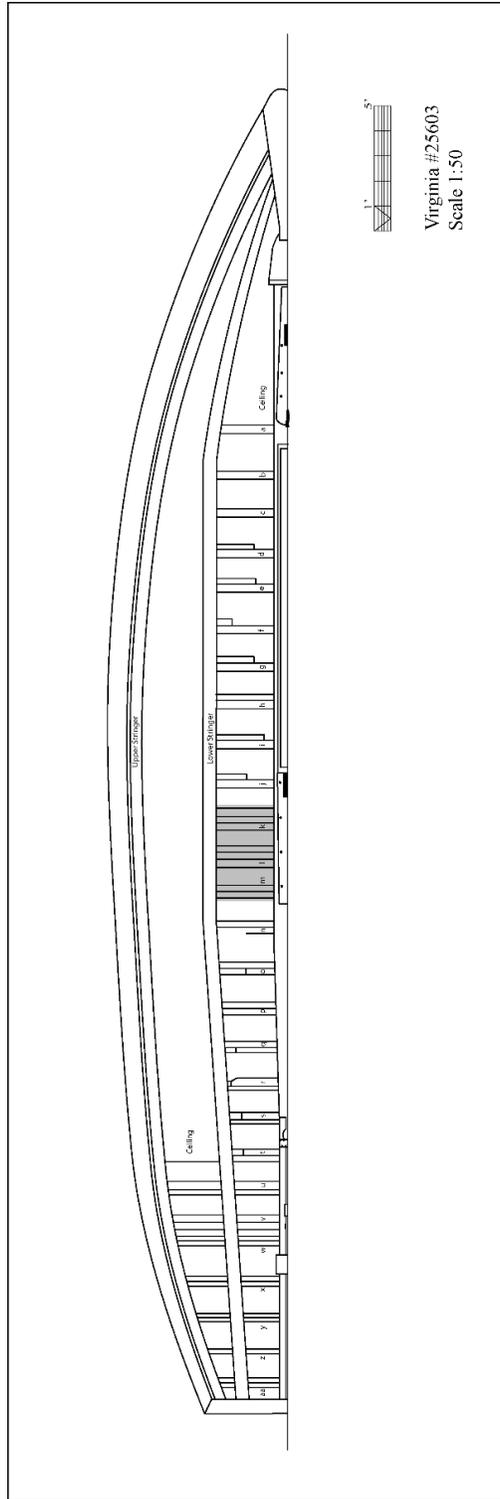


Figure 36: Plan view of port side frames (Illustration by author, 2013).

and third futtocks is comprised of pairs of planks running from stem to transom. Amidships measurements are 7 in. sided and 1.5 in. molded. Both are fastened with nails, the bilge stringer to the first or second futtocks and shelf clamp to third futtocks and top timber. Any remaining ceiling lies between these two features mostly along the starboard side, with a small segment between frames one and four on the port side.

### Mast Steps

Two mast steps are fastened to the keel on either side of the centerboard trunk (Figure 38). Exposed length of the forward mast step is 5 ft. 3 in. long, but overall length is unknown because the forward end runs underneath the cement in the bow. The forward mast step tapers from 13.5 in. aft to 7.5 in. forward. The aft end is rounded rather than squared off. Twenty-three inches aft of the forward end is a socket, 10 in. long, 4.75 in. wide, and 10.5 in. deep, to accept the foremast. A series of eight visible bolts connects the timber to the keel. On the aft end is a vertical bolt with a horizontal U-shaped ring. The u-bolt head is 6 in. long, 1.5 in. wide, and

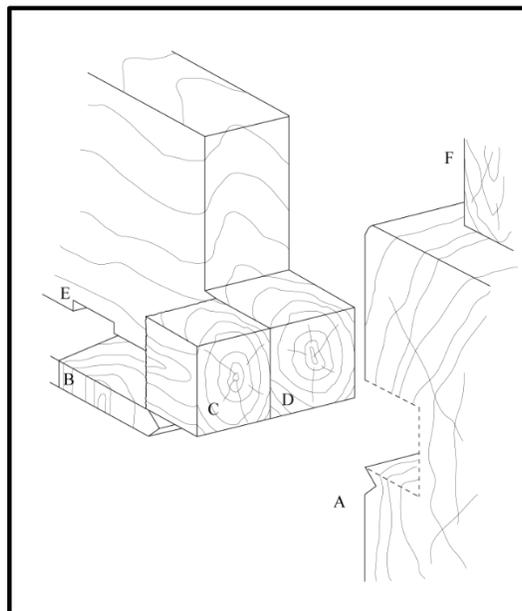


FIGURE 37. Exploded detail of port frames at centerboard trunk showing notch in keel; (A) keel, (B) garboard strake, (C) frame cut-off at keel, (D) frame, (E) limber, (F) bedlog of centerboard trunk, not to scale (Drawing by author, 2013).

sticks out of the timber approximately 3 in. Round head bolts fasten the mast steps to the keel and are spaced 13 in. and 11 in. apart.

The second mast step butts against the aft end of the centerboard trunk. Four inches molded and 5 ft. 2.5 in. long, this mast step tapers aft much like the forward rider. Forward width

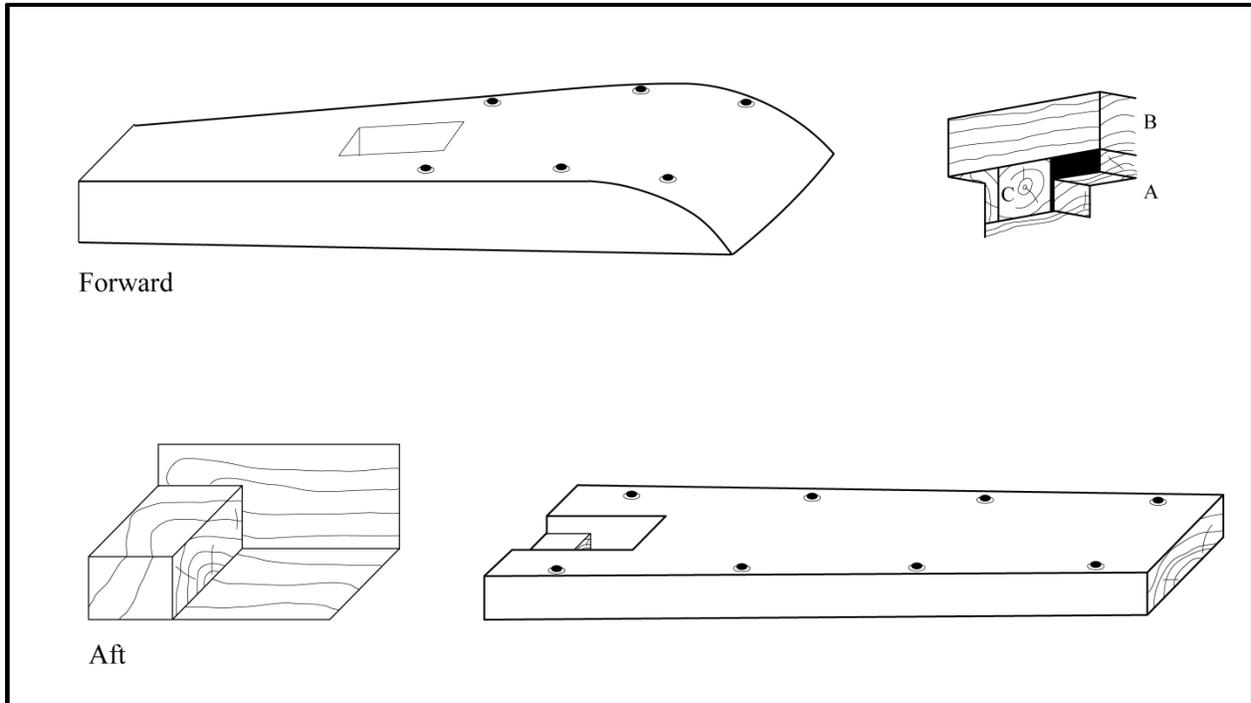


FIGURE 38. Mast steps illustration, scale 1 in. = 4 in. and 1 in. = 2 in. for notch details (Drawing by author, 2012).

is 12.5 in., narrowing to 10.5 in. aft. The step would accept the main mast in a socket in the forward end directly behind the centerboard trunk, measuring 11.5 in. long, and 4.75 in. wide, and 2 in. deep forward and 5 in. deep aft. Iron bolts are spaced seventeen inches apart along the mast step's length.

### Centerboard Trunk

The centerboard has been removed but the centerboard trunk remains fairly intact (Figure 39). The trunk rests on the keel between mast steps and frames 4 and 14. The centerboard slot cut

through the keel has been capped. The bedlogs are each a single timber, chamfered, and are slightly longer than the trunk. Four strakes stretching the length of the trunk, 2.25 in. thick and of varying widths between 8 in. and 1 ft., are on both port and starboard sides. Iron bolts, similar to those in frames and riders, attach strakes to the hedgeledge. Exposed on the starboard side are drifts through the strakes spaced every six inches. Two vertical metal plates are located mid-trunk which is where the centerboard would have been supported.

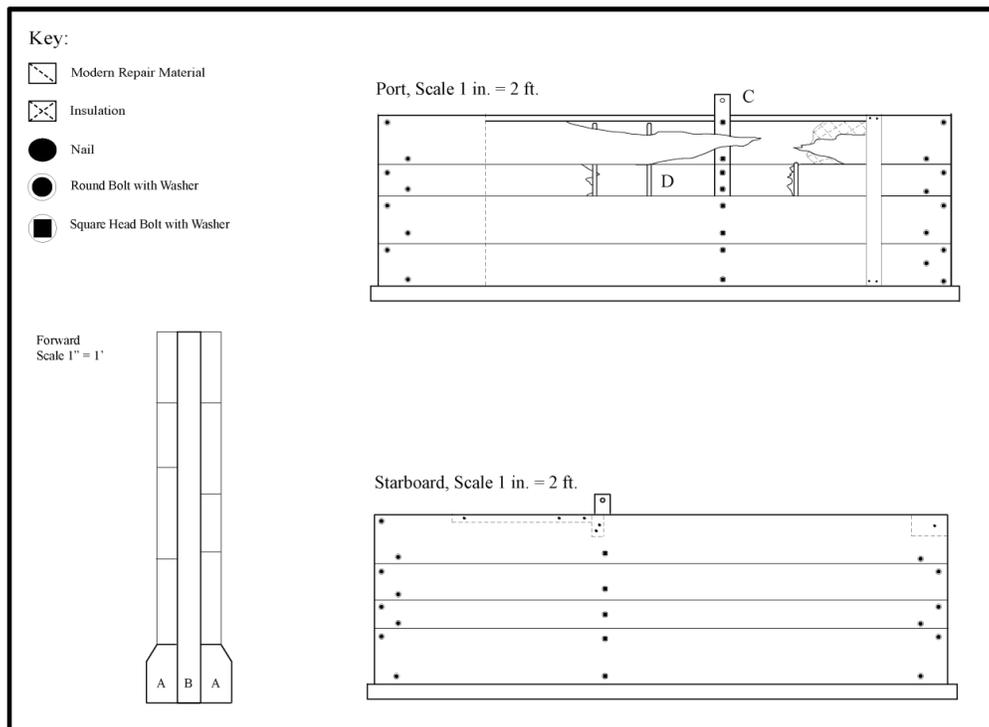


FIGURE 39. Centerboard trunk illustrations; (A) bedlog, (B) hedgeledge, (C) metal support for centerboard, (D) drifts (Drawing by author, 2012).

### Engine Bearers

The structures to support *Virginia*'s now absent engine remain in place. Engine bearers consist of two supports built across frames 17 through 20, one on either side of the keel (Figure 40). Each consists of three timbers bolted together and overall length is approximately 5 ft. The base for each consists of a single timber notched over these frames. Two timbers are on top of that, both angled to meet the propeller shaft. Though nearly identical, there are some slight

variations between port and starboard bearers. The forward faces of timbers are notched and there is a fastener driven through the forward face of the second timber of the starboard bearer. On the port side bearer the base is only slightly longer than the top two timbers which are flush with one another. Two bolts, rather than one as on the port side, are driven through the three timbers between frames 18 and 19. Two more bolts are driven horizontally through the top timber between frames 17 and 18. Notching is present on the base of both which roughly correspond and may have accepted the engine. Both bases are unpainted but the two angled timbers are painted the same blue as cabins and decks.



FIGURE 40. Engine bearers (Photograph by author, 2010).

## Propulsion

Though the engine was removed, elements of *Virginia*'s former propulsion are still intact. The propeller, propeller shaft, and stuffing box remain. Inboard, the stuffing box is 7 in. in diameter and extends out 14.5 in. from floor 22 (Figure 41). The propeller shaft runs through the hull out of the lower deadwood aft and is 1.5 in. in diameter. A combination bearing/stuffing box 8 in. long attaches to a metal plate on the sternpost 8 in. below deck. The three bladed propeller has a maximum blade length of 1 ft. The propeller attaches to the rudder with a shaft bearing. The rudder is an irregular shaped iron plate approximately 2 ft. long and 3 ft. 7 in. wide (Figure 42). Above deck, the rudder stock runs through the hull between frames 26 and 27 and between the post timbers with cement poured around the base (Figure 35 D). The stock bearing attaches to a plank running across the post timbers and stands 7 in. high. Atop the rudder stock bearing sits a copper alloy tiller 20 in. at the widest and 3 in. thick.



FIGURE 41. Stuffing box through floor 22 (Photograph by author 2010).

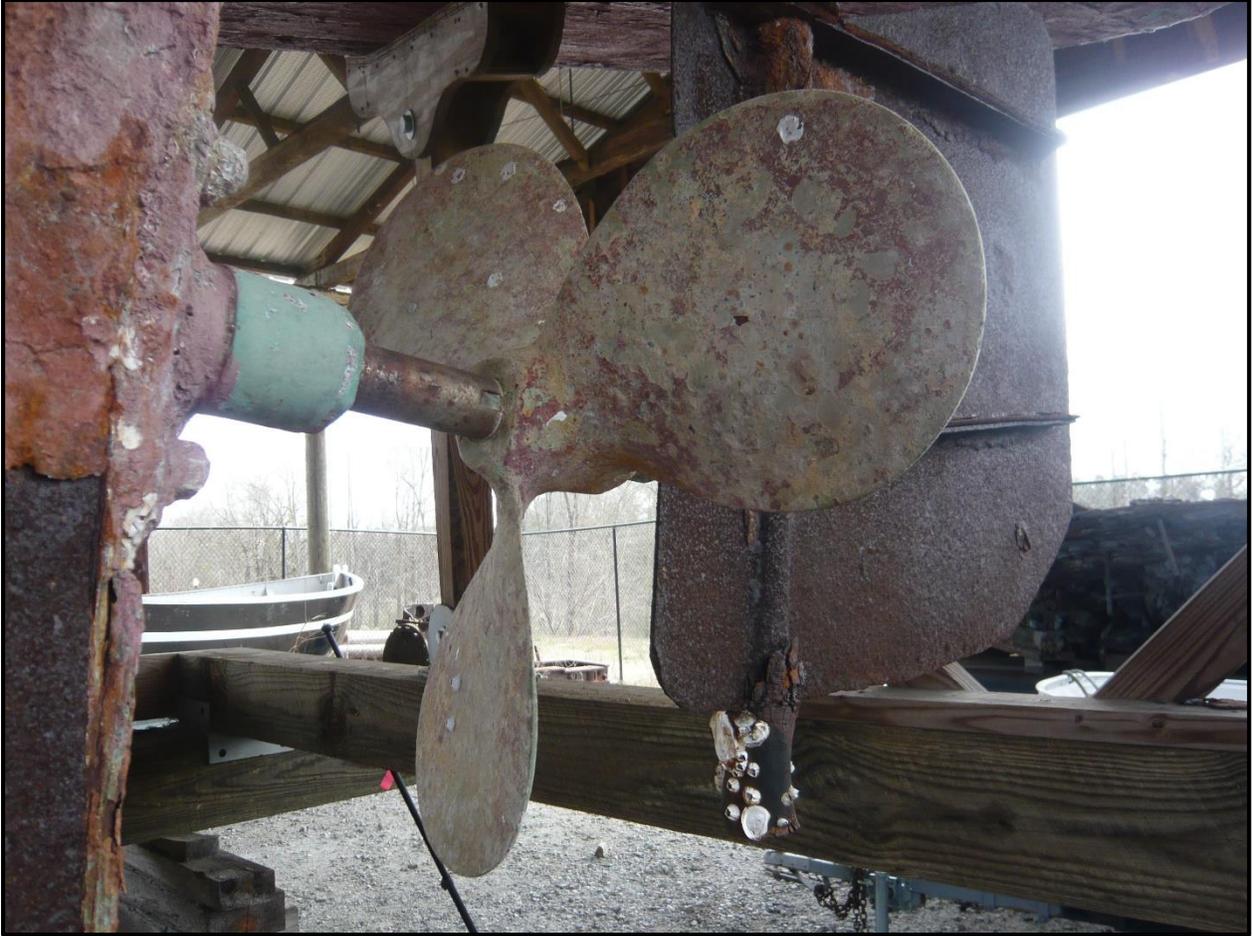


FIGURE 42. Rudder, port (Photograph by Valerie Rissel, 2010).

### Hull Planking

Planking is notably different below and above the rub rail. Below the rub rail planks are generally 4.5 in. wide and 1.5 in. thick and are black cypress (Miller 1996:20). Forward, at the bow, stakes are 4 in. wide, 1 in. thick. Caulking found in place is only observed between stakes below the rub rail. Oakum is generally used but other materials, such as a type of foam, was observed in areas of hull repair (Figure 43). Above the rub rail a combination of plywood sheets and boards are nailed to top timbers. Stakes are of irregular sizes forward but become more uniform aft, 4 in. wide 1 in. thick, through the transom.



FIGURE 43. Detail of foam substitute between hull planks at port amidships (Photograph by author, 2011).

### Decking

Decking is divided into two materials, narrow wood planking forward and plywood sheets aft (Figure 44). Plywood decking runs from the forward face of the first cabin aft. A portion of plywood decking aft of the second cabin is missing, exposing a section of the ship's interior in the stern. The fore deck consists of 28 planks between 3 and 4 in. wide. Two 8 in. planks make-up the king plank along the central portion of the foredeck. Within the king plank is the mast bed, a hexagonal opening 1 ft. 10 in. at the widest point. One companionway is on the port side just forward the first cabin 20 in. square. Outboard deck surfaces are painted blue as are the outboard cabin surfaces.

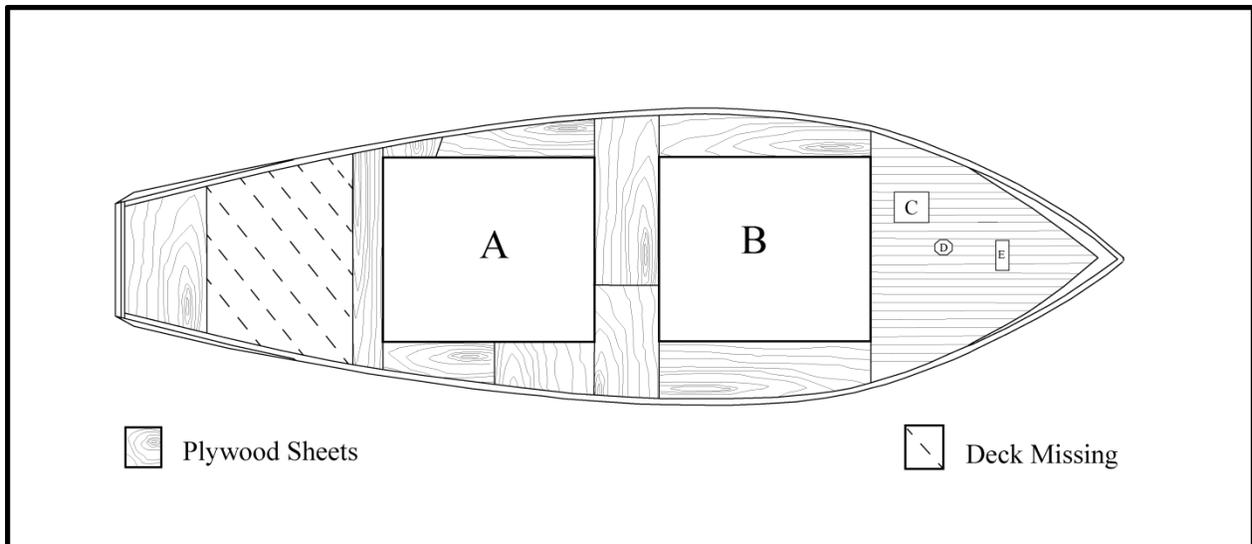


FIGURE 44. Current deck plan, (A) aft cabin, (B) forward cabin, (C) hatch, (D) mast saddle, (E) king post, not to scale (Drawing by author, 2013).

Like the decking, the deck beams underneath are distinctly different between the foredeck and aft. Forward, six deck beams vary in size: the furthest forward is 5 in. sided and 3 in. molded, the second aft 3.5 in. square, the third aft 4 in. by 2.5 in., the fourth aft 4 in. by 2.5 in., and the sixth aft 6 in. by 3 in. These are either flush against the shelf clamp or either the shelf is notched to receive the deck beam. The third deck beam is not notched, rather the shelf is notched to accept beam. On the third beam the ship's official number, 25603, and tonnage, NET 9, are etched into the aft face. The fifth beam is slightly different because it is comprised of two timbers, one on either side of the mast bed in the forward deck. The starboard half of the fifth deck beam was replaced by a newer plank 2 in. by 4 in. Deck beams in the afterbody are fairly uniform. These are 4 in. sided by 2 in. molded and run between the beam shelf and cabin stanchions. Galvanized nails in beam ends fasten these to the stanchion and their outboard ends sit on top of the shelf clamp.

The king post is on the foredeck between the first cabin and stem. Three large timbers make-up the main structure (Figure 45). The two outer timbers, 7 in. sided and 4.5 in. molded,

run below deck into the cement forward and narrow to 5 in. sided. A square timber has been hammered between the central member and the portside piece, presumably to strengthen the older, rotting timber. The central, upright timber, 3 ft. 6 in. tall, 7 in. sided, and 4 in. molded, has been angled at the top and there is a 3.5 in. square plate on the starboard side. Large iron bolts driven horizontally through the three timbers fasten these components together.

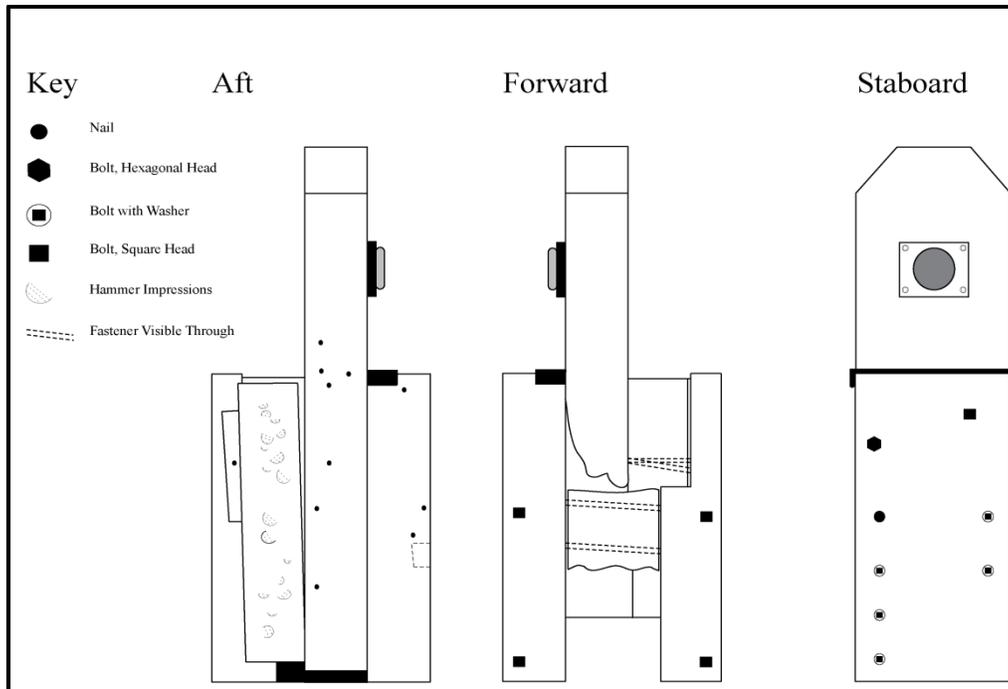


FIGURE 45. King post illustration, scale 1 in. = 6 in. (Illustration by author, 2012).

### Cabins

Two cabins amidships measure 12 ft. 10 in. long by 8 ft. wide and approximately 3 ft. above deck. Both are constructed of plywood sheets, the roof of the forward cabin consist of a recycled piece of plywood that once advertised Melrose apartment leasing offices (Figure 46). The forward cabin is enclosed on three sides, the aft being opened, and the aft cabin enclosed on all four sides except for a small opening on the forward face on the starboard side. The outboard sides of plywood are all painted in the same light bluish-grey as the deck and above the waterline but inboard some surfaces remain unpainted. Seven stanchions on both port and starboard 3.5 in.

square and 6 ft. 11 in. tall, erect the forward cabin. Seven stanchions also frame up the aft cabin, but these alternate between 3.5 in. square and 3.5 in. by 1.5 in. timbers. These stanchions fit into notches in the bilge stringer below deck. Stanchions are painted in the same color as outboard faces of plywood except for three forward. Modern galvanized nails are used exclusively in these structures.



FIGURE 46. Image of recycled plywood with advertisement painted over (Photograph by Valerie Rissel, 2010).

### *Construction Timeline*

Having highlighted key structural elements, the second portion of this chapter outlines an approximate chronology for building events, to facilitate preservation discussion in chapter 5. These physical clues enhanced the historical account by corroborating, challenging, or elaborating on previous documentation. Based on observations of contemporary evidence, four distinct phases emerge: original material, auxiliary conversion, commercial fishing transition, and attempted reconstruction. These are broad categories based on significant changes to the ship's purpose but did not attempt to place definitive dates to any addition or modification unless

prevailing evidence proves otherwise. Conclusions regarding this section relied on: observation of fabrics, fasteners, materials, comparison with HAMMS' documentation, and other documentation of ship specifications. Observation concerning degradation were considered hesitantly with the understanding that this is a complex issue based on different compositions, qualities, and placement on the ship. Briefly, original material consists of that which has not likely been replaced – such as the keel. Auxiliary conversion refers to a period between 1912 and 1914 when *Virginia* was transformed from a schooner to an auxiliary vessel. The commercial fishing era refers to her mid-20th century career, specifically after James Kirby became the sole owner in 1961. Finally, reconstruction refers to post-retirement, sometime during the 1990s, attempts by Kirby to return *Virginia* to her former schooner appearance. Cross-referencing tangible evidence with the historic narrative completed a more thorough understanding of the ship's changing forms through time; information vital to this thesis and *Virginia*'s future.

The core of *Virginia*'s construction remains intact from original construction; specifically this includes the keel, frames (except top timbers), centerboard trunk, mast steps, deadwood, sternpost, and most of the stem. This assertion is substantiated by interviews with *Virginia*'s final captain James Kirby, comparison with HAMMS' drawings, compiling information from the annual lists of American merchant vessels, and survey observations. As reported in a 1996 National Fisherman article, "...the vessel's keel, hull planking, stem, deck beams and mast stubs are original" (Piatt 1996:55). Considering Kirby did not become involved with the vessel until the early 1950s, other evidence becomes necessary to further verify this information. Looking to HAMMS' drawings, the cross section illustration is particularly helpful to evaluate such elements. The contemporary cross section compares with HAMMS documentation, survey results show similar keel, frames, and centerboard assembly, but much of the interior space has

changed and the deck and cabin layouts are different. What remains the same includes the keel, centerboard trunk (though the centerboard slot is now sealed and centerboard removed) and the general hull shape below the rubrail. Framing is almost the same, though an extra top timber has been added to raise the freeboard which has also elongated the hull.

Additionally, general specifications gathered from the *Annual List of Merchant Vessels of the United States* demonstrate that her recorded measurements remain relatively consistent, see Table 3. Tonnage is classified between about 11 and 12 tons through the 1920s with the most drastic changes reported in the 1930s. This could be explained due to changes in ship structure as *Virginia* transitioned from auxiliary ship to solely motorized commercial vessel. Similarly, length, breadth and depth are consistent through the 1920s with some variations through the 1930s until 1944 when these specifications remain the same through 1989.

Further evidence from survey supports this documentation. All these components show signs of modification. Many of the frames have been modified, for example frames 17 through 20 were modified to accommodate the addition of the diesel motor. Beyond modification, these pieces have been built upon with later materials or construction features added to these elements. Again frames show signs of stages of changes with empty fastener holes along the timber tops where ceiling and other construction elements were added and subsequently removed. The stem is another example of original construction being supplemented by later additions because the two top pieces of the current stem assembly were added later to increase the vessel's freeboard. Evidence for this also appears along the bottom of the keel which has had multiple materials (iron, wood, and a tar paper) added to create a protective shoe and all attached with different fasteners.

The beginning of *Virginia*'s auxiliary phase could be narrowed to within a two year span. Referring again to the *Annual List of Merchant Vessels of the United States*, this text classifies *Virginia*'s rig as gas screw in 1914, the first deviation from schooner. Addition of cement is probably the outcome of switching *Virginia* from a schooner to an auxiliary vessel. To compensate for added strain of adding an engine to a wooden hull, formerly sail vessel, cement was added to areas of weakness since older hulls did not always survive conversion (Fleetwood 1995:194).

<b>Years</b>	<b>Gross Tonnage</b>	<b>Length</b>	<b>Breadth</b>	<b>Depth</b>
<b>1868-1874</b>	11.14	X	X	X
<b>1876/1877</b>	10.42	X	X	X
<b>1882, 1885, 1889, 1892</b>	11.42	42	17	4
<b>1893-1897</b>	12.7	44	17	4
<b>1898-1913/1914</b>	12	44	17	4
<b>1914/1915-1923/1924</b>	12	40	17	4
<b>1923/1924-1929/1930</b>	12	42	17	4
<b>1930/1931</b>	17	46.1	14.9	4.7
<b>1931/1932</b>	17	X	X	X
<b>1938/1939, 1941</b>	23	46.6	14.7	4.8
<b>1944-1989</b>	14	45.9	14.4	3.6

TABLE 3. Specifications compiled from the *Annual List of Merchant Vessels of the United States* by the author.

strains to an old hull. Additionally cement appears aft around the rudder shaft logically placing the installation of a rudder, though not the present rudder which is a 1996 replacement

(Piatt 1996:55). The other feature directly linked to an added engine would be the structure to support this equipment – the engine bearers. However, original engine specifications are unknown and at least two other engines were installed while in James Kirby’s possession. Likely these features were modified to fit the final engine addition and are representative of the next phase – *Virginia*’s post-auxiliary, commercial fishing days.

When *Virginia* became a commercial fishing vessel a certain amount of equipment had to be added to the old former schooner. The best account comes from previous captain and owner James Kirby. In outfitting *Virginia* for fishing red snapper in the Gulf of Mexico Kirby added a Detroit Diesel 4-71 engine with accompanying hardware and a fish hold below deck and above deck outfitted the one cabin with helm station and three bunks and recycled military gear motors to reel in his catch (Piatt 1996:55). What remains of *Virginia*’s commercial fishing career are mere remnants of the sonar units on the keel starboard side and garboard strake port side (Figure 30). Also during this period Kirby attests to increasing the freeboard in an effort to make the ship more practical for his tasks. This can still be seen today with more modern wood comprising the top timbers and strakes fastened by galvanized nails. Increased freeboard has altered hull shape.

The final distinguishable phase, reconstruction of the vessel, occurred after *Virginia* ceased to be a commercial fishing vessel. In a 1988 interview, Kirby expressed his long-term plan for *Virginia* stating, “I intended to preserve the boat, which I have, but also to restore it like it originally was, to put it back to a sailing vessel” (Hyman 1998:G3). His efforts manifested in the two cabins on deck today (Figure 47). Even without this account, the two cabins are incongruous with the rest of the vessel. Both are constructed of plywood, one sheet recycled from an apartment complex. Buildings these cabins would have changed deck configuration, likely placing installation of plywood decks simultaneously which are of the same construction

and material as the cabins. In conjunction with these, the stanchions are part of this reconstruction effort. Stanchions for each cabin are newer timbers based on overall condition, are not painted as the surrounding structure, and some still have bar code tags still attached from the store or lumberyard where purchased. The captain's efforts were well intentioned but also add another consideration when considering *Virginia*'s potential restoration.



FIGURE 47. Cabin comparison to show restoration attempt; *left*, portrait of *Virginia* as schooner (Courtesy the National Civil War Naval Museum), *middle*, *Virginia* in the 1990s with single cabin (Courtesy the National Civil War Naval Museum), *right*, picture of *Virginia* today with two cabin configuration (Photo by Valerie Rissel, 2010).

### *Current Condition*

The vessel remains are from various periods throughout its history, most of which demonstrate some level of degradation. Wood and metals deterioration affected both the overall structure and individual timbers. Age and material were some of the reasons for degradation, but disuse and management exacerbated these problems. Deterioration matters are divided between the two main types of material, wood and metal, to report on the vessel's current state of preservation.

### Wood Deterioration

Multiple aspects of wood deterioration were identified during survey including; decay, deformation, delamination, and discoloration. These preservation concerns appear throughout the entire structure and within specific timbers. Decay thrives in the ship's recesses where debris and

dirt accumulate, which then retain moisture. Deformation, in the forms of shrinkage and warping, affects the ship's structure to varying degrees despite existing preservation measurements. Both newer and older timbers are delaminating, or splintering, for varying reasons. Discoloration of wood is both a product of exposure to sunlight and also from deteriorating iron fasteners impregnating the surrounding wood. Each facet of wood deterioration is discussed within overall ship structure and impacts on specific components.

Decay is most pronounced in areas of debris collection. Debris retains moisture and promotes decay of adjoining wooden elements (Bray 1978:1). On *Virginia* debris consists of dust, disarticulated materials, and paint chips. Such degradation compromises timbers which further complicates potential restoration if additional elements require replacement. Areas most susceptible to deterioration from debris accumulation include the recess along the keel and garboard strake inboard, mast steps, and the centerboard trunk hollow. Centerboard case planks exhibit a great deal of decay, aggravated by accumulated debris in the trunk's cavity. Modern house insulation exacerbates decay because this material fosters moisture and promotes wood decay (Figure 48). Stuffing the centerboard trunk with this material likely occurred after the centerboard was abandoned as a means to further seal off the whole in the keel.

Centerboard plank deterioration presents the most pronounced degree of decay, but the more troubling areas of rot are along the keel, floors, and frames. Debris accumulation appears in both mast steps, where floors butt against the keel, at frame ends, and underneath what remains of ceiling planks. In the forward mast step several inches of debris obscured the feature's depth. Though this accumulation of dirt presents a potential problem for framing, aft frames exhibit the greatest degree of decay. Several factors contribute to this advanced stage of degradation including the aforementioned accumulation of debris and increased exposure because of

removed decking aft. Framing is also endangered by debris induced decay where transverse faces lay exposed. Along the deck's length exposed frame ends even or just below deck creates a space which traps debris between decking and freeboard (Figure 49).



FIGURE 48. Centerboard trunk starboard profile with insulation indicated by red arrow. (Photograph by author, 2010).

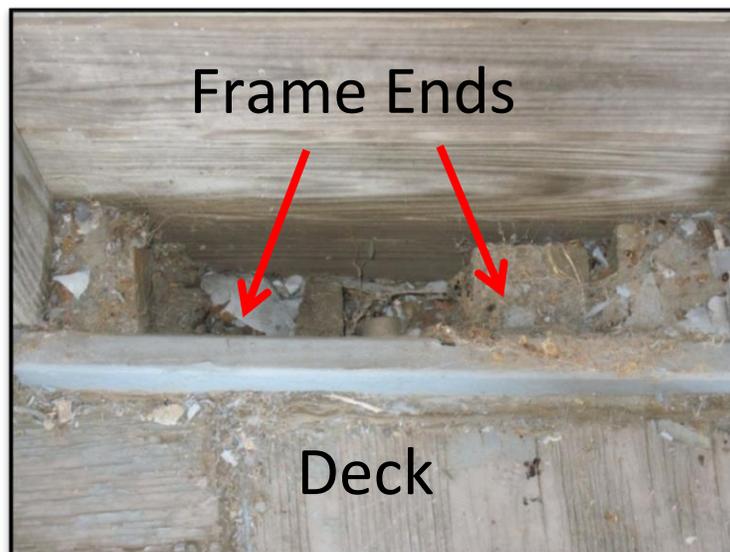


FIGURE 49. Degradation of frame ends (Photograph by author, 2011).

Another aspect of wood deterioration beyond decay consists of timber deformation. Removal from water and placement in storage dried the ship's timbers resulting in wood

shrinkage and warping. Both effects, whether independent or compounded, have potential to cause structural damage and present legitimate problems for *Virginia*'s preservation. Warping constitutes a large-scale problem for overall ship structure. The most problematic area of warping is along the keel. A single piece of wood, the keel twists toward port forward and to starboard aft, which became apparent while analyzing data during modeling (Figure 50). As the main structural element, problems with keel preservation compromise the entire ship. An



FIGURE 50. Keel deformation indicated by red arrows (Image by author, 2011).

example of keel warping affecting further structural features becomes apparent at the stem's base. The two stem pieces are separating at the scarph, the upper piece shifting away from the ship (Figure 51). Degraded fasteners increased the disjointedness of stem pieces. Disarticulated stem components further affect hull planking. The bottom three hull planks on both port and starboard were shifting away from the stem, most likely a product of both stem disarticulation and plank shrinkage.

The ship timbers have dried for twelve years accounting for the aforementioned shrinking and splintering of other timbers. Continuing to focus on the stem, keel splintering can be seen at the forward end of the timber at the joining of the keel and the foot of the stem (Figure 52).



FIGURE 51. Stem starboard showing disarticulation (Photograph by author, 2011).

Additional splintering can be seen in plywood sheets of the deck and cabins. Delamination of these elements is likely due to the product's properties and not subsequent drying of once waterlogged material.

Exposure accounts for another noticeable change in wood properties around the stem. The darkened appearance of the keel and garboard, visible in Figure 52, can be attributed to sunlight. Ultraviolet rays cause chemical degradation especially in light colored woods, like the keel fabric which is southern pine (Unger et al. 2001:47). Further discoloration of timbers inboard is a product of deteriorating fasteners. Rusting iron fasteners leave red stains in corresponding timbers. This process involves iron impregnation in the wood rather than just a surface complication. Iron impregnation is most predominant around rider fasteners (Figure 53).



FIGURE 52. Splintering of the garboard and keel, port (Photograph by author, 2011).



FIGURE 53. Metal impregnation in forward face of frame (Photograph by author, 2011).

## Metals Deterioration

The ship's metal components, representing several different material types, are deteriorating to varying degrees. Major features exhibiting corrosion include fasteners, propulsion, and miscellaneous equipment related to commercial fishing activity. Degree of degradation depends on the specific metal with only modern galvanized nails in later modifications exhibiting little or no deterioration. Fastener deterioration proves the most problematic concern for ongoing preservation and maintaining structural integrity. A brief discussion of metal deterioration for each group is presented using representative examples.

Fasteners, the bolts and nails holding *Virginia* together, are almost entirely iron. Whether inboard or part of the hull, fasteners exhibit similar qualities of deterioration. Generally, the head of both nails and bolts are rusting away from the shaft of the fastener. As fasteners rust, the wood around them is impregnated by the deteriorating metal as mentioned in the following section, see Figure 58. This deterioration is most pronounced in the original components of the ship, such as the keel, frames, and mast steps. Outer hull fasteners are degrading in a similar fashion, causing the fastener head to enlarge and the surrounding paint to either swell or completely displace it (Figure 54). Those fasteners which do not appear to be deteriorating are modern galvanized nails, mostly used in correspondence with cabin construction.

Propulsion features are composed of several metals exhibiting different degrees and qualities of deterioration. Focusing first on the rudder, it is composed of a steel blade, pintle, rudder stock, and brass rudder head, all of which are in an advanced stage of deterioration. Below deck the steel rudder blade continues to rust and sheets of metal are delaminating. Disarticulated pieces of the rudder lie in a pile below the feature. Areas of deterioration have



FIGURE 54. Outer hull fastener deterioration on port side, white arrows indicate dislodged paint due to corroding fasteners underneath. Photo by author, 2011.

advanced to such a degree that actual holes have appeared in the rudder blade (Figure 55 A). The steel pintle is also degrading in a similar manner and degree with the surface delaminating.

Rubber pieces at both the top and bottom of the steel rudder stock are drying out and cracking and with barnacles still attached (Figure 55 B). Above deck copper alloys are corroding with a light blue/green patina on the surface. The rudder stock above deck, as well as rusting, is further compromised by galvanic corrosion (Figure 56). Galvanic corrosion appears where the steel

rudder stock contacts the copper alloy head of the rudder assembly. It is a process of corrosion where a weaker metal corrodes preferentially to the stronger metal in contact. The steel propeller below deck has grayed which is a product of corrosion. Surface pitting is also apparent but it is undetermined if this is a form of metal degradation or from its use life. The propeller shaft has isolated areas of rust affecting the surface but does not appear to compromise the integrity of this component. The stuffing box, also a copper alloy, showed signs of blue/green corrosion. The fasteners attaching the stuffing box to aft face of deadwood appear to be stable.



FIGURE 55. Rudder and propeller, A indicates areas where the steel rudder blade has corroded through the entire blade and B shows the location of rubber fittings with barnacles still attached (Photo by Valerie Rissel, 2010).



FIGURE 56. Rudder assembly above deck showing corrosion, specifically galvanic corrosion at the top of the rudder stock which is in contact with the brass head. Photo by author 2010.

### *Conclusion*

This chapter establishes a preliminary description of construction based on current evidence and proposes there are elements which reflect four distinct phases of *Virginia's* career. It is likely that countless other construction specifications and modifications have been erased over the ship's lengthy career. Four different phases of construction periods emerge based on physical evidence and historical documentation. Much of the ship's backbone and hull remain original while that on and above deck represent both later modifications for commercial use and amateur reconstruction. Obtaining contemporary information from the physical record, the ship, is imperative before further deterioration or possible attempts at restoration occur. Additionally,

observation of the vessel's state of preservation is vital to understand the degree of degradation. These details lead to a series of preservation measures recommended in the following chapter. This chapter combined historic research and ship recording methodologies to cover the current preservation problems facing this ship. Wood deterioration ranges from rotting timbers to severe deformation of the keel. Multiple metals onboard, whether fasteners or the propulsion elements, exhibit signs of degradation specific to each particular alloy. These issues need to be addressed regardless of whether museum staffers decide to restore *Virginia* or not.

## Chapter 5: *Virginia*'s Preservation

### *Introduction*

The final discussion of this thesis focuses on *Virginia*'s future management. Essentially the debate is whether to stabilize the vessel in its contemporary form, the aim being preservation, or to rebuild the ship as a historic schooner, restoration. Such a decision is difficult to resolve when considering both practical considerations, the vessel's current condition and financing the project, and theoretical arguments concerning historical significance. A balanced approach to this subject is to consider the museum's goals, the state of the vessel, and the vessel's inherent value as a piece of maritime cultural heritage. However, museum officials remain undecided about future plans for the ship and this is the main reason why *Virginia* remains in storage. Formulating concrete plans for *Virginia* were stalled by museum officials because of a lack of documentation and more thorough historic research needed to be completed. Ideally though, former Director Bruce Smith expressed an interest in restoring *Virginia* to the mid-nineteenth century sailing vessel configuration. Restored as a schooner, *Virginia* would be the closest approximation to the Civil War era two-masted schooner, the main reason for the museum to purchase this vessel. However, without indisputable evidence of such activity, restoring and presenting *Virginia* as a Civil War blockade runner would be misleading. Such a decision would also eradicate material from both its auxiliary and later commercial fishing careers, both important historical eras for the ship. Addressing such problems of responsibly interpreting the ship for hopeful future display, is just one problem. In the meantime, the museum might consider implementing a more active maintenance plan to supplement existing efforts to preserve the vessel. To approach this chapter, a review of both current and past efforts to preserve the vessel is presented. Beyond management issues, there is a theoretical argument justifies saving this

vessel but also addressing how restoration may be an inadequate action for long-term preservation and proper interpretation of *Virginia*.

### *Preservation Analysis*

Analysis of preservation begins with studying the physical remains of the ship itself. Examining the ship in its present condition and construction serves two purposes; the first for understanding the components which make up the ship presently and the second to document those components and overall preservation issues prior to any actions. Similar to the survey methods employed to record the vessel's construction, assessing preservation was done through analyzing digital models and particular preservation issues documented through primarily digital photography, supplemented with some illustrations. The intent of the survey was to determine the current state of preservation, evaluate which components are at greatest risk, offer suggestions for short-term care, and differentiate more historic construction components from modern materials used in a prior restoration attempt. Additionally, completing a record of *Virginia*'s current state is vital for two reasons; no prior documentation on preservation exist and if a restoration plan is enacted such information will be lost (Naab 1990:9). Initial preservation observations were made in conjunction with the total station survey in 2010 but a more focused preservation analysis occurred between the 10<sup>th</sup> and 11<sup>th</sup> of September 2011. During this session both small and large-scale preservation concerns throughout the ship were documented. Additionally, the storage environment and current preservation measures already in place were observed.

### Previous Restoration

During the preservation survey, elements of current ship construction were identified as incongruous with any of the ship's historic materials. After surveying, a comparison of historical

evidence, it appeared Captain Kirby attempted a restoration, likely during his retirement. Ceasing to operate *Virginia* as a commercial fishing vessel, Kirby began the process of recreating the nineteenth century schooner. The practical one cabin configuration of a commercial fishing vessel, transformed to the present double, low-lying current cabin layout (Figure 49). Rebuilding the two cabins required a change in stanchions, deck beams, and decking, which account for the modern materials found aft the forward decking. This discovery corresponded with a statement from Kirby found in a 1988 interview where he state,

Since I was using it I never did anything to restore it, but I always had it in mind I definitely would when I retired fishing. I intended to preserve the boat, which I have, but also to restore it like it originally was to put it back to a sailing vessel.

(Hyman 1988:G1).

Captain Kirby effectively retired from commercial fishing a year after this interview. Sometime between 1989 and 2000 when the museum purchased *Virginia*, the former fisherman carried out his intentions to restore the vessel, accounting for the change in cabins and decking. These alterations can also be attributed to the former captain because the museum has yet to attempt its own restoration project. Kirby's efforts, while well intentioned, highlight the difficulties of restoring a historic vessel and further complicate the discussion of preservation presented later in this chapter.

### Museum Plans

As established in previous chapters, this museum purchased *Virginia* based on the assumption it ran the blockade during the Civil War. If so, according to former museum director Bruce Smith and current curator Jeffery Seymour, the museum wished to invest in restoration of *Virginia* to its former schooner configuration, the type of vessel it was during this era. The ship

was deemed a worthy project for the museum because if proven to be affiliated with the Civil War, it would be the only surviving sail, blockade runner. Based on the potential rarity of the vessel, the museum made the initial investment to purchase *Virginia* and to provide preliminary preservation measures. The alternative if not a blockade runner or lacking any affiliation with the war, the project will be abandoned due to lack of resources and disassociation with the museum's research objectives.

### Storage Details

*Virginia* is stored behind the museum's main facility in an exposed pole shed (Figure 48). The shed's sides are not enclosed which creates an uncontrolled storage environment for the ship. Temperature, humidity, and other environmental considerations fluctuate with the local weather conditions which account for some of the preservation problems. Sun exposure, or more importantly ultraviolet rays, which can exacerbate wood deterioration affect *Virginia*'s port side more significantly because that half of the vessel is closest to the shed's western edge. Being an open-shed, insects and other creatures have access to the ship. Most notably wasps create nests between construction elements and in voids and cracks of the vessels interior. Additionally, spider webs cover surfaces both on exterior and interior surfaces of *Virginia*. A chain link fence deters larger creatures and curious museum goers which is approximately eight feet high which surrounds the shed's perimeter. To further deter other animals, wire fencing is attached to the shed's exposed rafters deterring birds and other animals from nesting or roosting within the structure.

Within this structure, a custom cradle system supports the schooner and is intended to preserve hull shape. The cradle is positioned so that the ship sits with its port side two feet from the shed's western edge and the bow four feet back from the northern shed face and raises

*Virginia* four feet off the ground. The cradle consist of two beams (10 in. x 10 in.) parallel to the ship, eight more (8 in. x 8 in.) running perpendicular with these set on blocks formed by crisscrossing timbers. Perpendicular beams support the keel with shims placed where necessary to fill spaces. From the same perpendicular beams seven arms, referred to as “poppets”, on both port and starboard side extend to support the hull (Figure 57) (Ansel, et. al. 1993:13). Custom fabricated metal plates attach these upright supports to the perpendicular beams. These fourteen arms, angled at about 45 degrees, support the hull amidships with none located at the bow or stern. Notched plywood sheets fitted to these arms flex to conform to hull curvature.



FIGURE 48. Museum grounds highlighting location of *Virginia*'s storage shed and main museum facility (Photo by author, 2010).

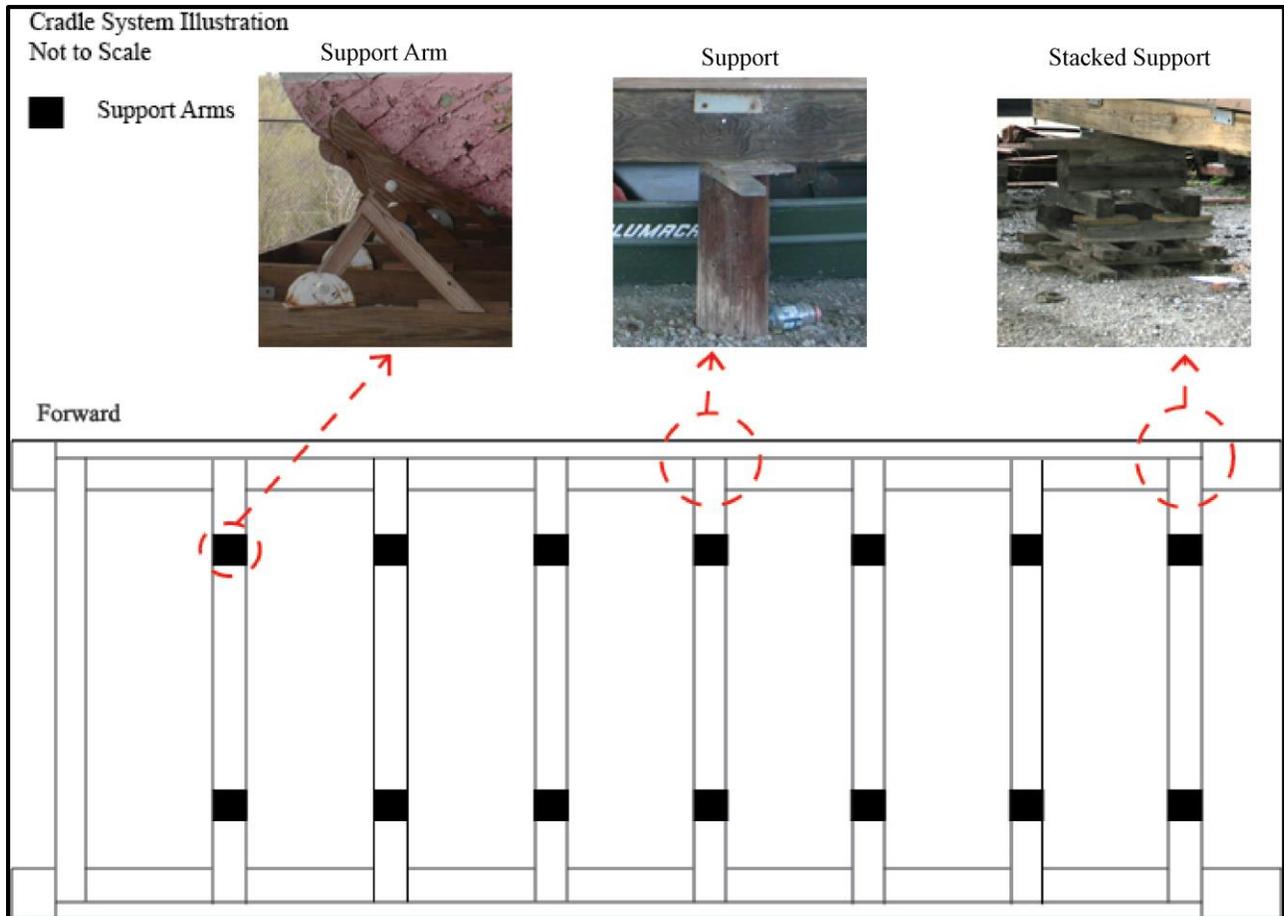


FIGURE 49. Plan view of cradle with corresponding photographs of components (Photographs and illustration by author, 2012).

Besides the cradle, five metal rods through the hull are in place to maintain the schooner's shape. Three are forward, one in the bow and two near the centerboard trunk. Of those at the centerboard one is placed just ahead of the centerboard trunk and the second forward through the trunk itself (Figure 50). A third runs through the hull aft of the engine mount and the fourth, which is connected by a chain, is broken and now lies on exposed frames just aft of the third. These are adjusted by either tightening or loosening to allow for the ship's natural flexing.



FIGURE 50. Through hull supports (Photo by author, 2010).

The combination of cradling support and hull braces in an appropriate building creates a favorable storage environment but further preventative measures could be implemented. Despite these efforts deterioration remains inevitable. Understanding *Virginia*'s current environment informs further discussion concerning long-term preservation and interpreting causes for current deterioration. The following section shifts focus to present evidence of degradation both to overall structure and individual elements.

#### *Preservation/Restoration*

Preservation and restoration are two terms applied in management of culturally and historically significant artifacts, buildings, landscapes, and objects. Historic ships constitute one facet of cultural heritage, and often the preservation or restoration of such an artifact presents multiple practical and theoretical complications. Interpretation of the vessel, its materials, and the degree of significance in maritime history become more complicated based on the uniqueness of any vessel. *Virginia* represents how after acquisition the process of preservation and decisions about restoration become slowed by difficult management considerations.

Maintaining *Virginia* constitutes the museum staff's management of the vessel to this point. Passive measures to protect hull shape and keep the vessel guarded from the elements are

in place but more active attempts to preserve the ship are necessary. Purchasing a ship because of its potential is just the first step in the never-ending and often expensive endeavor of historic ship management. In the words of Michael Stammers, “Ship preservation is never cheap and the work does not stop with the successful acquisition and restoration campaign” (2004:147). *Virginia*’s preservation continues beyond the museum’s current efforts and initial restoration goals.

Preservation and restoration will both be discussed as considerations for *Virginia*’s potential outcome. Following definitions of these terms, recommendations will be offered as advisement for the museum and to present arguments against current plans for restoration.

### Preservation

Preservation is the act of protecting and maintaining culturally significant artifacts. The term includes responsibly documenting, interpreting, and managing cultural heritage whether an artifact, building, landscape, or large objects. In terms of maritime heritage, or more specifically, historic vessels, preservation includes a great deal of maintenance to sustain the historical features and original fabric. Put more succinctly, preservation can be considered “a good maintenance plan” (Murtagh 2006:6). Dana Hewson, of Mystic Seaport in Connecticut, reiterates this sentiment on the topic, “preservation is maintenance – by definition” (1987:72). Maintaining a vessel, in this case *Virginia*, would allow retention of construction features from its various applications, without determination of which historic elements have greater significance.

Preservation does not intend to replace or remove material, but to stabilize the vessel with all historic forms intact. In the specific case of *Virginia*, stabilization to preserve its current form would leave intact construction components representative of the full-breadth of the vessel’s history. Returning *Virginia* to a singular form in its history diminishes the impact of its qualities

as a durable, lasting vessel adapted over a period of 148 years. Each ship should be considered on its individual merits and the following quote demonstrates the transition from a ship to an artifact.

When we talk about guidelines or standards, there are all these little conflicting requirements for what you want to do. I am not suggesting that every vessel should be restored to sailing condition. If the vessel is intact as an artifact, there is tremendous value in maintaining it intact as an artifact, although I do believe that the only way you have a prayer of doing that is if it becomes an indoor artifact (Rybka 1987:51).

The distinction between a vessel and an artifact is context. Once a vessel is moved away from its watery environment it “loses meaning” (Myers 1988:16). The museum desires a restoration project to return the ship to a blockade running schooner, a presentation lacking appropriate evidence. Considering this, emphasis should shift from restoring a ship to preserving an artifact. *Virginia* transitioned from a working vessel to a museum object and should be considered an intact artifact requiring ongoing preservation. Arguably, the vessel has not only lost context due because of removal from the water, but also because of lack of context within the museum’s collection. This aspect of management further complicates future plans for the vessel and makes restoration less desirable.

### Restoration

Restoration is a term that describes the process of returning an object or property to a prior appearance through removal or replacement of materials. Optimally, restoration is “the means of returning an artifact to its original appearance while disturbing as little as possible of the ‘original material’ (McClave 2005:50). The idea of original is an interesting concept to tackle when considering restoration of *Virginia*. Though a great deal of the ship’s original construction

and materials remain in place later additions and modifications also have inherent importance for the vessel's history. The concept of original applied to *Virginia* would mean the schooner attributes would be restored preferentially to the auxiliary and 20<sup>th</sup> century commercial fishing phases. Though restoration is not the optimal plan for *Virginia*, the possibilities for restoration projects must be considered because of past and potential future endeavors.

*Virginia* presents a complicated restoration case. As discussed, restoration projects hinge on ship with demonstrable significance based on a set of values related to people, events, construction, age, and purpose. Considering *Virginia*'s history, an argument can be established for each phase of the ship's career. Three distinct forms have been identified in the previous sections; shallow, centerboard, sailing schooner, auxiliary vessel, and commercial fishing boat. The museum's preliminary objective is to return *Virginia* to the 1860s era and presumed Civil War blockade running schooner. Though there is no evidence *Virginia* was a Confederate Civil War vessel, a possible restoration to its original schooner form is viable and historically significant. Importance of *Virginia*'s schooner attributes relates to both its age and vessel type. Age alone is a factor because few if any vessels of *Virginia*'s age and class exist today. The most notable is a Florida-based schooner called *Governor Stone*. *Governor Stone* is a restored, two-masted schooner under the stewardship of the Apalachicola Maritime Institute. The 1880 schooner was largely saved because it is thought to be the oldest surviving Gulf of Mexico-built schooner (Delgado, Clifford 1991:158). *Virginia*, also a Gulf Coast schooner built on the eastern shore of Mobile Bay, predates this by 15 years and is now the second known and documented example of this regional ship construction type. These distinctions warrant serious consideration for restoring *Virginia* to her nineteenth century schooner form, which is clearly a rarity if there is only one other known example.

Another consideration for restoration is *Virginia* during her auxiliary phase. As an auxiliary vessel, *Virginia* represents a common thread in early twentieth century American maritime tradition – converting nineteenth century sailing ships to dual engine/sail power. These conversions were often unsuccessful because older wooden hulls were not designed for the added strains of an engine (Fleetwood 1995:194). Cement forward in the stem and aft at the rudder stock are hallmarks of adapting the ship to accommodate subsequent engines. Fortunately *Virginia* as an auxiliary vessel was recorded in detail by HAMMS – another reason to emphasize the significance of this era from 1912-1939. Of all the vessels recorded in HAMMS only five at most remain, though there is no definitive number as per a personal correspondence with Todd Croteau, National Parks Service (2013). As a HAMMS vessel, *Virginia* was distinguished as a significant artifact of America’s maritime heritage by the survey’s standards. Considering the rarity of preserved auxiliary vessels which did not survive conversion and the even fewer HAMMS vessels, make preserving this form also a viable option.

Final consideration can be given to keeping her commercial fishing form. This realization of *Virginia* is significant for several reasons. Sheer age of the vessel as it operated in this facet of America’s fleet is exceptional. The 1963 Bureau of Fisheries of the United States Department of Interior survey declared her the oldest operating vessel in the fleet – years before actually being retired. In other words, *Virginia* had the distinction of oldest functioning vessel in America’s merchant fleet for 26 years. As the oldest merchant vessel, *Virginia* sailed extensively throughout the Gulf, more so than for her previous applications. Sailing in the Gulf of Mexico, *Virginia* was part of the red snapper fishery – an important industry for Florida, then her home state. Former captain James Kirby attributed the ship’s ability to sail for so many years in the Gulf to the quality of her original construction and material. Preserving her as the oldest

commercial fishing vessel would be a testament to her age and durability but not well suited to the museum's main focus.

Each of these facets of *Virginia*'s history presents theoretical possibilities for restoration. Given her age and adaptations, the vessel contains multiple eras significant to maritime history. However, each must be weighed against the realities of the ship's physical state and current stewardship by the National Civil War Naval Museum. Referencing the scope of this thesis, some preliminary recommendations and conclusions are offered concerning *Virginia*'s future.

### *Recommendations*

Based on the full scope of this thesis, some recommendations are offered for both restoration, though not advised, and preservation, which is the most responsible and advantageous option. As previously discussed, interpretation is a difficult process compounded by the vessel's lengthy and diverse history. Elements of each significant phase are intact, if to varying degrees and add to the vessel's sense of history. These suggestions draw upon historical evidence and contemporary documentation and are meant to be advisement for continued responsible management of *Virginia*.

### Restoration

Restoration would alter *Virginia*'s current physical form. In the previous section each restoration possibility was discussed in terms of historical significance. The physical evidence of each era will be evaluated to determine how much of each significant phase remains. Restoration done responsibly must strive to accurately capture a historic era with authentic materials and craftsmanship. Museum officials are uninterested in restoration if the ship lacks credible evidence of Civil War activity, as communicated by curator Jeffery Seymour (2013). Though restoration fails to communicate the full historical significance of this vessel, another individual

or institution in the future may be interested in the project. If restoration is a course of action, the responsible party should consider that the project requires adequate documentation and proper knowledge of the material and workmanship to properly complete restoration.

If restoration was undertaken on *Virginia*, the HAMMS documentation offers concrete evidence one of the ship's past configuration. The 1936 survey recorded a degree of documentation uncommon for most historic vessel and should be utilized in conjunction with this project for an informed restoration plan. Documentation for the other eras is limited. Information regarding the schooner *Virginia* was consists of a list of basic specifications beginning in 1868 (see Table 3). Further documentation of the commercial fishing vessel consists of grainy newspaper images and some other photographs in museum archives. No restoration can proceed without adequate information regarding structure because otherwise the project would depend on conjecture.

As a preventative, pre-planning measure, the TLS data was incorporated into preservation analysis. The hyper-realistic depiction of *Virginia* captured by TLS provided the best platform for visualizing the initial restoration stages. Discussed previously, materials incongruous with the historic era must be removed during restoration. Established in the construction description, the plywood cabins and decking are elements added during Kirby's retirement in an amateur restoration attempt. Additionally, freeboard and propulsion elements were detracted from the model to visualize the sailing schooner hull shape. Using TLS data, a virtual representation of the ship was generated with construction features removed to mimic the schooner (Figure 60).

There are two objectives for this type of pre-planning efforts. The first is to illustrate the degree of change once material is physically removed from the structure. The second is to

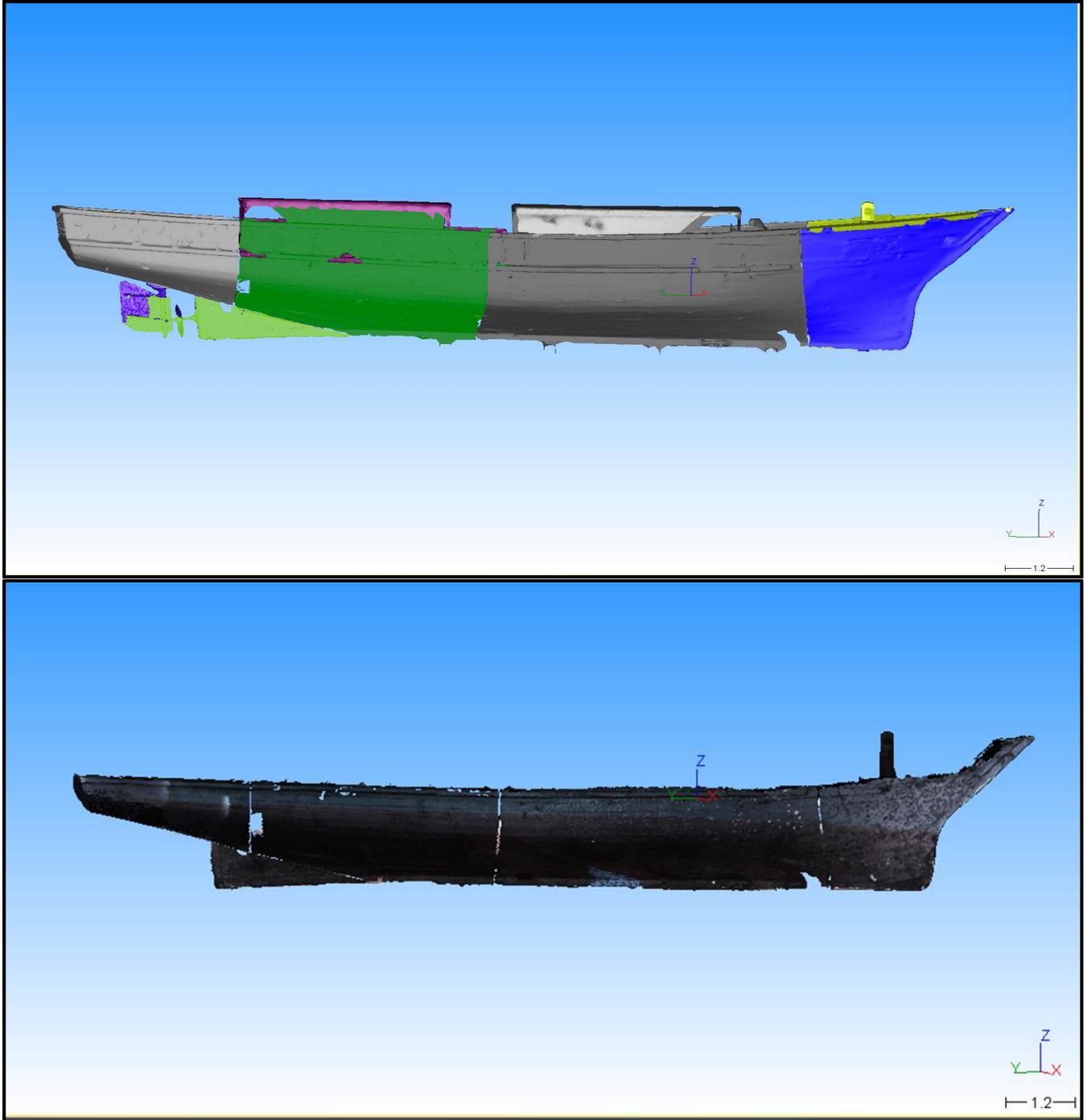


FIGURE 60. *Virginia* model, top is the overall model and the bottom image shows *Virginia* with modern materials removed to anticipate changes related to ship restoration. The rudder and propeller have also been removed to try and represent the schooner better (Images by author, 2011).

anticipate if these changes detrimentally affect the soundness of the structure. Comprehensive planning is vital to ship restoration and it is hoped that such depictions of the ship without these either non-historical components or elements from a different era of construction would aid the museum's efforts.

Beyond planning, digital models have the potential to complement either preservation or restoration. Virtual reconstruction could solve the dilemma of portraying the scope of *Virginia's* history without constraints of physical alterations. Such reconstructions have been applied in other instances of cultural heritage and archaeological objects. If applied to historic vessels, this principle could illustrate the dynamic nature of such objects and the ongoing modification and repair a ship undergoes to continue functioning. Considering the degree of manipulation demonstrated with the digital 3D data in this project, especially the TLS point cloud, this could be a viable way to display the ship and its multiple historic forms to museum goers if the museum is interested.

### Preservation/Stabilization

Preserving *Virginia* for future study and display may be best accomplished by stabilizing the vessel without modification to recreate any one of its historic forms. Stabilization provides the museum with the most cost-effective, executable, and arguably most responsible option. Replacing restoration efforts with a more active preservation plan would allow the museum to consider options, while also being responsible caretakers of the ship. For less financial investment than full restoration, the museum could implement a regular maintenance plan and consider modifications to the current preservation measures. Continuing *Virginia's* preservation by stabilizing the ship, is a reasonable and attainable solution while staff and board members evaluate the continued goals and whether *Virginia* is an appropriate requisition.

### Specifications for Ongoing Management

Supplementing the museum's current efforts with more active preservation actions would aid in the stabilization of the vessel. Regular cleanings of the vessel would prevent accumulation of debris. Gathering debris, like dirt, dust, splintered wood, in empty spaces and along structural features retains moisture and promotes rotting of wooden elements. The greatest accumulation of debris within *Virginia* includes space in the centerboard trunk, in mast steps, between frames, and along the keel and garboard strake inboard. Protecting metals from moisture is another component museum officials could consider to slow corrosion. Dana Hewson recommends the application of coatings to metals to prolong preservation (1987:72). Finally, though the current cradle system supports the majority of the hull further measures should be taken to shore up the stem an area experiencing a great degree of deformation. Ensuring the structural integrity of the vessel would also be beneficial to the museum if a buyer or another interested party is approached since the vessel lacks context within the institution's research objectives.

Beyond these practical considerations, nomination of *Virginia* to the National Landmark should be considered. For a historic ship to be considered for the National Register of Historic Landmarks, it must fulfill one or more of four categories of significance: association with an important historical event, involved with a significant historical figure, possess significant construction either representative of a craftsman, region, or period, and lastly be an important source of not yet discovered history or prehistory (Delgado 1987:35). These terms apply to vessels being nominated to the National Register of Historic Places. The list, "is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources" (National Park Service:2013). Nomination is based on historic significance. Successful inclusion of *Virginia* of this list, would

legitimize the ships inherent historical value. Such recognition could ensure protection for the vessel and make it more appealing to another institution if the National Civil War Naval Museum decides to sell *Virginia*.

### *Conclusion*

Though the museum has taken steps to preserve *Virginia* further actions are required to properly care for her long-term. More active measures to supplement the museum's current preventative steps could enhance and extend the preservation of *Virginia* until the institution resolves future actions for the vessel. Advisement concerning restoration has been offered, however, a preservation plan is arguably a more feasible and responsible consideration. Digital modeling allowed for visualization of restoration actions virtually, without damage to the physical structure. The biggest argument against restoration is deciding upon which historic phase is more significant than another. This interpretation is further complicated not only by the vessel's long history but its current ownership. Without definitive evidence of a Civil War connection, the ship may suffer from misinterpretation at such a topical museum dedicated to preserving artifacts from that particular event.

Structuring a stabilization program which adds to the museum's current efforts is the most desirable outcome for *Virginia*. Preservation would take emphasis away from choosing one era of historical significance and highlight the longevity of the vessel. Presenting the ship with features preserved from its various forms creates a timeline rather than an episodic interpretation. Exhibiting the breadth of the vessel's history is ultimately a more accurate, and more engaging, representation, even if this argument does not match with museum goals for the ship.

## Chapter 6: Conclusions

Throughout this thesis the project's main goal is to emphasize what happens to *Virginia* in the future and address the complications when considering preservation options for historic ships. To fully appreciate the complexity presented in a specific case of *Virginia*, all facets of her history and condition had to be assessed. Each phase of this project was completed with the intention of understanding not only *Virginia*'s past but to advise the museum on how to move forward with this project. Historical research, careful documentation of ship construction, and addressing the complicated preservation issues were all integral parts of this holistic study of *Virginia*.

The ship's history encompasses 148 years of Gulf Coast maritime history. Though the possibility of *Virginia*'s function as a blockade runner is dubious at best, it does represent a type of vessel which sailed illegal goods back into the Confederacy. Before Union vessels could slow illegal trade in the Gulf of Mexico, pilots took advantage of these small schooners with shallow drafts to dash along the coast to Havana to trade a few bales of cotton for contraband. Likely the trade focused on luxury goods, medicine, and compact items to take advantage of smaller cargo spaces aboard these vessels. Of course this trade, though an aspect of blockade running during the war, did not amount to the greater hauls made by larger vessels and these specially designed blockade runners throughout the war. *Virginia*'s date of 1865 does warrant closer examination considering the timing of her construction so soon after war. Yet if it was built prior to conflict, this does not necessarily mean the schooner was used as a blockade runner. Mobile Bay provided a source of food for Mobilians throughout conflict and it is just as likely *Virginia* engaged in the more legal trade of fishing during the war. Regardless of these hypothetical situations, the

earliest documentation, 1865 admeasurement and 1866 newspaper ad for sale of a new schooner *Virginia*, indicate that it is a post-Civil War vessel.

Beyond this speculation, there are statements which can be firmly made concerning her history. Tracing her former owners' occupations through census records it becomes clear *Virginia* was used in Alabama's oyster fishery through the early 1900s. The schooner most likely sailed as a go-between ship taking fresh catches from the smaller oystering boats back to markets or canneries. As an oyster freighter, *Virginia* was first owned and operated in the smaller fleet of vessels along Mobile Bay's east bay and later as part of the larger oystering fleet along the bay's west back. *Virginia*'s owners likely sailed her for other tasks and on pleasure cruises but her primary function remained in Mobile Bay's oyster beds.

After a change in ownership and movement of her homeport from Mobile to Florida's west coast, the ship was recorded in the HAMMS initiative in 1936. To be included in this project, *Virginia* had to meet certain criteria of age and significance. Those ships were recorded in an effort to document a dwindling resource of America's maritime history. Since, that resource has diminished even further with less than five vessels still in existence. Fortunately the HAMMS documentation captured an earlier form of *Virginia* and a glimpse of the vessel with masts and sails intact. These photographs and drawings offer the only historical documentation of her construction, details of her original design and structure likely lost or never created. *Virginia*'s status as a HAMMS vessel further reinforces the argument for her long-term preservation.

The vessel's continued use after being deemed a historically significant vessel is remarkable. Being used in the commercial fishing industry for more than thirty years demonstrates the vessel's durability. *Virginia* not only transitioned to become part of a

modernizing fleet of fishing vessels, but did so as a converted sailing vessel. As part of Florida's red snapper fishery, the former schooner ventured into the Gulf of Mexico waters further than before when it ran oysters back to shore in Mobile Bay. A ship operating after so many years garnered a fair amount of attention and speculation. In various articles concerning *Virginia* from this period, ideas about the ship's more illicit past surface. The blockade running scenario has been well covered, but there is also brief allusion to *Virginia* running illegal spirits into Florida during Prohibition. Assigning these romantic and adventuress narratives to the vessel is likely a product of her age and unknown origins rather than actual fact. Yet fortunately, age and "mystery" are qualities which have saved the vessel in addition to the final captain's appreciation for a vessel which delivered his livelihood for over thirty years.

Historical research was just one facet of the project to understand the vessel's history. Through documentation of the present ship structure, information left in the physical fabric furthered understanding the ship and its various transformations. Taking time to meticulously record differences between materials and construction details served to both complete a contemporary account of the ship and to also inform the final phase of the project which is preservation. Fieldwork was completed using geographical survey equipment, digital cameras, and hand measurements. Results from this survey include a set of lines, 3D models, and a series of detailed construction drawings.

The primary objective for recording surveys in this project was to generate a complete picture of *Virginia*'s structure and condition. Incorporating different recording equipment was an opportunity to assess advantages and disadvantages of each piece of machinery to maximize the quality of the finished product. Both total station and TLS have merit and limitations but for this project the two technologies complemented each other. Using total station survey data and

complimenting measured sketches, a 3D model and numerous 2D drawings were produced to illustrate key elements of *Virginia*'s construction. TLS data more completely captured the complex shape of the ship's outer hull. Though total station is the preferred method, TLS are more than a viable option for use in historic ship recording. Sheer speed, accuracy, and the highly realistic results from these scanners was clearly evident. There is also potential to take these really complex point clouds and apply virtual modeling and reconstruction in new facets of historic ship recording both for educational and planning purposes.

Survey results have potential to contribute to decisions which will have to be made regarding the ship's future. How to proceed with the vessel has yet to be determined by its caretakers. The museum favors a restoration focused on *Virginia* as a mid-nineteenth, sailing, centerboard schooner. Though significant, the two other phases of *Virginia*'s career warrant consideration for restoration. If restored as a schooner, some degree of speculation would dictate the work because no drawings or specifications exist of her original schooner form. The same issue exists for possible restoration of *Virginia*'s commercial fishing configuration because there are only newspaper accounts and limited photographic evidence. HAMMS presents the best scenario for restoration because of the degree of documentation but this does not address the theoretical dilemma of significance. Each of these phases represents a historically significant phase of which *Virginia* is one of a few examples still in existence. *Virginia* is one of two preserved Gulf Coast schooners, one of at most five HAMMS vessels, and is a relic of the commercial fishing industry which abandoned converted sailing ships for more modern vessels.

*Virginia*'s ongoing care has yet to be decided. Both fortunately and unfortunately the ship is at the National Civil War Naval Museum which has maintained the vessel since 2000, although without confirmation of her Civil War involvement may lose interest in the ship.

Whether *Virginia* is restored or is relocated to a different more appropriate museum, the ship is a viable project for ongoing preservation. *Virginia* sailed as part of an active Mobile Bay oystering community, was recorded by HAMMS workers, and became the oldest operating commercial fishing vessel during the mid-twentieth century. These are her accolades and each lends equal credence to the vessel's significance in American maritime heritage.

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## Appendix A: Virginia's Abstract of Title

This vessel was built at Fish River, Alabama in 1865 of wood  
 by unknown for unknown  
 as appears by abstract of title issued at Mobile, Ala., on May 12, 1939.

(b) Alabama  
(State of vessel)  
 ex A 2833  
 18 A 983

GRANTOR	GRANTEE	Kind of instrument and part conveyed	Date of instrument and date of maturity	Consideration or amount and discharge amount	Received for record	Recorded	Time of endorsement and entry or approval of home port	Part to enter
<u>RECORD AT MOBILE, ALA.</u>								
This vessel built on Fish River, Baldwin County, Alabama. License No. 4, issued at Mobile, Ala., Jan. 16, 1866, shows Frank Richmond and Michael Bellette, of Mobile, Ala., as owners. License No. 16, issued at Mobile, Ala., on May 25, 1866, shows Richard Hill and Charles Runwich, of Mobile, Ala., as owners. License No. 13, issued at Mobile, Ala., April 11, 1867, shows Peter Thompson and Charles Runwich, of Mobile, Ala., as owners.								
P. Thompson	Charles Runwich	B of S	May 1, 1875	340.00	May 1, 1875	Book A		
		All			11:00 AM	Page 39		
P. Runwich, Administrator of the estate of Charles Runwich, deceased	C. J. Campbell	B of S	Mar. 9, 1877	585.00	Mar. 9, 1877	Book C		
		All			---	Page 53		
C. J. Campbell	J.H.A. Miller	B of S	Sept. 2, 1878	425.00	Sept. 2, 1878	Book A		
		All			---	Page 68		
J. H. A. Miller	William W. Kruse	B of S	Mar. 5, 1892	600.00	Mar. 2, 1892	Book M		
		All			1:30 PM	Pages 333/336		
William W. Kruse	S. W. Co. and F. Nelson	B of S	June 5, 1899	700.00	June 5, 1899	Book D		
		All			1:00 PM	Page 62		
S. W. Co. and F. Nelson	Bayou la Batre Pkg. Co.	Mortgage	June 24, 1899	150.00	June 24, 1899	Book -Y-		
		All			---	---		
Record of discharge of mortgage from S. W. Co. and F. Nelson to Bayou la Batre Pkg. Co. cannot be located. . . . .								
F. Nelson et al	John H. Steiner	B of S	May 23, 1901	675.00	May 23, 1901	Book E		
		All			9:45 AM	Page 11		
John H. Steiner	C. G. Styron and Thos. H. Benton	B of S	Oct. 19, 1901	800.00	Oct. 11, 1901	Book R		
		All			1:00 PM	Page 25		
Charles G. Styron	Thos. H. Benton	B of S	Mar. 20, 1902	200.00	Mar. 20, 1902	Book R		
		1/2			9:20 AM	Page 38		
Thos. H. Benton	D. A. Ramsey	Record of this transfer cannot be located. . . . .						

GRANTOR	GRANTEE	Kind of instrument and part conveyed	Date of instrument and date of maturity	Consideration or amount and discharge amount	Received for record	Recorded	Time of endorsement and entry or approval of same port	Pc nr
D. A. Ransey	Richard S. Deans, John H. Deans, and Levi E. Deans.	B of S 1/3 each	11, 1912	900.00	July 2, 1912 11:35 AM	Book 5 Page 98		
Richard Deans, John H. Deans, and Levi E. Deans	J. H. A. Miller	B of S All	30, 1914	150.00	Dec. 30, 1914 3:25 AM	Book 11 Page 25		
Walter B. Miller, et al, heirs of J. H. A. Miller	John C. O'Gwynn, and Howard S. J. Walker	B of S All	12, 1930	250.00	Nov. 13, 1930 12:00 Noon	Book 23 Page 104		
Vessel burned Sept. 23, 1931, P. Y. L. No. 1, issued at this port July 1, 1931, surrendered November 31, 1931, abandoned. Vessel rebuilt 1934, admeasured this port August 17, 1934, and found to be under 16 Gross tons - used exclusively for pleasure and Motorboat number A. 2833 issued in the name of Howard S. J. Walker, of Mobile, Ala., sole owner.								
Collector of Customs Mobile, Ala.		RECORD AT TALLAHASSEE, FLORIDA Abst. of Title No. 12, 1939			May 15, 1939 9:00 AM	Book 1363 Page 185		
James L. Fraser	John W. Turner, Kenneth Brown, and Sixto Diaz	B of S 1/3 each	8, 1946	1.00 & OVC	Feb. 13, 1946 9:00 AM	Book B-1 Page 482		
John W. Turner, Kenneth Brown, and Sixto Diaz	Florian Degan	B of S All	30, 1946	10.00 & OVC	Aug. 6, 1946 9:00 AM	Book B-1 Page 496		
Florian Degan	L. H. Shilling	B of S All	1, 1946	10.00 & OVC	Nov. 1, 1946 2:00 PM	Book B-1 Page 523		
L. H. Shilling	Francis C. Bidwell	B of S All	June 16, 1952	\$10	June 17, 1952 11:00 AM	Book B-1 Page 1351	June 17, 1952	
Francis C. Bidwell	Charles M. Howatt	Mortg. All	June 17, 1952	\$4,000.00	June 19, 1952 9:00 AM	Book B-2 Page 193		
Charles M. Howatt	Bank of Palmetto	Assign of Mtg. All	June 17, 1952	\$4,000.00	June 25, 1952 8:30 AM	Book B-2 Page 194		
Bank of Palmetto	Francis C. Bidwell	S of M All	Aug 24, 1953	\$4,000.00	Aug 31, 1953 8:30 AM	Book B-2-3 Page 236		



# Appendix B: Historic American Merchant Marine Survey Records

No. <u>STAYSAIL Schooner</u> Rig	Trade <u>RESEARCH WORK</u>	Name of vessel <b>VIRGINIA</b>	Year built <u>1865</u>	INDEX NO. SURVEY NO. <u>8-23</u>	HISTORIC AMERICAN MERCHANT MARINE SURVEY
Length, o. a. <u>53'-4"</u> Length, l. w. l. <u>46'-0"</u> Beam, <u>14'-6"</u>	Draft <u>A-6"</u> Displacement Tonnage, N. G. <u>12</u>	Name of port <u>TAMPA FLA.</u>	Name of place <u>MOBILE, ALA.</u>	Date <u>1865</u>	Name of place <u>MOBILE, ALA.</u>
Designed by <u>UNKNOWN</u>	Built by <u>UNKNOWN</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Date <u>1865</u>	Name of place <u>MOBILE, ALA.</u>
Original owners <u>F. RICHMOND &amp; M. BALLETTTE</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Date <u>1865</u>	Name of place <u>MOBILE, ALA.</u>
Present owner <u>DR. JOHN F. BASS</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Date <u>1865</u>	Name of place <u>MOBILE, ALA.</u>
Present status <u>TRASH</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Name of place <u>MOBILE, ALA.</u>	Date <u>1865</u>	Name of place <u>MOBILE, ALA.</u>
Present location <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Date <u>1865</u>	Name of place <u>ENGLEWOOD, FLA.</u>
Source of data: <u>MEASUREMENTS FROM BOAT</u> <u>DR. JOHN F. BASS, ENGLEWOOD, FLA.</u> <u>DR. A. S. WALKER, MOBILE, ALA.</u> <u>U.S. CUSTOMS HOUSE RECORDS.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Date <u>1865</u>	Name of place <u>ENGLEWOOD, FLA.</u>
Surveys by: <u>LAURIE GAYES</u> <u>A. L. CARREVELLE</u> <u>GEORGE SMITH</u> <u>TOM WILHART</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Name of place <u>ENGLEWOOD, FLA.</u>	Date <u>1865</u>	Name of place <u>ENGLEWOOD, FLA.</u>
MEASURED: DRAWN: MEASUREMENTS CHECKED: <u>A. L. CARREVELLE</u>	DRAWINGS APPROVED: DRAWINGS APPROVED: ACCEPTED FOR U. S. NATIONAL MUSEUM	REGIONAL DIRECTOR: PROJECT DIRECTOR: CHARTER, DIVISION OF ENGINEERING:	PARTY LEADER: PARTY LEADER: PARTY LEADER:	INDEX NO. SURVEY NO. <u>8-23</u>	HISTORIC AMERICAN MERCHANT MARINE SURVEY

# VIRGINIA

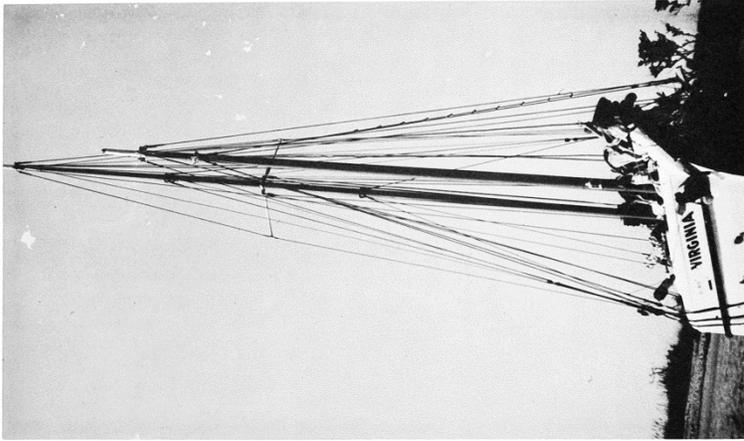
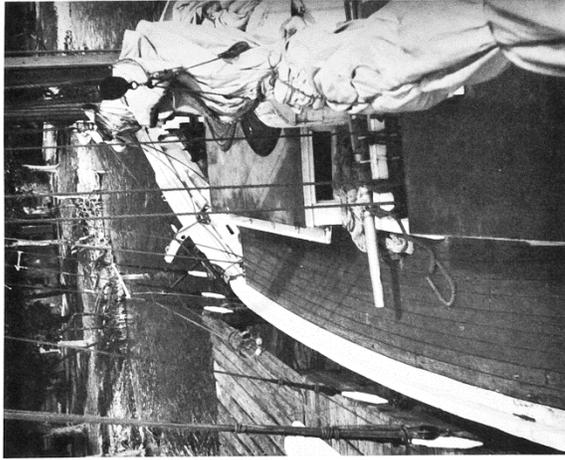
## Specifications

NAME Virginia  
 RIG/TYPE Schooner, staysail rigged, auxiliary (centerboard)  
 YR. BUILT 1865  
 LENGTH O.A. 57' 2" (LWL 49.51')  
 BEAM 14' 6"  
 DEPTH 4' 10"  
 DRAFT 4' 6"  
 GROSS TONS 12  
 NET TONS —  
 DESIGNED BY —  
 BUILT BY —  
 PLACE OF ORIG. OWNER Mobile, Ala. Frank Richmond and M. Bailette  
 ORIC. (research, 1936)  
 SERVICE LINES taken off vessel.  
 PROVENANCE Information Dr. John F. Bass (owner) and Dr. H.S.J. Walker and U.S. Customs records.  
 PLAN DATA

SURVEYOR(S) Laurie Gates, leader, H.L. Capdeville, Gerard Smith, Tom Wisheart  
 HAMMS 23 pp., offsets (taken inside of vessel, corrected for skin thickness), other details of hull, etc.  
 FIELD NOTES 7 prints, 3 negatives  
 PHOTOS

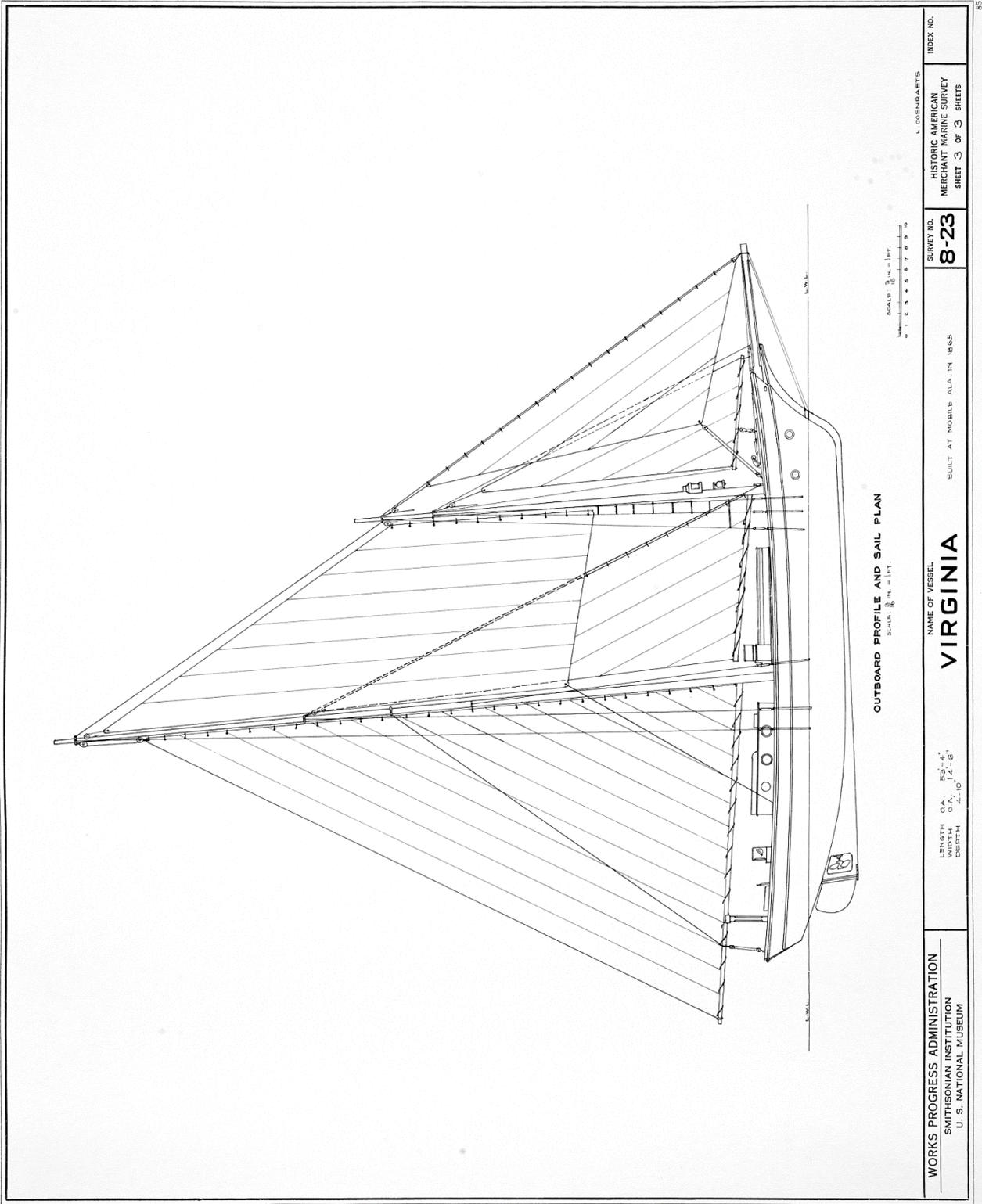
## Remarks

Body, sheer and half-breadths scaled  $\frac{1}{4}'' = 1'$ . Overall height of planing surface section, scaled  $\frac{1}{2}'' = 1'$ . Sail plan scaled  $\frac{1}{2}'' = 1'$ .  
 "The Virginia was built on the Fish River, Mobile, Alabama, in 1865. It is not clear for what purpose she was built but she has been used as a fisherman, pilot boat, freighter, dispatch boat and yacht.  
 Although her keel and frames are cypress she has stood the wear and tear of a strenuous career with only minor damage and is in excellent condition at the present time.  
 "She was originally rigged as a topsail schooner, which has been changed to a staysail rig with Marconi mainsail and fisherman's staysail. Auxiliary power was installed in 1916. A 16 horsepower Lathrop motor was first used although a 40 horsepower Lathrop motor has since been replaced with a 40 horsepower Lathrop.  
 "The original owners of the Virginia were Frank Richmond and Michael Bailette. Since they sold her in 1866 she has had a long list of different owners, her present owner being Dr. John F. Bass of Englewood, Florida. He uses the schooner with the assistance of one of his biological laboratories, Dr. J.H. Hyde, Supervisor and H.L. Long, Regional Director









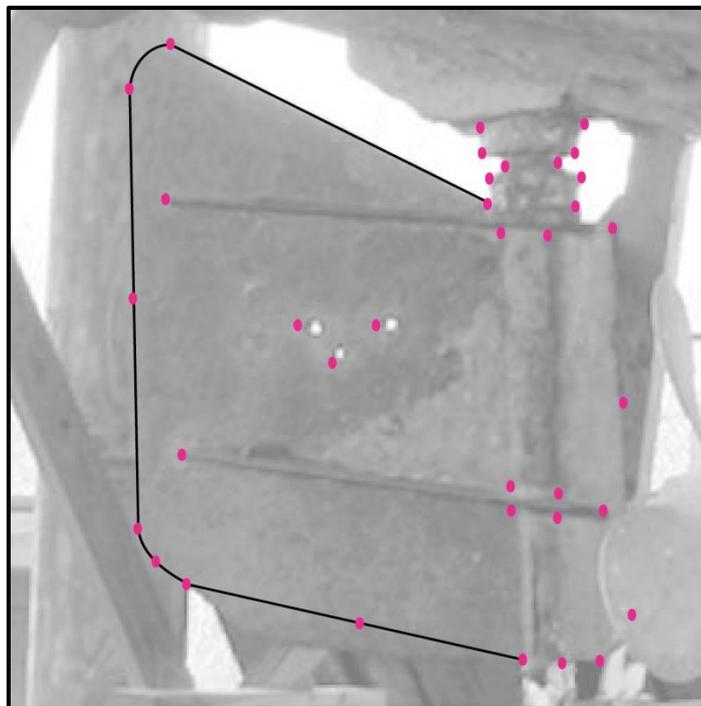
OUTBOARD PROFILE AND SAIL PLAN

WORKS PROGRESS ADMINISTRATION SMITHSONIAN INSTITUTION U. S. NATIONAL MUSEUM	LENGTH O.A. 52'-4" WIDTH O.A. 14'-6" DEPTH 4'-10"	NAME OF VESSEL <b>VIRGINIA</b>	BUILT AT MOBILE ALA. IN 1865	SURVEY NO. <b>8-23</b>	HISTORIC AMERICAN MERCHANT MARINE SURVEY SHEET 3 OF 3	INDEX NO.
	L. COBBIN & SONS					

### Appendix C: Pre-Survey Proformas



Forward starboard sheet with pre-assigned points at features and arbitrary survey lines (Image by author, 2010).



Rudder blade starboard side with pre-assigned survey points (Image by author, 2010).



Starboard upper stem sheet (Image by author, 2010).



Starboard propeller and deadwood sheet (Image by author, 2010).



Lower starboard stem scarph pre-assigned points (Image by author, 2010).